WorkCover
NEW SOUTH WALES

INTERMEDIATE
RIGGING

NATIONAL CERTIFICATE OF COMPETENCY

ASSESSMENT INSTRUMENT 1995

WorkCover. **Watching out for you.**

Intermediate Rigging

ASSESSMENT

Part 1 Practical

Part 2 Assignment

Part 3 Knowledge

June 1995

Order No. 845

Assessor guidelines—general

1 Introduction

1.1 Scope
These general guidelines apply to all the assessment instruments for the certificates of competency prescribed by Schedule A of the *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment.*

Assessors should also be familiar with the publication *Assessment guidelines for National Occupational Health and Safety Certification Standard for users and operators of industrial equipment.*

1.2 Additional guidelines
Guidelines which provide additional specific information to certificate assessors are also included in each assessment instrument. Included, where appropriate, are specific instructions on the usefulness of training records (such as log books) and other certificates with overlapping competencies.

1.3 Evidence of competence
Evidence of competence is established in a number of ways. The methods used in the following instruments involve:

- assessment of practical performance
- written solutions to typical problems, and
- written and/or oral answers to questions on underpinning knowledge.

2 Preparing for the assessment

2.1 Study the instruments
You need to read the assessment instruments and specific instructions carefully before beginning an assessment.

2.2 Confirm appointments
Prior to an assessment, you need to confirm the date, time and location of the assessment with the applicants and any other relevant people.

2.3 Equipment availability
The availability of equipment, materials and a suitable working area must be organised and confirmed, prior to the assessment.

2.4 Workplace factors
Because procedures and processes vary greatly between workplaces, it is important for assessors to plan their approaches to meet the requirements of the individual workplace.

Make sure you take the timeframe into account when planning the assessment and also make applicants aware of any time limits.

2.5 Selecting questions
Questions for the written/oral assessment should be randomly selected, either by hand or using the computer system, if applicable.

3 Conducting the assessment

3.1 Provide an explanation
Begin by explaining clearly to the applicants what is required of them. Check that applicants have provided (or have been provided with) the necessary tools and equipment.

3.2 Practical performance
Complete the performance checklist, as the applicant works through the required tasks. Wherever possible, this should be done in a normal working environment.

Do not ask the applicant questions while he or she is performing a task, as this can be distracting, and may affect the time taken to complete the assessment.

If, at any time, the applicant is endangering himself/herself or others, stop the assessment immediately. This indicates that the applicant is not yet competent and may require further training, before being reassessed.

Assessments should also be stopped, if equipment or property are likely to be damaged.

3.3 Knowledge
The knowledge assessment covers both oral and written exercises. The model answers provided with the knowledge assessment instruments are not necessarily exhaustive. Use your own judgement when scoring alternative answers.

3.4 Written assignment
As well as providing a means to determine the applicant's competence in solving work-related problems, the written assignment will clearly demonstrate whether or not the applicant can work without direct supervision. The assessor may assist by reading out a question, but should not prompt or interpret for the applicant.

3.5 Recording responses
Each item and question on the assessment forms you use is accompanied by a box. Assessors must complete every box as follows:

CORRECT PERFORMANCE/ANSWER

NOT YET ACHIEVED

NOT APPLICABLE

If a box is marked incorrectly, cross out the mistake, mark the correct response alongside, and initial the change.

4 Determining competencies

4.1 Assessment summary
A specific assessment summary is given for each certificate class. This is to be filled in and signed by the assessor, and countersigned by the applicant.

The original and duplicate are given to the applicant. The applicant provides the original to the certifying authority. The triplicate is retained by the assessor.

4.2 Competency requirements
In order for you to deem an applicant competent, he or she must have completed each section of the assessment to the standard required. You should note any time constraints when arriving at your decision.

The standard required for each instrument is specified in the specific guidelines and/or on the summary page at the end of each assessment.

In the case of a repeat assessment, the assessor can decide to apply the whole or only part of the assessment.

4.3 Additional comments
Where an applicant fails to meet the standard of competence, you should add a written comment on the Assessment Summary, which briefly explains the problem.

Advice to the applicant, on the appropriate remedial action should also be included. This will also assist the certificate assessor, in the event that the applicant undergoes future reassessment.

Likewise, if an applicant demonstrates outstanding or remarkable performance, this should be noted.

4.4 Further investigation
As a certificate assessor, it is your role to determine whether or not an applicant has achieved the standard necessary for the certifying authority to be able to grant a certificate of competency.

Whenever you are unsure of the applicant's performance or knowledge or performance, ask additional questions, and obtain additional evidence, before making your final decision.

National Occupational Health and Safety Certification Standard
for
Users and Operators of Industrial Equipment

ASSESSMENT INSTRUMENT

FOR THE

INTERMEDIATE RIGGING

CERTIFICATE OF COMPETENCY

PART ONE

PRACTICAL SKILLS PERFORMANCE ASSESSMENT

(Tasks and Model Results)

Intermediate Rigging—Practical Skills

CONTENTS

Introductory notes—Practical

1 The Intermediate Rigging Certificate encompasses the requirements for the Basic Rigging Certificate. It is preferable that an applicant for the Intermediate Rigging Certificate already holds a Basic Rigging Certificate or has previously passed a practical skills assessment for the Basic Rigging Certificate. Otherwise the assessment for an applicant for the Intermediate Certificate must incorporate the requirements of both the Basic and Intermediate Certificate assessment.

