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BASIC

SCAFFOLDING N

NATIONAL CERTIFICATE OF COMPETENCY

Basic Scaffolding

ASSESSMENT

Part 1	Practical
Part 2	Assignment
Part 3	Knowledge

June 1995

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

BASIC SCAFFOLDING

CERTIFICATE OF COMPETENCY

PART ONE

PRACTICAL SKILLS PERFORMANCE ASSESSMENT

(Tasks and Model Results)

Basic Scaffolding—Practical Skills

CONTENTS

Introductory notes—Practical

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

2 The practical skills performance assessment for Basic Scaffolding is a 'closed book' practical exercise covering six sections.

In practical skills performance assessment the certificate assessor evaluates the applicant's applied knowledge and understanding, the applicant's physical strength, dexterity, balance, coordination and motor skills, and the applicant's familiarity with scaffolding equipment and recommended work procedures. On completion of the assessment the assessor will determine whether the applicant can safely undertake, without supervision, the tasks encompassed within each of the four units of competence comprising Basic Scaffolding prescribed by Schedule A of the *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment* (NOHSC: 1006, 1992).

3 The relationship between the six sections of the performance assessment and the Standard's prescribed performance criteria and range statements is set out on page 21.

A full assessment should be completed within two and one half hours.

To pass the assessment, the applicant must complete satisfactorily each of the following sections:

Section 1: Inspection of equipment
Section 2: Fibre ropes
Section 3: Scaffold construction
Section 4: Erection and dismantling skills
Section 5: Tie construction
Section 6: Scaffold inspection

4 An applicant who holds a Dogging Certificate or a Basic, Intermediate or Advanced Rigging Certificate, or who produces proof of having passed a Dogging practical skills performance assessment for fibre ropes does not require assessment in Section 2.

5 An applicant who produces a satisfactory record of training (such as a log book) which establishes at least 100 working days of experience in the erection and dismantling of scaffolds (of which at least 50 days involved modular scaffolds) does not require assessment in Sections 3 and 5.

6 An applicant undergoing re-assessment need only be re-assessed in those sections in which he or she previously failed.

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

Conditions

8 **Location**
The practical skills assessment can be conducted at any location which has:
- sufficient clear space for the scaffold to be erected and dismantled;
- a firm supporting surface for the scaffold; and
- a suitable supporting structure for tying the scaffold.

9 **Minimum serviceable scaffolding equipment**
The following should be used as a guide by the assessor. The actual quantities and dimensions may vary depending upon the modular system to be used and the tie construction used.

Modular equipment

Adjustable baseplates	x 10
2.0 m standards	x 16
3.0 m standards	x 2
2.4 m ledgers	x 24
1.2 m transoms	x 18
1.2 m return transoms	x 3
1.2 m ladder access putlogs	x 1
3.6 m braces	x 1
2.0 m braces	x 6
2-plank platform brackets	x 4
2.4 m bracket tie-bars	x 2
2.4 m captive planks	x 20
1.2 m captive planks	x 5

Tube-and-coupler

2.7 m tubes	x 2
2.4 m tubes	x 2
0.9 m tubes	x 6
0.6 m tubes	x 2
Right angle couplers	x 18

Miscellaneous

5.0 m or 6.0 m ladder	x 1
1.0 m FSWR, 8 mm to 20 mm diameter	x 1

Lashing or fixing for ladder
Soleplates (where necessary)
Sufficient toeboard clips
Barricades, warning signs or similiar (where necessary)
6.0 m fibre rope handline
2.0 m of fibre rope and a length of cord for each applicant

10 **Minimum unservicable equipment**
Several items of unservicable equipment must be randomly mixed into the stock of servicable scaffolding equipment. The following can be used as a guide by the assessor but can be varied depending upon availability:

Right angle couplers: stripped, frozen or bent	x 2
Scaffold tubes: flame-cut, bent or too thin	x 2
Captive planks: warped, twisted or damaged ends	x 2
Ledgers or transoms: wedges missing or broken welds	x 2
Adjustable baseplates: bent plates or fully windable	x 2
FSWR: worn outer wires, birdcaged, crushed strands, severe corrosion, popped core or severe kinking	x 2

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

- scaffold key
- podger hammer
- torpedo spirit level
- retractable tape measure or folding rule
- scaffold belt with frogs and holders for the above.

12 **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.

13 **Scaffold design**
A suggested modular scaffold design is given in Attachment A. The assessor can vary the design to suit local circumstances but the constructed scaffold must incorporate the following features:

- a return
- ladder access
- platform brackets
- a height of at least 2.5 m above the base lift.

Each applicant is to be provided with a copy of the design drawing which must be returned to the assessor at the conclusion of the assessment.

14 **Conduct of assessment**
Wherever possible, applicants should be assessed in groups of 2 or 3. 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 of the six sections have been successfully completed or are not applicable, as appropriate.

15 **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 individual sections

16 **Inspection of equipment (Section 1)**

Note: This section applies to all applicants.

The certificate assessor must ensure that the servicable equipment and the unservicable equipment have been randomly mixed prior to the assessment.

The certificate assessor directs the applicant to inspect the equipment and to identify and isolate all unservicable items.

To complete this section successfully, the applicant must identify and isolate at least 80% of the unservicable items from the available stock of scaffolding equipment.

17 **Fibre ropes (Section 2)**

Note: This section does not apply to applicants who hold a Certificate of Competency for Dogging or Rigging or who have previously passed a Dogging practical skills performance assessment for fibre ropes.

The applicant is provided with a length of whipping cord and a 2m length of 3-strand hawser-laid natural fibre rope, 12 mm to 16 mm in diameter.

The applicant is assessed on seven separate tasks as follows:

(1) Whipping (one task)
The certificate assessor directs the applicant to whip one end of the rope. The applicant may choose one of the following methods:

a Common whipping;
b West Countryman's whipping;
c American whipping;
d Sailmaker's whipping.

Attachment B illustrates these methods for the benefit of the certificate assessor.

(2) Splicing (one task)
The certificate assessor directs the applicant to splice the other end of the rope. The certificate assessor may request either of the following splices:

a End splice (back splice);
b Eye splice.

Attachment C illustrates these methods for the benefit of the certificate assessor.

(3) Bends and Hitches (five tasks)
The certificate assessor directs the applicant to demonstrate each of the following bends and hitches:

a clove hitch around a tube;
b rolling hitch around a tube;
c single bowline ;
d timber hitch and half hitch around a plank;
e sheet bend to another rope.

Attachment D illustrates these methods for the benefit of the certificate assessor.

To complete this section successfully, the applicant must correctly perform at least six of the seven tasks.

18 **Scaffold construction (Section 3)**

Note: This Section does not apply to applicants with accepted documentary evidence of adequate experience.

This section involves the erection of a modular scaffold with an external return and platform brackets at the corner of a building or structure.

The surface on which the scaffold is to be constructed should be uneven. If necessary, the certificate assessor can simulate uneven ground by using strategically placed blocks of wood or similar.

The certificate assessor provides the applicant with the design drawing for the scaffold.

During the construction of the scaffold, the certificate assessor uses the following 13 items to gauge the applicant's competence:

a Where appropriate, the construction area is barricaded, cordoned off or sign-posted;

b Soleplates are correctly positioned and bear fully on the supporting surface;

c Adjustable baseplates are correctly positioned and bear fully on the soleplates;

d Standards are correctly placed;

e Transoms and ledgers are correctly positioned and fixed at each lift (NOT 'hit-and-missed');

f Braces are correctly positioned and fixed;

g The scaffold is square, level and plumb;

h Platform brackets and tie-bars are correctly located and fixed;

i Planks are correctly located;

j Toeboards are correctly located and fixed;

k Guardrails and midrails are correctly located and fixed;

l The ladder is correctly positioned, pitched and fixed;

m The configuration, positioning, bay lengths and lift heights of the scaffold comply with the drawing.

To complete this section successfully, the applicant must have achieved at least 10 of the 13 items.

19 **Erection and dismantling skills (Section 4)**

Note: This section applies to all applicants. For applicants who do not need to complete Section 3, the following can be assessed on an existing scaffold or, where there is no existing scaffold, by constructing and dismantling a single bay at least two lifts in height.

During the course of erecting and dismantling the scaffold, the applicant must clearly demonstrate:

a An ability to work confidently and safely at heights;

b An ability to use tools confidently and safely at heights;

c An ability to safely pass up, receive and position scaffolding components at heights, including the safe use of a handline;

Attachment E illustrates an acceptable modular scaffolding erection procedure for the benefit of the certificate assessor.

Attachment F illustrates the use of a handline for the benefit of the certificate assessor.

To complete this section successfully, the applicant must clearly demonstrate ***all*** *of the above-listed abilities.*

20 **Tie construction (Section 5)**

Note: This section does not apply to applicants with accepted documentary evidence of adequate experience.

The certificate assessor selects a tie assembly method suitable for the supporting structure.

The certificate assessor directs the applicant to construct the selected tie assembly.

The certificate assessor uses the following 4 items to gauge the applicant's competence:

a The tie tube is fixed horizontally to two standards or two ledgers with right angle couplers;

b All bearing surfaces of the assembly are fixed hard to the supporting structure;

c The tie does not obstruct clear access;

d The tie assembly has been correctly constructed.

To complete this section successfully, the applicant must have achieved at least three of the four items.

21 **Scaffold inspection (Section 6)**

Note: This section applies to all applicants.

The certificate assessor directs the applicant to identify the key items to be checked in carrying out a scaffold inspection.

The certificate assessor will use the following list of six items to gauge the applicant's ability to inspect a scaffold competently.

a Check that standards are bearing correctly;

b Check for missing structural components;

c Check for damaged components;

d Check condition of working and access platforms;

e Check tie fixings;

f Check that ladder is secure.

To complete this section successfully, the applicant must have identified at least five of the six items.

