PAINTERS ESTIMATING AND SPECIFICATIONS

Second Edition

Revised and Updated by
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Aligns with core units:
Group 4 Painters Estimating and Specifications for Course 4700 Certificate IV in Painters Registration
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Core 28893 Prb – Estimating
Core 28894 Prb – Contract Management
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FOREWORD

This text is written for the painter and decorator wishing to become registered in Western Australia and operate a Painting and Decorating Business.

BC026 Painters Estimating and Specifications covers a large area of study; however, it forms only one section of the completed Painters Registration Course.

The information in this book will assist painters in gaining a Registration Number and will help them to avoid or resolve any problems that may occur within the area of work.

ACKNOWLEDGEMENTS

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- Barloworld (Taubmans)
- Australian National Training Authority (ANTA)
- Reed Construction Data
INTRODUCTION

The majority of qualified painters will have completed an apprenticeship and learnt the various skills associated with applying paint to a variety of surfaces. They may have also developed some subsidiary skills such as imitating artificial marble, wood graining, creating broken colour finishes and applying wall coverings. They have worked hard and spent many hours learning their trade to a professional level so as to earn an above-average income.

However, in many situations, painters who operate or are about to operate a business need to learn and add other skills to their repertoire. These skills are very important and can contribute greatly to the success of their business. These skills are considered in this textbook and include:

- Reading and Writing Legal Specifications
- Calculating Accurate Quotations
- Interpreting Building Plans
- Familiarity with the Tendering Process
- Developing Good Customer Service
- Appreciating the Value of Job Planning

It is hoped that the information contained in this text will help you to improve your business practices by explaining the techniques used in competent estimating and tendering.

When you have completed this subject, along with the other two subjects comprising the Painters Registration Course (ie Paint Technology and Business Management), you will qualify for the Certificate IV in Painters Registration (Code 4700). On completion of the course you will be eligible to apply for your Painters Registration Licence.

The material in this text has been revised and developed by Timothy Kokkinidis (BA Training and Development) based on the original edition written in 1985 by Matthew Bedola. Additions include changes of procedures and terminology of specifications and contracts, and alignment with the implication of the introduction of the Goods and Services Tax in Australia on July 2000, and alignment with current training requirements.

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CHAPTER 1: SPECIFICATIONS AND CONTRACTS

1.1 THE IMPORTANCE OF SPECIFICATIONS

Scenarios 1 and 2 will show you how important it is to write a specification.

Scenario 1

Paul the Painter receives a telephone call asking him to go to Mrs Smith’s house to give a quote for painting the exterior of her house. Mrs Smith and her son are at the house and discuss with Paul Painter what they want done. Paul works out the amount of labour and materials required. He provides Mrs Smith and her son with a verbal quotation.

A day later, Mrs Smith’s son calls up Paul the Painter and says that they want to go ahead with the painting as soon as possible and a key for access into the house is kept on the top of the window ledge at the rear of the house. Mrs Smith’s son says that Mrs Smith will be away for the next week and that he has told the neighbours that the painter will be there and not to be alarmed. Paul the Painter begins the work.

Mrs Smith returns from her trip away and is surprised to see Paul the painter working on her home. She asks Paul the painter who told him to start. Paul says her son did, but her son denies this saying he always said that it would be subject to his mother’s approval. Mrs Smith tells Paul the painter that his quote is too expensive and she will only pay him 80% of the quote.

Scenario 2

Pedro the Painter is asked to give a quote for the exterior of a house owned by Mr Jones. Being a Registered Painter, Pedro provides Mr Jones with a written quote. A week later Mr Jones tells Pedro the Painter he wants to go ahead with the painting and Pedro the Painter asks him to sign the quotation and contract form, which he does. A suitable time is agreed for work to begin.

A little while after starting work, Pedro the Painter discovers that there is a problem with the existing paint in some places and he estimates that this will increase his costs by 25%. He telephones Mr Jones to discuss this. Mr Jones thinks that Paul the painter should have realised this when inspecting the property. However, since the problem areas were in places where Pedro the Painter could not reach with a ladder he agrees to the increase in costs and for Pedro the Painter to replace some rotted timber trimmings in the same area and paint them. A few days later the work is completed but as he was travelling to the bank to withdraw the money to pay Pedro, Mr Jones is run over by a car and is declared dead on arrival at hospital. Months later Pedro the Painter is still chasing payment from Mr. Jones’ executor. The executor only has the original quote and does not want to pay anything more than what was originally agreed to in writing between Pedro and Mr Jones.

Moral of the Stories:
PUT ALL AGREEMENTS IN WRITING
PURPOSE OF SPECIFICATIONS
The specification has three prime functions, and the specification writer must ensure that everything written down covers and serves each purpose adequately.

1. Tender Document
A specification provides the Tenderer with information he/she requires to estimate the project accurately and submit a quotation. A specification itemises the work required by the owner. For the painter it would include surfaces to be painted, type of paint, number of coats and colours.

2. Legal Document
The specification must be capable of exact interpretation and clearly define the responsibilities of parties mentioned within the signed Contract. If a dispute arises, the specification can be used to clarify the agreed-upon expectations of both parties involved. If resolution cannot be reached, the specification can be used in a court of law to finalise issues.

3. Working Document
The tradespeople on the job are those who use the specification the most and are expected to construct a building from what is written. The specification should include as much detail as possible in an endeavour to avoid hold-up of the work through having to contact the superintendent for decisions.

MAIN SPECIFICATION TERMS AND PERSONNEL
Now that we have covered the purpose of specifications it is best that you are introduced to the various people that are frequently mentioned within the specification.

The following brief list covers a few of the main terms. They will supply sufficient basis for further reading, and reference back to this list is recommended. The terms are not listed in alphabetical order but rather in order of relationship to each other.

Principal
The project owner. The principal is a co-signatory (with the contractor) to the contract.

Superintendent
The principal’s representative and agent, but ethically unbiased towards the principal or the contractor. Architects can at times function in the role of a superintendent.

The superintendent is not a party to the contract. The superintendent has a separate contract with the principal.

Builder
Person or company trading in building construction.

Tenderer(s):
The builder or builders during the tendering and pre-contract stages. A person who prices the Tender documents.

Contractor:
The selected builder after the signing of the contract.

Sub-contractor:
Person or company bound to the contractor by a sub-contract agreement to perform a specific section of the contract work. This person or company should also be a registered contractor in his/her own right.
Nominated Sub-contractor: A contractor equal in all respects to the sub-contractor but selected by the superintendent on behalf of the principal.

Contract: A contract is an agreement preferably in writing, enforceable by law, whereby one party undertakes to provide some service or perform some action in return for consideration provided by the other party within a stipulated time or period.

A contract must include at the minimum the following details to make it binding in a court of law: name of party(ies); their addresses; details of what will be exchanged (eg monies for works); signatures of party(ies); date of contract. It is preferable that there be a witness to the contract with their name, address and signature.
CHAPTER 1 SPECIFICATIONS AND CONTRACTS

CONTRACT TYPES

1. **Lump Sum – Entire Contracts**
   
   This is the most common type of contract used. It includes labour, materials, sundries and all costs for plant and equipment. This contract format is generally used when clients know exactly what they want in the building.

2. **Cost Plus or Prime Cost**
   
   This type of contract is used when the decorator or client does not know/cannot tell exactly what is to be done. For example, there may be hidden problems, specially when repairing earthquake or fire damage. This is worked in such a way that the client pays for the work and materials as long as the cost is legitimate. “Cost” refers to the cost of all materials required and the “plus” refers to labour charged at an hourly rate.

3. **Non-entire Contracts or Labour Only** (see Labour Only Sample)
   
   The client supplies all materials and only requires a contractor’s labour skills to complete the job. For example, a paint manufacturing company supplies its own product(s) and employs a contractor to apply it to a building.

Below are other terms that require mentioning when talking about contract types. These terms can be written into the above contract types.

**Provisional Sum**
An amount of money specified by the superintendent to be included in the tender amount to cover work of a specialist nature not normally performed by a builder. The *precise* nature and *exact* extent of the work is not known at the time of preparing the tender documents.

**Provisional Item**
An item inserted into a Bill of Quantities to provide a basis for future adjustment on a pro-rata basis, or work (other than specialist work) the *precise* nature and *exact* extent of which is not known at the time of preparing tender documents.

**Prime Cost**
(a) An amount specified or stated in a Bill of Quantities description, in rate form eg: Wallpaper (PC $60.00 per roll). It is indicative of the wholesale purchase price range from which selection will be made and also indicative of quality. It is used where the extent is known and measurable but the precise selection is not known at the time of preparing tender documents.

(b) The cost of direct labour and materials required to produce an item of work. Used mainly in bookkeeping and costing, within individual companies in assessing selling price and profits.

**Prime Cost Sum**
An amount of money specified to be included in the tender amount to cover the cost of goods to be supplied by a firm to be nominated by the superintendent. Used normally for goods of a specialist nature, the extent of which are known and measureable but the *precise* selection is not known at the time of preparing tender documents.

**Provisional Quantity**
Similar to Provisional Item mentioned previously but where the nature is known at the time of preparing tender documents; for example, it is known that limestone rock exists...
within the limits to be excavated but the exact quantity is not known until the work is completed.

**Contingency Sum**
A sum specified to be included in the tender amount to provide for unforeseen circumstances. Any portion not used is to be deducted from the contract amount on completion of the contract.

**PRINCIPLES OF WRITING A SPECIFICATION**
To write a specification out in longhand starting without other specification clauses as a guide is a tedious task. A master specification from which to take ideas helps the writer complete the specification with ease and accuracy.

Whenever writing specifications writers must give considerable thought to the project in hand and paint the building in their mind as they write. It is therefore reasonable to assume that they will retain in their memory the various features they are specifying even if they do not remember the words used to cover relevant clauses.

Specification writers should retain a copy of each specification prepared. On a new project for which they have to specify a special type of paint they may well find that they have written the necessary clause before. It should then be a simple matter to find those clauses and make a reference for the typist to copy them with any necessary changes. REMEMBER that they are guidelines only and cannot be used unaltered unless they are truly appropriate to the project in hand.

**SPECIFICATION WRITING**
What is a specification for? Unless the writer grasps the purpose of the document he/she cannot prepare it successfully. The specification has three purposes:

1. To be read by the tenderer as the only information he/she has on which to prepare a competitive tender.
2. To allow the tenderer or quantity surveyor to prepare the quantities of materials required for submitting competitive tenders.
3. To be read by the contractor and superintendent’s representatives to complete the work specified in the manner required by the superintendent.

**THE SPECIFICATION AS A BASIS FOR TENDERING**
The tenderer takes his/her own measurements of the work from the supplied drawings and then relies on the specification for the remainder of the information. This information should give a full description of the quality of materials and workmanship required to complete the work.

Therefore the specification writer should realise the importance of the work that has to be done. If by chance something is specified incorrectly this can cause major expense for either the contractor/and or the principal.

**THE SPECIFICATION FOR QUANTITIES OF MATERIALS**
The superintendent may elect to use a quantity surveyor to produce a Bill of Quantities. This Bill enables the tenderer to work out a tender using his/her own judgment from the figures that are supplied.
Without the Bill of Quantities, the tenderer must use the specification in conjunction with the plans to allow the construction of a tender. The use of the specification enables the tenderer to see the materials that are to be used on the various surfaces that are to be completed to the agreed method or standard as stated by the superintendent.

**THE SPECIFICATION FOR THE CONTRACTOR**

The superintendent has written the specification with the principal in mind. In the painting trade the superintendent has decided upon the correct coating method and materials required to protect and beautify the structure. The contractor who also knows this information then refers to the specification to carry out the specified work to the method and standard that the superintendent requests.

**ESSENTIAL POINTS IN WRITING A SPECIFICATION**

There are 5 main points to consider when writing a specification:

1. **BE SPECIFIC** – It’s the name of the game! Be definite and distinct in outlining your requirements – say what you mean, and mean what you say. Avoid leaving a choice of materials or finishes to the tenderer, unless you genuinely have no preference.

2. **BE CONCISE** – Use one word, preferably monosyllabic, to replace a phrase where possible, eg "Here and now" instead of "In this place and at this point of time". Do not "pad". Padding leads to vagueness and ambiguity and occasionally to self-contradiction. Be brief and to the point. Flowery literary styles are good in essays and novels but have no place in specifications.

3. **BE PRECISE** – Your descriptions should be accurate. Use the correct words – use a dictionary to help choose your words. Avoid using jargon, unless it really is saying what you need to say. Do not use slang words.

   With the above three points in mind, the other things you must take into account are the things that can change clauses without even appearing to do so.

4. **USE PLAIN ENGLISH** – Correctly constructed sentences and good self-expression coupled with correct spelling are essential. The specification is a legal document and as such must be understood. Poor English, bad expression, bad spelling (individually or in combination) can easily lead to misinterpretation, to disagreements, and to a court upholding a definition or view which you did not intend.

5. **KEEP THE PURPOSE IN MIND** – Instruct and inform the reader and amplify the drawn information.

   **DO NOT** be vague    **DO NOT** generalise    **DO commit yourself to a definite choice.**
PHRASES AND WORDS TO USE CAUTIOUSLY OR AVOID

- "Unless otherwise specified"
  As a specification writer, you should know what you have and have not specified. If it is otherwise specified, state the exceptions clearly. If it is not, then this phrase is meaningless. The correct way to use this phrase could be:
  “All paints to be used on this project will be Dulux except on the lounge walls where the paint specified will be Solver.”

- "To be as directed" (or "as selected" or "as required" or "to approval")
  To price such a requirement a tenderer needs to be a clairvoyant. State your directions in the specification. Select the thing and describe it – or take refuge behind a Provisional or PC sum! Tell the tenderer what standards you approve – explicitly.

- "Either" and "or"
  These are not specific words and are only acceptable if you genuinely have no preference between two or more items that can be regarded as equal for the intended purpose. Be aware that if you give a tenderer an option, they will more than likely go for the cheapest or quickest.

- "Generally"
  Thou shalt not generalise – be specific. For example, do not write: “Generally clean all the ceiling surface.” What does the word “generally” include or exclude? You would be better off saying: “Clean ceiling free from any dust, dirt, grease and wax.”

- "To future detail" (same as “To be as directed” above).

- "Suitable", "reasonable", "to the satisfaction of", "sufficiently"
  These expressions are vague. How can one person be sure what another will accept as suitable, or reasonable, or satisfactory – unless you define it in terms of acceptable standards. With painting and decorating there is an Australian Standard (AS/NZS-2311) that can be stated as your standard.

- "All"
  "All" is implied if no exceptions are stated. If exceptions are restated, it is contradictory!

- "Etcetera", or in its abbreviated form "etc."
  "Etc." is not specific enough. It does not describe anything that can be correctively identified.
1.2 SECTIONS OF A SPECIFICATION

A specification is divided into a number of sections. Each section contains specific information and when combined covers all the necessary aspects of a project. There are sections that will appear in all specifications while others are unique. Below is an example of the sections of a specification. The sections would appear in this order.

**Fig. 1.2 Sections of a specification**

**COVER PAGE**

The cover of any specification makes the first impression on its reader. The presentation is therefore important. If you present a badly laid out, insipid cover it will be poorly received, regardless of its contents. Covers should be made of stiff materials so they can stand the test of heavy usage on sites. Specifications with plastic covers are common these days.

The information contained on the face cover is shown on the sample specification in this chapter. Immediately inside the cover of the specification should be inserted information needed by the tenderers that becomes redundant once the contract is signed. This information should be removed before the signing of the contract.

**CONTRACT DOCUMENT**

The contract should be mentioned next as once it is signed the specification then becomes a legal document. Within the specification contract agreements should contain appropriate clauses covering such things as progress payments, alterations, extras and completion time insurances to be taken out by the painting contractor.

If any amendments are to be made to the contract, this should be done by crossing out deleted clauses in ink and inserting additions in ink or by pasting on insertions. The
signatories to the contract should initial each alteration, deletion and addition. Items that may require some form of amendments are:

- Delays in completion of work
- Maintenance periods
- Liquidated damages for non-completion.

CONTENTS PAGE
The contents page lists, in appearance order, the various sections of the specification and on which page they can be located. This helps those who wish to locate specific information without having to work their way through the specification.

INVITATION TO TENDER
The invitation to tender is a formal invitation to the tenderer(s) to submit a price. It sets out the scope of work involved in the project, its location, the key personnel involved whom the tenderer may need to contact for clarification. The most important information contained is the tender close-off date by which all tenders are required to be submitted. If they are not received by the due date, it is possible that late tenders will not qualify and miss out in the evaluation process.

PRELIMINARIES AND SUPPLEMENT TO PRELIMINARIES
Preliminaries means: “Something that precedes, prepares for, or introduces the main matter, action, or business.” (The American Heritage® Dictionary of the English Language, Fourth Edition.)

These two sections of a specification deal with the legalities of carrying out work in a specified manner. These legal clauses should be read carefully and understood perfectly prior to the signing of the contract. If there is a clause that the tenderer does not understand, they should check with somebody and seek clarification. Failing to do so could prove expensive to the tenderer.

As the principal employs a superintendent to have some form of work carried out, they have a separate contract to this effect. The superintendent subsequently has the principal’s interests at heart. Therefore the work must have some form of legal aspect to protect all parties concerned.

The specimen specification in this text is basic, but it will give you a basis on what to look for within a specification. There are a large number of clauses that require mentioning that do occur in specifications. The following legal clauses are found either in the preliminaries or supplement to the preliminaries.

Date for Possession
This date stated in the specification is the date on which the contractor is to be given responsibility for the site, and at times can also be the official date for commencement of work. If there is a different date of possession to the date of commencement, then the contractor will only be able to deliver or have deliveries made of equipment or materials required for the project. He/she will then have to wait until the date of commencement before work can begin. (See Specification Sample “Supplement to Preliminaries” Clause 6.2a[i].)
Date of Commencement
This date is specified as the date that work can officially begin on site. (See Specification Sample “Supplement to Preliminaries” Clause 6.2a[ii].)

Completion Date
This is the date that all work must be completed on site. (See Specification Sample “Supplement to Preliminaries” Clause 6.2a[iii].)

Practical Completion Date
The date certified by the superintendent on which the works are reasonably fit for use and/or occupation by the proprietor. (See Specification Sample “Supplement to Preliminaries” Clause 6.2a[iv].)

Final Completion Date
The date certified by the superintendent on which all contract work, including remedial or maintenance work under the defects liability period is completed. (See Specification Sample “Supplement to Preliminaries” Clause 6.2a[v].)

Tendering Requirements
These requirements govern those who are eligible to submit a tender to do the work specified. It is usually mentioned that only those people who are currently registered under the Painters Registration Act can apply. (See Specification Sample “Supplement to Preliminaries” Clause 6.2b.)

Liquidated Damages
A pre-determined sum of money payable by the contractor (or deductible from their balance of payment) to the proprietor. It is intended to be recompense for loss suffered for work not completed by the date required under the contract, including extensions granted. This determined sum of money might be an amount per day or per week or even per month that the contractor is over the practical completion date. (See Specification Sample “Supplement to Preliminaries” Clause 6.2c.)

Defects Liability Period
Period of time stated in the contract commencing at Practical Completion date during which the contractor is responsible for repairing all defective work which becomes evident, and which is due to his/her non-compliance with the specification. (See Specification Sample “Supplement to Preliminaries” Clause 6.2g.)

Retention Fund
An amount of money kept back in accordance with the contract, from monies due to the contractor for work done, as security that the contractor will fulfil his/her obligations. These monies are to be kept in a separate bank account in trust for the contractor, and when the contract has terminated at the final completion date, all monies including any bank interest generated should be handed to the contractor. (See Specification Sample “Supplement to Preliminaries” Clause 6.2h.)
**Percentage of Estimate Contract Retainable**
The amount stated as a percentage in the contract being deductible from each progress payment, forming the retention fund, until the stated limit is reached. (See Specification Sample “Supplement to Preliminaries” Clause 6.2h.)

**Bank Guarantee**
A form of security provided by the contractor's bank to the principal, in lieu of retention. The Bank acts as guarantor for the contractor and is liable if the contractor defaults (does not fulfil his/her contractual obligations). (See Specification Sample “Preliminaries” Clause 4.3.)

**Site Inspection**
This is to ensure that the tenderer has made the necessary effort to view the work site. Often it is mentioned that by submission of tender, a tenderer has and shall be deemed to have inspected the site. This is to stop any situation that may arise if the tenderer says that he/she did not see a section of work to be carried out. (See Specification Sample “Preliminaries” Clause 1.2.)

**Superintendent’s Authorised Deputies**
These deputies shall or should be introduced to the contractor upon completion of the tendering process. The clause would state that the contractor should not receive instructions regarding any of the work other than by the architect or his/her authorised deputies. (See Specification Sample “Preliminaries” Clause 1.7a & b.)

**Insurance**
This is to cover both the employer and general public that may use the area. The insurances that are generally asked for are Public and Employer Liability and Workers Compensation. Proof of these insurances is also required – either photocopies of receipts or something similar. (See Specification Sample “Supplement to Preliminaries” Clause 6.2e & f.)

**Overtime**
A clause that will or will not allow the contractor to work overtime to complete the work by the forecasted completion date will be included. This also covers the architect when he/she considers the application of extension of time that may be asked for when several public holidays fall together. (See Specification Sample “Preliminaries” Clause 3.2.)

**Works Programme**
The superintendent may call for a Programme (see Specification Sample “Preliminaries” Clause 3.4a, b & c) showing:
1. Practical completion on or before the due date
2. Commencement date
3. Commencement and completion dates for each section of the works.

**Safety**
This makes sure that the contractor is aware of the responsibilities regarding injuries that may result from unsafe working conditions. (See Specification Sample “Preliminaries” Clause 2.2.)
Guarantee

The contractor may be required to guarantee his/her work for a nominated period of time. Under the Painters Registration Act, all painters are by law required to guarantee their work for a minimum of 18 months. (See Specification Sample “Supplement to Preliminaries” Clause 6.2b.)

GENERAL CONDITIONS

This section of the specification begins to deal with the various specific trades associated with a project. For example, the project will require a plasterer, ceiling fixer and painter. Therefore, in the specification under general conditions there will be sections for each trade such as “Plastering General”; “Ceiling Fixing General” and “Painting General”. These sections will provide general conditions or “clauses” giving specific direction to each trade. The sample specification in this textbook (see Specification Sample “Painting” Clauses 1. to 1.15) only includes a “Painting General” for the purpose of this area of study. Below are some of the clauses that would be seen in a Painting General section of a specification.

Tests

The contractor may be requested to have available paint thickness measuring equipment for the purpose of checking the thickness of paint. (See Specification Sample “Painting” Clause 1.9a.) These tests usually apply to industrial paint applications such as on steel roof frames, bridges, grain silos. For decorative paint applications it is not common that specifications will be given for a certain thickness of paint. Perhaps application of a 2-pack epoxy/polyurethane coating on bench tops in a laboratory could be specified. In this situation, the thickness of the paint coating is imperative to its performance.

There is a variety of paint-thickness measuring equipment on the market. There are those used to measure paint thickness while the coating is wet called “wet film thickness” (WFT) and “dry film thickness” (DFT) for coatings that have cured.

Whichever method is used all measurements are referred to as microns and identified by the symbol “µm”. For example, if a coating is measured at 200 microns thick, it is shown as 200 µm. On average, depending on the method of application, such as brush, roller or spray, the coating thickness will vary. Below is an approximate guide to thickness of a paint coating based on the application method.
### Paint Thickness Based on Method of Application

<table>
<thead>
<tr>
<th>Application Method</th>
<th>Microns (µm) per coat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brush</td>
<td>20 – 50 µm</td>
</tr>
<tr>
<td>Roller</td>
<td>50 – 70 µm</td>
</tr>
<tr>
<td>Spray (Airless)</td>
<td>70 – 150 µm</td>
</tr>
</tbody>
</table>

*Table 1.1*

**Wet Film Thickness Gauges**

These gauges are made of either plastic, steel, copper, bronze or brass. In shape, they can be square, rectangular and circular, as shown below.

*Fig. 1.4 Three types of Elcometer® gauge*

The gauges that are square and rectangular have teeth on their sides, and while the coating is wet a side is used to make an impression through the paint coating and touching the surface it is applied on. When removed from the surface, the depth of the coating can be determined by identifying which tooth was the last one that touched the coating. Each tooth has a numerical number representing microns (metric) or thousandths of an inch (imperial). The number on the last tooth indicates the depth of the coating. Measurements are made a number of times in a given area and averaged. The averaged measurement must be within or over the range specified. If under, then a further heavier application is required whilst still wet.

*Fig. 1.5 Wet film gauge*

The circular gauge has a canal through the center of its edge that gradually increases in depth. The gauge is rolled once on its entire circumference over the wet coated surface.
When removed it is easy to identify where the paint coating has stopped touching the canal. The numerical reading on the side of the gauge indicates the thickness of the coating.

**Dry Film Thickness Gauges**

There are two types of dry film thickness gauge. One is referred to as destructive and the other as non-destructive.

**Destructive** testing means that the coating will be destroyed during the test. This test is performed on non-magnetic surfaces such as plaster and timber. This involves the use of a cutting tool and slicing the coating off the surface. A caliper-like tool measures the thickness of the coating. The caliper closes onto each side of the sample lightly so that the sample can be moved backwards and forwards without falling out of the grasp of the caliper. The caliper is then read for the measurement.

**Non-destructive** testing is performed on magnetic surfaces. Two instruments can be used. The first is called a “Magnetic Attraction Gauge”, commonly referred to as a “Banana Gauge” due to its design similar to the appearance of a banana (Fig 1.6). The other is a micrometer that gives a digital readout.

The banana gauge is applied to the surface. A small rounded magnetic pin is applied to the coating. Gradually the dial attached is turned until the pin retracts. The measurement shown at the point of retraction indicates the coating thickness.

When using the micrometer (also known as an ultrasonic material thickness gauge), it is important to first calibrate it. Then apply the magnetic probe to the coated surface and the thickness can be read on the digital display. Some models have the ability to print out a hard copy.

![Fig. 1.6 Banana gauge and ultrasonic material thickness gauge](image)

**Colour Schedule**

A time is usually given to the contractor in which to apply to the architect for the colour schedule. Never commence any work without the colour schedule, which may affect the finishing colours. (See Specification Sample “Colour Schedule”.)
Samples
If samples are called for, then the contractor will have to prepare finished samples of nominated finishes. Then all that type of work will have to conform to the samples that the superintendent has approved. These samples can be produced on boards showing the texture and colour. Or a surface on the building can be set aside where a sample can be applied for approval. Either way, the finished project must match the colour and texture of the samples produced. Samples should be signed by the superintendent prior to commencement of work. (See Specification Sample “Painting” Clause 1.9b.)