2 The practical skills performance assessment is one of three assessments which applicants must pass to qualify for an Intermediate Rigging Certificate of Competency. The other components are a knowledge assessment and a written assignment.

3 The practical skills performance assessment for Intermediate Rigging is a 'closed book' practical exercise involving the rigging of cranes.

In practical skills performance assessment the certificate assessor evaluates the applicant's applied knowledge and understanding and the applicant's familiarity with rigging equipment and recommended work procedures and rigging techniques. On completion of the assessment the assessor will determine whether the applicant can safely undertake, without direct supervision, the tasks encompassed within units of competence 1.0 and 2.0 comprising Intermediate Rigging prescribed by Schedule A of the *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment* (NOHSC: 1006, 1992).

4 The relationship between the performance assessment and the Standard's prescribed performance criteria and range statements is set out on page 6.

A full assessment should be completed within one hour.

5 An applicant who produces a satisfactory record of training (such as a log book) which establishes at least 25 working days of experience in the rigging of cranes, conveyers, dredges or excavators does not require a practical skills performance assessment.

6 Any other waiver of assessment should only be permitted in compliance with guidelines, determinations or advice given to certificate assessors by the certifying authority.

Conditions

7 **Location**
The practical skills assessment can be conducted at any location which has:
- sufficient clear space for the exercises to be carried out; and
- a firm supporting surface for the cranes(s).

8 **Minimum plant and equipment**
The following should be used as a guide by the assessor. The actual quantities and types may vary depending upon the availability.

Option A:
- a head section, butt section and at least two intermediate sections of a lattice boom (not necessarily mounted on a crane);
- an attendant crane of adequate capacity;
- trestles or other suitable supports for boom sections;
- suitable lifting gear.

Option B:
- a tower crane fitted with an external climbing frame;
- an additional tower section;
- suitable lifting gear.

9 **Tools for the applicant**
Each applicant must provide (or be provided with) the following tools:

- driving hammer
- spanners and torque wrench
- rigging belt with frogs and a bolt bag
- whistle.

10 **Personal protective equipment for the applicant.**
Each applicant must provide (or be provided with) the following PPE:

- safety helmet complying with AS 1801
- sturdy, non-slip footwear that covers the whole foot
- close-fitting clothing.

11 **Conduct of assessment**
The assessor may choose to conduct the assessment using either Option A or Option B, depending upon the availability of suitable cranes and associated equipment.

The person operating the crane (not the assessor) must hold the appropriate certificate of competency. A trainee crane operator cannot be used.

Wherever possible, applicants should be assessed in groups of two or three. Where a single applicant is to be assessed, the assessor should arrange for another person to assist (or the assessor may assist).

Where two or more applicants are assessed simultaneously, the assessor must ensure that the various tasks are evenly shared so that a full assessment of each applicant can be made. This may involve some repetition of tasks.

The performance of each applicant is to be recorded on the assessor's check list, a copy of which is included in this document.

An applicant passes a practical skills performance assessment when each relevant item on the check list is marked as either 'competent' or 'not applicable' as appropriate.

12 **Safety of personnel**
Where an applicant is working dangerously, recklessly or without the necessary co-ordination and balance, the assessor must direct the applicant to cease work and terminate those parts of the assessment forthwith.

Notes on options

13 **Option A: Add/remove a lattice boom section**

The assessor will nominate an intermediate section of lattice boom to be added or removed using an attendant crane.

The applicant must ensure that:

a the existing boom section joints are adequately supported;

b boom sections are correctly slung;

c the attendant crane takes the weight;

d boom pins are driven out from the outside;

e boom sections are joined while working from the outside;

f retaining pins are fitted to boom pins.

14 **Option B: Add/remove a crane tower section**

This exercise involves a tower crane equipped with an external climbing frame.

The assessor will nominate whether a tower section is to be added or removed.

(1) Where a tower section **is added**, the applicant must ensure that:

a the section is lifted and suspended from extendable monorail;

b the crane boom remains at minimum radius;

c the top tower section bolts are removed;

d the top section of the crane is correctly lifted;

e the additional section is correctly located;

f the section bolts are fitted and correctly torqued.

(2) Where a tower section **is removed**, the applicant must ensure that:

a the crane boom is at minimum radius;

b the section bolts are removed;

c the section is positioned on the monorail;

d the top section of the crane is correctly lowered;

e the remaining section bolts are fitted and correctly torqued;

f the section is correctly lowered.

Assessment form: Intermediate Rigging

Applicant's name .....