Assessment form: Basic Scaffolding

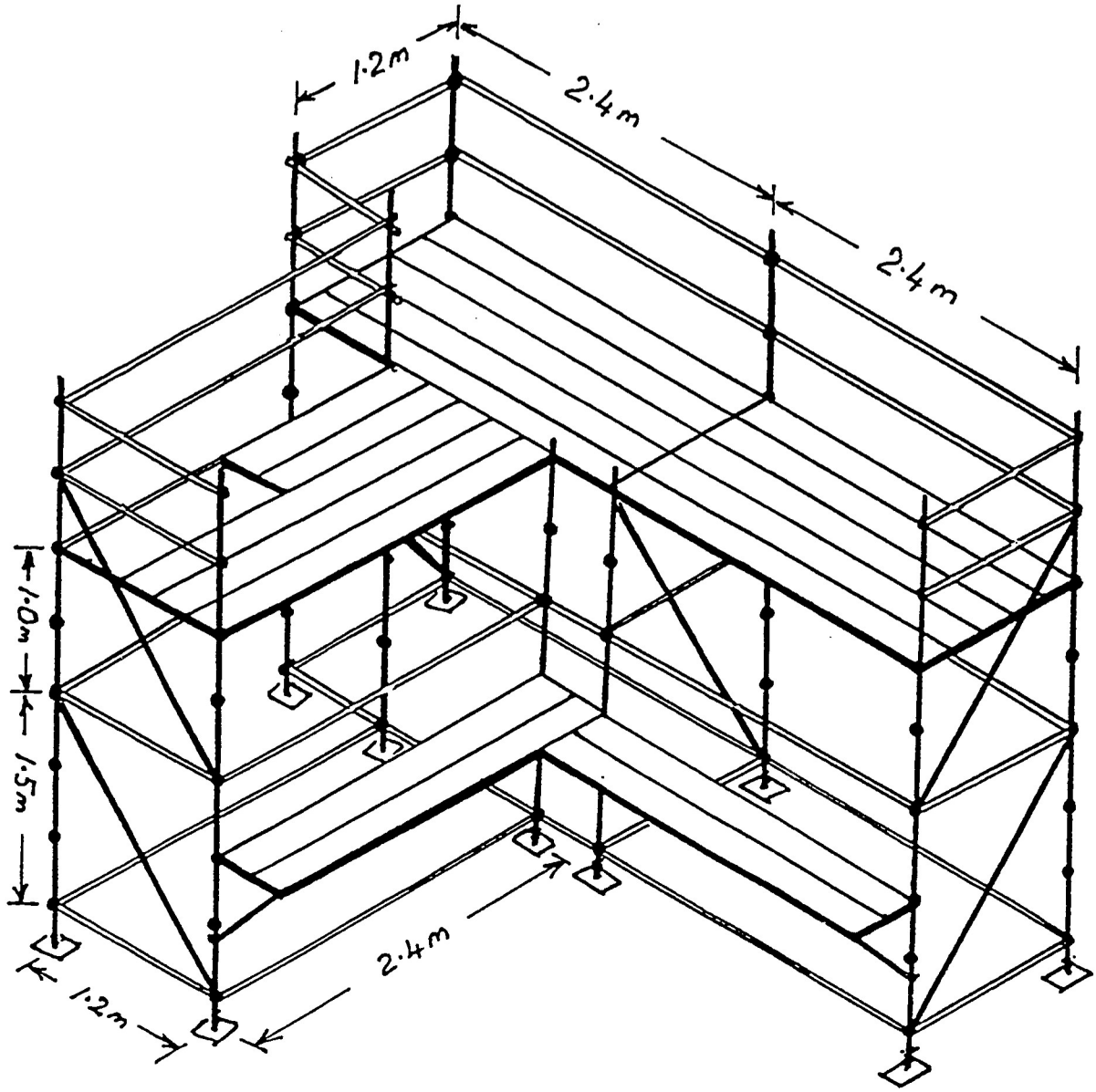
Applicant's name .....

Performance items	
1 Inspection of equipment Applicant identified and isolated at least 80% of unserviceable items ☐	• toeboards located and fixed ☐ • guardrails and midrails located and fixed ☐
2 Fibre ropes Applicant completed: • whipping (common/West-Countryman's/American/sailmaker's) ☐ • splicing (end splice/eye splice) ☐ • bends and hitches: - clove hitch ☐ - rolling hitch ☐ - single bowline ☐ - timber hitch & half hitch ☐ - sheet bend ☐	• ladder positioned, pitched and fixed ☐ • scaffold complies with the drawing ☐ **4 Erection and dismantling skills** Applicant: • works confidently and safely at heights ☐ • uses tools confidently and safely at heights ☐ • passes, receives and positions components and uses handline safely ☐
3 Scaffold construction Applicant ensured: • area secured/signposted ☐ • soleplates positioned and fully bearing ☐ • adjustable baseplates positioned and fully bearing ☐ • standards positioned ☐ • transoms and ledgers positioned and fixed ☐ • braces positioned and fixed ☐ • scaffold squared, levelled and plumbed ☐ • platform brackets and tie-bars positioned and fixed ☐ • planks located ☐	**5 Tie construction** • located and fixed to scaffold ☐ • bearing surfaces fixed hard ☐ • clear access not obstructed ☐ • correct construction ☐ **6 Scaffold inspection** • bearing of standards ☐ • missing components ☐ • damaged components ☐ • condition of platforms ☐ • bearing of ties ☐ • fixing of ladder ☐

ATTACHMENT A

Suggested modular scaffold design

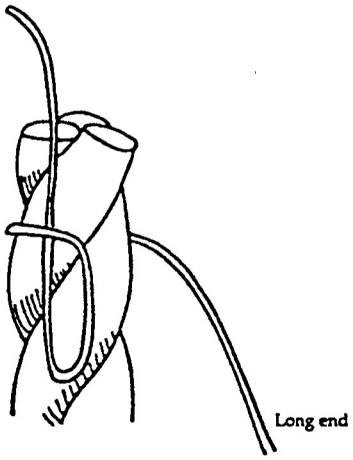
NOTE: FOR CLARITY, SOLEPLATES, TOEBOARDS AND LADDER ARE NOT SHOWN



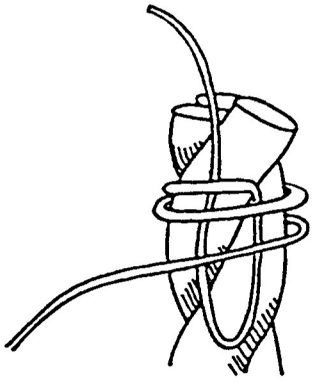
ATTACHMENT B

Whipping methods for fibre ropes

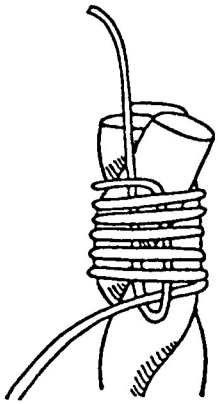
COMMON WHIPPING



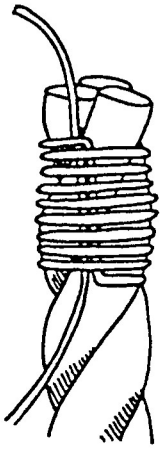
1. Form a loop facing away from the end of the rope, leaving one short end and one long end of whipping twine.



2. Pass the long end of the twine over the short end and around the rope.



3. Keep passing the twine around the rope until the correct length is achieved. Pass the long end of the twine through the loop.

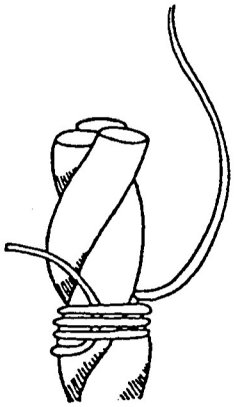


4. Pull the short end of twine until the long end is buried about halfway under the whipping. Now pull each end of the twine with equal strength until the whipping is tight. Trim off the loose ends.

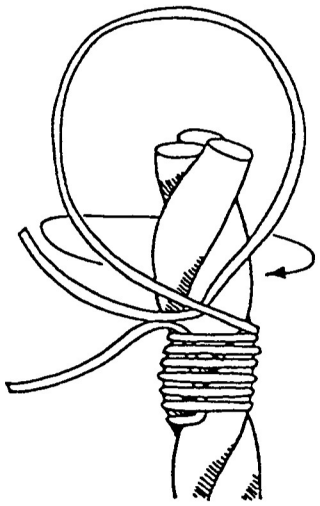
ATTACHMENT B

Whipping methods for fibre ropes (Cont.)

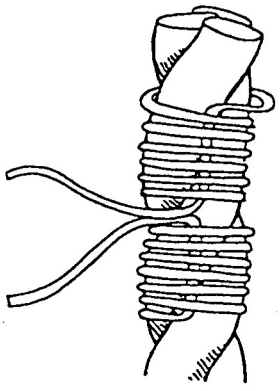
AMERICAN WHIPPING



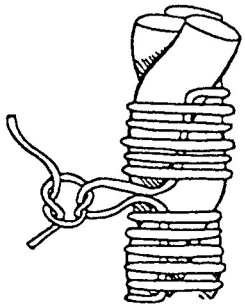
1. Lay the end of the twine down and take a number of turns over the end and around the rope.



2. Now lay the other end down and hold the two ends together. Make several turns around the rope with one side of the loop covering the other side of the loop and the rope.



3. Tighten the whipping by pulling the two ends.

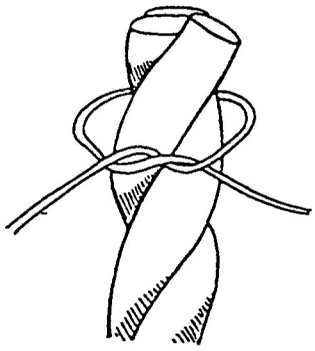


4. Tie a reef knot with the two ends to secure and finish the whipping.

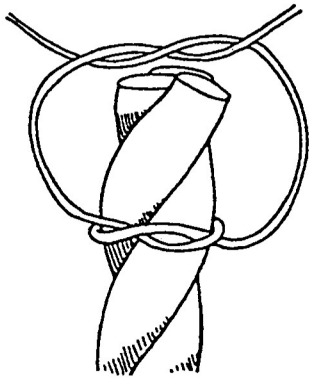
ATTACHMENT B

Whipping methods for fibre ropes (Cont.)

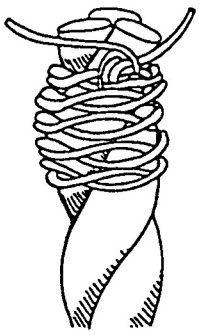
WEST-COUNTRYMAN'S WHIPPING



1. Take a turn around the rope with the twine and form the first overhand knot, ensuring that the two ends of twine left are of roughly equal length.



2. Take another half turn around the rope with each length of twine and form a second overhand knot on the other side of the rope.

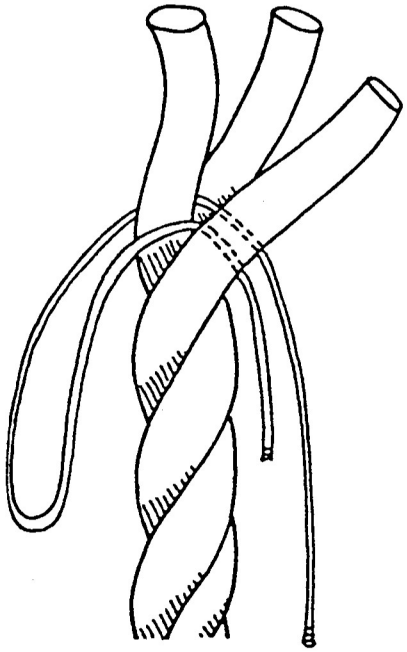


3. Continue tying overhand knots in such a way that the knots alternate all the way up the rope. Finish off with a reef knot – in other words – two overhand knots, one on top of the other.