Responsibility for Backgrounds
The term “background” is the surface that is going to be painted. By “apply a coating by brush, roller, spraygun or any other method”, it is implied that the applicator on commencement of work on those backgrounds accepts responsibility for the condition of the backgrounds and that they are in a fit condition to receive the specified finishes. (See Specification Sample “Painting” Clause 1.3.)

Inspection by the Superintendent
The superintendent may require a specific number of days notice to come and inspect any work that you feel requires checking before proceeding, for example:
1. Samples for approval
2. Backgrounds before application of first coat.

Materials Generally
The superintendent here has the right to nominate the manufacturer of the materials or may leave the manufacturer open as long as the materials conform to the Australian Standards. Usually this clause also covers the use of one manufacturer’s materials and the delivery instructions. A small inclusion on the storage of materials may also be mentioned here. (See Specification Sample “Painting” Clause 1.4.)

Preparatory Products
This covers the variety of fillers that are used in the painting trade. The stipulation may be that all preparatory products and paint materials come from a specific manufacturer or it may be left to the painter's discretion as to the manufacturer of the preparatory products. The superintendent may even go as far as to explain the painter's job by telling him/her to tint fillers used on timber to be clear finished, to match the timber colour. (See Specification Sample “Painting” Clause 1.5.)

Storage and Disposal
This covers the storage of materials. Areas may be set aside or a shed may be required to store material at the builder or contractor's expense. Then the disposal of waste materials should be covered. (See Specification Sample “Painting” Clause 1.6.)

Protection
This is basically common sense to the painter but must be mentioned to cover the superintendent or principal. Explain the use of masking tape, drop sheets (plastic and/or cloth) and paper. State the protection of wet surfaces by the use of screens, signs or other appropriate means. Request the removal of door or cupboard hardware to stop any paint spots from ruining the finish. (See Specification Sample “Painting” Clause 1.7.)
Making Good and Touching Up
This clause virtually explains itself. If any damages occur, then the painting contractor is required to make good the damages and repaint usually the entire surface, eg: wall or ceiling. (See Specification Sample “Painting” Clause 1.15.)

Application
This is the method by which the superintendent wants the material to be applied – as per manufacturer’s instructions. (See Specification Sample “Painting” Clause 1.12.) The consistency of the material to be applied is also stated so as to produce a uniform finish and colour. The sanding of intermediate coats and the type of abrasive that should be used on the surface coatings and ventilation should also be mentioned within the application clause. The clause should also cover the application of materials externally, covering things such as inclement weather and dry surfaces.

Miscellaneous items should then be mentioned briefly to point out any specialty services or trades that may be required, eg: signwriting, road marking or artwork.

SCHEDULE OF WORKS
This section of the specification is where all the details of the work that is to be carried out are listed in detail. It is in this section where the contractor or his/her employees will check to verify type of surface to be coated; specific preparation; paint coatings to be applied; number of coats; and sheen level.

METHOD OF WRITING SPECIFIED WORK
There are two main methods of writing a schedule of works; they are:
1. Room by room
2. Surface by surface.

ROOM-BY-ROOM METHOD
The room-by-room method is the basic way of writing a schedule of works, as it is the safest method. The work is carried out very methodically, working from the ceiling to walls and woodwork in each room from the front of the project to the rear. Below is an example of a room-by-room method.

   1.1 Remove all dirt, dust, grease or wax.
   1.2 Fill surface holes and cracks with filler.
   1.3 Sand down filled patches and seal patches with a water-based sealer.
   1.4 When touch up is adequately dry apply two (2) coats of acrylic flat, allowing a minimum of two (2) hours drying time between coats.

   2.1 Remove all dirt, dust and grease.
   2.2 Fill surface holes, cracks with filler. Use brush or sponge to make patches in filler to match existing render texture.
   2.3 When dry, apply water-based sealer to patched areas.
   2.4 When touch ups are adequately dry apply two (2) coats of acrylic flat, allowing a minimum of two (2) hours drying time between coats.
3. Woodwork – jarrah varnished – to be painted.
   3.1 Strip off all varnish to bare wood by using chemical paint remover.
   3.2 Wash with water to neutralise paint remover.
   3.3 Prime with oil-based pink primer.
   3.4 When thoroughly dry fill all holes and cracks with linseed oil putty.
   3.5 Sand down and dust off.
   3.6 Apply one coat of all-purpose oil undercoat.
   3.7 When thoroughly dry, sand smooth and dust off.
   3.8 Apply one coat of oil-based interior gloss.

As you can see, it is a long process but as was stated earlier this is the safest method of writing a specification.

SURFACE-BY-SURFACE METHOD

The other method that is available to the specification writer is the surface-by-surface method. This is a streamlined method and is starting to be used quite a lot. This method is suited to the person who is writing specifications continuously. The writer builds up a “bank” of surfaces and their relevant coating methods. Then all that is required is to draw on these surfaces and coating procedures and give them to the typist.

For all the surface types that may be mentioned within a specification the respective surface preparation would be given. An example of a surface-by-surface specification is shown below.

1. Gyprock

   1.1 Gyprock – water-based gypsum sealer finished in flat acrylic
                  apply first coat of flat acrylic by roller
                  apply second coat of flat acrylic by roller.

   1.2 Gyprock – water-based gypsum sealer finished in flat enamel
                  apply water-based sealer by roller
                  apply first coat of flat enamel
                  apply second coat of flat enamel.

2. Plasterboard

   2.1 Plasterboard – finished in satin acrylic
                  apply first coat of satin acrylic
                  apply second coat of satin acrylic.

   2.2 Plasterboard – non-pigmented binder sealer on all joints finished
                  in satin enamel
                  apply one coat of oil-based sealer
                  apply first coat of satin enamel
                  apply second coat of satin enamel.

Now that the basework is carried out all that is required is to mention the room and state the treatment that is required, eg:
Bedroom 1

Ceiling – Gypsum: to be finished in flat acrylic as per 1.1 above.
Walls – Plasterboard: to be finished in satin enamel as per 2.2 above.

So you can see the advantage of doing a specification in this manner, the main thing is that you only have to write out the sequence of coating a particular surface once as against the room-by-room method.

You will note that the method used in the Specification Sample “Schedule of Works” is the room-by-room method.

**COLOUR SCHEDULE**

Colour schedules are a very important part of the specifications. Colours specified for a project are usually selected by the client and reflect the client’s personal taste. It is imperative that the colours applied are exact to the client’s request. The colour schedule stipulates the choices made and can be specified in various ways. Written descriptions of colours can be included in the Works Schedule beside each item (see 1 below) to be painted or in the Colour Schedule (see 2 below). Below are some examples.

1. Colours Within a Works Schedule

**Testing Area (Laboratory)**

Ceilings – Plasterglass previously painted in PVA to be painted.

Clean ceiling from dust, grease and wax.

If new or suspect surface, use a pigmented oil-based sealer

Fill any holes, cracks with filler.

Sand down patches and dust off.

Apply two finish coats by roller, brush or spray of Latex Flat (Dulux) *Mushroom*.

*Note: A colour card containing the colours for the project would assist those submitting tenders to decipher which colours will likely require 2 or 3 coats, for coverage purposes, such as colours with specific tint bases.*
2. Colour Schedule

**Testing Area (Laboratory):**

- **Ceiling:** Mushroom (Dlx)
- **Walls:** Mushroom (Dlx)
- **Woodwork:** White

**Office 1:**

- **Ceiling:** White
- **Walls:** Cream Pastel (Taub)
- **Woodwork:** White

Note: Some colour schedules merely stipulate the areas to be painted and in written form state the name of the colour. It is then up to the contractor/tenderer to locate colour cards to acquaint themselves.

*Fig. 1.7 Colour schedule*

**DRAWINGS**

This section of a specification is usually at the conclusion. It includes diagrams that provide the tenderer/contractor with information to familiarise themselves with the project location and its surrounding areas. If the painting work is internal there may be a floor plan inserted highlighting the rooms to be painted. If the work is external, a site plan highlighting the building(s) to be painted is shown.
1.3 SAMPLE OF A SPECIFICATION

SPECIFICATION
for
Renovation of MGW Factory and Residence
at
9 Freeway Court, Osborne Park, WA 6022
for
Mr. J. Brown

Under the direction of the Superintendent
Mr. L. R. Tames & Associates
19 Vickers Street
WEST PERTH  WA  6000
CONTRACT

Renovation of MGW Factory and Residence
at
9 Freeway Court, Osborne Park, WA  6022

for

Mr. J. Brown

Under the direction of the Superintendent
Mr. L. R. Tames & Associates
19 Vickers Street
WEST PERTH WA  6000

Being the undersigned and having read the Specification, including all notices to tenderers together with all conditions of contract, do hereby Tender in lump sum to execute and perform the works herein specified.

I/We (name)  …………………………………………………………………………………

Of (company) …………………………………………………………………………………

Address  ………………………………………………………………………………………

Our total offer for the above Contract is the sum of:

$………………………     In words………………………………………………………………

…………………………………………………………………………………………………..

SIGNED BY THE PRINCIPAL

……………………………………………

(Witness)  ……………………………

Date:         /    /20  Date:         /    /20

SIGNED BY THE CONTRACTOR

……………………………………………

(Witness)  ……………………………

Date:         /    /20  Date:         /    /20

Sample Contract
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Specification sample contents page
INVITATION TO TENDER
We are at present calling for tenders for painting and wallpapering.

Location
Renovation of MGW Factory and Residence
at
9 Freeway Court, Osborne Park, WA  6022

Extent of Work
To supply of materials and labour for the painting and wallpapering to new and existing buildings.

Principal

Superintendent

Engineers

Quantity Surveyor

Tenders close at .................. on the ................................................................. in the Superintendent’s office.
PRELIMINARIES

1. INFORMATION FOR TENDERERS

1.1 Tenders
(a) Tenders shall be lump sums for the whole of the contract and not subject to cost fluctuation.

(b) Deliver tender in sealed envelope bearing the name of the Tenderer and the project to the Superintendent’s office at or before the closing time stated in the cover of the specification.

(c) Telephone tenders will not be accepted.

(d) Return tender documents to Superintendent’s office intact and complete at or before closing time.

1.2 Site Inspection
The Tenderer by submission of his/her tender acknowledges that he/she has and shall be deemed to have inspected the site and determined and allowed for all conditions on and surrounding the site, buildings and adjoining premises, all as found at the time of the tender and as may affect the carrying out of the contract.

1.3 Scope of Contract
This contract shall include all materials, labour, plant equipment and scaffolding as necessary for the due and proper completion of works as set out in the documents and this specification. Should any dispute arise as to the meaning of the documents regarding any item in this contract, the same shall be referred to the Superintendent. The term "Superintendent" will also apply to any authorised representative appointed by the Superintendent.

1.4 Contract Document
The following shall form the contract:

(a) Lump sum contract for all painting and works.

(b) This specification.

1.5 Supplement to the Preliminaries
Attention is drawn to the preliminaries setting out contract information not specified in the conditions of contract or in schedules or appendix thereof. The supplement is bound at the end of the Preliminaries and is part of the specification.

1.6 Consultants
Consultants engaged by the proprietors or the Superintendent for the purpose of this contract and their authorised duties are set out in the supplement to the Preliminaries.
1.7 Superintendent’s Authorised Deputies
(a) The contractor shall not receive instructions regarding the work from persons other than those named by the Superintendent in writing to the contractor as authorised deputies of the Superintendent.
(b) Consultants shall be authorised deputies of the Superintendent if so authorised in the supplement to the Preliminaries.

1.8 Artists and Special Tradesmen
Artists and special tradesmen, in accordance with the conditions of the contract are named in but not limited to those names in the Supplement to the Preliminaries.

2. GENERAL PRELIMINARIES

2.1 Cross References
Cross references are used in this specification for convenience only and shall not have any significance in the interpretation of the specification.

2.2 Safety
The contractor shall execute the works and ensure that the work is executed in a thoroughly safe manner and he/she shall be responsible for injury resulting from unsafe conditions.

2.3 Protection of Site and Adjacent Property
(a) Do everything necessary to ensure safety and freedom from injury, damage and interference of all adjacent public or private lands, wages, services and all other adjacent real or personal property whatsoever and of persons at any time in the vicinity of the site.
(b) At all times, take all reasonable steps to minimise nuisance to adjacent owners, their tenants and others (including nuisance from noise, dust, debris and obstructions) arising from the works.

2.4 Insurance
The contractor shall effect insurance as required by the Conditions of contract with an approved company and in the joint names of him/herself and the Principal (herein after referred to as "the insured") and as set out under clause A6.4 e and f in Supplement to Preliminaries. The contractor shall lodge cover notes with the Superintendent prior to commencement of any work on the site.

2.5 Principal
Principal reserves the right to supply materials and labour or both as a nominated sub-contractor, or nominated supplier, or may require certain works not included in the contract.
2.6 Notices and Fees
Give all notices; pay all fees, as required in connection with the contract and the contract period; in particular, Local Authorities.

3. **TIME CLAUSES**
Refer to Supplement to Preliminaries.

3.1 Delays for Wet Weather
Extensions of time due to rain will be granted for each wet day, in each month in excess of the average number of wet days for the month, as recommended by the Bureau of Meteorology.

3.2 Overtime
Allow for whatever overtime is necessary in order to bring the works to practical completion by the due date. No extension of time will be considered for delays on Saturdays, Sundays or Public Holidays.

3.3 Delays Arising From Disputes With Others
The contractor shall not be entitled to any extension when delay has been by proceedings or disputes with adjacent or neighbouring owners or occupiers where such proceedings or disputes arise from any act of the contractor other than any act required by the contract.

3.4 Works Programme
(a) Provide to the Superintendent, within two weeks of signing the contract, a Works Programme showing the following:
   (i) Practical Completion on or before the due date.
   (ii) Date for commencement of work on site.
   (iii) Commencement and completion dates for each section of this specification.

(b) The works programme and any amendments thereto shall not relieve the contractor of any of his/her responsibilities under the terms of the contract.

(c) As soon as practicable after any information shown on the Works Programme is rendered incorrect, for any reason, provide amended copies.

4. **PAYMENTS AND CONTRACT SUM ADJUSTMENTS**

4.1 Contingency Sum
(a) Allow the contingency sum of Three thousand three hundred dollars ($3,300) which shall be expended wholly or in part on written approval of the Superintendent only. Any unexpended part of this sum at the completion of the contract shall be deducted from the contract sum.
4.2 Progress Payments  
(a) The contractor shall be required to accurately and clearly submit a progress payment statement with itemised details of work done.  
(b) Details of work done as variation are to be separately scheduled in each statement.

4.3 Security in Lieu of Retention  
The Principal agrees to a bank guarantee or other mutually acceptable form in lieu of retention.

4.4 Valuation of Variation  
(a) Not later than the date of signing the contract, submit to the Superintendent for approval full details of the proposed method of valuing variations in each of the following categories and stating items for contractors’ margin for profit and overhead:  
   (i) Extra works  
   (ii) Omitted works  
   (iii) Variations involving related extras and omissions  
   (iv) Variations to work of nominated sub-contractors or nominated suppliers.

5. SUB-CONTRACTORS

5.1 Sub-contractors Other Than Nominated Ones  
Shall only be permitted to such works that normally are not carried out by the contractor.

5.2 Sub-contract Agreements  
The contractor shall enter into sub-contract agreements with all subcontractors whether nominated by the Superintendent or selected by the contractor.

5.3 Consent for Sub-letting  
Within 14 days of acceptance of tender the contractor shall supply the Superintendent with a complete schedule of Sub-contractors selected by the contractor to execute certain works.
6. SUPPLEMENT TO THE PRELIMINARIES

6.1 Consultants Engaged by the Principal

(a) ENGINEERING

(b) QUANTITY SURVEYOR

(c) NOMINATED SUB-CONTRACTOR

6.2

(a) (i) Date of possession shall be ..........................................
(ii) Commencement date shall be ..........................................
(iii) Completion date shall be on or before..........................
(iv) Practical completion date shall be ................................
(v) Final completion date shall be ......................................

(b) Only registered Painters shall be eligible to tender for the contract.

(c) Liquidated damages shall be $3,300.00 per day.

(d) Percentage to cover fees of Superintendent and other consultants shall be 5%.

(e) Public and Employer liability insurance shall be no less than one million dollars.

(f) Workers Compensation insurance shall be as required by the act 1911-1970 of Western Australia.

(g) Defects liability period shall be no less than 6 months.

(h) Retention fund shall be 5% of contract sum.

(i) All employees shall be union members.
PAINTING

1. GENERAL CONDITIONS APPLYING TO PAINTING

1.1 Notice to Sub-contractors: Reference should be made to the Preliminaries Section.

1.2 Colour Scheme: Give at least three weeks notice to the Superintendent of the date of requiring a colour scheme or schedule. Do not commence any work that may affect finishing colours before receipt of schedule.

1.3 Responsibility of Backgrounds: Ensure that backgrounds are suitably prepared to receive finishes. Commencement of work on backgrounds implies acceptance by the Painter of the Builder’s work on which finishes are applied and the edges up to which they finish.

1.4 Materials Generally: All coats on each surface shall be from the same manufacturer.

1.5 Preparatory Products: Use only preparatory products of types suitable for use with materials to which they are applied and with subsequent finishes. Use preparatory fillers of the same brand as subsequent finishes wherever possible. Tint fillers used on timber to be clear finished, to match the timber colour.

1.6 Storage and Disposal: Place materials constituting fire hazards in suitable containers, or remove or destroy them daily. Do not discharge waste materials into sanitary fittings. Collect liquid waste materials in moveable receptacles and dispose of them regularly.

1.7 Protection: Protect surfaces not to be coated by means of masking tape, dust sheets. Protect wet surfaces by use of screens, signs or other appropriate means.

1.8 Removal of Fittings: The Builder will arrange for Joiner or Carpenter to remove and replace locks, bolts, door handles and any other hardware for protection during painting.

1.9 Testing and Samples:

(a) Testing of Paints used on the works may be done by the Superintendent taking samples of these paints for testing purposes at his discretion.

(b) Samples —…………………

1.10 Workmanship Generally: All painting carried out on this area of works shall be done by a qualified tradesperson in a tradesperson-like manner.
1.11 Material Types and Application:
   (a) Refer to the Schedule of Work Required by Painter for material types and their application procedures.

1.12 Application Generally: Unless otherwise specified in the Schedule of Works section:
   (a) Apply products as container consistency unless otherwise recommended by the manufacturer of the coatings concerned.
   (b) Hand sand intermediate coats with light gauged sandpaper or wet and dry paper or as recommended by the coating manufacturer.
   (c) Provide adequate ventilation and dust free atmosphere (where possible). Apply coats to thoroughly dry surfaces unless otherwise recommended by the coating manufacturer. Do not apply external coats in conditions likely to affect the finish adversely. Observe drying times as recommended.
   (d) Observe manufacturers’ drying time allowances.

1.13 Bottoms of Doors: Coat bottom edges of external doors before installation and as specified for their external faces.

1.14 Joinery and Primers Generally: Ensure that joinery required elsewhere in this specification is to be primed before fixing. Prime other joinery immediately after fixing. Priming in this clause should also include the first coat of clear finish work where required.

1.15 Making Good and Touching up: Make good, touch up, or replace coatings damaged before practical completion date. Make good, touch up or replace priming and sealing coats where necessary, with materials recommended by the manufacturer of the coating concerned.
SCHEDULE OF WORK REQUIRED TO BE PAINTED

1. OFFICES (Interior)

1.1 Manager’s Office

1.1.1 CEILING – Polystyrene. To be painted – previously painted.
   - Remove all dirt, dust, grease or wax.
   - Fill surface holes, cracks with smooth filler.
   - Sand down filled patches and seal patches with water-based sealer.
   - When touch ups are adequately dry, apply two coats by either roller or brush or spray of acrylic flat.

1.1.2 WALLS – CEMENT RENDER. To be painted – previously painted.
   - Remove all dirt, dust, grease or wax.
   - Fill surface holes, cracks with filler. Use brush or sponge to make patches in texture as close as possible to the existing render.
   - When dry, seal with water-based sealer.
   - When touch ups are adequately dry apply two coats by roller, brush or spray of satin acrylic.

1.1.3 WOODWORK – JARRAH. Previously varnished – to be painted.
   - Strip all varnish to bare wood by using paint-stripper.
   - Neutralise paint stripper as per manufacturer’s instructions.
   - Coat with bleed seal.
   - Fill all holes and cracks with linseed oil putty.
   - Sand down and dust off.
   - Give one coat of oil-based undercoat.
   - Sand down and dust off.
   - Give two coats of oil-based enamel.
1.2 General Office

1.2.1 CEILING – Acoustic Tiles. Previously painted – to be painted.
Remove all dirt, dust, grease or wax.
Fill cracks with filler.
Sand down and dust off.
Apply either by brush or roller two full even coats of acrylic flat.

1.2.2 WALLS – Plasterboard covered in linen-backed vinyl in bad condition.
Remove vinyl by loosening bottom corner with a scraper then peel off by pulling from the bottom.
Check all areas and patch and fill cracks and holes with filler.
Sand wall with mechanical sander and dust off to remove all dust.
Size walls.
When adequately dry, apply linen-backed vinyl to walls from skirting top to cornice.

1.2.3 WOODWORK – Jarrah previously painted – to be varnished.
Strip off all paint with paint stripper.
Neutralise paint stripper as per manufacturer’s instructions.
Sand down well to a smooth and even looking surface.
Dust off well.
Seal all woodwork by brush, using first coat semi-gloss polyurethane.
When adequately dry, fill all holes, cracks, knots with linseed oil putty.
Sand down and dust off well.
Apply by brush, two finish coats of semi-gloss polyurethane allowing adequate drying time and lightly sanding between coats.

2. STAFF FACILITIES

2.1 Lunch Room

2.1.1 CEILING – Plasterglass, previously coated in PVA but smoke stained, to be painted.
Wash off ceiling and treat smoke stain.
Fill any holes, cracks with filler.
Sand patches down and dust off well.
Seal patches with oil-based sealer.
When adequately dry, apply two finish coats of flat enamel.
2.1.2 WALLS – Cement render, previously coated in satin enamel, smoke stained – to be painted.

Walls to be thoroughly washed with sugar soap to remove as much of smoke stains, grease, wax, dirt, dust as possible. Remove any flaking or powdering paint.

When walls are completely dry, patch any holes, cracks with filler. Lightly sand down walls also smoothing down patches. Dust off.

Seal patches with oil-based sealer.

When adequately dry, undercoat wall by roller, brush or spray.

When adequately dry, apply two finish coats of satin enamel either by roller, brush or spray, allowing adequate drying time and lightly sanding between coats.

2.1.3 WOODWORK – Jarrah previously coated in gloss enamel, to be painted.

Clean down all woodwork so it is free from all dirt, dust, grease and wax, either with sugar soap or ammonia.

Thoroughly sand down to provide key for painting system, dust off well.

Fill all holes, cracks with linseed oil putty.

Lightly sand down and dust off.

Undercoat all woodwork with oil-based undercoat.

Sand down lightly when undercoat is dry and dust off.

Apply two coats of high gloss enamel. Apply by roller or brush, allowing adequate drying time and lightly sanding in between coats.

2.2 Toilet and Change Rooms Male and Female

2.2.1 CEILING – Gyprock previously coated in PVA showing mould and flaking, to be painted.

Clean ceiling free from all loose flaking or powdering paint. Surface must also be washed clean of any mould or mildew, dust, dirt, grease using sugar soap and bleach. Allow ceilings to completely dry before painting.

Apply one coat of a mould deterrent material.

Apply one coat of acrylic sealer to be applied by brush or roller.

Fill all holes, cracks, with filler.

When dry sand down patches and dust off.

Apply two finish coats of acrylic flat.
2.2.2 WALLS – Hardwall plaster previously coated in gloss enamel, to be painted.
Refer to section 2.1.2.
Instructions to be applied to all walls.
Finish instructions but use two coats of gloss enamel.

2.2.3 WOODWORK – Jarrah, previously glossed, to be painted.
Refer to section 2.1.3.
Instructions to be applied to all walls.
Finish with gloss enamel.

3. OPERATIONAL AREA

3.1 Grinding Area

3.1.1 CEILINGS AND WALLS – Galvanized corrugated iron, showing signs of rust, to be painted.
Remove all rust and mill scale by mechanical and hand methods, using chipping hammer, derusting pistols, wired brushes or any other suitable mechanical or hand tool.
Treat rusted area with rust remover, to the specification of the manufacturer.
When dry, spot prime with red oxide metal primer.
When dry, apply one coat of oil-based primer either by brush, roller or spray.
Apply two finish coats of roof paint either by brush, roller or spray, allowing adequate drying time in between coats.

3.1.2 GUARD RAILS – Galvanized pipe previously painted with gloss enamel. Most of the paint has been worn, to be painted.
Clean down all rails so they are free from all dirt, dust, grease and wax.
Sand down and dust off.
Apply one coat of oil-based primer.
Sand down lightly and dust off.
Apply two finish coats of gloss enamel allowing adequate drying time and lightly sanding between coats.

3.1.3 DOORS – New galvanized iron. Not to be painted.

3.1.4 MACHINERY – not to be painted.
3.1.5 STORAGE CONVEYORS DUCTED THROUGH WORKSHOP –

Exterior and interior steel previously coated in Epoxy, to be recoated.

Sand down well by mechanical tools and dust off.

Wash down with mineral turpentine or white spirit to remove any grease.

Apply one coat epoxy primer by brush, roller or spray.

When adequately dry, apply by airless spray, two coats of epoxy. Leave adequate drying time between coats. Follow manufacturer’s instructions.

4. TESTING AREA

4.1 Laboratory

4.1.1 CEILINGS – Plaster glass previously painted in PVA, to be painted.

Clean ceiling free from any dust, dirt, grease, wax.

If new or suspect surface, use a pigmented oil-based sealer.

Fill all holes, cracks with filler.

Sand down patches, dust off.

Apply two finish coats either by roller, brush or spray of latex flat.

4.1.2 WALLS – Plaster glass previously painted in PVA, to be painted

Clean walls free from dust, dirt, grease, wax

If new or suspect surface, use a pigmented oil-based sealer.

Fill all holes, cracks with filler.

Sand down patches, dust off and seal with oil-based pigmented sealer.

Apply either with a brush or roller, two finish coats of acrylic flat.

4.1.3 WOODWORK – Jarrah, varnished, to be painted.

Refer to section 1.1.3

Instructions to be applied to woodwork.

Finish in two coats of gloss enamel.
## 5. CARETAKER’S QUARTERS

### 5.1 Entry Hall

#### 5.1.1 CEILINGS – Gyprock, new, to be painted.
Dust off ceilings to remove any dirt, dust.
Seal gyprock by applying one coat of water-based sealer, applied to ceiling and cornice. Application either by roller or spray.
Patch any holes, cracks in ceiling and cornice with filler when sealer is dry.
Lightly rub down patching and ceiling to remove any nibs and reseal patching or broken sealer with water-based sealer.
When adequately dry, apply two finish coats of PVA to ceiling and cornice.