Performance items	
Option A **Adding/removing a lattice boom section** Applicant ensured: • boom section joints adequately supported ☐ • boom sections correctly slung ☐ • weight taken by attendant crane ☐ • boom pins driven from outside ☐ • boom sections joined while working from outside ☐ • retaining pins fitted ☐ **Option B 1** **Adding a crane tower section** Applicant ensured: • section lifted and suspended ☐ • crane boom remained at minimum radius ☐ • section bolts removed ☐ • crane lifted ☐ • section located ☐ • section bolts fitted and torqued ☐	**Option B 2** **Removing a crane tower section** Applicant ensured: • crane boom placed at minimum radius ☐ • section bolts removed ☐ • section slung and suspended ☐ • crane lowered ☐ • section bolts fitted and torqued ☐ • removed section lowered ☐

Intermediate Rigging—Practical

RELATIONSHIP TO THE NATIONAL CERTIFICATION STANDARD

THE UNITS OF COMPETENCE

The tasks set for practical skills performance assessment are intended to assess the applied knowledge and understanding, and familiarity with rigging techniques and recommended work practices additional to those required for Basic Rigging which are necessary to carry out units of competence 1.0 and 2.0 for Intermediate Rigging prescribed by Schedule A of the *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment.*

These are as follows:

1.0 Plan and prepare work
2.0 Complete rigging work

Each unit of competence is subdivided into elements of competence, for which performance criteria are prescribed.

THE PERFORMANCE CRITERIA

The tasks involved in undergoing the practical skills performance assessment reflect the National Standard's following performance criteria: 1.1.6, 1.1.9, 1.1.16, 1.1.18, 2.1.3, 2.2.1, 2.2.2, 2.2.4, 2.2.5, 2.2.8, 2.2.10, 2.2.11, 2.2.12, 2.3.1, 2.3.2, 2.3.4, 2.3.5, 2.4.1, 2.4.2, 2.4.3, 2.4.4, 2.5.1 and 2.5.2.

Relevant performance criteria which are not reflected in the Intermediate Rigging assessment have been covered in the Dogging and Basic Rigging Assessments and do not require additional assessment.

THE RANGE STATEMENT

The tasks making up the practical skills performance assessment are focused around the rigging of cranes.

These tasks utilise the typical practical skills and techniques additional to those used for Basic Rigging, required to carry out work listed in the National Standard's range statement for Intermediate Rigging.

The model results apply the requirements of the *National Standard for Plant* and the requirements of its referenced Standard AS 2550, *Cranes—Mobile, Tower and Derrick—Selection and Operation,* to the obligations under State/Territory occupational health and safety legislation of a person who is responsible for the rigging of cranes.

National Occupational Health and Safety Certification Standard
for
Users and Operators of Industrial Equipment

ASSESSMENT INSTRUMENT

FOR THE

INTERMEDIATE RIGGING

CERTIFICATE OF COMPETENCY

PART TWO

WRITTEN ASSIGNMENT

(Questions and Answers)

Intermediate Rigging—Written Assignment

CONTENTS

Introductory notes—Assignment

1 The Intermediate Rigging Certificate encompasses the requirements for the Basic Rigging Certificate. It is preferable that an applicant for the Intermediate Rigging Certificate already holds a Basic Rigging Certificate. Otherwise the assessment for an applicant for the Intermediate Certificate must incorporate the requirements of both the Basic and Intermediate Certificate assessment.

2 The written assignment for Intermediate Rigging is one of three assessments which applicants must pass to qualify for an Intermediate Rigging Certificate of Competency. The other components are a knowledge assessment and a performance assessment.

3 The written assignment for Basic Scaffolding is a 'closed book' examination consisting of two sections. Each section contains three tasks.

In the written assignment the certificate assessor evaluates the applicant's conceptual understanding of rigging techniques, his/her ability to apply simple mathematics and physics, and ability to read and interpret drawings and specifications. On completion of the assessment the assessor will determine whether the applicant can safely undertake, without direct supervision, the tasks encompassed within units of competence 1.0 and 2.0 comprising Intermediate Rigging prescribed by Schedule A of the *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment* (NOHSC: 1006, 1992).

4 The relationship between the two sections of the assignment and the Standard's prescribed performance criteria and range statements is set out on page 15.

A full assignment includes five minutes reading time and up to 25 minutes to complete.

5 To pass the assignment, the applicant must provide an acceptable answer to each task in both of the following sections:

Section 1: Dual lifting (Three tasks)
Section 2: Tilt-slab erection (Three tasks)

6 Assessors should highlight in Tasks 1-6 the combination of variables required for completion of each task.

7 An applicant undergoing re-assessment need only be re-assessed in those sections which he or she previously failed to provide three satisfactory answers.

8 Any other partial or full waiver of assessment should only be permitted in compliance with guidelines, determinations or advice given to the certificate assessor by the certifying authority.

9 The model answers to the tasks and the method of determining satisfactory completion of each section are provided on pages 13–14.

INSTRUCTIONS TO APPLICANTS

1 Equipment

To complete this assignment you will need pens or pencils.

You MAY use an eraser and a calculator.

BOOKS AND PREPARED NOTES ARE NOT TO BE USED.

2 Reading time

You have five minutes to read the assignment and the attached material before you start writing.

During this five minutes you may ask the assessor questions about the assignment tasks and the information provided.

3 The assignment

The assignment contains:

- six tasks for you to do.

WRITE YOUR NAME AT THE TOP OF EACH PAGE.

4 Time allowed

You have 25 minutes to complete all six tasks.