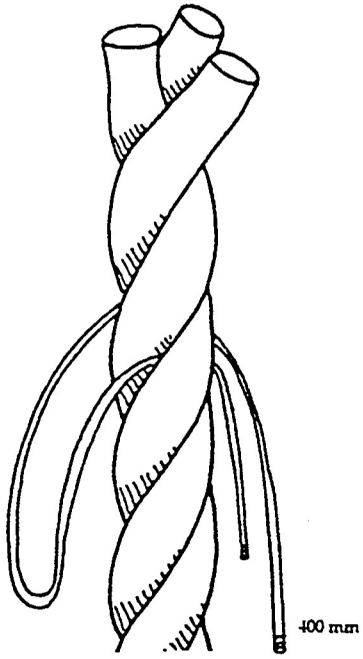
ATTACHMENT B

Whipping methods for fibre ropes (Cont.)

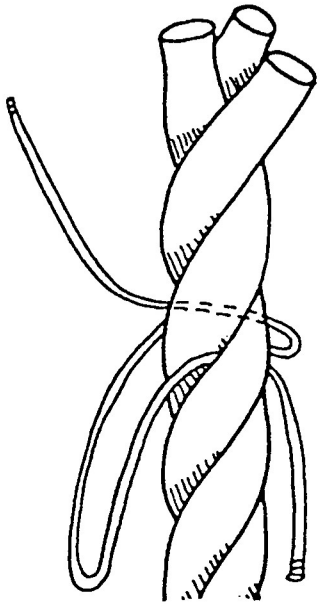
SAILMAKER'S WHIPPING

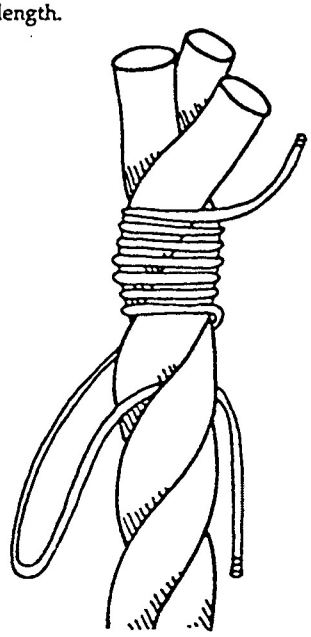


1. Unlay the rope for about 50 mm and form a loop around a strand with the whipping twine. The two (2) ends of the twine should emerge together opposite the strand with the loop.



2. Lay the rope back up and adjust the twine so that the loop and one end of twine are approximately 100 mm in length. The other end should be about 400 mm in length.



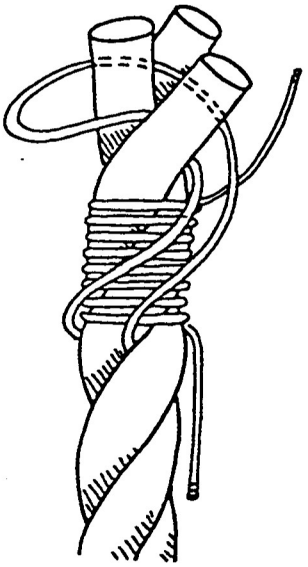


3 & 4. Holding the loop and short end of twine with the rope in one hand use the other hand to wind the long end of twine around the rope away from the loop and short end of twine.

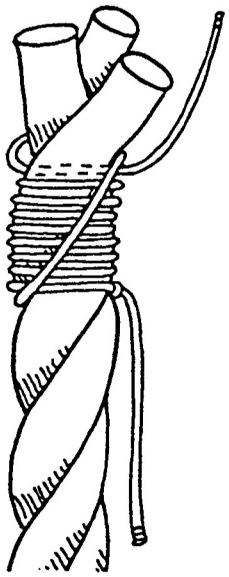
ATTACHMENT B

Whipping methods for fibre ropes (Cont.)

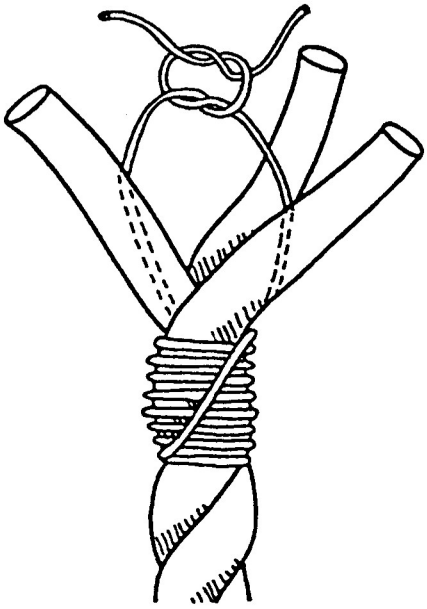
SAILMAKER'S WHIPPING

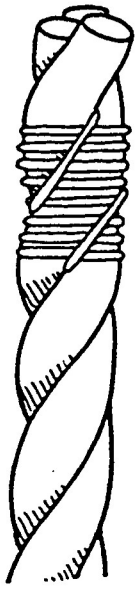


5. Pass the loop around the end of the strand in such a way that the twine rests in the space between the strands.



6. Tighten the loop by pulling the short end of twine.



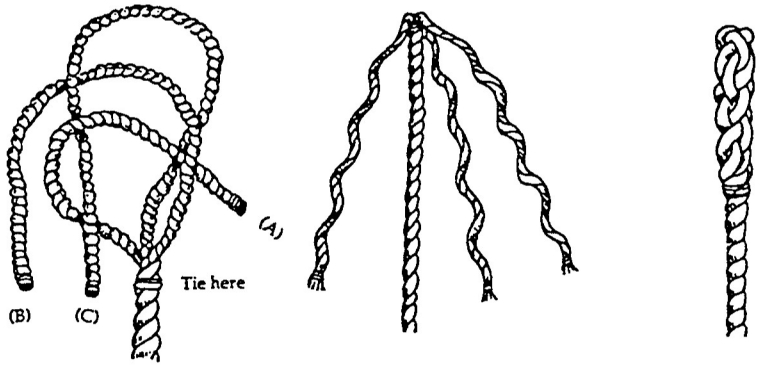


7 & 8. Now follow the groove left between the strands with the short end of twine and join the ends of twine with a reef knot in the middle of the rope.

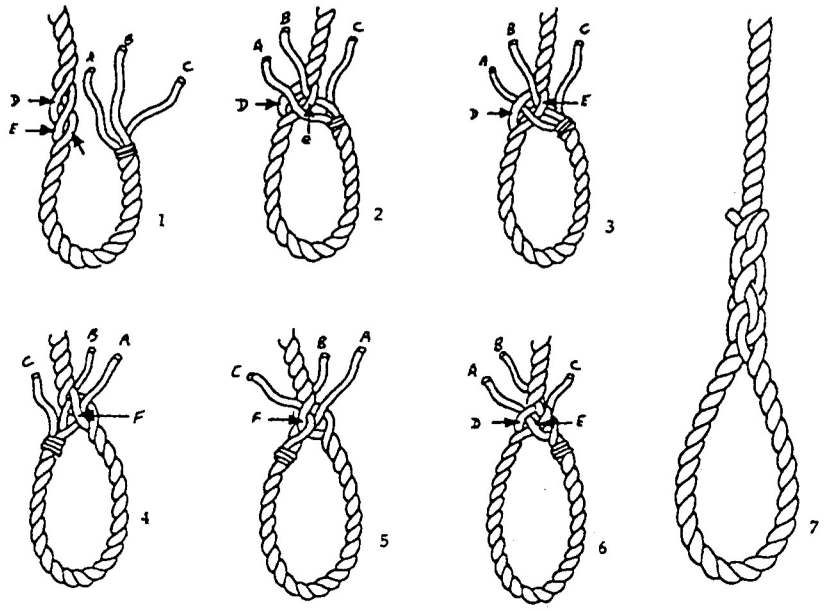
ATTACHMENT C

Splicing methods for fibre ropes

CROWN KNOT AND BACK SPLICE



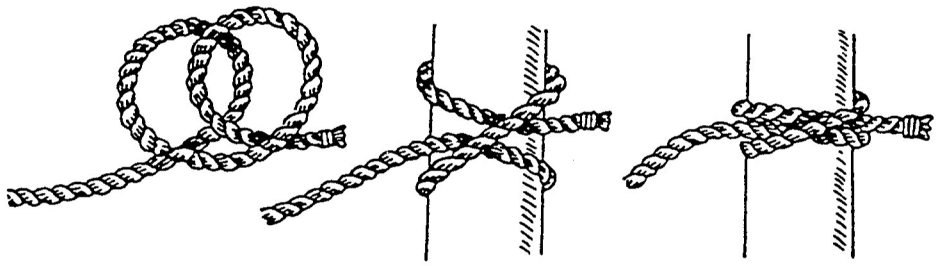
SIDE EYE SPLICE



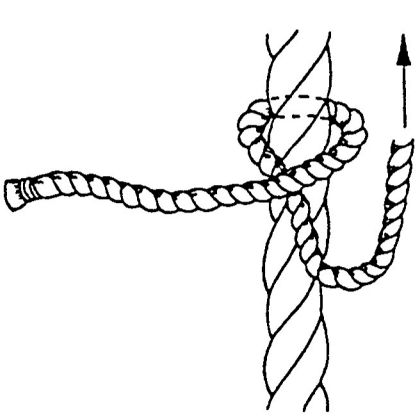
ATTACHMENT D

Bends and hitches for fibre ropes

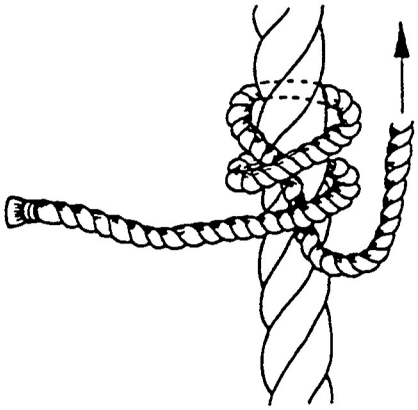
CLOVE HITCH



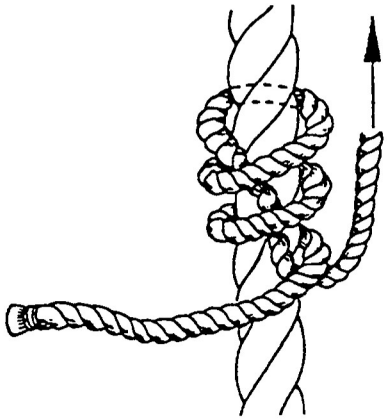
ROLLING HITCH



Step 1. Lay standing part on object to be lifted and cross end of rope over the standing part trapping it.



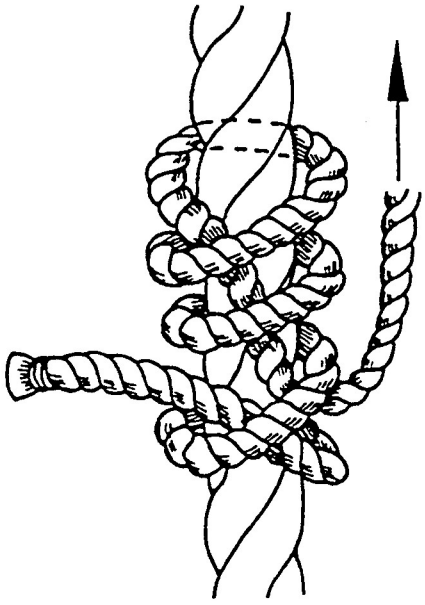
Step 2. Pass end of rope around back of object and over the standing part again.