#### 5.1.2 WALLS – Gyprock, new, to be wallpapered.
Dust off walls to remove any dirt, dust.
Seal gyprock by applying one coat of water-based sealer to walls.
Patch any holes, cracks in walls, when sealer is dry.
Lightly rub down patching and walls to remove any nibs and reseal patching or broken sealer with water-based sealer.
When adequately dry, prepare walls by coating with one coat of oil sealer, to stop suction. Apply by roller, brush or spray.
When adequately dry lightly rub down walls and apply one coat of size to walls. Apply by brush or roller.
Apply wallpaper to walls to manufacturer’s recommendations.

#### 5.1.3 WOODWORK – New jarrah, to be painted in satin enamel.
All woodwork to be dusted down to clean free from all dirt, dust.
Apply oil-based pink primer to woodwork.
When primer is dry fill any holes, cracks, knots with linseed oil putty.
When filler is dry sand down all woodwork to a smooth finish.
Dust off and apply one coat of undercoat by either roller or brush.
When dry, lightly sand down, dust off and apply two coats of satin enamel. Allow adequate drying time and lightly sand in between coats.
5.2 Lounge

5.2.1 CEILINGS – Ceiling pine planking, clear finish.
   Clean off all dirt, dust, chalk, timber stamp, markings.
   Apply three coats of semi-gloss polyurethane by brush, allowing adequate drying time and lightly sand in between coats.

5.2.2 WALLS – Gyprock to be painted. Finished in low sheen acrylic.
   Dust off walls to remove any dirt, dust.
   Apply one coat of water-based sealer.
   Fill any holes, cracks, with filler.
   When filler is dry, lightly sand to an even, smooth finish.
   Apply first coat of low-sheen acrylic by roller.
   Apply second coat of low-sheen acrylic by roller.

5.2.3 WOODWORK – Jarrah, to be varnished.
   Sand down to remove all foreign marks, dirt.
   Seal all woodwork using one coat of semi-gloss polyurethane.
   When adequately dry, fill any holes, cracks, knots, sand down and dust off, using tinted linseed oil putty to match jarrah woodwork.
   Apply two coats of semi-gloss allowing adequate drying time and lightly sanding in between coats; apply by brush.

5.3 Dining Room

5.3.1 CEILING – Exposed jarrah beams with caneite panels.
   Caneite to be painted.
   Dust down to remove any dirt, dust, remove any grease or wax.
   Apply one coat of water-based sealer, by either roller or brush.
   When dry fill any holes, cracks with filler.
   When filler is dry, sand patching and reseal patches with water-based sealer.
   When adequately dry apply two coats of finish by either roller or brush, allowing adequate drying time between coats.

5.3.2 BEAMS – Clean finish.
   Refer to section 5.2.1.
   Finish in polyurethane semi-gloss.

5.3.3 WALLS – One wall to have a mural wall covering over gyprock surface. Three walls – plywood, to be stained.
5.3.3.1 NORTH WALL – Wall papered in mural.
Refer to section 5.1.2.
Instructions to be followed.
Apply mural to wall following manufacturer’s instructions.

5.3.3.2 REMAINING WALLS – plyboard, to be stained.
Clean off all dirt, dust, chalk, timber stamp, pencil marks.
Apply one coat of stain to wall panels according to the manufacturer’s instructions, to match jarrah woodwork.
Sand down lightly.
Apply three coats of semi-gloss polyurethane by brush.
Sand lightly between coats.

5.3.4 WOODWORK – Jarrah to match stained walls.
Refer to section 5.2.3.
Instructions to be followed.
Finish in semi-gloss.

5.4 Bedrooms 1, 2 and 3

5.4.1 CEILINGS – Gyprock, to be wallpapered. Cornice gyprock, new.
Unpigmented binder sealer on all points.
Refer to section 5.1.2.
Instructions to be followed.
When adequately dry, prepare ceiling by coating with one coat of alkyd sealer to stop suction. Application either by roller, brush or spray.
When adequately dry, lightly sand down ceiling and apply two coats of PVA to cornice only, allowing adequate drying time between coats.
When cornice is dry, apply one coat of size to ceiling area only.
Apply by brush or roller.
Apply wallpaper to ceiling, cornice to be left clean.
NOTE: Colour scheme for Bedrooms 1, 2 and 3 to follow.
5.4.2 WALLS – Gyprock, to be wallpapered.
Dust off walls to remove any dirt, dust.
Seal gyprock by applying one coat of water-based sealer to walls.
Apply by roller or spray.
Patch any holes, cracks in walls with filler.
Gently rub down patching and walls to remove any nibs and reseal patching or broken sealer.
When adequately dry, prepare walls by coating with one coat of alkyd sealer to stop suction. Apply by either roller or spray.
When adequately dry, lightly rub down walls and apply one coat of size to walls.
Apply wallpaper to walls from top of skirting to cornice. Cornice to be left clean.

5.4.3 WOODWORK – Jarrah, new. To be varnished.
Refer to section 5.2.3.
Instructions to be followed.
Finish in semi-gloss.

5.5 Kitchen

5.5.1 CEILING – Gyprock, new. To be painted.
Refer to section 5.1.1
Instructions to be followed, as set out.

5.5.2 WALLS – Upper gyprock to be wallpapered. Rest of gyprock to be covered in linen-backed vinyl.
Refer to section 5.1.2
Instructions to be followed.
For upper, use wallpaper. For rest use linen-backed vinyl.

5.5.3 CUPBOARD – Masonite, to be painted.
Dust off cupboard to remove any dirt, dust.
Apply one coat of pigmented sealer then one coat of undercoat, sand lightly in between coats and fill any holes with poly putty.
Sand down and dust off.
Apply two finish coats of gloss enamel. Apply either by roller, brush or spray. Sand lightly in between coats.

5.5.4 WOODWORK – Jarrah, new. To be varnished.
Refer to section 5.2.3.
Instructions to be followed.
Finish with semi-gloss varnish.
5.6 Bathroom, Toilet, Laundry

5.6.1 CEILING AND WALLS – Hardiflex or similar, to be painted.

Dust off ceiling and walls to remove any dirt, dust. Remove any signs of grease or wax.

Apply one coat of water-based sealer by either roller, brush or spray.

When adequately dry fill any holes, cracks, joints using filler.

When filling is dry, sand down filling. Sand ceilings and walls and dust down and reseal patches.

When touch ups dry, apply two finish coats of semi-gloss acrylic by either roller, brush or spray, allowing adequate drying time between coats.

5.6.2 WOODWORK – Jarrah, new. To be painted in satin enamel.

Refer to section 5.1.3.

Instructions to be followed.

Finish in satin enamel.
6. EXTERIOR

6.1 Office

6.1.1 WALLS – Cement render, sand finish. Previously coated in PVA to be painted.
Dust off (use broom or rough brush) all walls to remove any loose materials, dust, dirt.
Fill any holes, cracks making sure to keep texture of filling as close as possible to existing texture.
When filling is dry, seal patches with exterior acrylic flat.
When touch ups are dry, apply two coats of exterior flat acrylic by either roller, brush or spray allowing adequate drying time between coats.

6.1.2 EAVES – Hardiflex sheeting previously coated in PVA, to be painted.
Dust off (with broom) all eaves and remove any loose materials, dust, dirt.
Apply two coats of flat PVA by either roller brush or spray, allowing adequate drying time in between coats.

6.1.3 FASCIA – Timber previously gloss enamelled, in bad condition. To be painted.
Remove all loose, flaking blistering or powdering paint by either hand or mechanical sanding.
Dust off and spot prime any bare timber areas using acrylic primer.
Fill any holes, cracks with linseed oil putty.
When filling is dry, lightly sand down and completely coat all fascias with acrylic primer.
When all primer is dry, sand down and dust off fascia, apply two coats of acrylic gloss allowing adequate drying time in between coats.

6.1.4 GUTTER – Metal previously gloss enamelled, in bad condition. To be painted.
Remove all blistered flaking, loose or powdering paint by either hand or mechanical methods.
Dust down and wash down any loose and sanded materials. Treat to prevent white rust.
Spot prime any bare metal areas with oil-based metal primer.
When all priming has dried apply two coats of acrylic gloss to gutters, allowing adequate drying time and lightly sanding between coats.
6.1.5 ROOF – Galvanized iron, unpainted and showing signs of rust. To be painted.
Remove all blistered, flaking, loose paint and all rust by either hand or mechanical tools.
Dust down and wash roof to remove all loose and sanded material using turpentine or white spirit.
Spot prime all rust-affected areas with all metal primer or similar.
When dry, prime all surface area of galvanized iron by either roller, brush or spray.
When dry apply two coats of roof paint to roof by either roller, brush or spray, allowing adequate drying time between coats.

6.2 Factory
6.2.1 ROOF AND WALLS – Galvanized corrugated iron showing signs of rust and unpainted, to be painted.
Refer to section 3.1.1.
Instructions as set out to be followed.
6.2.2 GUTTERING – New aluminium, not to be painted.

6.3 Caretaker’s Quarters
6.3.1 WALLS – Hardiflex sheeting to match sand finish of office walls.
Dust down to remove all dirt and dust.
Apply one coat of acrylic sealer.
When adequately dry fill all holes, cracks.
When patching is dry, rub down patches and reseal.
When dry, apply one coat of Texture. Use the same colour as the office walls. Use a roller sleeve to give the closest texture to the texture of the office walls.

6.3.2 EAVES – Hardiflex sheeting, new. To be painted.
Dust down to remove all dirt, dust.
Apply one coat of flat PVA by either roller, brush or spray.
When adequately dry, fill all holes, cracks with filler.
When patching is dry, rub down patches and reseal.
When touch ups are adequately dry apply two coats of flat PVA by either roller, brush or spray, allowing drying time in between coats.

6.3.3 GUTTERS AND FASCIA – Metal, new. Not to be painted.
6.4 Storage Hoppers

6.4.1 HOPPERS – steel, previously painted in epoxy. To be painted.
   Sand down well by mechanical tools and dust off.
   Wash down with mineral turpentine or white spirit to remove any grease or oil.
   Apply by either roller, brush or spray one coat epoxy primer.
   When adequately dry apply by either roller, brush or spray two finish coats of epoxy allowing adequate drying time between coats.

6.4.2 SUPPORTS – unpainted galvanized steel. Not to be painted.

6.5 Exterior Sundries

6.5.1 MAJOR SIGN FOR BUILDING OPERATION (NAME) – On new zinc-anneal.
   Dust down free from all dirt, dust. Degrease sign completely with mineral turpentine.
   When dry apply two coats of etching primer, allowing adequate drying time between coats as per instructions. Apply first finish coat no more than six hours after priming.
   When dry lightly sand, dust off and apply two finish coats of 100% acrylic exterior coating by either roller, brush or spray, allowing adequate drying time between coats.
   When background is completely dry, signwrite signs in two coats of 100% acrylic exterior coating, signs to be written GillSans lettering 600 mm high.

6.5.2 DIRECTION SIGN – To be painted on new galvanized iron.
   Refer to section 1.4.1.
   Instructions to be followed as set out.

6.5.3 SIGNS TO BE WRITTEN – Gill Sans lettering at 150 mm height.
   Five signs in all to be written:
   1. Entry
   2. Exit
   3. Visitors
   4. Staff Parking
   5. Loading Area

See sample sign as shown using scale 1 mm = 7.5 mm.
6.5.4 MANAGER’S OFFICE – To be gilded on door: MR. J. BROWN MANAGER.

Lay out sign on outside of glass either with grease or pencil.
Clean inside of glass very thoroughly.
Apply size made by dissolving gelatin in hot water. Use a water size brush.
Apply pieces of gold leaf to wet glass with sufficient numbers to cover completely and overlap.
When leaf is dry apply second coat of size, patch any holes with small pieces of leaf.
When dry, paint lettering on back of leaf using quick drying paint.
When the backing is dry, remove excess leaf outside of the painted portions using a damp cloth.
When dry, apply one coat of varnish over lettering only.

6.6 Car Park Markings

Clean car park areas to be marked free from all dirt, dust also making sure area is completely dry. Degrease any areas to be marked where there are signs of oil or grease, using mineral turps or mild caustic washes.

When areas are prepared and marked out apply two coats of road marking paint by roller, brush or spray, allowing adequate drying time between coats. (See drawings.)
# COLOUR SCHEDULE
*(Factory Interior)*

## 1. OFFICES

1.1 **Manager’s Office**
   - **CEILING** – acrylic flat White
   - **WALLS** – satin acrylic Cashmere (Dulux)
   - **WOODWORK** – gloss enamel Cashmere (Dulux)

1.2 **General Office**
   - **CEILING** – acrylic flat White
   - **WALLS** – linen-backed vinyl Dirse 567-988 (Croms)
   - **WOODWORK** – semi-gloss polyurethane Clear

## 2. STAFF FACILITIES

2.1 **Lunch Room**
   - **CEILING** – flat enamel White
   - **WALLS** – satin enamel Hat Cream (Dulux)
   - **WOODWORK** – gloss enamel Hat Cream (Dulux)

2.2 **Toilet and Change Rooms Male and Female**
   - **CEILING** – acrylic flat White
   - **WALLS** – gloss enamel Page Blue (Dulux)
   - **PARTITIONS** – gloss enamel Ciane (Dulux)
   - **WOODWORK** – gloss enamel Ciane (Dulux)
3. OPERATIONAL AREA

3.1 Grinding Area
  3.1.1 CEILINGS AND WALLS – roof paint Pale Grey (Dulux)
  3.1.2 GUARD RAILS – gloss enamel Safety Yellow (Dulux)
  3.1.3 DOORS – New galvanized iron Not to be painted.
  3.1.4 MACHINERY – not to be painted.
  3.1.5 STORAGE CONVEYORS DUCTED THROUGH WORKSHOP
    − Exterior Epoxy Vermont (Dulux)

4. TESTING AREA (LABORATORY)

4.1
  4.1.1 CEILINGS – latex flat Sand (Dulux)
  4.1.2 WALLS – acrylic flat Sand (Dulux)
  4.1.3 WOODWORK – gloss enamel Sand (Dulux)
1.4 OTHER FORMS OF SPECIFICATIONS

The previous section discussed in detail sections of a specification commonly used by superintendents, architects and builders. These would be for larger, more commercial type projects.

However, a painter will come in contact with other forms of specifications. In one form or another a contractor should produce small or mini-specifications when working out charges and the extent of work that he/she is going to do for smaller jobs. This would be the case where a painter produces a “quote” or “estimate” for domestic work, though not restricted to these size projects.

Quotations and Estimates

Quote
A quote is an itemised cost of the work to be carried out by the contractor and the contractor is bound to complete the work to that specified, fixed price. If the quote is for the immediate future and is a short-term job then this is the method to be adopted to cover oneself. A quote should have a validity date attached, eg:

“This above quotation is valid for 30 days."

If the job is not to be commenced for a lengthy period of time then the submission of an "Estimate" would be preferred to a quote.

A quote is only binding if the details and the price contained in its structure are agreed upon by all parties concerned and signed preferably in the presence of a witness.

Estimate
An estimate is only a suggested price for the job in question, but may be subjected to what are loosely referred to as Variation in Price or Rise and Fall clauses. The estimated price may be changed to meet the ever-increasing costs in wages and materials. Most major building projects are based on the estimate figure rather than a quote as the time factor between the commencement and completion of the job may exceed 12 months. With that period of time the cost of materials and labour may increase considerably.

The estimated price should be reviewed frequently and if necessary the costs involved can be increased.

<table>
<thead>
<tr>
<th>COMPARISON OF ESTIMATE AND QUOTATION</th>
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<tr>
<td>Aspect</td>
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<td>2. Time Frame</td>
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<td>3. Format</td>
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<td>4. Validity Period</td>
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Table 1.2
SETTING OUT A QUOTATION

When setting out a quote for major work you normally have a specification as a guideline. Should you deviate from that which is specified, the architect or proprietor can sue you in a court of law for breach of contract.

In cases where small works are being carried out and no specification is presented to you it is important that you write one. When writing or drawing up a quotation ensure that all details concerning each area to be painted are precise.

The reason for doing this is two-fold:
1. It gives the proprietor an exact description of the work and standard of work to be done at the price quoted.
2. It gives the contractor a guide to which he/she can achieve a price.

Once the client accepts the price submitted, the quotation should be signed by both parties and a witness (if possible). This then gives both parties a legal document and firm contract.

There are a variety of ways of setting out a quotation. They can include the following:

- Itemised Format (Fig 1.8)
- Letter Format (Fig 1.9)
- Table Format (Fig 1.10)

Whichever way is chosen, the setting out should be concise and to the point.
Joe Bloggs Painting Service  
27 Round Rd,  
PERTH WA 6000  
Ph. 9344 5670  
Reg. No. 3456  
ABN: 987 657 890

Date: 26 August, 2003

Re: Painting of Lounge Room to premises at 32 Smith Street, North Perth for Mr and Mrs I Jones

Ceiling: Wash and fill all cracks, holes and imperfections, such as gaps, dents, scratch and gouge marks, cracks and flaking plaster.  
Apply two coats of white PVA.

Walls: Wash and fill all cracks, holes and imperfections, such as gaps, dents, scratch and gouge marks, cracks and flaking plaster.  
Apply two coats of acrylic low-sheen Mushroom (Dulux)

Woodwork: Rub down and fill all imperfections.  
Apply one coat of all-purpose white undercoat.  
Apply one coat of white gloss enamel.

Supply all equipment, labour and materials, including GST – $350.00

Signatories:  
Proprrietor: .............................................  
Contractor: .............................................  
Witness: .............................................  
Date of signing ...........................................
Mr & Mrs I Jones
32 Smith Street
NORTH PERTH WA 6001

Dear Mr & Mrs Smith

Thank you for allowing me to submit a quote for the painting of your lounge room at the above address. Please find below a detailed description of works according to your requirements.

Ceiling: Wash down and fill any imperfections. Apply two coats of Flat Acrylic. White

Walls: Wash down and fill all imperfections. Apply two coats of Low Sheen Acrylic. Mushroom (DULUX)

Woodwork: Rub down and fill all imperfections. Apply one coat of white all-purpose undercoat. Apply one coat of gloss enamel. White

This quote is valid for 30 days and the total amount will be considered payable at completion of work. Workmanship is guaranteed for 18 months.

The above-mentioned work will be carried out in a tradesman-like manner. I will be supplying all equipment, labour and materials for a total cost of $350.00 (including GST).

Yours faithfully

JOE BLOGGS

I/We ________________________ of __________________________
Agree to the above terms and hereby authorize Joe Bloggs Painting Service to commence work at a mutually agreeable time.

_____________________   ___________________________________   __________
OWNER    Joe Bloggs Painting Service    Date

Fig. 1.9 Quotation: Letter format
**We use and Recommend**

![Taubmans Logo]

**PAINTING QUOTATION**

For work to be carried out

**QUOTED BY**

FOR ____________________________

OF ____________________________

**JOB LOCATION**

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<tr>
<th>EXTERIOR WORK</th>
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**INTERIOR WORK**

N.B. All surfaces to be painted will be clean, free of grease and dirt

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<th>Room</th>
<th><strong>Surface Preparation</strong></th>
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<th><strong>Colour</strong></th>
<th><strong>Costs</strong></th>
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<tr>
<td>Ceiling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Skirtings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architraves</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Walls</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Trim</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceiling</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Skirtings</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Architraves</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ADDITIONAL REQUIREMENTS / COMMENTS / EXTENT OF WORK**

---

**QUOTATION**

This quotation refers to the work detailed above.
The contractor agrees to do, in a workmanlike manner, the work specified herein. All materials, tools, equipment and labor to be furnished by the Contractor. The work will start ___________________ and will be completed on or before ___________________ weather and other conditions beyond Contractor's control permitting.

Contract Price: ___________________ Payment Terms: ___________________

Date: ___________________ Signature of Proprietor: ___________________

**Fig. 1.10 Quotation: Table format**
The preceding quotation formats all serve the same purpose. The second quote takes on the formation of a letter that allows you to mail it to your prospective client. With this form of quote you can make it slightly more personal as against the first form of quotation. However, the third quote is more streamlined and can be handed to the client the same day.

**NOTE:** Always keep a copy of all quotations as this allows both parties signing the quote some form of being able to check what work is to be done. Also you cannot be asked to do more than you stated in the quote for the agreed price.

### 1.5 SUB-CONTRACTS

A contractor, whether a painter, plumber, carpenter, etc., becomes a sub-contractor if and when he/she agrees to complete a schedule of work at a specified price from the builder. The builder then becomes the main contractor to the client and must see that all work is done to a satisfactory standard.

If the client is unhappy with the standard of work being carried out, then all complaints must be directed through the Building Contractor and not directly to the sub-contractor. Following are samples of two types of contracts that may be used by the builder or sub-contractor. The first is an agreement based on lump sum contracts or associated with a schedule of rates that the builder supplies to the contractor. The other is a labour only contract whereby all necessary materials are supplied and the contractor is merely required to provide the labour to complete the project.
Sample 1

SUB-CONTRACT AGREEMENT

Date: …………….. 20….

PARTIES

_________________________________________________________ ("Builder")

_______________________________________________________ ("Sub-contractor")

CONTRACT

1. (a) The Sub-contractor will complete the Works described in the Schedule ("the Works") in a workmanlike manner in accordance with relevant Plans and Specifications and in the time specified. If so indicated the Sub-contractor will complete the Works in stages by the dates respectively stated for each stage in the Schedule. All work will comply at least with "Acceptable Standards of Construction" issued by Lending Authorities.

(b) This is a *SCHEDULE OF RATES *LUMP SUM Contract. If "Lump Sum" the Contract Price shall be $……………………. (*Delete one). If “Schedule of Rates”, payment shall be made according to the schedule or Schedules of Rates annexed hereto or signed or initialled by the Parties.

COMPLETION

2. (a) If the Sub-contractor fails to complete the Works or any stage by the dates specified in the Schedule or within any extended time approved in writing by the Builder the Sub-contractor shall pay or allow by way of liquidated damages the sum stated in the Schedule for each week or part of a week during which the Works or the relevant stage shall remain incomplete.

(b) The Builder shall make a reasonable extension of time in respect of any delay not caused or contributed to by act or default of the Sub-contractors.
PAYMENTS
3. (a) Progress payments shall be made as provided in the Schedule.
(b) The Builder may retain ten percent of monies becoming due hereunder until the sum retained is equal to five percent of the amount payable hereunder and one half of the monies so retained will be released on the Builder taking over the Works and the other half will be released when the Sub-contractor shall have fulfilled any obligations arising under Clause 16 hereof or failing any such obligations on the expiration of the Builders Defects Liability Period.
(c) Before becoming entitled to any payment the Sub-Contractor shall deliver to the Builder if so required a statement signed by him/her that no wages are due and owing by him/her in respect of the Works at the date of payment.

VARIATIONS
4. (a) The Sub-contractor shall vary the Works as required by the builder but shall not be entitled to claim payment for any variation not authorised in writing.
(b) The price of any variation shall be added to or deducted from the Contract sum. Should the parties not agree upon a price the Builder may require the Sub-contractor to execute the variation, and the matter of price may be referred to arbitration in accordance with the provisions hereof. The Builder may have the variations carried out by another person, in which case the Sub-contractor will allow free access to such person, and his/her employees, as required.

HOURS OF WORK
5. No part of the Works shall be executed outside the ordinary working hours of the Builder without his/her consent, which shall not be unreasonably withheld.

REGULATIONS
6. The Sub-contractor will give all necessary Notices and pay all necessary fees and will comply with all provisions and requirements Statutory or otherwise relevant to the works.

INSURANCE
7. The Sub-contractor shall insure against liability at common law or under the Workers Compensation Act in respect of any person employed by him/her in or about the execution of the Works or in respect of whom he/she may be or become liable.
whether employed by him/her or not. The Sub-contractor also shall insure against liability to third persons or in respect of the property of third persons in an amount satisfactory to the Builder and shall lodge with the builder evidence that all insurances herein specified have been effected and that they are current from time to time.

**DEFAULT**

8. If the Sub-contractor shall become bankrupt or go into liquidation or if he/she shall make default in any of the following respects, viz:
   
   (a) if he/she wholly suspends the work before completion or
   
   (b) if he/she fails to proceed with reasonable diligence or in a competent manner, or
   
   (c) if he/she fails to comply with a notice from the Builder requiring him/her to remove and replace defective work or improper materials, or
   
   (d) if he/she commits any breach hereof THEN the Builder may by notice in writing terminate this Contract. Such termination shall not prejudice any right of the Builder to recover from the Sub-contractor damages for any breach by arbitration hereunder or otherwise.

**SCAFFOLDING**

9. Should the Sub-contractor or his/her employees or any sub-contractor from him/her be permitted to use any scaffolding or equipment belonging to or provided by the Builder THEN such use shall be on the express condition that no warranty or other liability on the part of the Builder will be created or implied as to the condition or suitability of the said scaffolding or equipment or otherwise.

**NOTICES**

10. Any notice to be given hereunder shall be deemed to be sufficiently given if served personally on the Sub-contractor or on his/her Representative on the job or on the Builder as the case may be or sent by prepaid post addressed to the person to whom it is necessary or required to be given at the address appearing herein or at his/her last known place of abode or business.

**SUB-LETTING**

11. The Sub-contractor will not assign this Agreement or sub-let any portion of the same without the written consent of the Builder, which shall not be unreasonably withheld.
REMOVAL OF WORKMEN
12. The Builder may require removal from the Works of any person employed by the Sub-contractor who in the opinion of the Builder is incompetent or misconducts themselves.

WAGES AND CONDITIONS
13. The Sub-contractor shall pay the rates of wages and observe and perform the conditions that are provided for in any relevant award or industrial agreement.

CLEANING UP
14. The Sub-contractor shall keep the Works clean and tidy as they proceed and on completion will remove all their plant and equipment and leave the Works clean and tidy ready for immediate use or occupation. If they shall fail to do so then the Builder may carry out whatever may be required and the cost thereof may be deducted from any monies due or becoming due to the Sub-contractor.

DAMAGE
15. The Sub-contractor will pay to the Builder the cost of making good any damage done by him/her or his/her Employees or sub-contractors to the Work of the Builder or of any other Sub-contractor.

DEFECTS
16. The Sub-contractor will maintain the Works until completion and thereafter make good all defects that may appear in the Works prior to the expiration of the Builder’s Defects Liability Period under the Head Contract.

DETERMINATION OF HEAD CONTRACT
17. Should the Head Contract be determined for any reason the Builder may determine this Contract and shall be liable to reimburse the Sub-contractor in respect of work already carried out and any other loss incurred in connection with the Works but the Sub-contractor shall not be entitled to recover loss of profit on the part of the Works not executed at the date of determination hereof.