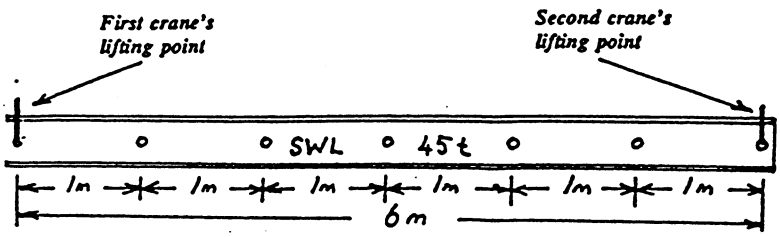
Directions: Sections 1 to 2

SECTION ONE: DUAL LIFTING

Assessors should highlight in Tasks 1-6 the combination of variables required for completion of each task.

INTRODUCTION

A prestressed concrete beam is to be lifted and repositioned using two lattice boom mobile cranes and the equalising beam illustrated below. There are no on-site limitations on the positioning of the cranes.



You have the following information:

Weight of prestressed concrete beam:
(a) 39 t or (b) 29 t

Weight of equalizing beam and lifting gear:
1 t

Alignment of prestressed concrete beam axis:
North/South

Final position for prestressed concrete beam:
3 m to the East

Capacity of first crane at maximum working radius:
(a) 20 t or (b) 25 t

Task 1: How far along the equalizing beam from the first crane's lifting point would you attach the prestressed concrete beam's lifting slings?

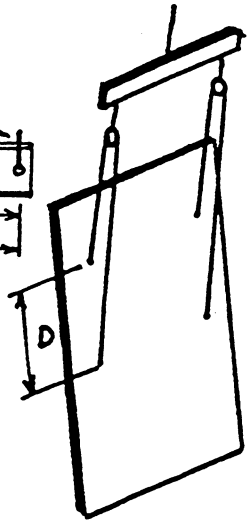
Task 2: What is the minimum capacity of the second crane at the required working radius?

Task 3: In order of sequence, describe the minimum crane movements required to lift and reposition the concrete reinforced beam?

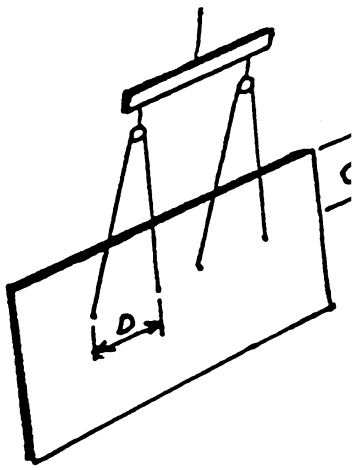
SECTION TWO: TILT-SLAB FRICTION

INTRODUCTION

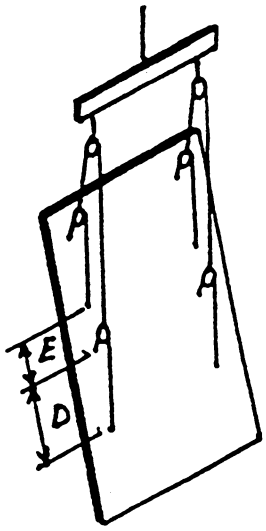
Three tilt-up panels are to be raised and positioned using the rigging configurations shown below.



Panel 1



Panel 2



Panel 3

You have the following information:

Panel 1:
Dimension D is: (a) 1.5 m **or** (b) 2.5 m

Panel 2:
Dimension C is: (a) 1.5 m **or** (b) 2.5 m
Dimension D is: (a) 1.0 m **or** (b) 1.2 m

Panel 3:
Dimension D is: (a) 2.4 m **or** (b) 2.7 m
Dimension E is: (a) 1.5 m **or** (b) 2.6 m

Task 4: What is the minimum length of the slings required for Panel 1?

Task 5: What is the minimum length of the slings required for Panel 2?

Task 6: What are the two minimum lengths of the slings required for Panel 3?

Model answers

SECTION ONE:
DUAL LIFTING

Note: This section contains three tasks (Tasks 1-3). In order to pass this section, the applicant must provide a correct answer to each question.

Task answer and commentary

Task 1:

Note: This task assesses the applicant's ability to apply the common rule for de-rating the working capacity of a crane involved in a dual lift and the understanding of levers.

The answer is calculated by firstly adding the weight of the prestressed concrete beam and the weight of the equalising beam and lifting gear. This combined weight is then multiplied by 1.2 to ensure crane capacity is 20% greater than its share of the load. This figure is then divided into the capacity of the first crane to establish what maximum portion of the load the first crane can carry. The result is then multiplied by 6m (the distance between the crane lifting points). Where the answer is less than a whole number, it is rounded downwards to the nearest whole number. Finally, this figure is subtracted from 6m to give the actual distance from the first crane's lifting point at which the load will be fixed.

6 - [crane capacity x 6 ÷ (W1 + W2 x 1.2)] = distance of slinging point (in m)

The answers for the four possible combinations are as follows:

capacity (a) and weight (a) 4 m
capacity (a) and weight (b) 3 m
capacity (b) and weight (a) 3 m
capacity (b) and weight (b) 2 m

Task 2:

Note: This task assesses the applicant's ability to calculate required lifting capacity for a given weight and a given lever arm.