Step 3. Pass end around back of object again and over the standing part again.

Step 4. Pass end around the object again this time forming a half hitch behind standing part.

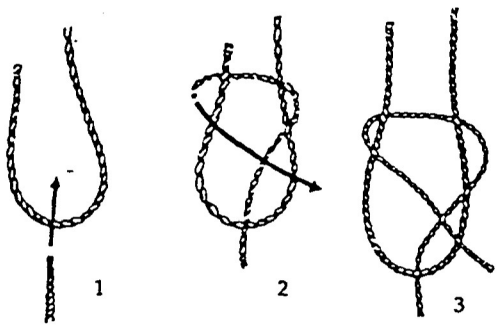
This type of hitch must be accompanied with and extra half hitch further along the object on the standing part for safety.



ATTACHMENT D

Bends and hitches for fibre ropes (Cont.)

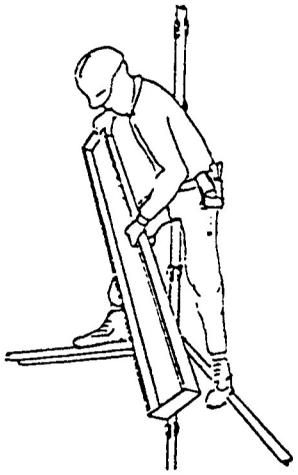
SHEET BEND



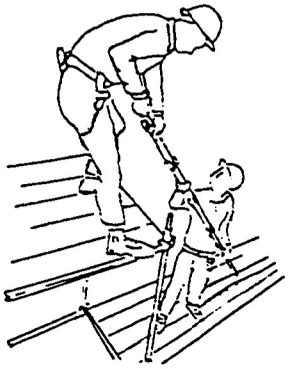
ATTACHMENT E

Erection procedure for modular scaffolds

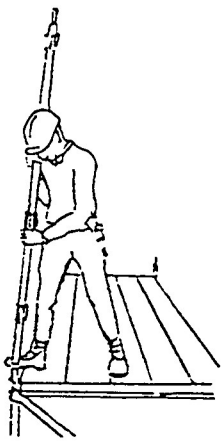
Step 1
When a lift has been completed, the scaffolder relocates sufficient planks to the next lift to provide a platform for further erection. To lift the last plank, the scaffolder braces his/her back against a standard and keeps the feet spread, with one foot securely on the transom and the other foot securely on the ledger.



Step 2
Components are passed up from below or are lifted up with a handline, gin wheel, hoist or other suitable means.



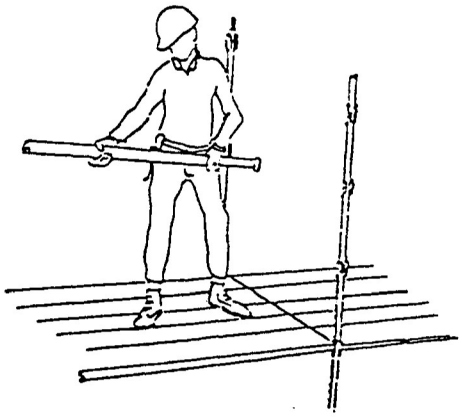
Step 3
The standards which break below guardrail height are topped up.



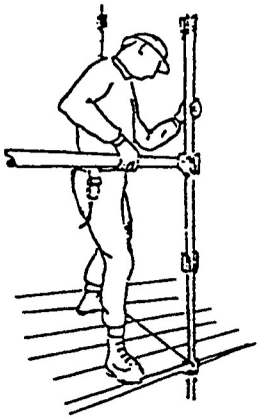
ATTACHMENT E

Erection procedure for modular scaffolds

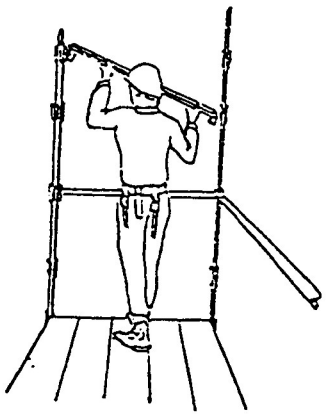
Step 4
As soon as practicable, guardrails are positioned at all open sides and ends where the scaffolder could fall more than 2m from the platform. The guardrail is balanced to secure it at the far end of the bay first.



Step 5
The near-end of the guardrail is secured to the standard. These guardrails are for the scaffolder's protection and will remain in place until the lift is dismantled. After guardrails are placed, any standards which break above guardrail height are topped up.

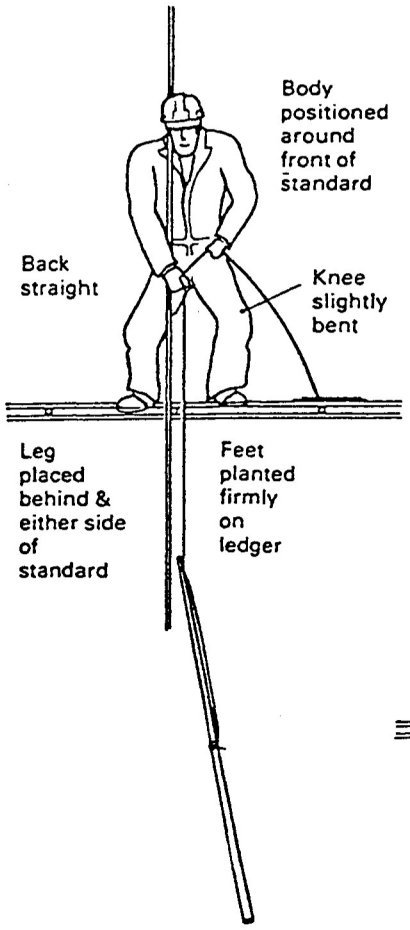


Step 6
The next lift of ledgers and transoms is fixed to the standards. Braces and tie assemblies are fixed where appropriate. The process is then repeated for all further lifts until the scaffold has reached its required height and the required working platforms are installed for the user.

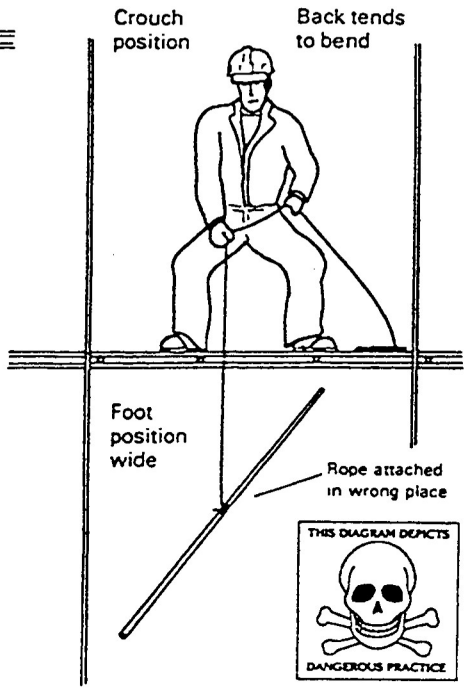


ATTACHMENT F

Use of a handline



CANNOT OVERBALANCE
STANDARD ACTS AS
AN ANCHOR



COULD OVERBALANCE
NO FAIL-SAFE BACKUP

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, the physical strength, dexterity, balance, coordination and motor skills, and the familiarity with scaffolding equipment and recommended work practices which are necessary to carry out the 4 units of competence for Basic Scaffolding 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 Erect scaffolding/equipment.
3.0 Inspect, repair and alter scaffolding/equipment.
4.0 Dismantle scaffolding/equipment.

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 practical assessment and the National Standard's performance criteria is as follows:

Section 1: Inspection of Equipment
The task in this section reflects performance criteria 1.2.1 and 1.2.2.

Section 2: Fibre Ropes
The 7 tasks in this section reflect performance criteria 1.2.4, 1.3.2, 2.1.3, 2.2.1, 2.2.6, 3.2.3 and 4.2.1.

Section 3: Scaffold Construction
The task in this section reflects performance criteria 1.1.3, 1.1.7, 1.1.9, 1.1.10, 1.1.16, 2.1.1, 2.1.2, 2.1.4, 2.2.1, 2.2.3, 2.2.6, 3.2.3, 3.2.4, 4.2.1 and 4.2.2.

Section 4: Erection and Dismantling Skills
The task in this section reflects performance criteria 2.2.1, 2.2.2, 2.2.6, 3.2.3, 3.2.4, 4.2.1 and 4.2.2.

Section 5: Tie Construction
The task in this section reflects performance criteria 2.2.1, 2.2.3, 2.2.6, 3.2.3, 3.2.4, 4.2.1 and 4.2.2.

Section 6: Scaffold Inspection
The task in this section reflects performance criteria 2.2.4, 3.1.1, 3.1.2, 3.1.3, 3.2.2, 4.1.1, 4.1.2 and 4.1.3.

THE RANGE STATEMENT

The tasks making up the practical skills performance assessment are focused around the erection of prefabricated modular scaffolding.

This type of scaffolding was selected because it is regarded as representing the most complex of the equipment types listed in the National Standard's range statement for Basic Scaffolding.

The model results apply the requirements of the *National Standard for Plant* and the design requirements of its referenced Standard AS 1576, *Scaffolding*, to the obligations under State/Territory occupational health and safety legislation of a person who erects, alters or dismantles scaffolding within the scope of the basic scaffolding certificate of competency.

ACKNOWLEDGEMENTS

Mr Phil Court of the Plant Safety Branch, Occupational Health and Safety Authority, Victoria is largely responsible for the development and subsequent high quality of these assessment instruments.

The material for Attachments B, C and D is taken from:

A Handbook of Rigging Practice, written by Peter Amjah and published by the NSW TAFE, 1991.

The material for Attachment F is taken from:

A Guide to Practical Scaffolding, published by the UK Construction Industry Training Board (2nd edition, revised 1987).

The material for Attachment E, will form part of the soon-to-be published:

Guidelines for Scaffolding, published jointly by Standards Australia and Standards New Zealand, 1994.

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

ASSESSMENT INSTRUMENT

FOR THE

BASIC SCAFFOLDING

CERTIFICATE OF COMPETENCY

PART TWO

WRITTEN ASSIGNMENT

(Questions and Answers)

Basic Scaffolding—Written Assignment

CONTENTS

Introductory notes—Assignment

1 The written assignment for Basic Scaffolding is one of three assessments which applicants must pass to qualify for a Basic Scaffolding Certificate of Competency. The other components are a knowledge assessment and a performance assessment.

2 The written assignment for Basic Scaffolding is a 'closed book' examination consisting of a total of seven separate tasks. The tasks cover four sections.

In the written assignment the certificate assessor evaluates the applicant's conceptual understanding of scaffold construction, his/her ability to apply simple mathematics and physics, and ability to read and comprehend the English language. On completion of the assessment the assessor will determine whether the applicant can safely undertake, without supervision, the tasks encompassed within each of the four units of competence comprising Basic Scaffolding prescribed by Schedule A of the *National Occupational Health and Safety Certification Standard for Users and Operators of Industrial Equipment* (NOHSC: 1006, 1992).