INSPECTIONS
18. The Sub-contractor will comply with the Builder’s directions with regard to inspections by a Lending Authority.
DEFINITIONS

19. Words herein denoting persons shall also denote Limited Companies and words denoting the singular shall include the plural and vice versa.

ARBITRATION

20. Any dispute that may arise hereunder or in any way in connection with the Works and whether before or after the completion or determination hereof may be submitted at the instance of either party to arbitration in accordance with the provisions of the Arbitration Act WA 1895-1935.

SCHEDULE

DESCRIPTION OF WORKS

___________________________________________________
________________________________________________________________________________
________________________________________________________________________________

COMMENCEMENT DATE:          COMPLETION DATE:

In 3 stages – Stage 1:

Stage 2:

Stage 3:

LIQUIDATED DAMAGES: $……………… per day/week/month.

PROGRESS PAYMENTS: Claims not more frequently than .…………

Payment within .……… days.

……………………………………

(BUILDER) (Witness)

……………………………………

(BUILDER) (Witness)

(Issued by the Master Builders’ Association of W.A.)
Sample 2

AGREEMENT – LABOUR ONLY

THIS AGREEMENT made the ................................. day of ......................
20........... BETWEEN .................................................................

of .................................................................

(Hereinafter called “The Client”) of the one part, and .........................

of .................................................................

(Hereinafter called “The Registered Painter”)

WITNESSETH:

1. THAT the Registered Painter execute and complete for the Client in a proper and
tradespersonlike manner and strictly in accordance with the Specifications and the
contract drawings all the Work hereunder.

2. THAT the Client agrees to pay the Registered Painter the price stated in the First
Schedule hereto.

3. THAT the Client shall retain pending completion of the Works herein the sum
named in the First Schedule hereto, which sum shall be paid to the Registered Painter
upon completion as aforesaid.
4. THAT the Works herein shall be completed by ........................................ 20......
   PROVIDED THAT should any interruption or delay occur in respect of the Works or
   should the Registered Painter be prevented from proceeding with the Works by
   reason of delays due to acts or omissions of the Client then the completion date shall
   be extended by a reasonable and appropriate number of days.

5. THAT the Registered Painter hereby agrees that the Work under this Agreement
   shall be performed by workers who are self-employed within the meaning of the
   Workers Compensation Act 1912-1966 and that such workers are properly insured
   within the terms of the said Act whether by the Registered Painter or by themselves.

6. THAT if the Registered Painter shall neglect to proceed with the Works with due
   diligence the Client may give notice in writing to the Registered Painter and if the
   Registered Painter shall not proceed with the Works within three days of the date of
   such notice then the Client may employ another registered painter or such other
   workmen as may be necessary to complete the Works. The Client may deduct,
   charge or retail all sums of money as he shall pay or incur in the completion of the
   Works and the Registered Painter shall not in any manner do or cause to be done
   any act or thing whatever to prevent the persons so employed from completing the
   works.

7. THAT the Registered Painter shall supply labour and the tools necessary for such
   labour to adequately complete the Works.

8. THAT scaffolding necessary to the performance of the Works shall be provided by
   the Client.

9. THAT any variation to this Agreement shall be in writing. The costs of varied work
   shall be at the rates set out in the First Schedule, or as agreed, and shall be added to
   or deducted from the total amounts payable.

10. THAT in the event of any dispute or difference arising between the Client and the
    Registered Painter either during the progress of the Works or after completion,
    determination, abandonment or breach of this Agreement as to the kind and/or
    quality or quantity of work or materials supplied or payment therefore then either
    party may give notice to the other in writing of such dispute or difference and such
    dispute or difference may be referred to Arbitration in accordance with the provision
    of the Arbitration Act WA 1895-1935.

11. THAT any notice necessary or required to be given under this Agreement shall be
    deemed to be sufficiently given if sent by pre-paid post addressed to the person to
    whom it is necessary or required to be given at the address given in this Agreement
    or the last address notified by such person to the other.
# FIRST SCHEDULE

Amount payable for all work executed under Clause 1 hereof shall be:

\[
\begin{align*}
\$ & \quad \text{per} \quad \text{\ldots} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \\
\$ & \quad \text{per} \quad \text{\ldots} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \\
\$ & \quad \text{per} \quad \text{\ldots} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \\
\$ & \quad \text{per} \quad \text{\ldots} \quad \ldots \quad \ldots \quad \ldots \quad \ldots \\
\end{align*}
\]

\[
\text{TOTAL} \quad \$ \quad \ldots
\]

Amount retained, being \( \ldots \ldots \% \) of total payable

## SPECIAL CONDITIONS

Herein insert any special provisions.

---

IN WITNESS WHEREOF the parties hereto have duly executed this Agreement the day and year first above written.

SIGNED by the Client in the presence of:

\[
\begin{align*}
\ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \\
\end{align*}
\]

SIGNED by the Registered Painter:

\[
\begin{align*}
\ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \\
\end{align*}
\]

(Issued by the Master Builders’ Association of WA.)
1.6 SELF TEST 1

You will find the answers to these questions at the back of the book.

1. State three (3) prime functions of a specification and explain your answers.

(a) __________________: ______________________________________________________
__________________________________________________________________________

(b) __________________: ______________________________________________________
__________________________________________________________________________

(c) __________________: ______________________________________________________
__________________________________________________________________________

2. Below is a list of personnel mentioned within a superintendent’s building specification. Study each of the terms listed from A-F and match each term with the correct definition by placing the appropriate letter in the space provided. Each definition may apply once, more than once or not at all.

TERMS

• Builder [ ]
• Contractor [ ]
• Principal [ ]
• Superintendent [ ]

A  One who designs buildings and supervises the carrying out of the building arrangements.
B  The person for whom building or engineering works are done.
C  The person who agrees to carry out building or engineering works.
D  The person who prepares the Bill of Quantities.
E  The person who surveys the site before construction begins.
F  The person who works as an employee of the building owner and whose role is to be continuously on site and inspect the detailed construction.
3. What are the three (3) contract types? State what kind of job situation they are used for.

(a) __________________ ________________________________________________  
______________________________________________________________________  

(b) __________________ ________________________________________________  
______________________________________________________________________  

(c) __________________ ________________________________________________  
______________________________________________________________________  

4. A “contingency sum” could be best described as: (circle correct letter)

(a) An amount of money specified to cover the cost of goods by a nominated company.  
(b) The cost of direct labour and materials required to produce an item of work.  
(c) An item of money inserted into the Bill of Quantities to provide a basis for future adjustment on a pro-rata basis.  
(d) An amount of money to be included in the tender to provide for unforseen circumstances.  

5. Within the General Painting section of a specification, the term “protection” refers to: (circle correct letter)

(a) Insurances a contractor must obtain.  
(b) Dust sheets and the like that are used to protect areas which are to be left unpainted.  
(c) Clothing which must be worn by persons involved in painting contracts.  
(d) The correct storage of materials that are of an inflammable or flammable nature.  

6. In which section(s) of a specification would you find the legal clauses?
7. Describe who a Nominated Sub-contractor is: ______________________________________
_____________________________________________________________________________
_____________________________________________________________________________

8. There are two (2) basic methods of writing a specification. What are they? Give a description for each.
(a) _________________:  _______________________________________
_______________________________________________________________________
_______________________________________________________________________

(b) _________________:  _______________________________________
_______________________________________________________________________
_______________________________________________________________________

9. What is meant by the following terms that are found in a specification?
(a) Commencement date: _________________________________________________
_______________________________________________________________________
(b) Liquidated damager: _________________________________________________
_______________________________________________________________________
(c) Practical completion date: ____________________________________________
_______________________________________________________________________
(d) Samples: ____________________________________________________________
_______________________________________________________________________
10. What is your understanding of the following terms contained within a building specification?

   (a) Responsibility of background:______________________________________________
       _______________________________________________________________________

   (b) Defects liability period:__________________________________________________
       _______________________________________________________________________

   (c) Tests: __________________________________________________________________
       _______________________________________________________________________

11. Explain what the difference is between a quote and an estimate.

   Quote: _____________________________________________________________________
       _______________________________________________________________________

   Estimate: __________________________________________________________________
       _______________________________________________________________________

12. In which situation would you give a quote?
    _________________________________________________________________________
    _________________________________________________________________________

13. In which situation would you provide an estimate?
    _________________________________________________________________________
    _________________________________________________________________________

14. What is wrong with the following clause found in a recent specification?
    “All woodwork surfaces are to be prepared, etc. and then apply two (2) coats of Satin Enamel according to manufacturer’s recommendations.”
    _________________________________________________________________________
    _________________________________________________________________________
15. What is the problem with the following specification clause?

“Rear Exterior Door: Prepare surface according to AS/NZS 2311 for new timber door, and apply 1 coat of Pink Primer. When dry, fill holes, cracks with linseed oil putty and undercoat with either acrylic or oil-based undercoat. After dry, rub down lightly with 320 dry cut, dust off, and apply 1 coat of Gloss Enamel. (Colour: Taubmans Snow White)”

16. A specification can be divided up into a number of sections. (eg Index, Cover Sheet.) Name four (4) others:

_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

17. From the “Specification Sample” (pages 1.20 to 1.47) answer the following questions.

Invitation to Tender
(a) What is the address of the project? ________________________________.
(b) What date is displayed in this section? ________________________________.
(c) What work is included in this project? ________________________________.

Preliminaries Section
(d) What type of contract is this specification? (circle the correct answer)

Labour Only; Lump Sum; Cost Plus

(e) Extensions of time are permitted due to weather conditions.
True or False

(f) Sub-contractors are not permitted on this project.
True or False

(g) Variations are permitted on this project.
True or False

Supplement to Preliminaries Section
(h) What is the retention fund percentage of the contract sum? _______%
(i) What two types of insurance are required to qualify to tender for this project?
Painting General

(j) How many weeks notice is the contractor required to give the superintendent when requesting colour schemes? _______________ weeks.

(k) Whose responsibility is it to remove and replace fittings such as: locks, bolts, door handles prior to and after painting? ________________.

(l) How many manufacturers’ coatings are permitted on the project? ________.

Works Schedule

(m) What type of material is the Ceiling in the General Office made of? ____________________________________________________________

(n) What paint product is to be applied to the Walls in the Lunchroom? _______________________________________________________

(o) How many finish coats are required to be applied to the Ceiling in the Residence Dining Room? ____________.

Colour Schedule

(p) What colour is specified for the Manager’s Office Woodwork? ____________

(q) What colour is specified for the General Office Woodwork? ____________
CHAPTER 2: ESTIMATING

2.1 CALCULATIONS

In the course of their trade activities painters are called upon to make almost constant use of their knowledge of mathematics. These calculations are by no means complicated or difficult when seen from a tradeperson’s point of view.

If we stop to consider the point, we will appreciate that much of our existence involves the mental mathematical calculations of different values, no matter what trade or activities we may follow. Much of our daily lives is taken up with the processes of mathematical calculations in some form or other:

- Time to catch a train or bus
- The right change and money for fares
- The distance and force necessary to kick a football . . .

or any other numerous calculations carried out almost automatically in daily living.

The painter is constantly required to make various calculations in a work situation, such as:

- How much paint to mix/purchase for a given surface
- The amount of materials required to paint buildings
- The time and hourly rates in pricing jobs

or any one of numerous other daily questions faced by tradespersons.

The importance of being able to competently work out trade calculations cannot be overstressed, particularly when painters run their own business and are continually quoting and working out prices. Calculate too much for a project and work will be lost to competitors, charge too little and you will end up losing money.

The following calculations are typical of the type of problems you will face in your everyday work as painters. A numeracy analysis (see page 2.3) will be briefly undertaken, covering at least the principles of addition, subtraction, multiplication, division and other relevant processes. If you struggle with these then you may require additional assistance with this chapter. Private tutors are available for assistance or if you are studying this subject in TAFE, contact your lecturer for further advice.

BASIC REQUIREMENTS

The basic requirements you will need for this section will be a:

- Calculator
- Scale Ruler
- Formula Sheet

Calculators differ in cost and functions. The painter’s needs are satisfied by the use of a simple calculator. Make sure that the calculator you choose has the following symbols/functions:
Calculators with large push buttons are preferable. The smaller the buttons the more likely it is that you will push the wrong one inadvertently, particularly if you have stocky fingers. Calculators with memory functions are not necessary.

NOTE: Some calculators differ when calculating more than two figures in sequence. For example, when adding 6 and 7 together and then subtracting 3 most calculators will allow you to push the following buttons: 6 + 7 - 3 = 10. If your calculator does not give you this answer then try using the following sequence instead: 6 + 7 = - 3 = 10. You will note that you have to push the equals button immediately after calculating the first two numbers, in this case after the 7.

Scale Rulers are required to help you read builders’ plans. Their use is covered later in the chapter at Figures 2.31 and 2.32. Scale rulers are very different to a standard ruler. The scale ruler scales up what you measure on building plans to the real measurement of the same item on the building site.

Formula is defined in the dictionary as: “A rule or principle expressed in algebraic language” (Source: Webster’s Revised Unabridged Dictionary, © 1996, 1998 MICRA, Inc.) Table 2.1 shows formulas or “rules” to be used when calculating. In conjunction with a calculator, formulas make calculating the number of metres squared (m²); linear metres (lm); quantities of paint; labour costs; rolls of wallpaper and specialised wallcoverings very easy.
NUMERACY ANALYSIS

Using a calculator complete the following exercise. You will find the answers at the back of the book.

<table>
<thead>
<tr>
<th>Numeracy Analysis Exercise</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Addition</strong></td>
<td><strong>Subtraction</strong></td>
<td><strong>Multiplication</strong></td>
</tr>
<tr>
<td>45 + 6 =</td>
<td>67 - 8 =</td>
<td>50 x 6 =</td>
</tr>
<tr>
<td>145 + 36 =</td>
<td>79 - 79 =</td>
<td>701 x 70 =</td>
</tr>
<tr>
<td>643 + 3.5 =</td>
<td>9.888 - .024 =</td>
<td>6.09 x 3.44 =</td>
</tr>
<tr>
<td>27 + 9 =</td>
<td>76 - 8 =</td>
<td>27 x 7 =</td>
</tr>
<tr>
<td>3.8 + 1.3 =</td>
<td>7634 - 50 =</td>
<td>8.39 x 3 =</td>
</tr>
<tr>
<td>3.7 + .6 =</td>
<td>2.45 - 1.07 =</td>
<td>999 x .10 =</td>
</tr>
<tr>
<td>85 + 19 =</td>
<td>704 - 39 =</td>
<td>302 x 47 =</td>
</tr>
<tr>
<td>24.3 + 9.3 =</td>
<td>37.22 - 6.04 =</td>
<td>59.3 x 27.1 =</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Division</strong></th>
<th><strong>Tabulation</strong></th>
<th><strong>Tabulation</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>35 ÷ 7 =</td>
<td>$ 34.87 $</td>
<td>$ 76.30 $</td>
</tr>
<tr>
<td>903.4 ÷ 5 =</td>
<td>$ 61.00 $</td>
<td>$ 861.90 $</td>
</tr>
<tr>
<td>7.777 ÷ 7 =</td>
<td>$ 9.06 $</td>
<td>$ 11.60 $</td>
</tr>
<tr>
<td>85 ÷ 5 =</td>
<td>$ 54.67 $</td>
<td>$ 9.00 $</td>
</tr>
<tr>
<td>639.4 ÷ 4 =</td>
<td>$ 40.81 $</td>
<td>$ 911.11 $</td>
</tr>
<tr>
<td>61.2 ÷ 5.0 =</td>
<td>$ 9.00 $</td>
<td>$12500.00 $</td>
</tr>
<tr>
<td>600 ÷ 24 =</td>
<td>$ 76.02 $</td>
<td>$23447.11 $</td>
</tr>
<tr>
<td>9.02 ÷ 3 =</td>
<td>$ 301.00 $</td>
<td>$10000.99 $</td>
</tr>
</tbody>
</table>

METRICATION

Metrical replaced the old Imperial measurement in Australia in 1966. Whilst it has been many years since the changeover, there may still be people in the painting industry who think in feet and inches. If so, they will need to familiarise themselves with metric measurements. All building plans in Australia are now in metric.

<table>
<thead>
<tr>
<th>Symbols Of Linear Measurements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millimetre (mm) 10 mm = 1 cm</td>
</tr>
<tr>
<td>Centimetre(cm) 100 cm = 1 m</td>
</tr>
<tr>
<td>Metre(m) 1000 mm = 1 m</td>
</tr>
</tbody>
</table>
**Converting in Metric**

The benefit of using a metric system of measurements is that it is based on multiples of 10, 100, 1000 and so on, as shown before. Therefore when converting from one unit to another, all that is required is to move the decimal point. For painters the most common conversion used is when converting millimetres to metres. This is done in the following way:

<table>
<thead>
<tr>
<th>Convert Millimetres to Metres</th>
<th>Eg.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millimetres to Metres</td>
<td>4700 mm</td>
</tr>
<tr>
<td>(count 3 places from right to left and insert a decimal point)</td>
<td>becomes 4.700 m</td>
</tr>
<tr>
<td></td>
<td>234590 mm</td>
</tr>
<tr>
<td></td>
<td>becomes 234.590 m</td>
</tr>
<tr>
<td></td>
<td>500 mm</td>
</tr>
<tr>
<td></td>
<td>becomes .500 m</td>
</tr>
<tr>
<td></td>
<td>50 mm</td>
</tr>
<tr>
<td></td>
<td>becomes .050 m*</td>
</tr>
</tbody>
</table>

*When there are insufficient numbers to count add a 0 for every decimal place.*

On a set of building plans all measurements are in millimetres. Before you can calculate the number of linear metres or metres squared you need to first convert the measurements shown in millimetres to metres. Then, entering metres into the calculator with the correct formula will result with the correct answer.
## TRADE CALCULATIONS FORMULAS

<table>
<thead>
<tr>
<th>TRADE CALCULATIONS FORMULAS</th>
</tr>
</thead>
</table>
| PERIMETER (for length of cornices, skirting boards, gutters and fascia etc.) | Perimeter of a room: \[2 \times \text{Lengths} + 2 \times \text{Breadths}\]  
| | Perimeter of Circle (circumference): \[\text{Diameter} \times 3.14\]  
| AREA | Perimeter of a room: \[2 \times \text{Lengths} + 2 \times \text{Breadths}\]  
| | Room: 4 Walls: \[2 \times \text{Lengths} + 2 \times \text{Breadths} \times \text{Height}\]  
| | Room: 2, 3 or more than 4 walls: \[\text{Perimeter} \times \text{Height}\]  
| | Triangle: Gable (1): \[\text{Base} \times \text{Perpendicular Height} \times 0.5\]  
| | Circle: Top of a Tank: \[\text{Radius} \times \text{Radius} \times 3.14\]  
| | Cylinder: Side of a Tank: \[\text{Diameter} \times 3.14 \times \text{Height}\]  
| | Sphere: Globe: \[\text{Diameter} \times \text{Diameter} \times 3.14\]  
| | Circular Dome: Half a Globe: \[\text{Diameter} \times \text{Diameter} \times 3.14 \times 0.5\]  
| | Cone: Church Steeples: \[\text{Diameter} \times 3.14 \times \text{Slant Height} \times 0.5\]  
| | Ellipse: Football Field: \[\text{Major Axis} \times \text{Minor Axis} \times 0.8\]  
| | Skillion/Sawtoothed Roof Building: \[\text{Perimeter} \times \text{Average Height}\]  
| Corrugated Iron: | \[\times 1.33 \text{ to any area formula above}\]  
| Cliplock Deck Roof: | \[\times 1.45 \text{ to any area formula above}\]  
| FORMULA FOR PAINT QUANTITIES | \[\text{Area} \div \text{Coverage per litre} \times \text{Coats}\]  
| FORMULA FOR PAINT COSTS | \[\text{Litres Required} \times \text{Cost per litre}\]  
| FORMULA FOR LABOUR COSTS | \[\text{Area} \times \text{Labour Rate} \times \text{Coats}\]  
| WALLPAPER FORMULA | \[\text{Wallpaper sizes: English (0.520 m x 10.000 m)} \text{ Canadian (0.520 m x 12.750 m)}\]  
| Step 1: | \[\text{Perimeter of room} \div \text{Width of Roll} \] (Round answer UP \(\uparrow\))  
| Step 2: | \[\text{Length of Roll} \div \text{Height of Room} \] (Round answer DOWN \(\downarrow\))  
| Step 3: | \[\text{Answer to Step 1} \div \text{Answer to Step 2} \] (Round UP \(\uparrow\) to nearest roll)  
| CEILING PAPER FORMULA | \[\text{Wallpaper sizes: English (0.520 m x 10.000 m)} \text{ Canadian (0.520 m x 12.750 m)}\]  
| Step 1: | \[\text{Window wall length} \div \text{Width of Roll} \] (Round answer UP \(\uparrow\))  
| Step 2: | \[\text{Other wall length} \div \text{Length of Roll} \] (Round answer DOWN \(\downarrow\))  
| Step 3: | \[\text{Answer to Step 1} \div \text{Answer to Step 2} \] (Round UP \(\uparrow\) to nearest roll)  
| LINING PAPER FORMULA | \[\text{Lining sizes: 0.560 m x 10.000 m} \text{ (Available also in 20, 30 and 40m length rolls)}\]  
| Step 1: | \[\text{Find the area of the surface to be lined}\]  
| Step 2: | \[\text{Find the area of the roll of lining paper} \text{ (e.g. 0.560m x 10.000m = 5.6 m²)}\]  
| Step 3: | \[\text{Answer to Step 1} \div \text{Answer to Step 2} \] (Round answer UP \(\uparrow\) to nearest roll)  
| WALLCOVERINGS (e.g. LINEN-BACKED VINYL) | \[\text{Pure Vinyl size: 1.200 m x buy by the metre}\]  
| Step 1: | \[\text{Perimeter of Room} \div \text{Width of Roll} \] (Round answer UP \(\uparrow\))  
| Step 2: | \[\text{Height of Room} + 0.100 m \times \text{Answer to Step 1} \] (Round answer UP \(\uparrow\) to nearest metre)  

*Table 2.1*
CALCULATIONS

PERIMETERS

The painter and decorator must be able to recognise features that require the calculation of a perimeter in order to calculate their cost. The total distance around the extreme outside of an object is referred to as a “perimeter.”

Examples include:

- Skirting boards
- Gutter and fascia
- Barge boards
- Cornices

To find the total length of skirting boards in a room with four walls use formula:

\[
\text{Perimeter} = 2 \text{ Lengths} + 2 \text{ Breadths}
\]

\[
A + B + C + D = \text{ Perimeter}
\]

In the case where a room has several door openings, the total distance of the openings needs to be deducted from the perimeter. If a room is of an irregular shape the perimeter is calculated by adding all walls and deducting any openings.

\[
A + B + C + D + E + F + G - \text{ Opening} = \text{ Perimeter}
\]
To find the perimeter of a circle (known as the circumference) use the formula:

\[ \text{Perimeter} = \text{Diameter} \times 3.14 \]

**A** = Circumference – distance around the outside of a circle.

**B** = Radius – distance from the circle’s centre to its side.

**C** = Diameter – distance from one side of a circle to the other passing through the middle of the circle.

**AREAS**

When calculating cost and quantities for larger surfaces, a painter will need to calculate the “area” of the surface.

Examples include:

- Walls and ceilings
- Gable inserts
- Storage tanks
- Corrugated surfaces such as roofs and fences

**EXAMPLES OF SETTING OUT AND USE OF AREA FORMULAS**

1. Rectangle – Ceiling or 1 wall

   ![Rectangle Diagram]

   Formula: \[ \text{Length} \times \text{Breadth} \]

   \[ 5.490 \text{ m} \times 3.400 \text{ m} = 18.666 \text{ m}^2 \]

   **NOTE:** Dimensions of drawing have been converted from mm to metres by counting three decimal places and inserting a decimal point.
2. Room (4 Walls)

Formula: \(2 \text{ Lengths} + 2 \text{ Breadth} \times \text{Height}\)

\[3.567 \text{ m} + 3.567 \text{ m} + 2.500 \text{ m} + 2.500 \text{ m} \times 3.000 \text{ m} = 36.402 \text{ m}^2\]

3. Room (2, 3 or more than 4 walls)

Formula: \(\text{Perimeter} \times \text{Height}\)

\[2.450 \text{ m} + 2.450 \text{ m} + 3.000 \text{ m} + 3.000 \text{ m} + 2.600 \text{ m} \times 3.100 \text{ m} = 41.85 \text{ m}^2\]

4. Triangle – Gable

Formula: \(\text{Base} \times \text{Perpendicular Height (PH)} \times .5\)

\[12.670 \text{ m} \times 8.560 \text{ m} \times .5 = 54.227 \text{ m}^2\]

**NOTE:** The above answer is only for 1 gable. If there are two gables of identical size, then insert \(\times 2\) to the formula.
5. Circle

The formula for the area of a circle incorporates $3.14$. The Greek mathematician Pythagoras proved that by multiplying the diameter of a circle by $3.14$ one can calculate the circumference of a circle. The figure $3.14$ is commonly referred to by the Greek lower case letter “π” (pronounced pie). This figure is always used when calculating objects with a circular shape. This would include circle, sphere, dome, cone, and cylinder. The exception is an ellipse. (See example 10)

![Diagram of a circle with radius labeled 4.567 mm]

Formula: \[ \text{Radius} \times \text{Radius} \times 3.14 \]

\[ 4.567 \text{ m} \times 4.567 \text{ m} \times 3.14 = 65.492 \text{ m}^2 \]

**NOTE:** A radius is a straight line from one side of a circle to the middle of the circle.

6. Cylinder

![Diagram of a cylinder with radius labeled 5.500 mm and height labeled 25 m]

Formula: \[ \text{Diameter} \times 3.14 \times \text{Height} \]

\[ 11 \text{ m} \times 3.14 \times 25 = 863.5 \text{ m}^2 \]

**NOTE:** The formula requires a diameter however the drawing provided only a radius. As a radius is half the size of a diameter we need to double the size of the radius.
7. **Sphere**

[Diagram of a sphere with a diameter of 8456 mm]

Formula: \( \text{Diameter} \times \text{Diameter} \times 3.14 \)

\[ 8.456 \text{ m} \times 8.456 \text{ m} \times 3.14 = 224.522 \text{ m}^2 \]

**NOTE**: A diameter is twice the size of a radius and is a straight line from one side of a circle to the other side passing through the center.