The answer is calculated by multiplying the combined weight by 1.2 (as above). This figure is divided by 6 m (the distance between the crane lifting points). The result is then multiplied by the answer to Task 1 to give the minimum net capacity in tonnes required by the second crane.

Task 1 answer x [(W1 + W2 x 1.2) ÷ 6] = 2nd crane capacity (in t)

The answers to the four possible combinations are as follows:

Where first crane is (a) and concrete beam is (a): **32 t**
Where first crane is (a) and concrete beam is (b): **18 t**
Where first crane is (b) and concrete beam is (a): **24 t**
Where first crane is (b) and concrete beam is (b): **12 t**

Task 3:

Note: This task assesses the applicant's ability to apply the common rules for crane motions when carrying out dual lifts.

The answer should be: (1) Hoist, (2) Luff Up, (3) Lower.

Note: Luffing <u>Down</u> is not acceptable.

SECTION TWO:
TILT-SLAB ERECTION

Note: This section contains three tasks (Tasks 4-6). In order to pass this section, the applicant must provide the correct answer to each task.

Task answer and commentary

Task 4:

Note: This task assesses the applicant's ability to apply the common formula for a 2 x 2 rigging configuration.

The answer is calculated using the formula:
Sling length = 2 D.

The answers to the two possible combinations are as follows:

Where D is (a): 3.0 m
Where D is (b): 5.0 m

Task 5:

Note: This task assesses the applicant's ability to apply the common formula for a 4 x 1 rigging configuration.

The answer is calculated using the formula:
Sling length = 3 C + D.

The answers to the 4 possible combinations are as follows:

Where C is (a) and D is (a): 5.5 m
Where C is (a) and D is (b): 5.7 m
Where C is (b) and D is (a): 8.5 m
Where C is (b) and D is (b): 8.7 m

Task 6:

Note: This task assesses the applicant's ability to apply the common formulae for a 2 x 4 rigging configuration.

The answer is calculated by using the following formulae:
For the 4 slings: Sling length = 3 D.
For the 2 slings: Sling length = 4.5 D or 4.5 E, (whichever is the greater).

The answers to the four possible combinations are as follows:

Where D is (a) and E is (a): 7.2m and 10.8m
Where D is (a) and E is (b): 7.2m and 11.7m
Where D is (b) and E is (a): 8.1m and 12.15m
Where D is (b) and E is (b): 8.1m and 12.15m

END OF ANSWERS

Intermediate Rigging—Written Assignment

RELATIONSHIP TO THE NATIONAL CERTIFICATION STANDARD

THE UNITS OF COMPETENCE

The tasks set within the two sections of the written assignment are intended to assess the conceptual understanding, numeracy and technical comprehension, additional to that required for Basic Rigging required to carry out units of competence 1.0 and 2.0 for Intermediate Rigging prescribed by Schedule A of the *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment.*

These are as follows:

1.0 Plan and prepare work
2.0 Complete rigging work

Each unit of competence is subdivided into elements of competence, for which performance criteria are prescribed.

THE PERFORMANCE CRITERIA

The relationship between each section of the written assignment and the National Standard's performance criteria is as follows:

Section 1: Dual lifting
The questions in this section reflects performance criteria 1.1.2, 1.1.3, 1.1.6, 1.1.7, 1.1.13, 1.1.16, 1.1.18, 1.2.5, 1.2.6, 1.2.7, 2.2.1, 2.2.4, 2.2.5, 2.2.6, 2.2.8, 2.2.10, 2.2.11 and 2.2.12.

Section 2: Tilt-slab erection
The questions in this section reflect performance criteria 1.1.1, 1.1.2, 1.1.5, 1.1.11, 1.1.14, 1.1.18, 1.1.19, 1.2.5, 1.2.7, 2.2.1, 2.2.4, 2.2.5, 2.2.8, 2.2.9, 2.2.10 and 2.2.12.

Relevant performance criteria which are not reflected in the Intermediate Rigging assessment have been covered in the Dogging and Basic Rigging assessments and do not require additional assessment.

THE RANGE STATEMENT

The questions making up the written assignment are related to the use of load equalizing gear for both dual lifting and tilt-slab erection.

These types of rigging equipment were selected because they are regarded as representing the most complex equipment used to carry out rigging work within the scope of the Intermediate Rigging Certificate.

The model answers apply the requirements of the *National Standard for Plant* to the obligations under State/Territory occupational health and safety legislation of a person who uses rigging equipment within the scope of the Intermediate Rigging Certificate.

The answers for Section One are derived from the common rules for multiple crane lifts given in *A Guide for Dogmen and Crane Chasers* and *A Guide for Riggers,* both of which are published by the WorkCover Authority of NSW.

The answers for Section Two are derived from the rigging formulae given in AS 3850.2, *Tilt-Up Concrete and Precast Concrete Elements for Use in Buildings,* Part 2: *Guide to Design, Casting and Erection of Tilt-Up Panels,* published by Standards Australia.

Please Note: It is expected that the forthcoming 1994 edition of *A Guide for Riggers* will contain all the necessary information for applicants preparing for the Intermediate Rigging written assignment.