3 The relationship between the four sections of the assignment and the Standard's prescribed performance criteria and range statements is set out on page 36.

A full assignment includes five minutes reading time and up to 55 minutes to complete.

4 To pass the assignment, the applicant must satisfactorily complete each of the following sections:

Section 1: Estimating Equipment Quantities (One Task)
Section 2: Calculating Loads (Four Tasks)
Section 3: Construction of Ties (One Task)
Section 4: Completing a Log (One Task)

5 An applicant undergoing re-assessment need only be re-assessed in those sections which he or she previously failed.

6 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.

7 The model answers to the tasks and the method of determining satisfactory completion of each section are provided on pages 33–35.

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.

3 The assignment

The assignment contains:

- one scaffold sketch;
- one scaffold drawing;
- one equipment order list;
- one handover certificate; and
- seven tasks for you to do.

WRITE YOUR NAME AT THE TOP OF EACH PAGE.

4 Time allowed

You have 55 minutes to complete all seven tasks.

Directions: Section 1 to 4

INTRODUCTION

You work for the Very Fast Scaffold Company.

Your supervisor has sent you to the Acme Constructions building site to take charge of the erection of two scaffolds.

The first scaffold is shown on sketch no 1.

The second scaffold is shown on drawing no VFS/0123.

You have also been given a modular scaffolding equipment list and a handover certificate.

With the help of these materials, you are to complete the following tasks.

SECTION ONE:
ESTIMATING EQUIPMENT QUANTITIES

Task 1: On the *modular scaffolding equipment list*, write in the quantities required to construct the scaffold shown on sketch no 1.

(Do NOT include soleplates. Do NOT include toeboards.)

SECTION TWO: CALCULATING LOADS

Task 2: Calculate the total weight of the equipment needed to construct the scaffold shown on sketch No 1.

(Use the weights shown on the *modular scaffolding equipment list* to help you. Do NOT include soleplates. Do NOT include toeboards.)

Task 3: Calculate the dead load carried by the adjustable baseplate marked on sketch no 1 as:
- A; or
- B

(as selected by assessor)

Task 4: The scaffold shown in sketch no 1 will be used for:

a medium duty work which is 450 kg per bay; or
b heavy duty work which is 675 kg per bay.
(as selected by assessor)

Each standard is designed to carry up to one third of the duty live load per bay.

Calculate how many kilograms of live load could be carried by the same adjustable baseplate used for Task 3.

Task 5: The soleplates you will use to construct the scaffold shown in sketch no 1 are 300 mm wide.

The site engineer has certified that the soil supporting the scaffold shown in sketch no 1 has a bearing capacity of:

a 2.8 t per square metre; or
b 1.65 t per square metre.
(as selected by assessor)

Calculate, to the nearest 10 mm, the minimum length of soleplate you need under the same adustable baseplate used for Tasks 3 and 4.

(Use the dead load you calculated for Task 3 and the live load you calculated for Task 4 to help you. Do NOT include toeboards. Do NOT include the self-weight of soleplates.)

SECTION THREE:
CONSTRUCTION OF TIES

Task 6: On drawing no VFS/0123, mark with crosses the maximum positions at which you would fix the scaffold's ties.

(Plan bracing and ledger bracing is NOT to be used on this scaffold.)

SECTION FOUR: COMPLETING A LOG

Task 7: You have finished constructing the scaffold shown on drawing no VFS/0123. It is now ready for use.

Complete the handover certificate for this scaffold.

Basic Scaffolding—Written Assignment

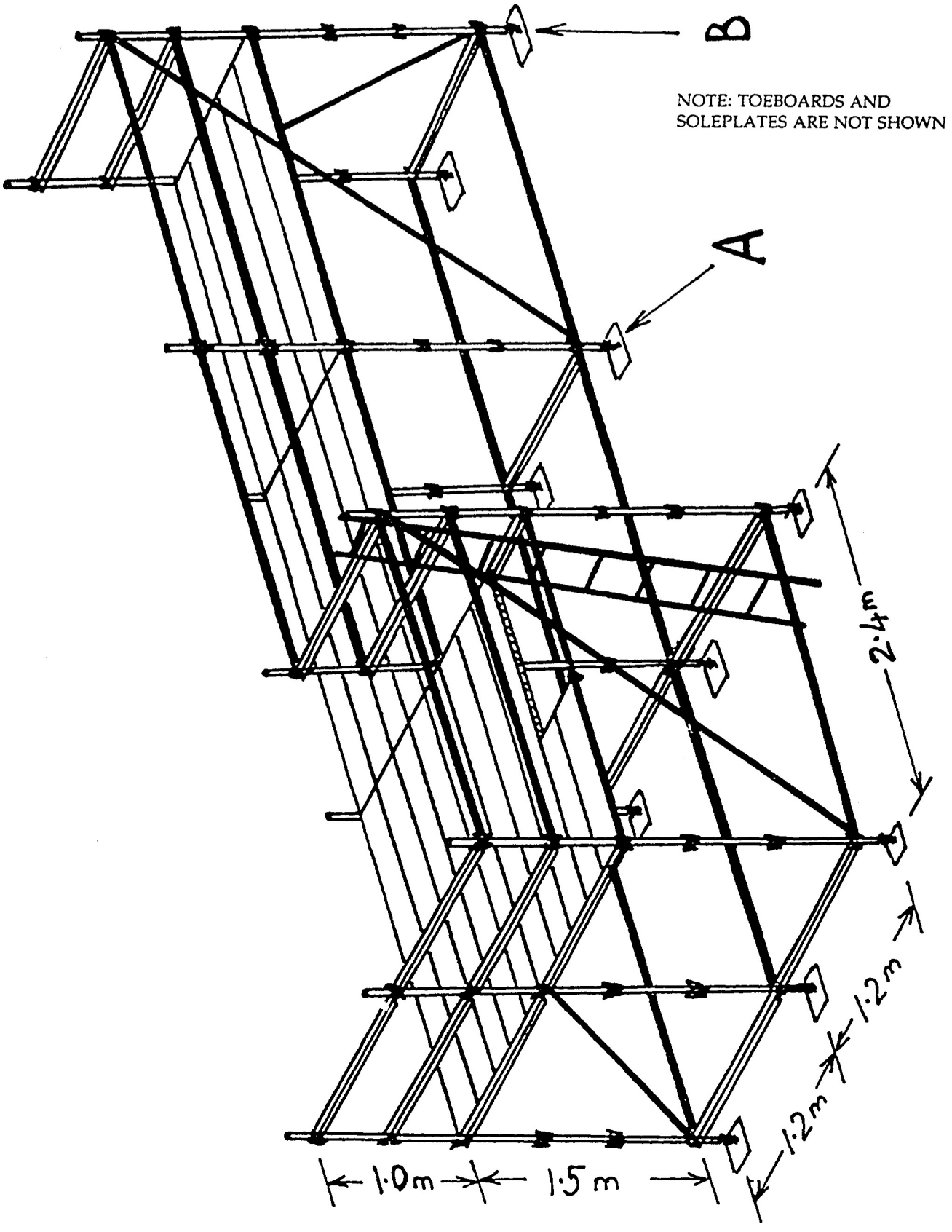
Task 1 **Applicant's name** .....

The Very Fast Scaffolding Company Modular scaffolding equipment list			
Component	**Length**	**Weight**	**Quantity required**
Standard	2.0m	12kg	
Standard	3.0m	18kg	
Transom	1.2m	8kg	
Ledger/Guardrail	2.4m	10kg	
Brace (1.2m bay)	2.0m	10kg	
Brace (2.4m bay)	3.6m	17kg	
Captive Plank (225mm)	1.2m	10kg	
Captive Plank (225mm)	2.4m	20kg	
Ladder Access Putlog	1.2m	8kg	
Adjustable Baseplate	750mm	7kg	
Ladder	4m	20kg	

Basic Scaffolding—Written Assignment

Tasks 1 to 5 **Applicant's name** .....

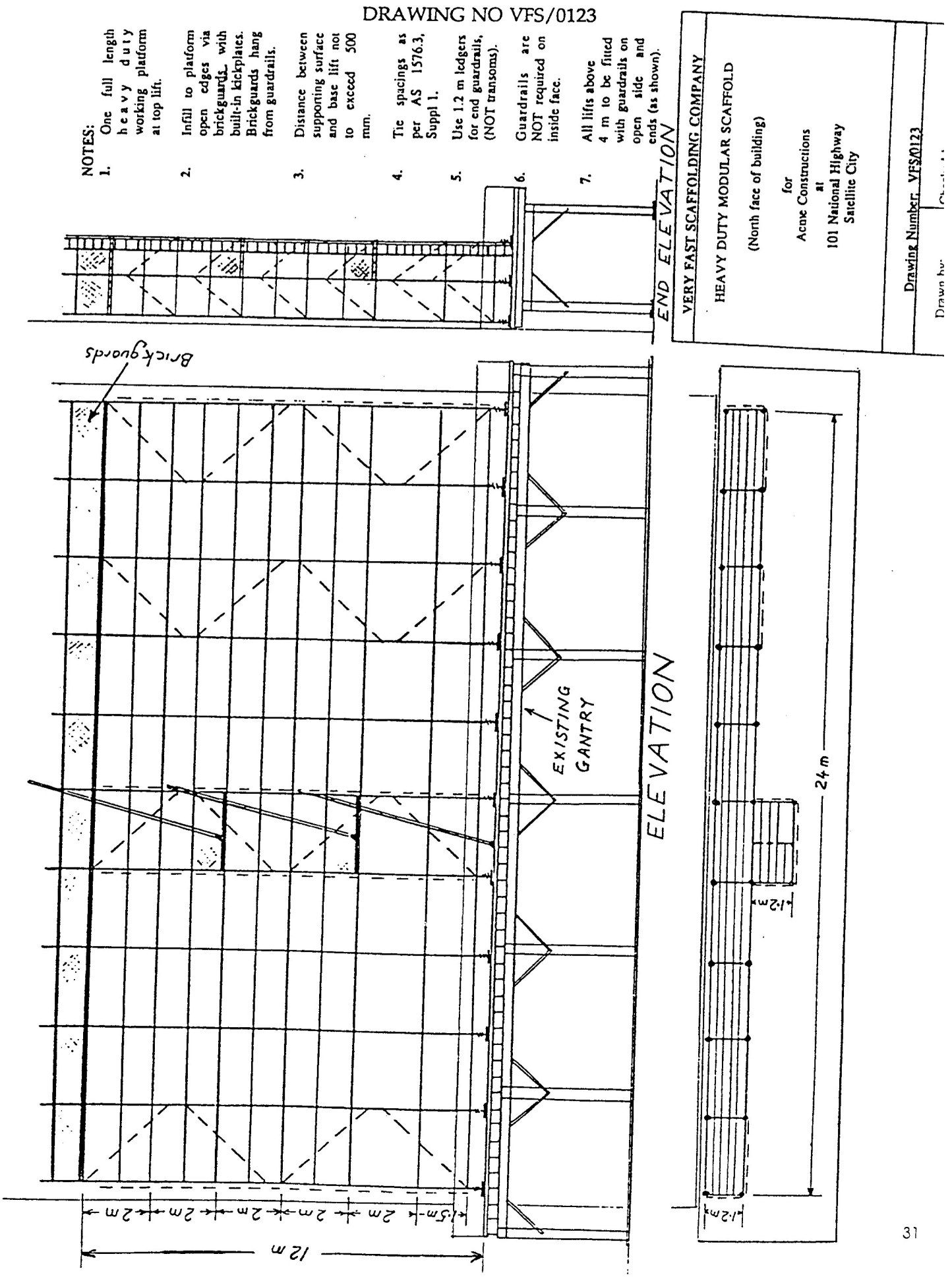
SKETCH NO 1



Basic Scaffolding—Written Assignment

Task 6

Applicant's name .....