8. **Circular Dome**

A dome is half a sphere therefore you use the same formula as a sphere and then halve that surface area by multiplying by .5

[Diagram of a circular dome with a diameter of 16000 mm]

Formula: \( \text{Diameter} \times \text{Diameter} \times 3.14 \times .5 \)

\[ 16.000 \text{ m} \times 16.000 \text{ m} \times 3.14 \times .5 = 401.92 \text{ m}^2 \]
9. **Cone**

Formula: \( \text{Diameter} \times 3.14 \times \text{Slant Height} \times .5 \)

\[
45 \text{ m} \times 3.14 \times 60.000 \text{ m} \times .5 = 4,239.00 \text{ m}^2
\]

10. **Ellipse**

Formula: \( \text{Major Axis} \times \text{Minor Axis} \times .8 \)

\[
9.700 \text{ m} \times 3.260 \text{ m} \times .8 = 25.297 \text{ m}^2
\]

**NOTE:** Major axis is another term for Length and Minor Axis for Breadth.
11. Skillion and Saw-toothed Shaped Roof Buildings

**Formula:** \( \text{Perimeter} \times \text{Average Height} \)

\[ 47.25 \text{ m} \times 3.75 \text{ m} = 177.187 \text{ m}^2 \]

**Note:** Average height is calculated by adding up all the different heights on the building and then dividing them by the number of different heights added together. (eg Example above \( 4.5 + 3.000 = 7.500 \div 3.75 \text{ m} \).)

12. Corrugated Iron

A standard 798 mm wide sheet of corrugated iron is rolled from a 1064 mm wide flat sheet of metal. The corrugating process reduces the width by one third. To compensate for this reduction in size multiply the area of a corrugated surface by 1.33.

**Formula:** \( \text{Diameter} \times 3.14 \times \text{Height} \times 1.33 \)

\[ 6.000 \text{ m} \times 3.14 \times 5.670 \text{ m} \times 1.33 = 142.074 \text{ m}^2 \]
13. Clip-lock Roof Decking

The same principle that applied to corrugated areas also applies to clip-lock roof decking. However, in this case there is more metal used to make this profile. Therefore, to compensate for this, we multiply the area of roof decking by 1.45.

Formula: \[ \text{Length} \times \text{Breadth} \times 1.45 \]

\[ 3.000 \, \text{m} \times 1.200 \, \text{m} \times 1.45 = 5.22 \, \text{m}^2 \]

PAINT QUANTITIES

Once the number of square metres has been calculated for a given area, the next step is to calculate the quantity of paint required. This is determined by using the coverage rates on the paint can or as supplied by the paint manufacturer. The number of coats to be applied is also taken into consideration.

The formula is: \( \text{Area} \div \text{Coverage Rate} \times \text{Number of Coats} \)

\text{Example:} \quad \text{Calculate the quantity of paint required for walls in a room with a length of 5,000 mm and a breadth of 4,500 mm. The height of the walls is 2,800 mm. The coverage is 14 m}^2 \text{ per litre per coat. Apply two coats.}

\text{Walls Formula:} \quad 2 \, \text{Lengths} + 2 \, \text{Breadths} \times \text{Height}

\[ 10.000 \, \text{m} + 9.000 \, \text{m} \times 2.800 \, \text{m} = 53.2 \, \text{m}^2 \]

\text{Paint Quantity Formula:} \quad \frac{\text{Area}}{\text{Coverage Rate}} \times \text{Number of Coats}

\[ 53.2 \, \text{m}^2 \div 14 \times 2 = 7.6 \text{ (round off to next full litre)} \]

8 litres.

NOTE: When the answer for litres of paint has a decimal point in it, it is then necessary to round up to the next full litre.

PAINT COSTS

Calculating paint costs will vary from painter to painter depending on trade discounts you are able to get from your paint supplier. Buying in bulk usually reduces the price per litre.

The formula is: \( \text{Litres Required} \times \text{Cost per Litre} \)

\text{Example:} \quad \text{From the previous section we calculated that we need 8 litres of paint. With trade discount the cost for paint is $7.50 per litre. What is the cost for materials?}
Formula for Paint Costs:  \[ \text{Litres Required} \times \text{Cost per Litre} \]

\[ 8 \text{ L} \times 7.50 = 60.00 \]

**LABOUR COSTS**

The costing of areas or linear measurements is made quite easy. The cost is usually given to you as $ per m\(^2\) or $ per running m. Therefore all that has to be done is to multiply the area by the cost component.

The formula is:  
\[ \text{Area} \times \text{Labour Cost} \times \text{Number of Coats} \]

**Example:**

If the area of the walls of a room was 29.460 m\(^2\) and the rate for painting this surface was $2.35 per m\(^2\), what would be the cost if 2 coats were required?

**Formula:**  
\[ 29.460 \text{ m}^2 \times 2.35 \times 2 \text{ coats} = 138.46 \]

**NOTE:** Most builders provide their painters with a cost list and these rates include all coats. In such situations delete “number of coats” from the formula.

**COST GUIDES**

There are a variety of cost guides that were applicable at the time this textbook was published. They include:

- Master Painters Association (MPA) of WA recommended cost rates
- Cost Rates as supplied by one of Perth’s WA Builders
- Cordell’s Cost Guide.

These are only guides and you will NOTE there is a difference between them. The MPA rates available from the MPA, as a member of the association, include materials and labour, but only for new work. Renovation work incurs extra preparation costs and these must be added. The cost rates from the builder also include labour and materials. Some builders have special arrangements with a paint manufacturer to supply all materials, and the painter is required to use their materials. These special arrangements reduce the cost of the materials and in turn the rates per m\(^2\) or linear metre (Table 2.3).

Cordell Products provides a guide for commercial/industrial and housing rates. Their costings include labour and materials. Page 185 of WA Commercial/Industrial & Housing Cordells Guide, 1999 is provided as a sample. The complete version can be purchased directly from Building Cost Information Division, Reed Construction Data. [www.reedconstructiondata.com.au](http://www.reedconstructiondata.com.au). Refer to Table 2.2.

It would be a wise and shrewd painter who familiarises him/herself with various cost guides so that when preparing a quotation, particularly for renovation work, they will have some assistance.
## PAINTING

### Estimator Tips
- Unit rates include all labour and material requirements.
- Rates include for preparation of surfaces to be coated.
- Allowance has been made for brushes, rollers and sand paper.

### LABOUR

<table>
<thead>
<tr>
<th></th>
<th>Per</th>
<th>Labour</th>
<th>Material</th>
<th>Plant</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Painter (tender rate)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>28.00</td>
</tr>
</tbody>
</table>

### MATERIALS

<table>
<thead>
<tr>
<th>Material Description</th>
<th>Unit</th>
<th>Rate (per hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrylic primer</td>
<td>litre</td>
<td>9.58</td>
</tr>
<tr>
<td>Acrylic undercoat</td>
<td>litre</td>
<td>8.70</td>
</tr>
<tr>
<td>Acrylic interior flat</td>
<td>litre</td>
<td>10.95</td>
</tr>
<tr>
<td>Acrylic interior semi gloss/gloss</td>
<td>litre</td>
<td>10.95</td>
</tr>
<tr>
<td>Acrylic latex exterior low sheen</td>
<td>litre</td>
<td>11.08</td>
</tr>
<tr>
<td>Acrylic latex exterior gloss</td>
<td>litre</td>
<td>11.08</td>
</tr>
<tr>
<td>PVA flat</td>
<td>litre</td>
<td>7.29</td>
</tr>
<tr>
<td>Alkyd primer (oil)</td>
<td>litre</td>
<td>11.40</td>
</tr>
<tr>
<td>Alkyd metal primer (oil)</td>
<td>litre</td>
<td>11.40</td>
</tr>
<tr>
<td>Alkyd sealer (oil)</td>
<td>litre</td>
<td>9.58</td>
</tr>
<tr>
<td>Alkyd undercoat (oil)</td>
<td>litre</td>
<td>9.58</td>
</tr>
<tr>
<td>Alkyd enamel flat (oil)</td>
<td>litre</td>
<td>7.02</td>
</tr>
<tr>
<td>Alkyd enamel gloss/gloss (oil)</td>
<td>litre</td>
<td>8.19</td>
</tr>
<tr>
<td>Oil stain - interior</td>
<td>litre</td>
<td>10.46</td>
</tr>
<tr>
<td>Oil stain - exterior</td>
<td>litre</td>
<td>10.46</td>
</tr>
<tr>
<td>Polyurethane flat/semi gloss/gloss</td>
<td>litre</td>
<td>9.26</td>
</tr>
<tr>
<td>Silicon masonry preserver</td>
<td>litre</td>
<td>5.69</td>
</tr>
<tr>
<td>Lining paper</td>
<td>m²</td>
<td>1.58</td>
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<tr>
<td>Decorative paper</td>
<td>m²</td>
<td>7.88</td>
</tr>
<tr>
<td>Vinyl paper</td>
<td>m²</td>
<td>6.30</td>
</tr>
<tr>
<td>Suede fabric</td>
<td>m²</td>
<td>9.45</td>
</tr>
</tbody>
</table>

### UNIT RATES

#### WOODWORK PAINTING (INTERNAL)

**Acrylic (Semi Gloss/Gloss)**

One coat acrylic primer; one coat undercoat; two coats acrylic interior semi gloss/gloss finish to internal woodwork.

<table>
<thead>
<tr>
<th>Description</th>
<th>Rate (per m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walls (timber paneling)</td>
<td>6.86</td>
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<tr>
<td>Ceilings (timber paneling)</td>
<td>7.64</td>
</tr>
</tbody>
</table>

**Alkyd (Semi Gloss/Gloss)**

One coat oil primer; one coat undercoat and two coats enamel semi gloss/gloss finish to internal woodwork.

<table>
<thead>
<tr>
<th>Description</th>
<th>Rate (per m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walls (timber paneling)</td>
<td>6.86</td>
</tr>
<tr>
<td>Ceilings (timber paneling)</td>
<td>7.64</td>
</tr>
</tbody>
</table>

**Polyurethane (Flat/Semi Gloss/Gloss)**

Two coats polyurethane flat/semi gloss/gloss finish to internal woodwork.

<table>
<thead>
<tr>
<th>Description</th>
<th>Rate (per m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walls (timber paneling)</td>
<td>4.51</td>
</tr>
<tr>
<td>Ceilings (timber paneling)</td>
<td>4.51</td>
</tr>
</tbody>
</table>

**Stain**

Two coats interior oil stain finish to internal woodwork.

<table>
<thead>
<tr>
<th>Description</th>
<th>Rate (per m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walls (timber paneling)</td>
<td>4.12</td>
</tr>
<tr>
<td>Ceilings (timber paneling)</td>
<td>4.51</td>
</tr>
</tbody>
</table>

### Table 2.2

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Page 185
<table>
<thead>
<tr>
<th>Item Description</th>
<th>Unit price</th>
</tr>
</thead>
<tbody>
<tr>
<td>(All coats included)</td>
<td></td>
</tr>
<tr>
<td>Internal Wall Painting - Washable</td>
<td>$5.00 m2</td>
</tr>
<tr>
<td>Internal Wall Painting - P.V.A.</td>
<td>$4.00 m2</td>
</tr>
<tr>
<td>Internal Wall Painting - Low Sheen</td>
<td>$6.00 m2</td>
</tr>
<tr>
<td>Ceiling Painting - Flat</td>
<td>$4.50 m2</td>
</tr>
<tr>
<td>Exposed Rafters to Ceiling</td>
<td>$4.50 lin m</td>
</tr>
<tr>
<td>Exposed Rafters to Verandah</td>
<td>$8.00 m2</td>
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<tr>
<td>Gutter and Fascia</td>
<td>$6.00 lin m</td>
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<tr>
<td>Extra for Two Tone Gutter/Fascia</td>
<td>$2.00 lin m</td>
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<tr>
<td>Exposed Eaves Lined on Rafter</td>
<td>$10.00 lin m</td>
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<tr>
<td>Single Entry Door &amp; Frame</td>
<td>$200.00 each</td>
</tr>
<tr>
<td>Double Entry Doors and Frame</td>
<td>$400.00 each</td>
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<tr>
<td>Single Flush or Colonial Door &amp; Frame</td>
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<tr>
<td>Double Flush Panel Door &amp; Frame</td>
<td>$120.00 each</td>
</tr>
<tr>
<td>Extra for Solid Colonial Floors</td>
<td>$20.00 each</td>
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<tr>
<td>Nosing/Capping with Scotia</td>
<td>$10.00 lin m</td>
</tr>
<tr>
<td>Skirting</td>
<td>$4.00 lin m</td>
</tr>
<tr>
<td>Shelf Fronts including Rails and Cleats</td>
<td>$3.00 lin m</td>
</tr>
<tr>
<td>Balustrade/Handrail</td>
<td>$35.00 lin m</td>
</tr>
<tr>
<td>External Walls</td>
<td>$9.00 m2</td>
</tr>
<tr>
<td>Eaves – Hardiflex Lining</td>
<td>$5.00 m2</td>
</tr>
<tr>
<td>Verge/Barge including Overhang Lining</td>
<td>$10.00 lin m</td>
</tr>
<tr>
<td>Timber Posts</td>
<td>$20.00 each</td>
</tr>
<tr>
<td>Verandah Pergola Beams</td>
<td>$10.00 lin m</td>
</tr>
<tr>
<td>Downpipes</td>
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<tr>
<td>External Lintels</td>
<td>$5.00 lin m</td>
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<tr>
<td>Double Storey Allowance</td>
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<tr>
<td>Cedar Panelling</td>
<td>$18.00 m2</td>
</tr>
<tr>
<td>Cedar Doors</td>
<td>$250.00 each</td>
</tr>
<tr>
<td>Limestone Columns</td>
<td>$7.00 each</td>
</tr>
</tbody>
</table>

Table 2.3
PERCENTAGES

From time to time a painter is required to calculate percentages of figures in a number of situations. They could be:

- Percentage of tax to deduct from employees’ wages
- Discount rates for paint and materials purchases
- Adding a certain percentage for profit
- Calculating percentage for Goods and Service Tax (GST).

Depending upon the type of calculator you have, one of the following two methods is used. If you have a percentage button on your calculator, use Method 1. If not, use Method 2.

**Example 1**

Your paint supplier has agreed to give you a discount of 30% on all paint purchases. Your paint purchases came to $351.20.

Method 1: \[ $351.20 - 30\% = 291.496 \]
Answer: $291.50

Method 2: \[ $351.20 \times 0.30 = 105.36 \]
\[ $351.20 - 105.36 = 291.496 \]
Answer: $291.50

The most common reason you will be required to use percentages will be to calculate GST, which was introduced in Australia in July, 2000 at a rate of 10%.

**Example 2**

You have calculated the cost for labour and materials to repaint the exterior of a house. If your quote comes to $2,750.00, what is the total cost with GST?

Method 1: \[ $2,750.00 + 10\% = 3,025.00 \]

Method 2: \[ $2,750.00 \times 0.10 = 275.00 \]
\[ $2,750.00 + 275.00 = 3,025.00 \]

WALLPAPER QUANTITIES/COST

There are a number of different methods used for calculating quantities and costs on individual jobs. Consider the following methods:

1. By dividing the average area of one roll of wallpaper into the area of the wall surface to be papered and adding an allowance for wastage in cutting and matching of patterns.

2. Most wallpaper manufacturers supply a table or chart that gives the average quantities of paper required for rooms of varying size and wall height.

3. Probably the most effective and accurate method is that which determines:
   (a) the number of strips or lengths required by dividing the width of the roll into the perimeter of the room
   (b) the number of lengths or strips which can be effectively cut from each roll of paper obtained by dividing the length of strip into the length of the roll
   (c) finally, the number of rolls – obtained by dividing the number of lengths per roll into the total number of strips required for the room.

We shall look at Method 3 in detail.
First we must open up the room to find the room perimeter and the area of the walls. The dimensions of this room are 4 750 mm by 3 500 mm and the walls are 2 800 mm high.

NOTE: No allowance is made for door or window openings.

WALLS

STEP 1

Strips required
Begin by finding the perimeter, adding all wall dimensions together.

Wall 1   4 750 mm  
Wall 2   3 500 mm  
Wall 3   4 750 mm  
Wall 4 + 3 500 mm  
16 500 mm

After converting mm to metres, the total length of the room perimeter is 16.500 m. The normal width of wallpaper is 520 mm. Converting this to metres it becomes .520 m. This is now divided into the 16.500 m perimeter to find the number of strips required.

Perimeter ÷ Width of roll (round up)
16.500 m ÷ .520 m = 31.73 lengths

The number of lengths required is 31.73 and as the .73 of a length is required you must round up to the next full length. Therefore the number of lengths required will be 32.

STEP 2

Strips per Roll
Now the number of lengths per roll must be determined, and this is calculated from the height of the room. The height of the room is taken from the ceiling level down to the floor level. This allows approximately 75 mm at the top and at the base for trimming because the paper is trimmed at the cornice and skirting levels. English paper is being used and the roll length is 10 000 mm, the height of the room being 2 800 mm. After converting to metres our measurements are divided:

Length of Roll ÷ Height of Room (round down)
10.000 m ÷ 2.800 m = 3.57 drops per roll

The .57 of a roll may not necessarily be useful to us. Therefore we round down the number to 3 and say that we are able to get three full lengths per roll.
STEP 3

Number of Rolls
To calculate the number of rolls required, divide the 32 lengths of the room’s perimeter (answer to step 1) by 3 (answer to step 2) because this is the number of lengths per roll.

Answer to Step 1 ÷ Answer to Step 2 (round up)

\[ 32 \div 3 = 10.66 \text{ rolls} \]

As we cannot purchase .66 of a roll, we must purchase the full roll; therefore the number is rounded up to eleven (11).

Answer: 11 rolls are needed for this room.

CEILINGS

To find the number of rolls required for the ceiling of this room or any room for that matter, the hanging is governed by the room’s main light source, usually the window. As you know from experience the ceiling paper must be hung to or away from the light source.

STEP 1

Strips Required
In this room we will place the window on one of the longer walls. This means that the long side of the ceiling has to be divided by the width of the paper being used. (We shall use the most common wallpaper, English, measuring .520 m wide × 10.000 m long.)

Perimeter ÷ Width of Roll (round up)

\[ 4.750 \text{ m} \div .520 \text{ m} = 9.13 \text{ (round up to 10 lengths)} \]

Ten lengths are required as the .13 is a portion of a length and we must take it up to the next full length.

STEP 2

Strips per Roll
To determine the number of lengths per roll, divide the 3.500 m into the length of the roll.

Length of Paper ÷ Height of wall (round down)

\[ 10.000 \text{ m} \div 3.500 \text{ m} = 2.86 \text{ (round down to 2 strips)} \]
CHAPTER 2 ESTIMATING

STEP 3

Number of Rolls
Now we effectively receive only 2 full lengths of paper per roll. Divide the 10 lengths (answer to step 1) by 2 (answer to step 2) to calculate how many rolls are required.

Answer to Step 1 ÷ Answer to Step 2 (round up)
10 ÷ 2 = 5 rolls required.

MATCHING PATTERNS
Where matching patterns are being used it is necessary that you do not deduct window and door openings when measuring and calculating the number of rolls required. However, if the window or door openings occupy a large section of the wall area, then possibly the left over centre of the rolls may be used to cover the small area between the top of the door or window frame and cornice.

On walls where the windows have sills, heads and reveals, most of the wallpaper is used. However, where windows and doorframes have architraves, you will find that there will be large amounts of wastage. Unfortunately this is unavoidable, especially where the pattern must be matched.

Additional rolls will be required when, or if, large “drop pattern” repeats require unusual cutting or waste.

LINING PAPER
Lining paper is a preparatory paper. It is used to provide a sound and even surface to walls that may be damaged or have small irregularities where fillers are not suitable. For example, cement rendered walls would require lining paper to remove the sand finish coming through the top wallpaper. Lining paper is available in grades of paper and varies in price accordingly. The width of lining paper is usually 560 mm, and it is available in 10, 20, 30 and 40 meter rolls. As there is no pattern to lining paper, we can calculate using another method that uses all the paper with less wastage.

STEP 1

Area of the surface
The first step is to find the area of the surface to receive lining paper. This is the same way as calculating for paint. Find the number of square metres in the wall surface. Using the same measurements as before, the room we will measure is 4 750 mm by 3 500 mm with a height of 2 800 mm. Find the perimeter of the room as explained before.

4 750 mm
3 500 mm
4 750 mm
+ 3 500 mm
16 500 mm

Convert millimeters to metres and then multiply 16. 500 m by the height.

16.500 m x 2.800 m = 46.20 m²
STEP 2

Area of the paper
To find the area of the lining paper simply multiple the length of the paper by its width. Let’s assume our lining paper length is 10 meters long. Therefore, we multiply 10.000 m long by .560 m wide.

\[ 10.000 \text{ m} \times 0.560 \text{ m} = 5.6 \text{ m}^2 \]

So the area of the lining paper is 5.6m\(^2\)

STEP 3

Number of Rolls
Once you have calculated the number of square metres in the lining paper, divide it into the wall area, which is 46.20m\(^2\).

\[ 46.20 \div 5.60 = 8.25 \text{ rolls (round up to next full number)} \]

Answer: 9 rolls

WALLPAPER COSTS
The cost of hanging various rolls of wallpaper differ, and it is up to people like yourself to become proficient at hanging all types of papers with skill and speed so that the cost of each roll to be hung is kept to a minimum.

However, as a guide, at the time of publication the average cost charged to hang standard type wallpaper was $33.00 per roll (including 10% GST).

Wallpaper costs range, for cheaper papers from approximately $20 dollars per roll to strippable vinyl types from $50 to $70 dollars per roll. Lining paper costs $15 to $20 per roll and the cost to apply it is $33.00 per roll.

To calculate the total cost for materials is a simple calculation. Assuming we need to purchase 10 rolls of a paper costing $65.00 per roll and we charge $33.00 per roll to apply it, the total cost would be: $980.00.

Cost to supply: $65.00 per roll  
Cost to hang: $33.00 per roll  
\[ \frac{98.00 \text{ per roll} \times 10 \text{ rolls}}{} = 980.00 \]

Other costs may need to be added such as wall preparation and cost of size and adhesives.

SPECIALISED WALLCOVERINGS
There are a number of wallcoverings on the market other than wallpaper. These include anaglypta, lincrusta, linen-backed vinyl (also known as pure vinyl), wool weave, flock, foil, grass weave, front runnner and suedes. A heavier adhesive is applied directly to the wall rather than the covering.
For the purpose of this exercise, we will concentrate on linen-backed vinyl. This covering is used in commercial settings such as office buildings in high traffic areas (e.g., walls of staircases and passage ways). The covering is robust and can be washed and scrubbed without harm. This material is 1 200 mm wide and is rather expensive. Prices range between $25 and $75 per metre.

The method of calculating the number of metres of linen-backed vinyl is different to ordinary wallpaper as it is supplied and hung by the metre. The most accurate and effective method is that which determines:

(a) The number of lengths required by dividing the width of the material into the perimeter of the room

(b) Adding to the height or dado of the room .100 mm and multiplying it by the number of strips required.

Example: First we must open up the room to find the room perimeter as previously. The dimensions of the room are 4 550 mm by 3 750 mm and it is 2 450 mm high.

NOTE: When calculating dado height the door openings should be subtracted from the perimeter.

**STEP 1**

**Strips Required**

Begin by finding the perimeter by adding all the dimensions together.

\[
\begin{align*}
4550 \text{ mm} & \\
3750 \text{ mm} & \\
4550 \text{ mm} & \\
+3750 \text{ mm} & \\
16600 \text{ mm} &
\end{align*}
\]

After converting millimetres to metres the total length of the room perimeter is 16.600 m. The width of linen-backed vinyl is 1 200 mm. Convert that also. 1.200 m is now divided into the perimeter to find the number of strips required.

\[
\text{Perimeter of Room} \div \text{Width of Roll (round up)}
\]

\[
16.600 \text{ m} \div 1.200 \text{ m} = 13.83 \quad \text{(round up to 14)}
\]

The number of strips required is 13.83 and as the .83 represents over half a length you must take it to the next full length making the total number of strips required 14.

**STEP 2**

**Metres Required**

Having found the number of lengths required, you then multiply this by the height of the walls and include .100 m for trimming at the top near the cornice and bottom above the skirting. In this case the figure is 2.450 m + .100 = 2.55 m.

\[
\text{Height of room} + .100 \text{ m} \times \text{Answer to Step 1} = \text{(round up)}
\]

\[
2.450 \text{ m} + .100 \times 14 = 35.7 \text{ m} \quad \text{(round up to 36 metres)}
\]
Consequently the amount of linen-backed vinyl required is 35.7 m, and as you buy and hang paper by the metre you would purchase 36 m.

**SPECIALISED WALLCOVERING COSTS**

The cost of hanging wallcoverings depends on the type of covering requested by the client. As a guide, at the time of publication, the chargable cost for labour to apply linen-backed vinyl was $15.00 per metre (including 10% GST).

Wallcovering prices range between $25 and $75 per metre.

To calculate the total cost for materials and labour is a simple calculation. Assuming we need to purchase 20 metres of pure vinyl costing $45.00 per metre and we charge $15.00 per metre to hang it, the total cost would be: $1,200.00.

<table>
<thead>
<tr>
<th>Cost Item</th>
<th>Cost</th>
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</thead>
<tbody>
<tr>
<td>Cost to supply</td>
<td>$45.00</td>
</tr>
<tr>
<td>Cost to hang</td>
<td>+ $15.00</td>
</tr>
<tr>
<td>Total</td>
<td>$60.00 per metre x 20 metres = $1,200.00</td>
</tr>
</tbody>
</table>

Other costs may need to be added such as for wall preparation and cost of adhesives. Adhesives cost approximately $125.00 for 20 litres.

**2.2 PLAN READING**

Most painters when quoting are able to quote by “eyeballing” the job on site. After years of experience they are able to estimate how much paint is needed and the time involved to complete the work required. However, this method of quoting is based on seeing the job and condition of the surfaces.

There are times though that painters are called upon to provide a quotation where they are unable to “eyeball” the work. This could be because the building has not yet been constructed. In this situation it is imperative that the painter be able to read and calculate from “approved” building plans.

An “approved” building plan or working drawings are those that have been passed by the local authority complete with council notations and recommendations where necessary.

Most domestic dwellings have a standard layout of plans and elevations. This requires those people who are involved in reading information from plans to know where to look.

**SECTIONS OF A PLAN**

To understand the layout of building plans it is necessary to know the names given to each part. The following pages explain and illustrate the different parts of plans:

- Site Plan
- Floor Plan
- Elevations
- Sectional Elevation
- Details
Fig. 2.3 House plans ©ANTA
Site Plan
A sit plan is required to indicate the correct positioning of the building on the building site. It includes the name of the street; lot number; northerly direction; contour lines of the block; position of driveway and scale of drawing (1:200).
Floor Plan
Probably this plan gives more information than any other part of the working drawing such as overall shape and room sizes. Imagine the roof has been removed and you are viewing the house from above. Information provided is: overall length and depth of house; room dimensions; wall thicknesses; position and sizes of doors, windows, cupboards, built-in robes, bath, shower etc.; section lines and scale of floor plan, which is usually 1:100. For the painter the floor plan is the most important.

Sometimes the electrical layout is incorporated on the floor plan. However, due to possible congestion a separate floor plan with electrical layout is often provided.