National Occupational Health and Safety Certification Standard
for
Users and Operators of Industrial Equipment

ASSESSMENT INSTRUMENT

FOR THE

INTERMEDIATE RIGGING

CERTIFICATE OF COMPETENCY

PART THREE

KNOWLEDGE ASSESSMENT

(Questions and Answers)

Intermediate Rigging—Knowledge Assessment

CONTENTS

Introductory notes—Knowledge

1 The Intermediate Rigging Certificate encompasses the requirements for the Basic Rigging Certificate. It is preferable that an applicant for the Intermediate Rigging Certificate already holds a Basic Rigging Certificate. Otherwise the assessment for an applicant for the Intermediate Certificate must incorporate the requirements of both the Basic and Intermediate Certificate assessment.

2 The knowledge assessment for Intermediate Rigging is one of three assessments which applicants must pass to qualify for an Intermediate Rigging Certificate of Competency. The other components are a written assignment and a performance assessment.

3 The knowledge assessment for Intermediate Rigging is a 'closed book' short-answer examination divided into three sections. The questions in each section are to be randomly selected from a bank which contains a total of 50 questions.

In the knowledge assessment the certificate assessor evaluates the extent of the applicant's underpinning knowledge. On completion of the assessment the assessor will determine whether the applicant can safely undertake, without direct supervision, the tasks encompassed within each of the units of competence comprising Intermediate Rigging prescribed by Schedule A of the *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment* (NOHSC: 1006, 1992).

4 The relationship between the questions and the Standard's prescribed performance criteria is set out on page 25.

5 A full knowledge assessment consists of 13 questions and can take up to 15 minutes to complete. The time permitted for partial assessments should be approximately one minute per question.

There are two ways in which the knowledge assessment can be conducted. These are:

- *By written examination.* Where this method is used, the applicant must be given the chance to be orally assessed on any questions which are not completed in writing;

- *By oral examination.* Where this method is used, the assessor will enter the applicant's answers on to the examination paper.

6 To pass the assessment, the applicant must correctly answer (either in writing or orally) a majority of the randomly selected questions in each of the following sections:

Section 1: Certification (3 selected from 12)
Section 2: Tilt-slab erection (5 selected from 19)
Section 3: Demolition of structures (5 selected from 19)

7 An applicant undergoing re-assessment need only be re-assessed in those sections in which he or she previously failed to answer a majority of selected questions correctly.

8 Any other partial or full waiver of knowledge assessment should only be permitted in compliance with guidelines, determinations or advice given to the certificate assessor by the certifying authority.

9 The model answers to the bank of questions are on pages 22–24.

Where appropriate, model answers include acceptable alternatives given in brackets.

10 Applicants may use alternative compatible metric units from those given in the model answers. For example, where the model answer is 250 mm, an answer of 25 cm or 0.25 m is acceptable.

11 Where the model answer includes a unit of measurement, an applicant's answer which is not qualified with a unit of measurement is unacceptable. For example, where the model answer is 250 mm, an answer of 250 is NOT acceptable.

12 An applicant who uses an imperial unit of measurement in an answer must be given the opportunity by means of oral questioning to convert the answer correctly to an appropriate metric measurement. A failure to convert an imperial measurement correctly is regarded as a failure.

Intermediate Rigging—Knowledge Questions

SECTION ONE:
CERTIFICATION

Note: Select three questions at random from the following 12. To pass this section, the applicant must correctly answer at least two of the selected questions.

1 (a) Is a person with an Intermediate Rigging Certificate allowed to erect concrete reinforced tilt-up panels?

1 (b) Is a person with an Intermediate Rigging Certificate allowed to plan and direct a multiple crane lift?

1 (c) Is a person with an Intermediate Rigging Certificate allowed to erect a permanently guyed structure?

1 (d) Is a person with an Intermediate Rigging Certificate allowed to erect and dismantle a tower crane?

1 (e) Is a person with an Intermediate Rigging Certificate allowed to erect and dismantle a hoist fitted with a jib?

1 (f) Is a person with an Intermediate Rigging Certificate allowed to erect and dismantle a guyed derrick?

1 (g) Is a person with an Intermediate Rigging Certificate allowed to use load equalising gear?

1 (h) Is a person with an Intermediate Rigging Certificate allowed to erect a boatswain's chair?

1 (i) Is a person with an Intermediate Rigging Certificate allowed to erect and dismantle a lattice-boom mobile crane?

1 (j) Is a person with an Intermediate Rigging Certificate allowed to erect and dismantle a cableway?

1 (k) Is a person with an Intermediate Rigging Certificate allowed to install a hung temporary working platform?

1 (l) Is a person with an Intermediate Rigging Certificate allowed to carry out rigging work in connection demolition?

SECTION TWO:
TILT-SLAB ERECTION

Note: Select five questions at random from the following 19. To pass this section, the applicant must correctly answer at least three of the selected questions.

2 (a) What is the minimum safety factor for lifting inserts and bracing inserts?

2 (b) How often are proof tests required on lifting clutches?

2 (c) What is the maximum load on an expansion anchor for brace-fixing?

2 (d) Where chemical anchors are used to fix braces, what percentage of them must be proof-tested to the working load limit?

2 (e) Which type of expansion anchor is not recommended for fixing braces to the floor?

2 (f) What is the minimum safety factor for braces?

2 (g) What must be fitted to adjustable brace locking pins?