Basic Scaffolding—Written Assignment

Task 7 **Applicant's name** .....

The Very Fast Scaffolding Company

HANDOVER CERTIFICATE Number: 9999

Each of the following items must be completed by the responsible scaffolder:

(1) Client: _____

(2) Site address: _____

(3) Scaffold location: _____

(4) Type of scaffold: Tube-and-coupler/Frame/Tower-frame/Modular/Other
(Circle the appropriate type.)

(5) Number of working platforms: _____

(6) Duty category of working platforms: Light/Medium/Heavy/Special
(Circle the appropriate category.)

(7) Number of lifts above base lift: _____

(8) Scaffold height: _____

(9) Number of bays long: _____

(10) Scaffold length: _____

(11) Type of access: Ladder/Stair/Ramp/Other
(Circle the appropriate type.)

(12) Design drawing reference: _____

(13) Date of handover: _____

(14) Time of handover: _____

(15) Name of responsible scaffolder: _____

(16) Signature of responsible scaffolder: _____

Model answers

Explanatory notes for Certificate assessors

1. In marking the assignment, the assessor needs to be aware that several of the tasks are linked. Therefore a wrong solution to one task may affect the answer given in a following task.

   For example, if the quantities estimated for Task 1 are incorrect, the total weight calculated for Task 2 will be based on the wrong quantities. In another case, if the dead load has been incorrectly calculated for Task 3, this may result in the answer for Task 5 being different from that shown in the model answers.

2. Where the assessor has identified an initial calculation as incorrect, any subsequent use of this incorrect figure should not necessarily be penalised. The assessor should calculate answers to subsequent questions using the incorrect figure thereby ensuring that the applicant is credited for subsequent correct calculations.

3. Where appropriate, the methodology has been explained in the model answers to assist the assessment of answers based on incorrect data.

SECTION ONE: ESTIMATING EQUIPMENT QUANTITIES

Task answer and commentary

Task 1:
Note: This question assesses the applicant's understanding of the function of common prefabricated modular scaffolding components and ability to calculate quantities from a drawing.

In order to pass Section One, the applicant must have correctly estimated at least 9 of the 11 quantities on the Equipment List .

The correct estimates for the quantities in each category are as follows:

1	Standards (2 m)	x	2
2	Standards (3 m)	x	8
3	Transoms	x	20
4	Ledger/Guardrails	x	20
5	Braces (2 m)	x	2
6	Braces (3.6 m)	x	2
7	Planks (1.2 m)	x	2
8	Planks (2.4 m)	x	18
9	Ladder Access Putlogs	x	1
10	Adjustable baseplates	x	10
11	Ladders	x	1

SECTION TWO: CALCULATING LOADS

Note: Four tasks are given in Section Two (Tasks 2 to 5). In order to pass this section, the applicant must correctly complete at least three of these tasks.

Task answer and commentary

Task 2:
Note: This task assesses the applicant's ability to calculate weight from quantity.

The answer is achieved by multiplying the quantities estimated for Task 1 in each category by the component weight given on the equipment list and adding the totals.

If Task 1 was correctly completed, the answer should be **1060 kg** (or 1.06 t).

Task 3:
Note: This task assesses the applicant's understanding of how dead load is distributed in a scaffold and the applicant's ability to calculate dead load in a specific configuration.

The answer is achieved by adding the self-weight of the adjustable baseplate, the self-weight of the standard, half the self-weight of each ledger, transom and brace which is fixed

to the standard, and one quarter of the self-weight of each bay of planks supported by the standard.

For baseplate A, the dead load is **131.5 kg**.

For baseplate B, the dead load is **99.5 kg**.

Task 4:
Note: This task assesses the applicant's understanding of how live load is transmitted to standards and the applicant's ability to calculate the portion of duty live load acting on a standard in a specific configuration.

The answer is achieved by dividing the duty live load by three and multiplying this figure by the number of working platform bays supported by the standard.

For baseplate A with medium duty loading, the live load is **300 kg**.

For baseplate A with heavy duty loading, the live load is **450 kg**.

For baseplate B with medium duty loading, the live load is **150 kg**.

For baseplate B with heavy duty loading, the live load is **225 kg**.

Task 5:
Note: This task assesses the applicant's understanding of load distribution over surface area and the applicant's ability to convert common units of measurement to determine a single variable (namely, the length of soleplate required).

The answer is achieved by firstly adding the dead load calculated for Task 3 and the live load calculated for Task 4 to determine the total load carried by the baseplate. This figure is then divided by the bearing pressure (in kg per m^2). The result is then divided by 0.3, which is the width of the soleplate (in m). This answer (rounded to the nearest 10 mm) is expressed in metres, or can be converted into smaller units (such as mm or cm).

If Tasks 3 and 4 have been correctly answered, the answer should be as follows:

For baseplate A medium duty with bearing capacity of 2.8 t: **0.51 m**

For baseplate A heavy duty with bearing capacity of 2.8 t: **0.69 m**

For baseplate A medium duty with bearing capacity of 1.65 t: **0.87 m**

For baseplate A heavy duty with bearing capacity of 1.65 t: **1.17 m**

For baseplate B medium duty with bearing capacity of 2.8 t: **0.3 m**

For baseplate B heavy duty with bearing capacity of 2.8 t: **0.39 m**

For baseplate B medium duty with bearing capacity of 1.65 t: **0.5 m**

For baseplate B heavy duty with bearing capacity of 1.65 t: **0.66 m** (or 0.65 m)

SECTION THREE: CONSTRUCTION OF TIES

Task answer and commentary

Task 6
Note: This question assesses the applicant's ability to apply the rules for tie spacings specified in Clause 3.6 of AS 1576.3, Suppl 1. (These are the recommended specifications referred to by Clauses 6.2.4.3 and 6.1.4 of AS/NZS XXXX, *Guidelines for Scaffolding*.

To pass Section 3, the applicant's marking of drawing no VFS/0123 must clearly indicate at least four of the following five features:

1 A total of 12 tie positions are marked on the elevation.

2 Each tie position is marked close to a ledger/standard node-point.

3 There are three tie positions marked in each end bay (at the first or second pair of standards).

4 The horizontal distance between adjacent tie positions does not exceed 7.2 m (three bays).

5 The vertical distance between the supporting surface and the first level of ties, and the vertical distance between each level of ties does not exceed 4 m (two lifts).

SECTION FOUR: COMPLETING A LOG

Task answer and commentary

Task 7:
Note: This task assesses the applicant's ability to transfer information from a drawing and use a simple proforma.

To pass this section, the applicant must have correctly filled in at least 14 of the 16 items on the handover certificate.

The correct answers are as follows:

1 Acme Constructions

2 101 National Highway, Satellite City

3 North face

4 Modular

5 1

6 Heavy

7 6

8 12 m
(Note: Height is measured to top lift—NOT guardrail)

9 10

10 24 m

11 Ladder

12 VFS/0123

13 As stated (should include day, month and year)

14 As stated (should include am or pm or be given in 24 hour form)

15 The applicant's name

16 The applicant's signature

END OF ANSWERS

Basic Scaffolding—Written Assignment

RELATIONSHIP TO THE NATIONAL CERTIFICATION STANDARD

THE UNITS OF COMPETENCE

The tasks set within the four sections of the written assignment are intended to assess the conceptual understanding, English language literacy and numeracy required to carry out the four units of competence for Basic Scaffolding 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 Erect scaffolding/equipment.
3.0 Inspect, repair and alter scaffolding/equipment.
4.0 Dismantle scaffolding/equipment.

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: Estimating equipment quantities

The task in this section reflects performance criteria 1.1.3, 1.1.4, 1.1.7, 1.1.12, 1.1.16, 1.3.1, 2.2.1, 2.2.3, 2.2.4, 3.1.2, 3.2.1 and 4.1.1.

Section 2: Calculating loads

The 4 tasks in this section reflect performance criteria 1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.15, 1.1.16, 1.3.1, 2.1.4, 2.2.1, 2.2.3, 2.2.4, 3.1.1, 3.1.2, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 4.1.1, 4.1.3, 4.2.1 and 4.2.2.

Section 3: Construction of ties

The task in this section reflects performance criteria 1.1.3, 1.1.4, 1.1.6, 1.1.7, 1.1.12, 1.1.16, 2.2.1, 2.2.3, 2.2.4, 2.2.6, 3.1.1, 3.1.2, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 4.1.1, 4.1.2, 4.1.3, 4.2.1 and 4.2.2.

Section 4: Completing a log

The task in this section reflects performance criteria 1.1.1, 1.1.3, 1.1.4, 1.1.8, 1.1.12, 2.2.4, 3.1.1, 3.1.2 and 3.1.3.

THE RANGE STATEMENT

The tasks making up the written assignment assess conceptual understanding, literacy and numeracy in relation to prefabricated modular scaffolding.

This type of scaffolding was selected because it is regarded as representing the most complex of the equipment types listed in the National Standard's range statement for Basic Scaffolding.

The model answers apply the requirements of the *National Standard for Plant* and the design requirements of its referenced Standard AS 1576, *Scaffolding*, to the obligations under State/Territory occupational health and safety legislation of a person who erects, alters or dismantles scaffolding within the scope of the Basic Scaffolding certificate of competency.

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

ASSESSMENT INSTRUMENT

FOR THE

BASIC SCAFFOLDING

CERTIFICATE OF COMPETENCY

PART THREE

KNOWLEDGE ASSESSMENT

(Questions and Answers)

Basic Scaffolding—Knowledge Assessment

CONTENTS

Assessor guidelines—specific

Introductory notes—Knowledge

1 The knowledge assessment for Basic Scaffolding is one of three assessments which applicants must pass to qualify for a Basic Scaffolding Certificate of Competency. The other components are a written assignment and a performance assessment.

2 The knowledge assessment for Basic Scaffolding is a 'closed book' short-answer examination divided into six sections. The questions in each section are to be randomly selected from a bank which contains a total of 100 questions.

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

3 The relationship between the questions and the Standard's prescribed performance criteria is set out on page 49.

4 A full knowledge assessment consists of 26 questions and can take up to 30 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.