---

FLOOR PLAN  SCALE 1:100

Fig. 2.5 Floor plan © ANTA
Elevations
Although the majority of the information is found on the floor plan, elevations are also important. Elevations are divided into Front, Rear and Side elevations. Once north position is known, elevations are named according to the direction they face, eg north, south, east and west. Elevations provide information such as: view of front of building; roof shape; eave width; gutter and fascia line; ground level to floor level; floor level to ceiling level; external finishes, eg brick/render; degree of roof pitch; downpipe and metered box positions; and scale of elevation (eg 1:100).

Sectional Elevations
These elevations are cross-sections through the building at set points. It is like cutting the house in half and looking inside. The cross-section shows footings, floor and roof structures, and walls according to where the section lines have indicated. The sectional lines have arrowheads that indicate the direction to which the section is viewed. The scale of sectional elevations is usually 1:100.
Details

These views are used when it is not possible or practical to show specific constructional details on small-scale drawings. Certain information requires more detail, clarity and accuracy and scales 1:20, 1:10 or 1:5 are used. For even more accurate drawings the scales 1:2 or 1:1 may be used, for example drawings such as footing and eave construction; flashing details; timber or concrete wall construction details; specific joinery details and wall and floor tile display and layout.
TWO-STOREY PLANS
Building plans with multiple storeys contain the same sections as discussed with single-storey buildings. The only difference is the number of floor plans. A single-storey plan has only one floor plan, whereas a multiple-storey plan contains a floor plan for each storey. The levels are identified, as in the case of a two-storey building, as “lower floor plan” and “upper floor plan”. On some plans, the lower floor plan will show dotted lines indicating where the upper level corresponds with the lower. The common design between the upper and lower floor levels will be the position of the staircase or lift.
Fig. 2.9 Lower floor plan © ANTA
Fig. 2.10 Upper floor plan © ANTA
CHAPTER 2 ESTIMATING

Fig. 2.11 North and south elevations © ANTA
ABBREVIATIONS AND SYMBOLS ON PLANS

To save space and reduce cluttering on plans, abbreviations and symbols are used. These can be classified into the following area:

- Term Abbreviations
- Architectural Symbols
- Electrical Symbols
- Materials Symbols

**Term Abbreviations**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Meaning</th>
<th>Abbreviation</th>
<th>Meaning</th>
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<td>Gas</td>
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<td>PF</td>
<td>Pat Footing</td>
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<td>SD</td>
<td>Service Duct</td>
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*Table 2.4*
### Architectural Symbols

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*Table 2.5*
Table 2.5 Cont.

Electrical Symbols

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Table 2.6
### Material Symbols

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<td><img src="image" alt="Cut Stone Masonry Symbol" /></td>
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**Table 2.7**

### SCALING

When a set of plans are drawn it is usually impossible to show items in full size, therefore the building structure or location must be proportionately reduced to fit on to a convenient size drawing paper. This reduction is known as “scaling down” and is shown on the plan as, for example, “1:100” or whichever scaling down reduction the architect or designer has chosen.

Scaling is necessary due to dimensions being omitted from the plans because of human error or because the dimensions are not known at the time of drawing.
Scales commonly used on building plans are:

- Floor plans 1:100 or 1:50
- Elevations 1:100 or 1:50
- Sectional Elevations 1:100 or 1:50
- Site Plans 1:500 or 1:200
- Details 1:20 or 1:10 or 1:5 or 1:2 or 1:1

**Using a 1:5 scale one would read each increment as being 5mm**

**Or as denoted on the scale rule 20mm 1:1 scale equals 100mm in 1:5 scale**

**Fig. 2.31 Accurate measuring**

**How to Use a Scale Ruler:**

The first important step is to choose the correct scale on the ruler to match the scale given on the drawing. A scale ruler will have at least two scales on each side of the ruler (see diagram below eg. 1:10 and 1:100). If using the 1:100 scale, align the “0” mark at the beginning of the line being measured and read the measurement on the ruler at the end of the line.

**NOTE:** Sometimes lines measured fall between scale rule increments. A rule of thumb in this case would be to read the higher increment of the two. This ensures you are not under estimating.
SCALING EXERCISE

<table>
<thead>
<tr>
<th>Scale</th>
<th>Distance to be Measured</th>
<th>mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:50</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1:10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

INTERPRETING PLAN DRAWINGS

When looking at a plan drawing for the first time, you are faced with a mass of information that is given to you at one time. If you can break this information down to the areas necessary for you, you may not be so alarmed at its content.

ROOMS

When you look at a plan you can see the layout of the various rooms. These are usually printed in quite bold lettering styles as shown below.
The outline of the rooms is done in a method called backlining, only for presentation. This makes the rooms appear more prominent.

**THE WALL SECTIONS**

Where there is a cavity wall, the drawing usually shows this cavity by leaving the cavity line there but usually quite light. This is mainly for the bricklayer to show where the cavity walls are to go and what they look like.

The single brick walls, usually internal, are shown by two dark lines.

**WINDOWS**

Where the backlining ends on a cavity wall and fine lines are drawn in between the break in the cavity wall these lines show windows, eg:
CUPBOARDS, STOVES ETC
Within the kitchen, bathroom and laundry you will notice that the drafter has included the positioning of cupboards, stove, sinks, bath, shower recess.

DOORS
From the plan, and your knowledge of houses and structures, you should be able to tell which are swinging doors and which are sliding doors.

RIDGES AND VALLEYS AND EAVES
The plan also includes, shown in broken lines, the ridges and valleys of the roof structure.

EAVES
As shown above, there are broken lines around the outside of the building. These show the positioning and width of the eaves. Using these two sections, ridges and valley, you can work out the positioning of the gables.

GUTTER AND FASCIA
These lengths can be worked out by looking at the broken lines at the edge of the building. Also keep in mind the ridge and valley broken lines to work out the gables where there is no gutter and fascia. Now you can work out the linear length of the gutter and fascia.

MEASUREMENTS
Outside the plan drawing there are sets of lines and figures. These figures are the basic reason we are examining this section. Below is an example of the lines and measurements mentioned.
There should be three measurement lines. The first line and row of figures shows brick piers and openings. This gives us the measurements of the wall and window widths.

The second row informs us of the wall thicknesses and room sizes (internal). For the painter, these are the most important as they are the internal measurements of the various rooms. To find the length and breadth of a room you go to the room and then work out to the side of the drawing till you come to the second row of figures. These then tell you the measurements of that particular room.

The last row of figures is the overall length or breadth of the building on one plane or elevation.

Another measurement that you will be required to find is the height of the ceiling. This is shown on one of the elevations between the CL and the FL eg:

**EXTERIOR WALLS**
These are usually set out in brick courses but do not show the measurement. This is where you will be required to use your scale ruler.

**GABLES**
For the measurement of gables you will be required to look at the elevations. You may be able to work out parts of the gable from the plan, but for things like the height this will have to be found or measured from the elevations supplied on the drawing.

**CALCULATIONS**
When you have found and measured the lengths required you will be able to go back to basic calculations and use the formula that covers the area, eg: Perimeters, Rectangles, Walls etc.
2.3 QUANTITIES OF MATERIALS

PAINT COVERAGE

Quantities of paint required for an average dwelling can be calculated quite easily, by using an average coverage table and a Painting Quantities sheet.

The series of steps that are required to complete a quantities sheet are as follows:

1. Across the top list all the surfaces that are to be painted.
2. Down the left hand side list the materials that are specified to be used.
3. Enter the area calculated under the appropriate section, not forgetting to double these if a two-coat system is required.
4. Total the areas for each paint.
5. Enter the suggested coverages of each paint type.
6. Divide the total area by the respective coverage of materials to find the amount of paint required to the next full litre.

<table>
<thead>
<tr>
<th>Surface</th>
<th>Doors</th>
<th>Gutter (Metal)</th>
<th>Fascia Timber</th>
<th>Windows Timber</th>
<th>Verandah Railings</th>
<th>Down Pipes</th>
<th>Other Pipes</th>
<th>Roof Vents</th>
<th>Fence rails and panels</th>
<th>Gate Metal</th>
<th>Meter Box</th>
<th>Concrete Floors</th>
<th>Hardiflex Walls</th>
<th>Total Area</th>
<th>Coverage m²/litre</th>
<th>Quantity Paint</th>
</tr>
</thead>
<tbody>
<tr>
<td>Print Primer</td>
<td>8.5</td>
<td>6.5</td>
<td>8.5</td>
<td>4.5</td>
<td></td>
<td>6</td>
<td>.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>34.5</td>
<td>12</td>
<td>3 P</td>
</tr>
<tr>
<td>Undercoat</td>
<td>8.5</td>
<td>3.6</td>
<td>6.5</td>
<td>8.5</td>
<td>4.5</td>
<td>3.6</td>
<td>2.1</td>
<td>5.4</td>
<td>6</td>
<td>3</td>
<td>.5</td>
<td></td>
<td></td>
<td>52.2</td>
<td>16</td>
<td>4 P</td>
</tr>
<tr>
<td>Oil Gloss</td>
<td>8.5</td>
<td>3.6</td>
<td>6.5</td>
<td>8.5</td>
<td>4.5</td>
<td>3.6</td>
<td>2.1</td>
<td>5.4</td>
<td>6</td>
<td>3</td>
<td>.5</td>
<td></td>
<td></td>
<td>207</td>
<td>18.5</td>
<td>12 P</td>
</tr>
<tr>
<td>P.V.A.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>207</td>
<td>18</td>
<td>3 P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paving Paint</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36</td>
<td>36</td>
<td>14</td>
<td>12 P</td>
<td></td>
</tr>
<tr>
<td>Metal Primer</td>
<td>3.6</td>
<td></td>
<td>3.6</td>
<td>5.4</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>17.7</td>
<td>16</td>
<td>2 P</td>
</tr>
<tr>
<td>Total Area</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Table 2.8*
CHAPTER 2 ESTIMATING

APPROXIMATE PAINT COVERAGES

NOTE: These are average guide figures and are subject to adjustment according to porosity of surfaces and the brand of paint specified.

<table>
<thead>
<tr>
<th>PAINT TYPE</th>
<th>m²/LITRE</th>
<th>PAINT TYPE</th>
<th>m²/LITRE</th>
</tr>
</thead>
<tbody>
<tr>
<td>All purpose sealers</td>
<td>8</td>
<td>Acrylic gloss</td>
<td>15</td>
</tr>
<tr>
<td>Wood primer</td>
<td>12</td>
<td>Roofing paint</td>
<td>15</td>
</tr>
<tr>
<td>Zinc chromate metal primer</td>
<td>16</td>
<td>Paving paint</td>
<td>14</td>
</tr>
<tr>
<td>All purpose undercoat</td>
<td>16</td>
<td>Aluminium silver</td>
<td>18</td>
</tr>
<tr>
<td>Gloss enamel</td>
<td>18.5</td>
<td>Silicone water repellent</td>
<td>4</td>
</tr>
<tr>
<td>Flat plastic</td>
<td>18</td>
<td>Varnish internal and external</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 2.9

SUNDRY ITEMS

TURPENTINE
Linseed oil, thinners and the like, allow 10% of the appropriate type of paint.

GLASS PAPER
Allow 1 sheet per litre of paint. (Exclude last coat and plastic paint.)

PUTTY
Allow 1 kg to 10 litres of primer.

PAINT
Can sizes are – 250 ml, 500 ml, 1litre, 4 litres, 10 litres and 20 litres
2.4 SELF TEST 2A – CALCULATING
You will find the answers to these questions at the back of the book.

LINEAR
1. Convert the following millimetres into meters.
   - 22345 mm ________ m
   - 450 mm ________ m
   - 34 mm ________ m
   - 12345 mm ________ m

2. Calculate the skirting board perimeter in a room that measures 4 600 mm by 2 500 mm.

3. Calculate the perimeter of gutter and fascia to a house measuring 25 metres by 10 meters.

4. Calculate the perimeter of a room measuring 2.4 m by 4.5 m with a door opening of 0.750m.

AREA
5. Calculate the area of a ceiling with a length of 4 500 mm and width of 3 750 mm.

6. Calculate the area of one wall with a length of 7 560 mm and height of 2 450 mm.

7. Calculate the area of four walls with a height of 3 000 mm with a length of 12 300 mm and width of 5 670 mm.

8. Calculate the total number of m$^2$ (area) in a room with 5 walls with a height of 2 440 mm. The other walls measure: 4 670 mm; 4 800 mm; 3 450 mm 2 670 mm; 2 980 mm.

9. Calculate the total m$^2$ for two (2) gables with a base of 4 670 mm and perpendicular height of 7 000 mm.

10. Calculate the m$^2$ of a top of a tank only, with a radius of 6 500 mm.

11. Calculate the m$^2$ of a tank (sides only) with a diameter of 4 200 mm and height of 10 500 mm.

12. Calculate the m$^2$ for a sphere with a diameter of 12 000 mm.

13. Calculate the m$^2$ for a circular dome with a radius of 5 400 mm.

14. Calculate the area of an ellipse with a major axis of 6 780 mm and minor axis of 3 490 mm.
15. Calculate the area of a saw-toothed roofed building (walls only) with a length of 23 500 mm and width of 13 000 mm. The largest height is 5 600 mm and the smallest height is 4 765 mm.

16. Calculate the area of a cylinder (walls only) that are corrugated. The diameter is 4 300 mm and has a height of 6 700 mm.

17. Calculate the area of a flat rectangular roof with clip-lock deck roofing with a length of 5 890 mm and a width of 3 450 mm.

**PAINT QUANTITIES**

Using the following coverage rates calculate the quantity of paint required. (Round answers up to next full litre.) The following surface coating coverage rates are for one coat over a substrate of normal porosity unless otherwise specified.

<table>
<thead>
<tr>
<th>Paint Quantities</th>
<th>Coverage Rate per litre</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acrylic Flat</td>
<td>12m²</td>
</tr>
<tr>
<td>Acrylic Gloss</td>
<td>11m²</td>
</tr>
<tr>
<td>Acrylic Semi-gloss</td>
<td>12m²</td>
</tr>
<tr>
<td>Flat Enamel</td>
<td>14m²</td>
</tr>
<tr>
<td>Semi-gloss Enamel</td>
<td>15m²</td>
</tr>
<tr>
<td>Gloss Enamel</td>
<td>16m²</td>
</tr>
<tr>
<td>Polyurethane Clear</td>
<td>16m²</td>
</tr>
<tr>
<td>Texture Coating (Fine)</td>
<td>8m²</td>
</tr>
<tr>
<td>Texture Coating (Coarse)</td>
<td>4m²</td>
</tr>
<tr>
<td>Chlorinated Rubber</td>
<td>10m²</td>
</tr>
<tr>
<td>Epoxy (two-pack)</td>
<td>10m²</td>
</tr>
<tr>
<td>Polyurethane (two-pack)</td>
<td>10m²</td>
</tr>
</tbody>
</table>

18. Calculate the amount of paint required to paint a sphere with semi-gloss acrylic (one coat). Diameter: 4 500 mm.

19. Calculate the amount of paint required to paint three (3) ellipses with acrylic flat (2 coats). Major Axis: 3 567 mm Minor Axis: 2 456 mm.

20. Calculate the amount of paint required to paint a room (ceiling and walls) with semi-gloss enamel (2 coats). Length: 3 560 mm Width: 3 000 mm Height: 2 800 mm.

**PAINT COSTS**

21. Calculate the quantity and cost of acrylic gloss required to paint the saw-toothed roofed building with two (2) coats, walls only. Gloss acrylic costs $8.50 per litre.
LABOUR COSTS
22. What is the cost of labour to paint three (3) gables with 2 coats? The base measures 4 670 mm with a perpendicular height of 2 890 mm. Labour cost is $4.80 (all coats included in price.)

PERCENTAGES
23. You have calculated a quotation for a client at $3 600.00. What would the total cost be when adding 10% for GST?

24. Your paint supplier has negotiated to give you 17.5% discount on all paint supplies and 9% discount on hardware supplies. Your paint purchases were $1,345.00 and hardware purchases were $535.00. What is the total cost to you?

WALLPAPER
25. Calculate the number of rolls of wallpaper (English) required for a room with the following dimensions. Lgth: 6 500 mm Wdth: 3 900 mm Ht: 2 900 mm.

26. Calculate the cost of wallpapering (Canadian) a room measuring 5 790 mm by 3 670 mm and a height of 2 450 mm. You charge $33.00 per roll to hang the paper and $59.99 per roll to supply. What is the total cost including GST?

WALLPAPER CEILING
27. Calculate the rolls of wallpaper (English) required for the following ceiling.
LINING PAPER
28. Calculate the total cost to apply lining paper to a room that is 2 600 mm by 2 170 mm. The height is 3 000 mm. You charge $33.00 per roll to hang the paper and $25.00 per roll to supply. What is the total cost including GST? (Lining Paper Size: 10 000 mm long and .560 m wide.)

SPECIALISED WALLCOVERINGS
29. Calculate the total cost to apply pure vinyl to a room with the following dimensions. Length: 6 570 mm Width: 3 900 mm Height: 2 700 mm. You charge $14.00 per metre for labour and $30.00 per metre for materials. What is the total cost including GST?

2.5 SELF TEST 2B – PLAN READING
1. Why is it necessary for painters to know how to read building plans?

2. What information is provided by the following types of plans?
   A. Site Plan:

   B. Floor Plan:

   C. Elevations:

   D. Sectional Elevations:

   E. Details:
3. Identify the following building plan symbols:

<table>
<thead>
<tr>
<th>Sketch</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Sketch 1" /></td>
<td></td>
</tr>
<tr>
<td><img src="image2.png" alt="Sketch 2" /></td>
<td></td>
</tr>
<tr>
<td><img src="image3.png" alt="Sketch 3" /></td>
<td></td>
</tr>
<tr>
<td><img src="image4.png" alt="Sketch 4" /></td>
<td></td>
</tr>
<tr>
<td><img src="image5.png" alt="Sketch 5" /></td>
<td></td>
</tr>
<tr>
<td><img src="image6.png" alt="Sketch 6" /></td>
<td>F</td>
</tr>
<tr>
<td><img src="image7.png" alt="Sketch 7" /></td>
<td></td>
</tr>
<tr>
<td><img src="image8.png" alt="Sketch 8" /></td>
<td>40 W</td>
</tr>
<tr>
<td><img src="image9.png" alt="Sketch 9" /></td>
<td></td>
</tr>
<tr>
<td><img src="image10.png" alt="Sketch 10" /></td>
<td></td>
</tr>
<tr>
<td><img src="image11.png" alt="Sketch 11" /></td>
<td></td>
</tr>
</tbody>
</table>
4. From the building plans on pages 2.26 and 2.27 and the labour/material rates on page 2.16, calculate the following:

DO NOT DEDUCT FOR OPENINGS eg. Doors and windows

(a) Cost to paint the ceiling and walls in Bedrooms 2 and 3. You are required to apply 2 coats of Flat on the ceilings and 2 coats of Low-sheen on the walls. (Rates on pages 2.16 include all coats.)

(b) Cost to paint the gutter and fascia. (Rates on pages 2.16 include all coats.)

5. What is the total cost to hang and supply English wallpaper to Bedroom 1 walls. You charge $33.00 per roll to apply the wallpaper and it costs $59.99 per roll to purchase. Add 10% for G.S.T. DO NOT DEDUCT FOR OPENINGS.

6. What is the total cost to hand and supply pure vinyl (Linen-backed Vinyl) to the Living Room. Cost to apply $14.00 per metre. Cost to supply $40.00 per metre. Add 10% for G.S.T. DO NOT DEDUCT FOR OPENINGS.
CHAPTER 3: CONTRACT MANAGEMENT

3.1 THE TENDERING PROCESS

WHAT IS A TENDER?
A tender is a calculated price given to an object that is to be worked upon, under the regulations laid down to the tenderer. If the person or persons calling for tenders are agreeable, they can either accept or reject any tender. On acceptance of their selected tender, a contract is drawn up and is signed by both parties and a witness. The contract may vary as to the type required by both parties or can be controlled by the specification. All changes to either the contract or the specification must be made before the contract is signed.

There is a code that governs the tendering process and it is included in the Australian Standards™. The code number is AS 4120. Copies can be purchased from Standards Australia located in every major city in Australia. It is recommended that, before engaging in major tendering with larger organisations, painters first obtain a copy and familiarise themselves with the code of practice. It is also strongly recommended that a business has operated for at least 12 months prior to engaging in a tendering process. This will enable the painter to refine his/her business operations and rectify any teething problems associated with starting a new business. Many dollars could be lost due to the lack of experience in operating a business.

Tender Terminology
The two major people involved in the tendering process are the Principal and the Tenderer.

Principal – Any person(s) inviting and receiving tenders. A contractor or subcontractor could also be a principal.

Tenderer – Any person(s) providing a tender. They can be a contractor, or subcontractor or any person who supplies goods.

TYPES OF TENDERER
Depending upon the kind of work being offered for tender and the method which the principal chooses to follow, tenderers can be classified as follows:

SELECTED TENDERERS: The principal can have a list of tenderers who have proved they are competent by the work already accomplished on behalf of the principal on other projects. The principal chooses from this list and invites them to tender on a rotational basis. The principal can add to or deduct from the list those who wish to be included and those who no longer meet the needs of the principal.

OPEN TENDERERS: The principal advertises in the local newspaper or other means for prospective contractors to submit their tenders for a specific project. Because it is advertised in the local paper, the number of those tendering is not restricted. However, the principal would expect that the tenderers prove they have the necessary skills, resources, quality, safety management and financial ability to undertake a project being advertised. If satisfied with a tenderer’s performance the principal may choose to add their name to a register and they now become selected tenderers for any future projects.
PRE-REGISTERED TENDERERS: These tenderers are similar to the selected tenders. The principal invites expressions of interest for pre registration for a specific project or specific types of projects. Tenderers are checked against pre-qualification criteria and a small number of those meeting the required criteria are invited to tender.

INVITED TENDERERS: The principal invites tenders from a number of prospective tenderers known to have the ability to undertake a project of the type proposed.

NEGOTIATION TENDERER: This type of tender is perhaps the better of the above-mentioned types to be involved with. Only one tenderer negotiates with the principal to reach an agreeable tender to both parties concerned. These types of tender can occur when there is no competition for the work or the principal prefers a particular tenderer with whom he or she is familiar to do the work.

KINDS OF TENDER
1. State Government Tenders* (See Fig. 3.4)
2. Commonwealth Tenders
3. Local Government Tenders (See Fig. 3.3)
4. Private Sector Tenders (See Fig. 3.2)

*Note: At the time of publication all companies submitting State Government Tenders in the building and construction industry valued over $150,000 have to be classified as Priority Access Employers. A Priority Access Employer is one who has proved that they are strongly committed to training within their company (eg employing apprentices). For further information: www.Priority.training.wa.gov.au

TENDERING PROCESS

General: Before the tendering process begins by the principal calling for tenders, the principal has a moral obligation to arrange the project funding. Once having called for tenders, the principal should be committed to proceed with the project. If he or she does not proceed for one reason or another, valuable time and expense can be wasted by the hopeful tenderers.

Call for tenders
The principal should allow sufficient time from the time of inviting tenders to the closing date when tenders are required to be submitted. Sufficient time should be allowed for the tenderers to make visits to the project site and undertake any other work necessary to allow them to accurately complete the tender documents. The principal is responsible for allowing access to the site for inspection by tenderers.

Where tenders are advertised in the local newspaper, the advertisement should include information that assists the prospective tenderers determine if they are appropriate contractors. Advertisements in Western Australia appear in Wednesday’s local paper.

The following should appear in the advertisement:
1. Description of the work required
2. Information of when and where tender documents may be obtained
3. Details of when and where tender shall close
4. The tender validity period (how long the quote must be valid for)
5. Details of any tender documentation deposit or purchase price required, if applicable, and the method of obtaining a refund of that cost
6. Name, address and telephone number of the Principal’s appropriate contact person for any enquiries and/or clarification.

**Receipt of tenders**
All tenders received by the principal should be secure and confidential. It is therefore necessary for the principal to make necessary arrangements to this effect. Information that a tenderer provides in a tender should not be given or made available by the principal to any another tenderer at any stage during the tender process or after it has concluded. However, it is acceptable to have public openings of tenders and disclosure of tender prices, provided it is advised in advance in the tender.

Late tenders usually will not be accepted, except where it is clear that circumstances beyond the tenderer’s control were the cause of lateness or that that the integrity of the tendering process will not be compromised by accepting a late tender. A situation where this may occur is during a postal strike. Where a late tender is received, the time and date of receipt shall be noted on the document and signed by the recipient.

**Closing of tenders**
It is strongly recommended that tenders should not close:
1. Earlier than 2:00 p.m.
2. On a Monday or day following a public holiday
3. Less than a minimum of one day after a weekend, building industry holiday or rostered day off
4. Less than a minimum of one week after the recognised industry Christmas close down.
5. On a weekend

This is for practical purposes, which include ensuring that delivery of mail is completed for any given day, and to accommodate times when personnel who receive and submit tenders are not likely to be at work.

**Evaluation of tender**
The principal has the right to reject any tender that does not comply with the tender documents. The principal has the right also to choose what he/she considers to be the most advantageous tender.

Assuming the principal decides not to accept any tender for whatever reason, then they would advise the tenderers they wish to recall their tenders and provide the tenderers with the reasons for the decision. As a general rule where appropriate, the original tenderers will be invited to submit new tenders.

The principal could use the following points when evaluating the tenders before him or her:

1. Tenderer has complied with pre-qualification criteria. For painters this may include proof of Painter’s Registration Number and financial capacity to take on project.
2. Conformity with the tender documents. Agreement not to use sub-contractors and proof of insurance policies, stating policy numbers.
3. Value for money. The best price for specified work.
CHAPTER 3 CONTRACT MANAGEMENT

4. Construction period. Tenderer able to complete project within time frames.
5. Technical, managerial, physical and financial resources.

**Negotiation and selection**
After the tenders have been sighted the principal should not try to seek lower prices by trading off different tenderers’ prices against others.

The principal should first complete all negotiations with the first choice of tenderer, before starting to negotiate with another tenderer.

Once the principal has chosen the tenderer he/she wishes to use and their price, he/she should write a letter to the successful tenderer confirming this decision.
TENDER PROCESS FLOW CHART

Fig. 3.1 Tender process flow chart
OBLIGATIONS OF TENDERERS

Call for Tenders
Potential tenderers should only submit a tender if they truly believe they have the ability to do the work being offered. In the case of selected, preselected or invited tenders, a tenderer may change his/her mind and decide not to tender. If this is the case he/she must notify the principal immediately.

Return of Tender Documents
Tenderers who are not successful in winning a tender should return tender documents to the principal. However, this is only necessary if the principal requests it in the tender documents.