2 (h) What two items of information must be available on site regarding the working load limit of an adjustable brace?

2 (i) Unless specifically designed, what is the maximum height of shim under the panel edge?

2 (j) What is the minimum width of shims under the panel edge?

2 (k) What type of indicator must be fitted to a crane used for lifting tilt-slabs?

2 (l) When lifting a panel from its casting bed, what increase in the dead load would you allow for the effect of suction?

2 (m) Without special design, what is the minimum number of braces per wall panel?

2 (n) When a panel is in its final position, what is the maximum tolerance on its alignment?

2 (o) Where would you find the rigging configuration for lifting a particular panel specified?

2 (p) On a tilt-slab shop drawing, what does an outlined triangle mean?

2 (q) On a tilt-slab shop drawing, what does a blocked-in triangle mean?

2 (r) On a tilt-slab shop drawing, what does a blocked-in circle mean?

2 (s) On a tilt-slab shop drawing, what does a screw-thread mean?

SECTION THREE: DEMOLITION OF STRUCTURES

Note: Select five questions at random from the following 19. To pass this section, the applicant must correctly answer at least three of the selected questions.

3 (a) What type of indicator must be fitted to a crane used for demolition?

3 (b) Does a crane used for demolition work require a hoist-limiting device (anti-two-block device)?

3 (c) What is the minimum diameter or an FSWR felling rope?

3 (d) What is the minimum diameter of a felling chain?

3 (e) Would you fell structural members by snatch-loading?

3 (f) When a structure is to be felled with ropes or chains, what is the minimum horizontal distance between the structure and the pulling mechanism?

3 (g) How close to the sides of the rope or chain may a person stand during felling?

3 (h) On multi-storey buildings, are free-standing columns and walls demolished before or after floors?

3 (i) Before removing a lift car, what must be done to all the lift door openings?

3 (j) What is the maximum freestanding height for a masonry wall left without lateral support outside working hours?

3 (k) What is the maximum freestanding height for a reinforced concrete column left without lateral support outside working hours?

3 (l) What is the maximum freestanding height for an unencased steel column left without lateral support outside working hours?

3 (m) What is the minimum number of temporary guy lines needed to control the felling of a steel column?

3 (n) What is the maximum height above the cut-off level at which you would apply lateral force to fell a masonry wall?

3 (o) Where a reinforced concrete wall has a single reinforcement grid located close to one face, should the wall be felled away from the reinforced face or towards the reinforced face?

3 (p) Under what circumstances is the cutting of suspended cables on an electricity transmission tower permitted?

3 (q) What may occur if a prestressed beam is turned on its side or turned upside down while it is suspended?

3 (r) Who should be consulted before a structure above a post-tensioned transfer beam is demolished?

3 (s) Who should be consulted before ungrouted post-tensioned members are demolished?

END OF QUESTIONS

Model answers

SECTION ONE: CERTIFICATION

Question	Answer	Reference
1 (a)	Yes	NOHSC: 1006, p 25
1 (b)	Yes	NOHSC: 1006, p 25
1 (c)	No	NOHSC: 1006, p 25
1 (d)	Yes	NOHSC: 1006, p 25
1 (e)	Yes	NOHSC: 1006, p25
1 (f)	No	NOHSC: 1006, p25
1 (g)	Yes	NOHSC: 1006, p25
1 (h)	No	NOHSC: 1006, p25
1 (i)	Yes	NOHSC: 1006, p25
1 (j)	No	NOHSC: 1006, p25
1 (k)	No	NOHSC: 1006, p25
1 (l)	Yes	NOHSC: 1006, p25

SECTION TWO: TILT-SLAB ERECTION

2 (a)	2.5 (or 2½)	AS 3850.1, Clause 4.3.1
2 (b)	Every 6 months	AS 3850.1, Clause 4.3.2
2 (c)	0.65 (or 65%) of the first slip load	AS 3850.1, Clause 4.3.3(b)
2 (d)	100%	AS 3850.1, Clause 4.3.3(c)
2 (e)	Deformation-controlled anchors	AS 3850.2, Clause 2.4.2(b)
2 (f)	2	AS 3850.1, Clause 4.4
2 (g)	Retaining devices	AS 3850.1, Clause 4.4
2 (h)	Its WLL at zero extension and at maximum extension	AS 3850.1, Clause 4.4(b)
2 (i)	40 mm	AS 3850.1, Clause 4.5.2
2 (j)	100 mm or the panel thickness, whichever is lesser	AS 3850.1, Clause 4.5.2
2 (k)	A load indicator	AS 3850.1, Clause 4.6
2 (l)	40% (or 1.4)	AS 3850.2, Clause 3.7.2
2 (m)	2	AS 3850.1, Clause 5.3.2
2 (n)	5 mm	AS 3850.2, Clause 3.7.7(d)
2 (o)	On the shop drawing	AS 3850.1, Clause 5.4(k)
2 (p)	A lifting insert	AS 3850.2, Table 3.9
2 (q)	A bracing insert	AS 3850.2, Table 3.9
2 (r)	A fixing insert	AS 3850.2, Table 3.9
2 (s)	A panel/floor connection	AS 3850.2, Table 3.9