5 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: Site hazards (3 selected from 7)
Section 3: Tools and equipment for scaffolding (3 selected from 17)
Section 4: General scaffold requirements (7 selected from 26)
Section 5: Particular scaffold requirements (7 selected from 26)
Section 6: Associated equipment requirements (3 selected from 12)

6 An applicant who holds a Basic, Intermediate or Advanced Rigging Certificate does not require assessment in Section 6.

7 An applicant undergoing re-assessment need only be re-assessed in those sections 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 45–48.

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

10 Applicants may use alternative compatible metric units to 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.

Basic Scaffolding—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) At what height is a scaffolding certificate of competency needed?

1 (b) Is a person with a Basic Scaffolding Certificate allowed to construct a cantilevered scaffold?

1 (c) Is a person with a Basic Scaffolding Certificate allowed to construct a barrow ramp?

1 (d) Is a person with a Basic Scaffolding Certificate allowed to construct a tower frame scaffold with outriggers?

1 (e) Is a person with a Basic Scaffolding Certificate allowed to construct a tube-and-coupler scaffold?

1 (f) Is a person with a Basic Scaffolding Certificate allowed to install a barrow hoist?

1 (g) Is a person with a Basic Scaffolding Certificate allowed to construct a modular birdcage scaffold?

1 (h) Is a person with a Basic Scaffolding Certificate allowed to construct a swing stage?

1 (i) Is a person with a Basic Scaffolding Certificate allowed to install a safety net?

1 (j) Is a person with a Basic Scaffolding Certificate allowed to erect a mast climber?

1 (k) Is a person with a Basic Scaffolding Certificate allowed to construct a mobile frame scaffold?

1 (l) Is a person with a Basic Scaffolding Certificate allowed to install a personnel and materials hoist?

SECTION TWO: SITE HAZARDS

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

2 (a) How close to live unprotected powerlines would you construct a metal scaffold?

2 (b) How far past each end of the scaffold should insulation on live powerlines extend?

2 (c) How can a scaffold built alongside a road be protected from traffic damage?

2 (d) What could happen if the tie tubes on a scaffold stuck out too far when a crane is operating?

2 (e) Name something which might corrode scaffolding equipment.

2 (f) What is the danger where a scaffold is being constructed close to machinery with moving parts?

2 (g) What type of scaffolding material would you use to construct a scaffold where there may be a danger of explosion?

SECTION THREE: TOOLS AND EQUIPMENT FOR SCAFFOLDING

Note: Select three questions at random from the following 17. To pass this section, the applicant must correctly answer at least two of the selected questions.

3 (a) How far above the maximum nut extension must the spindle of an adjustable baseplate extend?

3 (b) What is the maximum extension on an adjustable baseplate?

3 (c) What is the minimum size of a square baseplate?

3 (d) What is the minimum outside diameter of a common scaffold tube (to the nearest mm)?

3 (e) What is the minimum wall thickness of a common steel scaffold tube?

3 (f) What is the minimum wall thickness of a common aluminium scaffold tube?

3 (g) What is the minimum width of a scaffold plank?

3 (h) What is the minimum thickness of a hardwood solid timber scaffold plank?

3 (i) What is the minimum thickness of an oregon solid timber scaffold plank?

3 (j) What is the minimum diameter of fibre rope you would use for a handline?

3 (k) What is the minimum diameter of fibre rope you would use for a gin wheel?

3 (l) What is the maximum load you would lift with a gin wheel?

3 (m) Would you use a gin wheel with no rope guides?

3 (n) How far along an unbraced cantilevered scaffold tube would you fix a gin wheel?

3 (o) How would you stop a ring-type gin wheel from sliding along the scaffold tube?

3 (p) Would you suspend a gin wheel from a right angle coupler?

3 (q) What would you do to make safe a hook-type gin wheel with no safety catch?

SECTION FOUR: GENERAL SCAFFOLD REQUIREMENTS

Note: Select seven questions at random from the following 26. To pass this section, the applicant must correctly answer at least four of the selected questions.

4 (a) What is the maximum load in each bay of a light duty working platform?

4 (b) What is the maximum load in each bay of a medium duty working platform?

4 (c) What is the maximum load in each bay of a heavy duty working platform?

4 (d) What maximum load would you place on a right angle coupler?

4 (e) What maximum load would you place an adjustable baseplate?

4 (f) What is the maximum allowable load on a chain?

4 (g) What is the maximum allowable load on a flexible steel wire rope?

4 (h) When a scaffold is built on soil, what would you place under the baseplates to distribute the load?

4 (i) What minimum width of timber would you use as a soleplate?

4 (j) Are gaps allowed between the planks of a working platform?

4 (k) Can platform planks be lapped on the returns of a scaffold?

4 (l) What is the minimum width of a light duty working platform?

4 (m) What is the minimum width of a medium duty working platform?

4 (n) What is the minimum width of a heavy duty working platform?

4 (o) What is the minimum width of clear access along a working platform for persons with hand tools only?

4 (p) What is the minimum width of clear access along a working platform for persons and materials?

4 (q) Can planks with different thicknesses be used to deck out a working platform?

4 (r) When is edge protection needed on working platforms?

4 (s) How far above the working platform must a toeboard extend?

4 (t) At what height above the working platform would you fix a guardrail?

4 (u) What must be provided between the guardrail and the toeboard to complete a platform's edge protection?

4 (v) What is the maximum gap allowed between an unprotected platform edge and the working face?

4 (w) Is it acceptable to use a personnel hoist as the only means of access to a scaffold's working platforms?

4 (x) What type of ladder cannot be used for access to a scaffold?

4 (y) What is the maximum height allowed between ladder landings?

4 (z) What is the minimum height an access ladder must extend above the landing?

SECTION FIVE: PARTICULAR SCAFFOLD REQUIREMENTS

Note: Select seven questions at random from the following 26. To pass this section, the applicant must correctly answer at least four of the selected questions.

5 (a) Do castors for mobile scaffolds need wheel locks?

5 (b) Can a castor for a mobile scaffold have a pneumatic tyre?

5 (c) Why is plan bracing needed in a mobile scaffold?

5 (d) What is the minimum platform width when platform brackets are fixed between lifts?

5 (e) Would you fix platform brackets on the inside of the scaffold or on the outside of the scaffold?

5 (f) When platform brackets are fixed between lifts, where would you place the extra working platforms?

5 (g) What maximum spacing would you use between tank brackets supporting 50 mm thickness solid timber scaffold planks?

5 (h) What maximum spacing would you use between tank brackets supporting 63 mm thickness solid timber scaffold planks?

5 (i) What would you do to stop the movement of planks on a crane-lifted shutter bracket scaffold?

5 (j) Should the design of a sheeted scaffold be checked by an engineer?

5 (k) Would you use hessian to sheet a scaffold?

5 (l) Does the supplier of prefabricated scaffolding need to provide written information about the system?

5 (m) Would you mix components of two prefabricated systems in the one scaffold without a supplier's or engineer's consent?

5 (n) What maximum horizontal tie spacing would you use on an unsheeted modular scaffold?

5 (o) What maximum vertical tie spacing would you use on an unsheeted modular scaffold?

5 (p) If you used plan bracing to increase the tie spacings on a prefabricated scaffold, how would you strengthen each tie?

5 (q) If a tie tube was fixed to a wedge-type modular ledger, how would you fix the ledger against uplift?

5 (r) Where would you fix the first lift on a modular scaffold?

5 (s) How many unbraced panels would you allow between the longitudinally braced panels of an unsheeted modular scaffold?

5 (t) Where would you fix transverse braces to a run of unsheeted modular scaffold?

5 (u) What would you attach to a run of frame scaffold at the platform level so that random-length scaffold planks can be butted?

5 (v) How high would you build an unsheeted free-standing steel frame scaffold?

5 (w) Without supplier's information or engineer's approval, how high would you build a light duty aluminium tower frame scaffold?

5 (x) Would you fix the ladder access to a tower frame scaffold internally or externally?

5 (y) How is the ladder opening in a tower frame scaffold's working platform usually protected?

5 (z) Without supplier's information or engineer's approval, how many working platforms would you place on a light duty aluminium tower frame scaffold?

SECTION SIX:
ASSOCIATED EQUIPMENT REQUIREMENTS

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.

Applicants who hold a National Rigging Certificate have already been accessed on this Section and do not require re-assessment.

6 (a) What is the maximum mesh size of a safety net?

6 (b) What maximum gap would you allow between the edge of a safety net and the building or structure?

6 (c) What are the two maximum fall distances which you might find marked on the label of a safety net?

6 (d) What minimum and maximum initial sag would you allow for a safety net?

6 (e) What minimum clearance would you ensure below a safety net?

6 (f) What minimum horizontal distance should an outrigged safety net extend past the outermost working position?

6 (g) What maximum spacing would you use between ties along the border chord of a safety net?

6 (h) What is the minimum overun distance between the hoist rope attachment and the head sheave on a cantilevered platform hoist?

6 (i) What is the minimum and maximum horizontal clearance between the moving platform of a cantilevered hoist and any landing or floor?

6 (j) What is the minimum height of a landing gate for a cantilevered platform hoist?

6 (k) What maximum distance would you use between lateral braces of a cantilevered platform hoist?

6 (l) How high would you free-stand the tower of a cantilevered platform hoist above its last tie?

END OF QUESTIONS

Model answers

SECTION ONE: CERTIFICATION

Question	Answer	Reference
1 (a)	Where a person or object could fall more than 4 m from the scaffolding. (An answer of '4 m', or 'more than 4 m', or '2 lifts', or 'over 2 lifts' is acceptable.)	As XXXX, Clause 7.3
1 (b)	No	As XXXX, Clause 7.3
1 (c)	No	As XXXX, Clause 7.3
1 (d)	Yes	As XXXX, Clause 7.3
1 (e)	No	As XXXX, Clause 7.3
1 (f)	Yes	As XXXX, Clause 7.3
1 (g)	Yes	As XXXX, Clause 7.3
1 (h)	No	As XXXX, Clause 7.3
1 (i)	Yes	As XXXX, Clause 7.3
1 (j)	No	As XXXX, Clause 7.3
1 (k)	Yes	As XXXX, Clause 7.3
1 (l)	No	As XXXX, Clause 7.3

SECTION TWO: SITE HAZARDS

Question	Answer	Reference
2 (a)	4 m	As XXXX, Clause 4.3.2.1
2 (b)	4.9 m	As XXXX, Clause 4.3.2.2
2 (c)	Any one of the following: (i) Re-route traffic; (ii) Provide guards (or fenders); (iii) Use a person to direct traffic (or flagman).	As XXXX, Clause 4.4.2
2 (d)	Crane loads could snag the scaffold (or similiar words).	As XXXX, Clause 4.4.3
2 (e)	Any one of the following: (i) Acids; (ii) Alkalis; or (iii) Salts.	As XXXX, Clause 4.4.6
2 (f)	Injury from machinery operation	As XXXX, Clause 4.4.5
2 (g)	Non-conductive material (or timber)	As XXXX, Clause 4.4.7