Evaluation of Tender Documents
Tenderers should familiarise themselves with the tender documents, and also ensure that they visit the site on which the project is to be constructed. If there is any doubt regarding any matter relating to the tender, they should obtain further clarification from the principal. This will guarantee that their tenders are thorough. This is also an indication that the tenderer fully understands the documents and the work required.

No tenderer should try to obtain information that is not being provided also to other tenderers.

If there are any mistakes or discrepancies that the tenderers believe are in the tender documents, they should immediately bring these to the attention of the principal.
3.7

ADVERTISED TENDERS IN "THE WEST AUSTRALIAN"

City of Joondalup

TENDER
Tenders are invited from licensed Contractors to provide Consultancy Services for Tender No. 016-05/04 for Consultancy Services from Licensed Quantity Surveyors for a period of 5 years.

EXPRESSION OF INTEREST (EOI)
Expressions of interest are invited from qualified Contractors to provide Consultancy Services for EOI No. 015-05/04 for the Purpose of a Contract Management Software System.

Details of the conditions of tendering / expression of interest, contract, terms and specifications are provided in the City’s Tender / EOI Document. The City follows the Codes of Tendering AS 4120 and its contract management framework.

1. Tender / EOI Document is available on payment of $25 x 0.07 (payable upon submission of a valid Tender/EOI form) on Wednesday, 28 August 2003, from Reception, Joondalup Administration Centre, 96 Bussel Avenue, Joondalup WA 6027. Documents may be viewed prior to purchase or downloaded from the City’s website without payment from http://www.joondalup.wa.gov.au.

2. Contact Person: Matthew Mckinstry, 9400 4555

Tender Closing: 3:30 PM Thursday 4 September 2003
Tender Lodgement: Tender Box, Ground Floor (rear), Joondalup Administration Centre, 96 Bussel Avenue, Joondalup WA 6027, prior to closing.

A tender received in the tender box last but not not be accepted.

A tender/EOI shall be submitted in a sealed envelope, clearly marked "CONFIDENTIAL Tender/EOI number and description, addressed to Chief Executive Officer, City of Joondalup. The lowest or any tender/EOI will not necessarily be accepted.

City’s Code of Conduct prohibits canvassing of Electrical Members/Agency Officers.

GEOFF SMITH
Chief Executive Officer

WATER CORPORATION
www.watertenders.wa.gov.au

Fig. 3.2 Private Tender
Fig. 3.3 Local Government Tender
Fig. 3.4 Government State Tender

3.2 CUSTOMER RELATIONS

Who is a Customer?

Customers are people who bring you their wants. It is your job to satisfy their requirements, thereby profiting the customer and yourself.

Customers are not cold statistics – they are flesh and blood human beings, with feelings, emotions, biases and prejudices like your own.

A customer is not someone to argue or match wits with. Nobody has ever won an argument with a customer.

A customer is not an interruption of your work, but is the purpose of it. You are not doing customers a favour by serving them – they are doing your company a favour by giving you an opportunity to do so.

A customer is not dependent on you – you are dependent upon the customer.
HOW DOES THE CUSTOMER VIEW YOU?

To your customers you are the spokesperson for your company. What you say, how you say it, and what you do, has an important bearing on whether people continue to do business with your company.

Do you want customers or clients? What is the difference you might ask? A customer is someone for whom you provide a one-off service. A client is someone who comes to you on a continual basis.

It is necessary to assume full responsibility for the company’s actions, and you should not be quick to blame another person or section of your company for some error or inconvenience. YOU ARE RESPONSIBLE.

The true test of the quality of your company’s service is how good the customer thinks it is — not how good you think it is.

CLIENT BEHAVIOURS

Client behaviours vary. Establishing and maintaining relationships with clients involves knowing how to deal positively with a range of human behaviours. Behaviours can be classified as:

- Passive
- Neutral
- Assertive
- Aggressive

Below are some suggestions that may assist you to deal with the above behaviours. It will take time and experience to develop these skills. However, your effort will contribute to leaving a positive impression with current and future clients.

Passive Clients

These clients tend to be evasive and do not express their feelings. They are the ones who lose without knowing it, because service providers assume that, because they do not complain, they are happy.

With such clients you need to find out if they are satisfied with the service or supplies.

Using “open-ended” questions can draw out information — questions like: “How do you feel about this?” They should be encouraged to say what they really think. You should create an environment where they can express any criticism without fear of being treated badly or disadvantaged.

Neutral Clients

Such clients are the easiest to deal with. They behave as you expect. They are skilled at dealing with others. As long as you uphold your part of the agreement/contract, they are predictable, and easy to deal with.
Assertive Clients
These clients will stick up for their own rights without threatening you or causing alarm. What you will need to do is clarify their needs by listening very carefully and using good questioning skills. To ensure you understand the nature of the complaint, request or issue, ask open-ended questions that prompt more information. Rephrase in your own words so the client is aware that you understand them correctly.

For all your clients you should:

- Obtain specific information that includes dates, places, amounts
- Ensure you understand the situation in its entire scope
- Act on the issue/complaint
- Check feedback from the client on your progress

Aggressive Clients
These clients are the most difficult to deal with and will require more time and skills. This is because they are often upset, and can be abusive and seem personally threatening to you. In the business arena, it is imperative that you separate criticism from a personal level to a professional level. It is important that you do not take abuse personally. If you do, then you increase your stress levels. Try to view complaints in a positive way. Complaints, even if made in anger, are a form of feedback for your organisation. They are indicators to help you identify and give attention to an aspect of your service that may need attention.

When the client is “getting it off their chest”:

- Do not interrupt someone who is angry. Listen attentively as they let off steam. If you try to interrupt it will only prolong their venting of emotion. By listening carefully while they are talking you will show them that you are taking them and their issue seriously.
- If you feel intimidated, try to be more assertive as this will gradually help you to take more control of the situation, which is what the client wants you to do.
- Stay calm and do not lose your temper. If you allow yourself to become heated and turn the situation into an argument, it is likely that you will lose a client. Remain firm (assertive) but with a cool head and you will help to cool the aggressive client. You will not then be adding “fuel to the fire”, so to speak.
- Stay on the topic. Do not get side-tracked by becoming involved in other issues.

After the client has vented:

- After the client has finished their emotional outburst, start to calm them with direct-closed questions. These questions require “yes” “no” or specific factual answers. This will help the client to keep to the point.
- Slow the situation down even further by writing down the problem in front of the client. This will help to slow down the momentum of the situation.
- Using your own words, clearly state what you perceive is the problem to show the client that you understand their point of view and you have been listening carefully to their concern.
• Ask the client to suggest what action they would like to see.
• If it is unreasonable, negotiate a plan of action together. Use the active voice to state your intentions: “I will contact …..” If you are unable to fix the problem on your own, then team-work may be required. If so, get the client’s approval.
• Give the client a time frame when the issue will be resolved.
• Follow up by contacting the client to assess their satisfaction.

Whichever client you may be confronted with you should always use the “**HW**” principle: **How and Why** things are done. Professional people always explain to their clients procedures highlighting why these procedures are preferred. When a procedure is going to cause discomfort the onus is on service providers to be honest. A doctor who makes the statement: “This injection might hurt” is better off than saying “This won’t hurt a bit.” The latter is dishonest and the client will resent it.

**SPEAKING AND REPLYING TO A CUSTOMER**

Consider what is meant by good service. It involves many different qualities, depending upon the customers’ needs and the conditions under which they come to you with their requests. There are, however, certain standards that are applicable to all contracts:

1. Give prompt service and help the customer with the minimum of delay
2. Ensure that all the information you give is both accurate and complete

**Explain Yourself Well, Be Friendly and Helpful**

**Explain Yourself:**
Whenever a request cannot be granted, or within the time limits in which a customer would expect it to be granted, give an explanation. If the answer has to be “no” then explain why.

• Give information patiently and reasonably so the customer can see your side.
• Talk with assurance – the customer will be influenced by your conviction and assured manner.
• Listen without interrupting unnecessarily.
• Respond to comments where necessary.
• Stop talking if interrupted.
• If you are having a phone conversation do not keep the customer waiting on the line without giving regular progress reports – seconds of silence can seem like hours to someone waiting.
• When returning to the phone, attract the customer’s attention before discussing details or progress reports – his/her attention may have been distracted.
• Indicate regret or appreciation where appropriate.
• Close discussions politely.

**Be Friendly:**
Your voice can do much to convey a friendly and pleasing personality. Your voice and speech are among your most important assets. They are even more important when you are the unseen company representative on the end of a telephone line.
• Speak clearly and distinctly in pleasant tones.
• Speak in a natural and pleasing manner.
• Do not speak too slowly or too quickly and avoid disturbing speech mannerisms.
Remember that your voice and speech alone must convey your personality over the telephone. You must inject life and animation into your voice to project your personality.

**BE INTERESTED AND HELPFUL:**
• Show a personal interest and give individual attention.
• Be really helpful in taking care of the customer’s request or problems.
• Where you cannot grant a request, see if some alternative action can be taken.
Good service reflects sincerity and naturalness – it means being yourself

**Recording Telephone Details**
Handling an incoming call involves many considerations; for example, you must:

• Listen to the customer’s “story”.
• Secure information from the customer – understand their needs.
• Furnish the customer with correct, complete information, after obtaining the required details.
• Record pertinent information for every contact.
• Use a special form, or contact memo, to record each call. The contact memo should include the following information:
  (a) Who the customer is – name/phone number
  (b) What the customer called about
  (c) Essential facts required to solve customer’s problem(s)
  (d) What action was taken and promised.

NOTE: The above procedure is especially helpful if someone at home is taking the message for you. Contact memos should be accurate, legible, and complete – they form a valuable record for follow up.

**ANSWERING MACHINES AND MOBILE PHONES**

**Answering Machines**
An answering machine is a valuable tool for your business. It helps you not to lose any potential cliental. At times it will be the first point of contact for your clients. Leaving a good impression and making the client feel comfortable in leaving their details is the first step to beginning a business relationship.

Your message should identify your organisation, giving your name and assurance that you will return their call at your first available opportunity.

Make sure that when using an answering machine your message invites your clients to leave all necessary details in their message. These should include their name and the day and time of the message.
If you do not intend to answer your callers promptly then the professional approach is not to use an answering machine. Its use suggests a commitment to customer service, and the impression customers receive if you do not call back is that they are not important to your business.

Keep your message current. If you are going to be away for several days or weeks, adapt your message to include such information and when you expect to return.

Mobile Phones
Mobile phones are another business accessory. As with conventional telephones, using a mobile phone while speaking to a person face-to-face can be considered rude. It is better to have your calls re-directed to another person or answering machine than to take a call while you are occupied with another person. If you do not have such a service, then offer to take the person’s name and number and you can call them back. They will appreciate your professionalism in attending to a prior customer, since they will be reassured that they also will receive full attention when you deal with them.

CUSTOMER SERVICE TIPS
Customers notice when the standard of service falls below their expectations – but they also notice when it rises above them.

We all have expectations relating to a service or product we purchase or hire. When the product or service is below expectations, we are disappointed. If on the other hand it exceeds our needs, we can experience a surprised, appreciative response. It is this customer delight factor that can influence a client to call on your services again.

A small bottle of champagne in an ice-bucket, with a welcoming note from the hotel manager, costs very little but because it exceeds expectations it can make a positive impact on customer-satisfaction levels, to the point where it generates a conscious customer delight.

A Painting and Decorating business can ensure that their customers experience the customer delight factor by providing above-than-anticipated service. Below are a few suggestions.

• Offer to paint something small that was not in the original quote (eg side gate).
• Unblock gutter or down pipe while repainting roof/gutters.
• Leave samples of paint for clients to do touch ups.
• Present items with your business details printed (eg fridge magnets, pens, hand and body creams, lip balms, sun cream, message pads).

Favourable attitudes to a service supplier can be destroyed by a single experience of bad service.

It has been suggested by research that if a person buys a car and is pleased with it, they will tell 8 others, but if they are displeased, they will tell 22 others with exaggerations.

Human nature being as it is, we tend to pay more attention to real life experiences that are more negative than positive. This is evident on the evening news. There are more negatives reports stories than positive ones. They are more emotive and people want to learn how to protect themselves if in a similar situation.

Therefore, if you offer bad service to a client, it is more than likely that more people are going to hear about the dissatisfaction of your client towards your service and in turn your
business name. This can only mean a negative outlook for any future business with your ex-client and anyone they talk to. People want to protect themselves from disappointment.

The best form of advertising is word of mouth. Use your clients’ positive reports and recommendations of your good service to grow your business.

QUALITY SERVICE QUESTIONNAIRE

Feedback from your clients is valuable for you and the future of your business. Whether good or bad, all feedback can highlight areas of your service that excel and where you need to give attention and make adjustments. One method of obtaining feedback is to use a Customer Service Questionnaire.

A customer service questionnaire (Fig. 3.5) can be made up of quantitative and qualitative questioning.

**Quantitative Questioning**

This type of questioning requires your clients to give a numerical value to specific aspects of your service you wish to know about. You can simply copy the questions from the sample questionnaire in this text or you can modify them to your needs. The questionnaire can be adapted to target specific categories of your service.

**Qualitative Questioning**

This form of questioning provides your client with the opportunity to express to you any aspect of your service where they feel you could improve. It is open-ended questioning where you could receive feedback in an area of your business you felt does not require attention.

The benefits of using such an instrument is that customers’ opinions and observations will help you know where to refine and improve your company’s service. Some people may never tell you to your face what they think of your service, particularly if it is not favourable. However, writing it on a questionnaire could seem less threatening to them.

The survey can be handed to the client at the completion of the work or sent in the mail. If you choose to mail it, make sure a self-addressed envelope is included to encourage the client to mail it at no cost to them.
3.3 JOB PLANNING

Planning is a very important part of life. We plan every moment of our life whether consciously or subconsciously. From the moment we wake up on a weekday we plan activities required before starting work at a set time. These include personal hygiene, breakfast, travelling to work. Checking the clock helps us to determine our progress and how well we have planned our time.

To successfully complete a job, run a company, or even provide a quotation, planning is imperative. Experience has taught us the need to plan.

*The time to repair the roof is when the sun is shining!* — J. F. Kennedy

*Vision is the art of seeing things invisible.* — Jonathan Swift

*Good order is the foundation of all things.* — Edmund Burke
Dig a well before you are thirsty. – Chinese Proverb
What man who wants to build a tower, does not sit down
and count the cost first. – Bible
To fail to plan - is to plan to fail. – Anonymous

When we plan we consider all things concerned with a project so that we can select the best
way of completing the project on time, within budget and according to the required
standard.

Without careful planning there will be waste of time, materials and money.

GENERAL PLANNING PROCEDURES
The process of planning can be straightforward and uncomplicated. Here is a suggested
planning process for any project.

1. Decide what has to be done and when it has to be done by.
2. Think about all the things that might stop you getting your job done.
3. Think about all the ways that the job can be done.
4. Of all the ways it can be done, select the way that suits your situation best and looks
   like giving you the least problems.
5. Make a drawing like a link chain showing the order of things that has to be done.
6. Check to make sure that everything that has to be done is included in your plan.

Planning To Provide a Quotation
Planning to provide a quotation for a specific job can be organising mentally or preferably
in written form. Consideration should be given to the following factors:

• Time job will take
• Cost per hour (labour)
• Materials (quantity and cost)
• Sundry items
• Possible problems – have contingency options
• Travelling costs/time

FLEXIBILITY WITH PLANNING
Murphy’s Law: "If something is going to go wrong – It will go wrong!"

No human is immune to this law.

“Go wrong” in this context means: something happens which was not originally planned.

Therefore one needs to allow for flexibility in the planning process for perceived problems
or flexibility when the problems appear.

The following are examples of conditions that can affect a job plan and scheduling:

• Weather conditions
• Paint drying times
• Industrial disputes
• Environmental protection concerns
• Scaffolding availability
• Council regulations
• Client requests/complaints
• Occupational Health and Safety requirements
• Previous trades behind time.

Perhaps the most common condition affecting painters/decorators is that previous trades in the construction process are behind time.

Listed below is a basic construction process chart depicting the building trades in their sequential order. As a general rule the further down the list one’s trade appears, the more chance of being affected by the previous trade(s) timetable. The painter/decorator is classified as a finishing trade and positioned in Stage Three (3) of the building process.

**GENERAL CONSTRUCTION PROCESS CHART**

<table>
<thead>
<tr>
<th>STAGE ONE:</th>
<th>Earthworks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plumber (underground work)</td>
</tr>
<tr>
<td></td>
<td>Electrician (underground work)</td>
</tr>
<tr>
<td></td>
<td>Concreter</td>
</tr>
<tr>
<td></td>
<td>Bricklayer</td>
</tr>
<tr>
<td></td>
<td>Roof Carpenter</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STAGE TWO:</th>
<th>Roof Tiler</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Plumber (pipes in walls)</td>
</tr>
<tr>
<td></td>
<td>Electrician (conduits in walls)</td>
</tr>
<tr>
<td></td>
<td>Plasterer</td>
</tr>
<tr>
<td></td>
<td>Ceiling Fixer</td>
</tr>
<tr>
<td></td>
<td>Cabinet Maker</td>
</tr>
<tr>
<td></td>
<td>Wall and Floor Tiler</td>
</tr>
<tr>
<td></td>
<td>Second Fixer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>STAGE THREE:</th>
<th>Plumber (fittings)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Electrician (fittings)</td>
</tr>
<tr>
<td></td>
<td><strong>Painter/Decorator</strong></td>
</tr>
<tr>
<td></td>
<td>Brickpaver</td>
</tr>
<tr>
<td></td>
<td>Landscaper</td>
</tr>
</tbody>
</table>

**NOTE:** While flexibility is needed, it is not a licence to go beyond the contract agreement. Quality needs to be maintained and within the time frame agreed upon by the parties involved.

**SCHEDULES**

Time schedules are a good method to plan a job. Schedules 1 and 2 (Tables 3.1 & 3.2) show how the Bar Schedule works. At a glance one can see, within the interior schedule, that three days have been allowed to complete the bathroom that is accomplished in conjunction with Bedrooms 1 and 2.

At the beginning of day 4 the Kitchen and Bedroom 3 are started, with Bedroom 3 being completed halfway through day 5.
The Laundry and Toilet are started halfway through day 5 and completed along with the Kitchen at the end of day 6.

The Family Room, Hall and Entry Hall are then started on day 7. Note that the Family Room is then completed at the end of the eighth day and the Hall and Entry Hall are finished halfway through day 9. Half a day is allowed for cleaning up on day 9.

Whenever you are planning a Time Schedule, always plan it so the last item of the interior to be finished is the Hallway. It is not wise to first complete the Hallway and then begin the rooms leading from it. The Hall walls would probably be damaged, or the doorframes and doors badly marked. This method applies to both new contracts and renovation work.

<table>
<thead>
<tr>
<th>Schedule 1 Interior Only</th>
<th>Working Day Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>Bedroom 1</td>
<td></td>
</tr>
<tr>
<td>Bedroom 2</td>
<td></td>
</tr>
<tr>
<td>Bedroom 3</td>
<td></td>
</tr>
<tr>
<td>Bathroom</td>
<td></td>
</tr>
<tr>
<td>Kitchen</td>
<td></td>
</tr>
<tr>
<td>Toilet</td>
<td></td>
</tr>
<tr>
<td>Laundry</td>
<td></td>
</tr>
<tr>
<td>Family Room</td>
<td></td>
</tr>
<tr>
<td>Entry Hall and Hall</td>
<td></td>
</tr>
<tr>
<td>Clean Up</td>
<td></td>
</tr>
</tbody>
</table>

Table 3.1

<table>
<thead>
<tr>
<th>Schedule 2 Exterior Only</th>
<th>Working Day Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 2 3 4 5 6 7 8 9</td>
</tr>
<tr>
<td>Prime</td>
<td></td>
</tr>
<tr>
<td>Undercoat</td>
<td></td>
</tr>
<tr>
<td>Gloss Plus Trim</td>
<td></td>
</tr>
<tr>
<td>Walls PVA</td>
<td></td>
</tr>
<tr>
<td>Porch Floors</td>
<td></td>
</tr>
<tr>
<td>Clean Up</td>
<td></td>
</tr>
</tbody>
</table>

Table 3.2

**PRINCIPLES OF TIME MANAGEMENT**

Time is a most precious resource. It makes good sense to use time wisely and not spend any more than is necessary on tasks. We can be good managers of time if we remember a few principles of time management.
1. Plan to spend a certain amount of time on a task. If the task is taking longer than planned and it cannot be done any more quickly, remaining tasks will need to be re-organised.

2. List tasks that must be completed before another task can start.

3. List tasks that can be done at the same time.

4. Make a note of what you consider are the most important tasks in the project. These tasks may need to be given the most time.

5. Make a note of any tasks that can be completed quickly and easily. If possible you might like to get these tasks completed early and get them out of the way.

6. If anything unplanned happens or if any task that was not planned is discovered, examine the importance of the situation and allocate an amount of time to fix the situation.

**PLANNING TO BE COST EFFECTIVE**

Planning to be Cost Effective and Efficient is as Simple as ABC:

**A** well-planned project will be completed quickly and cost less than a poorly planned job that takes a long time. Consumers will appreciate how quickly you can complete a good quality job.

**B** by getting the project completed quickly and economically you can make a start on the next project at an earlier date. Your direct cost will be spread over a greater number of projects, making your overall business operation very cost effective.

**C** arefully planned projects will be efficient in the use of materials, equipment and labour.

### 3.4 SELF TEST 3

**Tendering Process**

1. There are five (5) types of people who submit tenders. State two (2) of them and give a brief description for each one.
   
   (i) ____________________

   (ii) ____________________

2. Explain the role of the two people listed below in the building industry.

   **Tenderer:**

   ______________________________________________________

   ______________________________________________________

   **Principal:**

   ______________________________________________________

   ______________________________________________________
3. The principal should allow sufficient time between inviting tenders and closing of tenders. State below why this is advisable.

_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

4. When tenders are advertised, the advertisement shall include the following sections. (Fill in the missing words.)

(a) An adequate description of the work required.

(b) Details of _________ and _________ tender documents may be obtained.

(c) Details of when and where tenders shall _________.

(d) The tender validity period.

(e) Details of any tender documentation deposit or _______ _______ if applicable, and method of obtaining a refund of the cost.

5. No information provided in a tender by a tenderer can be given by the principal to another tenderer at any stage during and after the tender process. (Circle correct answer.)

    True or False

6. No public openings of tenders and disclosure of tender prices is permitted at all. (Circle correct answer.)

    True or False

7. The Australian Standard number for tender policy and procedures is: (Circle correct answer.)

    (a) AS - 2311
    (b) AS - 4120
    (c) AS - 3120
    (d) AS - 2140

8. Closing of tenders usually will be at least one week after the recognised industry Christmas close down. There are at least three other preferable time frames. List two (2) of them.

    (i) _______________________
    (ii) _______________________

9. The principal can trade off different tenderers’ prices against others in an attempt to seek lower prices. (Circle correct answer.)

    True or False
10. Evaluation of tenders and tenderers should include consideration of the following: (Fill in the missing words.)

1. Compliance with pre-qualification criteria and the applicable Code of Practice.
2. Conformity with the ______________ documents.
3. _________ for money.
4. Construction period
5. Technical, ____________, physical and _________ resources of the tenderer.

11. When the principal has accepted a tender he/she should advise the tenderer by: (Circle the correct answer.)

   (a) Phone
   (b) Letter
   (c) None of the above

12. The successful tenderer and his/her price that was accepted should be disclosed in writing to the other tenderers. (Circle correct answer.)

   True or False
13. Fill in the missing spaces of the tender process.

Fig. 3.22
Customer Relations

14. Mark the following statements: True or False.

(a) A customer is dependent on you – you are not dependent upon the customer. ________

(b) A customer is not someone to argue or match wits with. Nobody has ever won an argument with a customer. ________

(c) Customers are people who bring you their wants. It is your job to satisfy their requirements, thereby profiting the customer and yourself. ________

(d) The true test of the quality of your company’s service is how good you think it is – not how good your customer thinks it is. ________

15. What is a recommended method of determining whether a customer is happy with the product, service and final job you have provided?

______________________________________________________________________

______________________________________________________________________

16. List below as many key factors you should endeavour to practise when speaking to a customer on the phone.

• ______________________________________________________________________

• ______________________________________________________________________

• ______________________________________________________________________

• ______________________________________________________________________

• ______________________________________________________________________

• ______________________________________________________________________

• ______________________________________________________________________

17. When taking notes about a customer’s phone call, what important information should you record?

(a) ______________________________________________________________________

(b) ______________________________________________________________________

(c) ______________________________________________________________________

(d) ______________________________________________________________________
18. Research has shown that if a customer is happy with your service, they will tell ________ people. However, if they are displeased, they will tell ________ people with exaggerated embellishments.

19. Customers notice when the standard of service falls below their expectations. But they also notice when it rises above them. State below what you could do in your field of work to ensure your customer believes they are receiving above normal service.

_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________
_____________________________________________________________________________

Job Planning

20. Complete the following quotes:
   “Vision is the art of seeing things ____________.” Jonathan Swift
   “To fail to ________ is to _______ to fail.” Anonymous

21. When planning for a job, list at least five (5) considerations that should be given:
   • _______________________________________________________________________
   • _______________________________________________________________________
   • _______________________________________________________________________
   • _______________________________________________________________________
   • _______________________________________________________________________

22. No matter how thoroughly you plan for a job, there will always be unforeseeable problems once the job commences. From the list below tick the items that can affect an original job plan and scheduling.

   Client requests          Weather conditions
   Industrial disputes      Prior trade behind time
   Client complaints        Travelling costs
   Sundry Items
23. Identify six points to be considered when planning a project:
   • __________________________________________________________
   • __________________________________________________________
   • __________________________________________________________
   • __________________________________________________________
   • __________________________________________________________
   • __________________________________________________________

24. List the ABC of cost effective and efficient planning.
   A __________________________________________________________________
   _________________________________________________________________
   B __________________________________________________________________
   _________________________________________________________________
   C __________________________________________________________________
   _________________________________________________________________
ANSWERS TO SELF TESTS

CHAPTER 1

SELF TEST 1

1.  (a) Tender Documents: The Tenderer must have all the information he/she requires to estimate the project accurately.

(b) Legal Documents: The specification must be capable of exact interpretation and clearly defining the responsibilities of the parties mentioned in the contract.

(c) Working Document: The tradespersons on the job are those who use the specification the most and are expected to construct a building from what is written. The specification should include as much detail as possible in an endeavour to avoid any hold-ups of the work through references having to be made to the Superintendent for decisions.

2.  
   Builder       [ C or E ]
   Contractor    [ E or C ]
   Principal     [ B ]
   Superintendent [ F ]

3.  (a) Lump Sum: The most common type of contract used. This includes labour, materials, sundries and all costs for plant and equipment. This contract format is generally used when clients know exactly what they want in the building.