SECTION THREE: DEMOLITION OF STRUCTURES

Question	Answer	Reference
3 (a)	A load indicator	AS 2601, Clause 1.8.2
3 (b)	Yes	AS 2601, Clause 1.8.2
3 (c)	12 mm	AS 2601, Clause 2.3.2.2
3 (d)	8 mm	AS 2601, Clause 2.3.2.2
3 (e)	No	AS 2601, Clause 2.3.2.2
3 (f)	1.5 times the height of the structure	AS 2601, Clause 2.3.2.1
3 (g)	0.75 x distance between the mechanism and the structure	AS 2601, Clause 2.3.2.1
3 (h)	Before	AS 2601, Clause 3.2.1
3 (i)	Barricade them	AS 2601, Clause 3.2.2.2
3 (j)	Less than 15 x least overall plan dimension	AS 2601, Clause 3.5.1(a)
3 (k)	Less than 20 x least overall plan dimension	AS 2601, Clause 3.5.1(b)
3 (l)	Less than 25 x least overall plan dimension	AS 2601, Clause 3.5.1(c)
3 (m)	Two	AS 2601, Clause 3.5.2
3 (n)	Half the unsupported height above the cut-off level	AS 2601, Clause 3.5.4
3 (o)	Towards the reinforced face	AS 2601, Clause 3.5.5.1
3 (p)	Under no circumstances	AS 2601, Clause 3.7.1.1
3 (q)	Sudden (or catastrophic) collapse of the beam	AS 2601, Appendix C2.2
3 (r)	A structural engineer (or the prestressing equipment supplier)	AS 2601, Appendix C2.3.1
3 (s)	A structural engineer (or the prestressing equipment supplier)	AS 2601, Appendix C2.3.1

END OF MODEL ANSWERS

LIST OF REFERENCES

The references used to compile this assessment instrument are:

NOHSC: 1006, *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment.* (Worksafe Australia, 1992)

AS 2601, *Demolition of Structures.* (Standards Australia, 1991)

AS 3850.1, *Tilt-Up Concrete and Precast Concrete Elements for Use in Buildings,* Part 1: *Safety Requirements,* (Standards Australia, 1990)

AS 3850.2, *Tilt-Up Concrete and Precast Concrete Elements for Use in Buildings,* Part 2: *Guide to Design, Casting and Erection of Tilt-Up Panels,* (Standards Australia, 1990)

Note: A new revised edition of *A Guide for Riggers* will be published by the WorkCover Authority of NSW during 1994. It is expected that this edition will contain all the necessary information for the National Rigging knowledge assessments.

Intermediate Rigging—Knowledge Questions

RELATIONSHIP TO THE NATIONAL CERTIFICATION STANDARD

THE UNITS OF COMPETENCE

The questions selected at random from the three sections of the knowledge assessment are intended to assess underpinning knowledge which is required to carry out the three units of competence for Intermediate Rigging prescribed by Schedule A of the *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment.*

These are as follows:

1.0 Plan and prepare work
2.0 Complete rigging work
3.0 Demolish structures and/or plant

Each unit of competence is subdivided into elements of competence, for which performance criteria are prescribed.

THE PERFORMANCE CRITERIA

The relationship between each group of questions and the National Standard's performance criteria is as follows:

Section 1: Certification
These questions reflect performance criteria 1.1.7 and 1.1.15.

Section 2: Tilt-slab erection
These questions reflect performance criteria 1.1.1, 1.1.2, 1.1.3, 1.1.5, 1.1.6, 1.1.7, 1.1.11, 1.1.16, 1.1.18, 1.1.19, 1.2.1, 1.2.6, 2.2.1, 2.2.4, 2.2.6, 2.2.9, 2.2.11, 2.3.1, 2.3.2, 2.3.3, 2.3.5, 2.4.2, 2.4.3, and 2.4.4.

Section 3: Demolition of structures
These questions reflect performance criteria 3.1.1, 3.1.2, 3.1.3 and 3.1.4.

Relevant performance criteria which are not reflected in the Intermediate Rigging assessment have been covered in the Dogging and Basic Rigging assessments and do not require additional assessment.

THE RANGE STATEMENT

The bank of questions assesses knowledge which directly relates to the more complex work tasks listed in the National Standard's range statement for Intermediate Rigging.

The model answers apply the requirements of the *National Standard for Plant* and its relevant referenced Standards to the obligations under State/Territory occupational health and safety legislation of a person who carries out dogging and rigging work within the scope of the Intermediate Rigging Certificate of Competency.

The model answers are expected to be consistent with the forthcoming 1994 edition of *A Guide for Riggers,* to be published by the WorkCover Authority of NSW, which the Worksafe Australia Scaffolding and Rigging Expert Working Group has foreshadowed as a suitable text for the determination of applicants' answers for Intermediate Rigging.

Catalogue No. **845** Ordering Hotline **1300 799 003**

WorkCover NSW 92-100 Donnison Street Gosford NSW 2250
Locked Bag 2906 Lisarow NSW 2252 WorkCover Assistance Service **13 10 50**
Email **contact@workcover.nsw.gov.au** Website **www.workcover.nsw.gov.au**

ISBN 0 7310 5125 4 Production and printing by cmSolutions – 02 9743 8777