SECTION THREE: TOOLS AND EQUIPMENT FOR SCAFFOLDING

Question	Answer	Reference
3 (a)	150 mm	As XXXX, Appendix B
3 (b)	600 mm	As XXXX, Appendix B
3 (c)	150 mm x 150 mm (or 225 cm^2)	As XXXX, Appendix B

3 (d)	48 mm	As XXXX, Appendix B
3 (e)	4 mm	As XXXX, Appendix B
3 (f)	4.45 mm (or 4.4 mm or 4.5 mm)	As XXXX, Appendix B
3 (g)	220 mm (or 225 mm)	As XXXX, Appendix B
3 (h)	32 mm	As XXXX, Table C4
3 (i)	38 mm	As XXXX, Table C4
3 (j)	12 mm	As XXXX, Clause 5.2
3 (k)	16 mm	As XXXX, Clause 5.2
3 (l)	50 kg	As XXXX, Clause 5.5
3 (m)	No	As XXXX, Clause 5.5
3 (n)	600 mm	As XXXX, Clause 5.5
3 (o)	Fix a coupler on either side	As XXXX, Clause 5.5
3 (p)	No	As XXXX, Clause 5.5
3 (q)	Mouse the hook	As XXXX, Clause 5.5

SECTION FOUR:
GENERAL SCAFFOLD REQUIREMENTS

Question	Answer	Reference
4 (a)	225 kg (or 2.2 kN)	As XXXX, Table 6.1
4 (b)	450 kg (or 4.4 kN)	As XXXX, Table 6.1
4 (c)	675 kg (or 6.6 kN	As XXXX, Table 6.1
4 (d)	630 kg (or 630 kgf or 6.25 kN)	As XXXX, Table C3
4 (e)	3030 kg (or 30 kN, or 3030 kgf. 3000 kg or 3 t are acceptable approximations.)	As XXXX, Table C3
4 (f)	one sixth of the breaking load (or breaking strain or breaking force).	As XXXX, Clause 6.1.11
4 (g)	one sixth of the breaking load (or breaking strain or breaking force).	As XXXX, Clause 6.1.10
4 (h)	Soleplates	As XXXX, Clause 6.1.2
4 (i)	220 mm (or 225 mm, or the width of a scaffold plank)	As XXXX, Clause 6.1.2
4 (j)	No	As XXXX, Clause 6.1.6
4 (k)	Yes	As XXXX, Clause 6.1.6
4 (l)	450 mm (or 2 planks)	As XXXX, Table 6.1
4 (m)	900 mm (or 4 planks)	As XXXX, Table 6.1
4 (n)	1000 mm (or 5 planks)	As XXXX, Table 6.1
4 (o)	450 mm (or 2 planks)	As XXXX, Clause 6.1.6
4 (p)	675 mm (or 3 planks)	As XXXX, Clause 6.1.6
4 (q)	No	As XXXX, Clause 6.1.6

4 (r)	When a person or object could fall more than 2 m	As XXXX, Clause 6.1.7
4 (s)	150 mm	As XXXX, Clause 6.1.7
4 (t)	Not less than 900 mm and not more than 1100 mm (or any height between these two)	As XXXX, Clause 6.1.7
4 (u)	A midrail (or infill, or brickguards of 17 mm plywood)	As XXXX, Clause 6.1.7
4 (v)	Less than 225 mm (or 225 mm or less than the width of a scaffold plank)	As XXXX, Clause 6.1.7
4 (w)	No	As XXXX, Clause 6.1.8
4 (x)	Any one of the following: (i) A domestic grade (or non-industrial grade) ladder (ii) An extension ladder (iii) A step ladder	As XXXX, Clause 6.1.8
4 (y)	6 m (or 3 lifts)	As XXXX, Clause 6.1.8
4 (z)	900 mm (or 1 m)	As XXXX, Clause 6.1.8

SECTION FIVE: PARTICULAR SCAFFOLD REQUIREMENTS

Question	Answer	Reference
5 (a)	Yes	As XXXX, Appendix B
5 (b)	No	As XXXX, Appendix B
5 (c)	To stop the scaffold from twisting (or distorting) when it is moved	As XXXX, Appendix B
5 (d)	450 mm (or 2 planks)	As XXXX, Clause 6.2.4.5
5 (e)	The inside (or alongside the working face)	As XXXX, Clause 6.2.4.5
5 (f)	At the lift immediately above and the lift immediately below	As XXXX, Clause 6.2.4.5
5 (g)	2 m	As XXXX, Clause 6.8.1
5 (h)	2.5 m	As XXXX, Clause 6.8.1
5 (i)	Positively fix (or lash, or strap, or spike) them	As XXXX, Clause 6.8.3
5 (j)	Yes	As XXXX, Clause 6.1.9.2
5 (k)	No	As XXXX, Clause 6.1.9.2.3
5 (l)	Yes	As XXXX, Clause 6.2.2
5 (m)	No	As XXXX, Clause 6.2.4.1
5 (n)	3 bays (or 6 bays with plan bracing)	As XXXX, Clause 6.1.4
5 (o)	4 m (or 2 lifts, or 8 m with ledger bracing, or 4 lifts with ledger bracing)	As XXXX, Clause 6.1.4
5 (p)	Fix check couplers (or additional couplers) to the tie tubes	As XXXX, Clause 6.1.4
5 (q)	Fix a check coupler (or additional coupler) over the wedge	As XXXX, Clause 6.2.5.5
5 (r)	At the standards' lowest connection points (or at the base of the standards)	As XXXX, Clause 6.2.5.1

5 (s)	3	As XXXX, Clause 6.2.5.4
5 (t)	At each end (or in each lift at each end)	As XXXX, Clause 6.2.5.4
5 (u)	Ledgers and putlogs	As XXXX, Clause 6.2.6
5 (v)	Three times the least base width	As XXXX, Clause 6.1.4
5 (w)	9 m	As XXXX, Clause 6.2.7.3
5 (x)	Internally (or within the framework)	As XXXX, Clause 6.2.7.5
5 (y)	With a trapdoor (or hinged hatch	As XXXX, Clause 6.2.7.5
5 (z)	One	As XXXX, Clause 6.2.7.4

SECTION SIX: ASSOCIATED EQUIPMENT REQUIREMENTS

Question	Answer	Reference
6 (a)	100 mm	As XXXX, Appendix H
6 (b)	200 mm	As XXXX, Appendix H
6 (c)	1 m and 6 m	As XXXX, Appendix H
6 (d)	1/4 and 1/5 of the shortest side length	As XXXX, Appendix H
6 (e)	2/3 of the shortest side length or 2 m, whichever is greater	As XXXX, Appendix H
6 (f)	2/5 of the maximum fall height plus 2 m	As XXXX, Appendix H
6 (g)	750 mm	As XXXX, Appendix H
6 (h)	1.5 m	As XXXX, Appendix G
6 (i)	25 mm and 100 mm	As XXXX, Appendix G
6 (j)	1.8 m	As XXXX, Appendix G
6 (k)	6 m	As XXXX, Appendix G
6 (l)	3 m	As XXXX, Appendix G

END OF MODEL ANSWERS

LIST OF REFERENCES

The sole direct reference used for this assessment is:

AS/NZS XXXX, *Guidelines for Scaffolding*

Please Note: This reference is currently being updated for publication. When available, this assessment instrument will be reviewed to ensure accuracy of questions, answers and referenced clauses.

Basic Scaffolding—Knowledge Questions

RELATIONSHIP TO THE NATIONAL CERTIFICATION STANDARD

THE UNITS OF COMPETENCE

The questions selected at random from the six sections of the knowledge assessment are intended to assess underlying knowledge which is required to carry out the four units of competence for Basic Scaffolding 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 Erect scaffolding/equipment.
3.0 Inspect, repair and alter scaffolding/equipment.
4.0 Dismantle scaffolding/equipment.

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 1.1.8 and 1.1.13.

Section 2: Site hazards
These questions reflect performance criteria 1.1.5, 1.1.8, 1.1.9, 1.1.10, 1.1.13, 1.1.14, 1.1.16, 2.1.1, 2.1.2, 2.2.1, 2.2.6, 3.1.1, 4.2.1 and 4.2.2.

Section 3: Tools and equipment for scaffolding
These questions reflect performance criteria 1.1.16, 1.2.1, 1.2.2, 1.2.3, 1.2.4, 2.1.3, 2.1.4, 2.2.1, 2.2.3, 2.2.4, 2.2.6, 3.1.1, 3.2.2, 3.2.3, 3.2.4, 4.1.2, 4.1.3, 4.2.1 and 4.2.2.

Section 4: General scaffold requirements
These questions reflect performance criteria 1.1.1, 1.1.2, 1.1.3, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.12, 1.1.13, 1.1.14, 1.1.15, 1.1.16, 2.1.4, 2.2.1, 2.2.3, 2.2.4, 2.2.6, 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 4.1.1, 4.1.2, 4.1.3, 4.2.1 and 4.2.2.

Section 5: Particular scaffold requirements
These questions reflect performance criteria 1.1.1, 1.1.2, 1.1.3, 1.1.5, 1.1.6, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.12, 1.1.13, 1.1.14, 1.1.15, 1.1.16, 2.1.4, 2.2.1, 2.2.3, 2.2.4, 2.2.6, 3.1.1, 3.1.2, 3.1.3, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 4.1.1, 4.1.2, 4.1.3, 4.2.1 and 4.2.2.

Section 6: Associated equipment requirements
These questions reflect performance criteria 1.1.1, 1.1.3, 1.1.4, 1.1.5, 1.1.7, 1.1.8, 1.1.9, 1.1.10, 1.1.11, 1.1.12, 1.1.13, 1.1.14, 1.1.15, 1.1.16, 1.2.4, 2.1.4, 2.2.1, 2.2.3, 2.2.4, 2.2.6, 2.2.7, 3.1.1, 3.1.2, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 4.1.1, 4.1.2, 4.1.3, 4.2.1 and 4.2.2.

THE RANGE STATEMENT

The bank of questions assesses knowledge which directly relates to most equipment types listed in the National Standard's Range Statement for Basic Scaffolding. This is as follows:

- prefabricated scaffolds;
- cantilevered hoists with maximum WLL not exceeding 500 kg (materials only);
- ropes;
- gin wheels;
- safety nets;
- bracket scaffolds (tank and formwork).

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 erects, alters or dismantles scaffolding and associated equipment within the scope of the Basic Scaffolding certificate of competency. In particular, the model answers are consistant the following referenced Standards:

- AS 1418, *Cranes (Including Hoists and Winches);*
- AS 1576, *Scaffolding;*
- AS 1577, *Scaffold Planks;*
- AS 1892, *Portable Ladders;* and
- BS 3913, *Industrial Safety Nets.*

The model answers are taken from AS/NZS XXXX, *Guidelines for Scaffolding,* which the Worksafe Australia Scaffolding and Rigging Expert Working Group has endorsed as a suitable text for the determination of applicants' answers for Basic Scaffolding.

It is intended that a future revision of this instrument will include questions relating to static lines once suitable information has been included in the *Guidelines for Scaffolding.*

Catalogue No. **840** Publications Hotline **1300 799 003**

. Production and printing by Salmat – 02 9743 8777