(b) Cost Plus or Prime Cost: This type of contract is used when the decorator or client does not know/cannot tell exactly what is to be done. For example, there might be hidden problems, specially when repairing earthquake or fire damage. This is worked in such a way that the client pays for the work and materials as long as the cost is legitimate. “Cost” refers to the cost of all materials required and the “plus” refers to labour charged at an hourly rate.

(c) Non-entire Contracts or Labour Only: The client supplies all materials and only requires a contractor’s labour skills to complete the job. For example, a paint manufacturing company supplies its own product(s) and employs a contractor to apply it to a building.

4.  (d)

5.  (b)

6.  Preliminaries or Supplement to Preliminaries
7. A contractor equal in all respects to the Sub-contractor but selected by the superintendent on behalf of the Principal.

8. (a) Room by room: This is the basic way of writing a schedule of works, as it is the safest method. The work is carried out very methodically, working from the ceiling to walls and woodwork in each room from the front of the project to the rear.

(b) Surface by surface: This is a streamlined method and is starting to be used quite a lot. This method is suited to the person who is writing specifications continuously. The writer builds up a “bank” of surfaces and their relevant coating methods. Then all that is required is to draw on these surfaces and coating procedures and give them to the typist.

9. (a) Commencement date: This date is specified as the date that work can officially begin on site.

(b) Liquidated damager: A pre-determined sum of money payable by the contractor (or deductable from their balance of payment) to the proprietor. It is intended to be recompense for loss suffered for work not completed by the date required under the contract, including extensions granted. This determined sum of money might be an amount per day or per week or even per month that the contractor is over the practical completion date.

(c) Practical completion date: The date certified by the superintendent on which the works are reasonably fit for use and/or occupation by the proprietor.

(d) Samples: If samples are called for then the Contractor will have to prepare finished samples of nominated finishes. Then all that type of work will have to conform to the samples that the superintendent has approved.

10. (a) Responsibility of background: The term “background” is the surface that is going to be painted. By “applying a coating by brush, roller, spray gun or any other method”, it is implied that the applicator on commencement of work on those backgrounds accepts responsibility for the condition of the backgrounds and that they are in a fit condition to receive the specified finishes.

(b) Defects liability period: Period of time stated in the contract commencing at Practical Completion date during which the contractor is responsible for repairing all defective work which becomes evident, and which is due to his non-compliance with the specification.

(c) Tests: The contractor may be requested to have available paint thickness measuring equipment for the purpose of checking the thickness of paint. These may include Wet Film Thickness or Dry Film Thickness testing.

11. Quote: A quote is an itemised cost of the work to be carried out by the contractor and the contractor is bound to complete the work to that specified, fixed price.

Estimate: An estimate is only a suggested price for the job in question, but may be subjected to what are loosely referred to as Variation in Price or Rise and Fall clauses. The estimated price may be changed to meet the ever-increasing costs in wages and materials.
12. If the quote is for the immediate future and is a short-term job then this is the method to be adopted to cover oneself.

13. Most major building projects are based on the estimate figure rather than a quote as the time factor between the commencement and completion of the job may exceed 12 month. If the job is not to be commenced for a lengthy period of time then the submission of an "Estimate" would be preferred to a quote.

14. The clause uses the word “etc”, which is not specific and does not serve any purpose in this clause.

15. The problem with this specification clause is that it is not specific in that it uses the words “either” and “or” and leaves the option to the contractor to make the decision as to which undercoat will be used.

16. Any of the following: Invitation to Tender; Contract Page; Preliminaries; Supplement to Preliminaries; Works Schedule; Colour Schedule; Drawings

17. Invitation to Tender
   (a) Freeway Court, Osborne Park, WA 6022
   (b) Date of closing of Tender
   (c) Painting and Wallpapering

Preliminaries Section
   (d) Lump Sum
   (e) True
   (f) False
   (g) True

Supplement to Preliminaries Section
   (h) 5%
   (i) Public Liability and Workers Compensation

Painting General
   (j) 3 weeks notice
   (k) Joiner or carpenter
   (l) One manufacturer’s

Works Schedule
   (m) Acoustic tiles
   (n) Satin enamel
   (o) 2 coats

Colour Schedule
   (p) Cashmere (DULUX)
   (q) Clear varnish
CHAPTER 2

Numeracy Analysis

<table>
<thead>
<tr>
<th>Addition</th>
<th>Subtraction</th>
<th>Multiplication</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 + 6 = 51</td>
<td>67 - 8 = 59</td>
<td>50 x 6 = 300</td>
</tr>
<tr>
<td>145 + 36 = 181</td>
<td>79 - 79 = 0</td>
<td>701 x 70 = 49,070</td>
</tr>
<tr>
<td>643 + 3.5 = 646.5</td>
<td>9.888 -.024 = 9.864</td>
<td>6.09 x 3.44 = 20.9496</td>
</tr>
<tr>
<td>27 + 9 = 36</td>
<td>76 - 8 = 68</td>
<td>27 x 7 = 189</td>
</tr>
<tr>
<td>3.8 + 1.3 = 5.1</td>
<td>7634 - 50 = 7,584</td>
<td>8.39 x 3 = 25.17</td>
</tr>
<tr>
<td>3.7 + .6 = 4.3</td>
<td>2.45 - 1.07 = 1.38</td>
<td>999 x .10 = 99.9</td>
</tr>
<tr>
<td>85 + 19 = 104</td>
<td>704 - 39 = 665</td>
<td>302 x 47 = 14,194</td>
</tr>
<tr>
<td>24.3 + 9.3 = 33.6</td>
<td>37.22 - 6.04 = 31.18</td>
<td>59.3 x 27.1 = 1,607.03</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Division</th>
<th>Tabulation</th>
<th>Tabulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>35 ÷ 7 = 5</td>
<td>$34.87</td>
<td>$76.30</td>
</tr>
<tr>
<td>903.4 ÷ 5 = 180.68</td>
<td>$61.00</td>
<td>$861.90</td>
</tr>
<tr>
<td>7.777 ÷ 7 = 1.111</td>
<td>$9.06</td>
<td>$11.60</td>
</tr>
<tr>
<td>85 ÷ 5 = 17</td>
<td>$54.67</td>
<td>$9.00</td>
</tr>
<tr>
<td>639.4 ÷ 4 = 159.85</td>
<td>$40.81</td>
<td>$911.11</td>
</tr>
<tr>
<td>61.2 ÷ 5.0 = 12.24</td>
<td>$9.00</td>
<td>$12500.00</td>
</tr>
<tr>
<td>600 ÷ 24 = 25</td>
<td>$76.02</td>
<td>$23447.11</td>
</tr>
<tr>
<td>9.02 ÷ 3 =3.00666</td>
<td>+ $801.00</td>
<td>+ $10000.99</td>
</tr>
<tr>
<td></td>
<td>$1,086.43</td>
<td>$47,818.01</td>
</tr>
</tbody>
</table>

Scaling Exercise

<table>
<thead>
<tr>
<th>Scale</th>
<th>Distance to be Measured</th>
<th>Answer in mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:1</td>
<td></td>
<td>51 mm</td>
</tr>
<tr>
<td>1:20</td>
<td></td>
<td>640 mm</td>
</tr>
<tr>
<td>1:100</td>
<td></td>
<td>6400 mm</td>
</tr>
<tr>
<td>1:50</td>
<td></td>
<td>2700 mm</td>
</tr>
<tr>
<td>1:10</td>
<td></td>
<td>100 mm</td>
</tr>
</tbody>
</table>
SELF TEST 2A – Calculating

**LINEAR**
1. 22.345 m
   .450 m
   .034 m
   12.345 m
2. 14.2 linear metres
3. 70 linear metres
4. 13.05 linear metres

**AREA**
5. 16.875 m²
6. 18.522 m²
7. 107.82 m²
8. 45.310 m²
9. 32.69 m²
10. 132.665 m²
11. 138.474 m²
12. 452.16 m²
13. 183.124 m²
14. 18.929 m²
15. 378.322 m²
16. 120.316 m²
17. 29.464 m²

**PAINT QUANTITIES**
18. 6 litres
19. 4 litres
20. 7 litres

**PAINT COSTS**
21. $1,921.00

**LABOUR COSTS**
22. $97.17
PERCENTAGES
23. $3,960.00
24. $1,596.47

WALLPAPER
25. 14 Rolls
26. 8 Rolls $818.31

WALLPAPER CEILING
27. 6 Rolls

LINING PAPER
28. 6 Rolls $382.80

SPECIALISED WALLCOVERINGS
29. 51 metres of vinyl $2,468.40

SELF TEST 2B – ANSWERS
1. So they can calculate an estimate or quotation for painting works in situations where the project has not been constructed.

2. a. Site plans indicate the correct positioning of the building on the building site. It includes: name of street, lot number, northerly direction, contour lines of the block, position of driveway and scale of drawing (eg 1:200).

b. Overall shape and size of rooms, length and depth of building, wall thickness, size of doors and windows, cupboards, built-in robes, bath and shower.

c. Elevations provide views to each side of the building, roof shape, eave width, gutter and fascia line, ground level to floor level measurements, floor level to ceiling level measurements, external finishes.

d. Sectional elevations provide cross sections of the inside of the building, (eg, footings, floor and roof structure)

e. Details provide closer up views of footings, eave construction, flashings, timber and concrete wall construction, wall and floor tile display and layout.

3.

<table>
<thead>
<tr>
<th>Sketch</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Vanity Basin" /></td>
<td>Vanity Basin</td>
</tr>
<tr>
<td><img src="image" alt="Left-sided hinged window" /></td>
<td>Left-sided hinged window</td>
</tr>
<tr>
<td><img src="image" alt="Bath" /></td>
<td>Bath</td>
</tr>
<tr>
<td>Item</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Hot Plate</td>
<td></td>
</tr>
<tr>
<td>Single bowl, right drain sink</td>
<td></td>
</tr>
<tr>
<td>Horizontal sliding and fixed window/door</td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td></td>
</tr>
<tr>
<td>Fluorescent light</td>
<td></td>
</tr>
<tr>
<td>Light Switch</td>
<td></td>
</tr>
<tr>
<td>Earth</td>
<td></td>
</tr>
<tr>
<td>Structural Steel</td>
<td></td>
</tr>
</tbody>
</table>

4. (a) Bedroom 2

Ceiling: \( L \times W \)
\[ 3.345 \times 2.900 = 9.700 \text{ m}^2 \]

Walls: \((2L + 2B) \times H\)
\[ (6.690 + 5.800) \times 2.450 = 30.600 \text{ m}^2 \]

Bedroom 3

Ceiling: \( L \times W \)
\[ 3.345 \times 2.920 = 9.767 \text{ m}^2 \]

Walls: \((2L + 2B) \times H\)
\[ (6.690 + 5.840) \times 2.450 = 30.698 \text{ m}^2 \]

Bedroom 2 Ceiling: \( 9.700 \text{ m}^2 \)
Bedroom 3 Ceiling: \( 9.767 \text{ m}^2 \)

\[ \frac{9.700 \text{ m}^2}{19.467 \text{ m}^2} \]

Area \( \times \) Labour Rate
\[ 19.467 \text{ m}^2 \times \$4.50 \text{ per m}^2 = \$87.60 \]
Bedroom 2 Walls: 30.600 m²
Bedroom 3 Walls: 30.698 m²

Area × Labour Rate
61.298 m² × $6.00 per m² = $367.78
Total Cost: = $455.38

4. (b) 5.2 (front wall and calculating clockwise around house)

2.6
4.8
6.8
.6
4.5
5.0
+ 9.3
38.8 linear metres × $6.00 per linear metre = $232.80

**NOTE:** There is no gutter and fascia on the sides of laundry walls. These walls have barge boards at the top and are calculated separately with its respective charge rate which is not required in this question.

5. Bedroom 1

Step 1 Perimeter ÷ Width of paper ↑ (round up)
16.5 ÷ .520 = 31.7 32 strips

Step 2: Length of paper ÷ Height of Room ↓ (round down)
10.000 ÷ 2.450 = 4.08 4 strips per roll

Step 3: Answer to Step 1 ÷ Answer to Step 2 ↑ (round up)
32 ÷ 4 = 8
8 rolls

Cost to Hang $59.99
Cost to Supply $33.00
$92.99 × 8 rolls = $743.92

$743.92 + 10% = $818.31

6. Living Room

Step 1: Perimeter ÷ Width of vinyl ↑ (round up)
17.33 ÷ 1.200 = 14.4 15 strips

Step 2: (Height of Wall + .100) × Answer to Step 1 ↑ (round up)
(2.450 + .100) × 15 = 38.25 39 metres

Cost to Apply $14.00 per metre
Cost to Supply $40.00 per metre
$54.00 × 39 metres = $2,106.00

$2,106.00 + 10% = $2,316.60
CHAPTER 3

SELF TEST 3

Tendering Process

Any of the following:

**Selected Tenderers:** The principal can have a list of tenderers who have proved they are competent by the work already accomplished on behalf of the principal on other projects. The principal chooses from this list and invites them to tender on a rotational basis.

**Open Tenderers:** The principal advertises in the local newspaper or other means for prospective contractors to submit their tenders for a specific project. Because it is advertised in the local paper, the number of those tendering is not restricted.

**Pre-registered Tenderers:** These tenderers are similar to the selected tenders. The principal invites expressions of interest for pre registration for a specific project or specific types of projects. Tenderers are checked against pre-qualification criteria and a small number of those meeting the required criteria are invited to tender.

**Invited tenderers:** The principal invites tenders from a number of prospective tenderers known to have the ability to undertake a project of the type proposed.

**Negotiation Tenderer:** Only one tenderer negotiates with the principal to reach an agreeable tender to both parties concerned.

2. **Tenderer:** Any person(s) providing a tender. They can be a contractor, or sub-contractor or any person who supplies goods.

**Principal:** Any person(s) inviting and receiving tenders. A contractor or sub-contractor could also be a principal.

3. Sufficient time should be allowed for the tenderers to make visits to the project site and undertake any other work necessary to allow them to accurately complete the tender documents.

4. (b) Details of when and where tender documents may be obtained.
   (c) Details of when and where tenders shall close.
   (e) Details of any tender documentation deposit or purchase price, if applicable, and method of obtaining a refund of the cost.

5. True (unless otherwise specified in the tender)

6. True (unless otherwise specified in the tender)

7. (b) AS-4120

8. Any of the following:
   - Not earlier than 2:00 p.m.
   - Not on a Monday or day following a public holiday
   - No less than a minimum of one day after a weekend, building industry holiday or RDO
   - Not on a weekend
9. False

10. 2. Conformity with the **tender** documents.
    3. **Value** for money.
    5. Technical, **managerial**, physical and **financial** resources of the Tenderer.

11. (b) Letter

12. False.

13. Fill in the missing spaces of the tender process.
Customer Relations

14. (a) False
(b) True
(c) True
(d) False

15. Quality Service Questionnaire

16. Any of the following:
   If unable to provide a service, explain why, and recommend someone else.
   If you have to say “no”, explain why.
   Provide information patiently and in a reasonable manner.
   Talk with assurance.
   Listen and do not interrupt client.
   Respond to comments when necessary.
   Stop talking if interrupted.
   Express regret or appreciation.
   Speak clearly.
   Avoid mannerisms.
   Do not speak too slow or too fast.
   Show personal interest.
   Close conversations politely.

17. (a) Who the customer is – name/phone number
(b) What the customer called about
(c) Essential facts required to solve customer’s problem(s)
(d) What action was taken and promised.

18. Research has shown that if a customer is happy with your service, they will tell 8 people. However, if they are displeased, they will tell 22 people with exaggerated embellishments.

19. Offer to paint something small that was not in the original quote.
   Unblock gutter or down pipe while repainting roof/gutters.
   Leave samples of paint for clients to do touch ups.
   Present items with your business details printed (eg. fridge magnets, pens, hand and body creams, lip balms, sun cream, message pads).

Job Planning

20. “Vision is the art of seeing things invisible. ” Jonathan Swift
    “To fail to plan is to plan to fail.” Anonymous
21. • Time job will take
  • Cost per hour (labour)
  • Materials (quantity and cost)
  • Sundry items
  • Possible problems - have contingency options
  • Travelling costs/time

22. • Weather conditions
  • Industrial disputes
  • Client complaints
  • Client requests
  • Prior trade behind time

23. • Plan to spend a certain amount of time on a task. If the task is taking longer than planned and it cannot be done any more quickly, remaining tasks will need to be re-organised.
  • List tasks that must be completed before another task can start.
  • List tasks that can be done at the same time.
  • Make a note of what you consider are the most important tasks in the project. These tasks may need to be given the most time.
  • Make a note of any tasks that can be completed quickly and easily. If possible you might like to get these tasks completed early and get them out of the way.
  • If anything unplanned happens or if any task that was not planned is discovered, examine the importance of the situation and allocate an amount of time to fix the situation.

24. **A** well-planned project will be completed quickly and cost less than a poorly planned job that takes a long time. Consumers will appreciate how quickly you can complete a good quality job.
   **B**y getting the project completed quickly and economically you can make a start on the next project at an earlier date. Your direct cost will be spread over a greater number of projects making your overall business operation very cost effective.
   
   **C**arefully planned projects will be efficient in the use of materials, equipment and labour.
# GLOSSARY

The following terms are used in the Estimating and Specification field. Knowing the meaning of these terms will help you understand some of the topics discussed in this text. The terms are listed in alphabetical order rather than appearance order.

## A

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>Method of applying paint to a surface (e.g., brush, roller, spray).</td>
</tr>
<tr>
<td>Arbitration</td>
<td>The process by which the parties to a dispute submit their differences to the judgment of an impartial person or group appointed by mutual consent or statutory provision.</td>
</tr>
<tr>
<td>Architect</td>
<td>One who designs and/or supervises the construction of buildings or other large structures.</td>
</tr>
<tr>
<td>Area</td>
<td>A surface measured and identified in ( \text{m}^2 ) (square metres).</td>
</tr>
<tr>
<td>AS/NZS</td>
<td>Australian/New Zealand Standards\textsuperscript{TM} (e.g., AS/NZS-2311 Guide To The Painting of Buildings).</td>
</tr>
<tr>
<td>Authorised Deputy</td>
<td>A person authorised to represent another.</td>
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</table>

## B

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Background</td>
<td>The surface to be painted, new or old.</td>
</tr>
<tr>
<td>Bill</td>
<td>1. Short for “Bill of Quantities”</td>
</tr>
<tr>
<td></td>
<td>2. Written request for payment of work.</td>
</tr>
<tr>
<td>Bill of Quantities</td>
<td>An itemised list of components for a building. Alongside each item is the number of linear metres (lm) or square metres (m(^2)) for each item to be found on the entire project or section of building.</td>
</tr>
<tr>
<td>Builder</td>
<td>A person or company responsible for the construction of buildings</td>
</tr>
</tbody>
</table>

## C

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circumference</td>
<td>The distance around the perimeter of a circular object.</td>
</tr>
<tr>
<td>Clauses</td>
<td>A distinct article, stipulation, or provision in a document.</td>
</tr>
<tr>
<td>Client</td>
<td>A person who seeks the services of a professional on more than one occasion.</td>
</tr>
<tr>
<td>Colour Scheme</td>
<td>A written document stipulating the colours to be used on a project.</td>
</tr>
<tr>
<td><strong>Completion Date</strong></td>
<td>The date when works are to be finished according to the specification.</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Cone</strong></td>
<td>The shape similar to an ice-cream cone.</td>
</tr>
<tr>
<td><strong>Construction Period</strong></td>
<td>The time allocated/stipulated for a building to be constructed.</td>
</tr>
<tr>
<td><strong>Consultant</strong></td>
<td>One who gives expert/professional advice/service.</td>
</tr>
<tr>
<td><strong>Contingency Sum</strong></td>
<td>An amount of money to be included in a tender price to provide for unforeseen circumstances. Any not used to be deducted from the contract amount.</td>
</tr>
<tr>
<td><strong>Contract</strong></td>
<td>A legally binding agreement, preferably in writing, between at least two parties.</td>
</tr>
<tr>
<td><strong>Contractor</strong></td>
<td>One who agrees to furnish materials or perform services at a specified price, especially for construction work.</td>
</tr>
<tr>
<td><strong>Cost Plus</strong></td>
<td>Cost of materials and labour (unknown quantity, therefore hourly-rate) plus agreed profit percentage.</td>
</tr>
<tr>
<td><strong>Cross References</strong></td>
<td>A reference made from one part of a specification to another part, where the same subject is discussed.</td>
</tr>
<tr>
<td><strong>Customer</strong></td>
<td>A party who requests your services for a particular job.</td>
</tr>
<tr>
<td><strong>Customer Delight Factor</strong></td>
<td>A pleasant feeling experienced when expectations are exceeded</td>
</tr>
<tr>
<td><strong>Cylinder</strong></td>
<td>A shape like a tank.</td>
</tr>
<tr>
<td><strong>D</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Date of Possession</strong></td>
<td>When contractor can deliver materials to site and prepare for start of work. In some situations can also begin work.</td>
</tr>
<tr>
<td><strong>Decimal Point</strong></td>
<td>A dot written in a decimal number, as in 8.375, to indicate the place where values change from positive to negative powers of 10.</td>
</tr>
<tr>
<td><strong>Defect Liability Period</strong></td>
<td>Period from Practical Completion Date until Final Completion Date during which the contractor is responsible for repairing all defective work due to non-compliance with specification.</td>
</tr>
<tr>
<td><strong>Diameter</strong></td>
<td>A straight line from one side of circle or sphere to the other side passing through the center.</td>
</tr>
<tr>
<td><strong>Dome</strong></td>
<td>Half a sphere</td>
</tr>
<tr>
<td><strong>Drawings</strong></td>
<td>Sections of a specification where diagrams/plans identify areas to be worked on.</td>
</tr>
</tbody>
</table>
Eggshell Satin finish.

Elevation Plans Sections of building plans with drawings showing appearance of front, rear and side views of external building faces. Also included are measurements for height of walls and ceiling.

Ellipse Similar to the shape of a football field

Engineer One who is trained or professionally engaged in a branch of engineering, eg electrical, civil, structural.

Estimate An approximate calculation. To form an opinion in monetary value or time.

Etc. Abbreviation for etcetera.

Extent of Works Description of work involved in a project to be contracted.

Final Completion When all works including remedial, maintenance is completed and the contractor is no longer responsible for works.

Financial Resources Amount of liquidity (money) available to be used.

Floor Plans Sections of building plans with drawings showing appearance of floor, showing all internal walls, rooms, doors, windows and their measurements.

Formula A statement, especially an equation, of a fact, rule, principle, or other logical relation.

GST Goods and Services Tax.

Guarantee A promise or an assurance, especially one given in writing, that attests to the quality or durability of a product or service.

Head Contract In a project where more than one contract is used by more than one person, refers to the contract that was drawn and signed first (eg Contract between principal and superindentant as compared to contact between builder and sub-contractors).
<table>
<thead>
<tr>
<th>Glossary Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imperial</td>
<td>Standards legalised by the British Parliament for weights and measurements (e.g., feet, inches, yards, miles, ounces, pounds).</td>
</tr>
<tr>
<td>Inspections</td>
<td>Official examination or review by authorised personnel.</td>
</tr>
<tr>
<td>Insurance</td>
<td>Coverage by a contract binding a party to indemnify another against specified loss in return for premiums paid. A protective measure.</td>
</tr>
<tr>
<td>Invitation to Tender</td>
<td>An official written paper requesting/inviting quotations for a specific task(s).</td>
</tr>
<tr>
<td>Invited Tenderer</td>
<td>A description of a party who has been invited by written or verbal request to submit a quotation.</td>
</tr>
<tr>
<td>Labour Only</td>
<td>A contract stating only value of labour to be exchanged with works completed.</td>
</tr>
<tr>
<td>Legal Clause</td>
<td>A distinct article, stipulation, or provision in a document which will stand up in a court of law upon which responsibility can be determined.</td>
</tr>
<tr>
<td>Linear</td>
<td>Related to a straight line, e.g., for measuring the length of guttering.</td>
</tr>
<tr>
<td>Liquidated Damages</td>
<td>A pre-determined sum of money to be paid by the Contractor to the Principal to pay for any money lost by the Principal due to the Contractor holding up his/her business from working because the contractor has not finished his/her work by the specified time.</td>
</tr>
<tr>
<td>Local Government</td>
<td>Shire, City, Town, Principality (e.g., Shire of Wanneroo; City of Stirling; Town of Vincent).</td>
</tr>
<tr>
<td>Lump Sum Contract</td>
<td>A contractual agreement that includes all materials, labour, equipment cost and sundry items.</td>
</tr>
<tr>
<td>m</td>
<td>Abbreviation for the term “metre” (metric).</td>
</tr>
<tr>
<td>MPA</td>
<td>Master Painters Association of WA</td>
</tr>
<tr>
<td>m²</td>
<td>Abbreviation for the term “metres square”. A surface area calculated by its width and length or height and length or all and interpreted into a numerical value (metric).</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
</tr>
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<td>---------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Maintenance Periods</td>
<td>Time when agreed for touch ups and making good of areas where damage may occur due to movement in building.</td>
</tr>
<tr>
<td>Major Axis</td>
<td><strong>Longest</strong> line/distance from one side of an ellipse to the other side passing through the centre.</td>
</tr>
<tr>
<td>Making Good</td>
<td>Repairing areas that have been damaged.</td>
</tr>
<tr>
<td>Managerial Resources</td>
<td>Ability to organise, supervise, monitor employees employed to accomplish works.</td>
</tr>
<tr>
<td>Masonry</td>
<td>Any thing constructed of dry materials such as bricks, stone, clay, tiles, concrete.</td>
</tr>
<tr>
<td>Materials Generally</td>
<td>Relates to which manufacturer’s products will be used on a specific project or, if not specified, then a stipulation of Australian Standards codes with which products must comply.</td>
</tr>
<tr>
<td>Metric System</td>
<td>System of weights and measures originating in France and introduced in Australia in 1966. Based on multiples of 10 and includes litres, millimetres, metres, grams, kilograms, kilometres.</td>
</tr>
<tr>
<td>Minor Axis</td>
<td><strong>Shortest</strong> line/distance from one side of an ellipse to the other side passing through the centre.</td>
</tr>
<tr>
<td>mm</td>
<td>Abbreviation for the term “millimetre” (metric)</td>
</tr>
<tr>
<td>Municipal</td>
<td>Relating to “Local Government” (see above)</td>
</tr>
<tr>
<td>Murphy’s Law</td>
<td>Humorous axioms (saying) stating that anything that can possibly go wrong, will go wrong.</td>
</tr>
<tr>
<td>Negotiation Tenderer</td>
<td>A description of a party who has been invited by written or verbal request to negotiate a price for works and not compete with other prospective tenderers.</td>
</tr>
<tr>
<td>Nominated Sub-contractor</td>
<td>A sub-contractor who has been employed by the superindentent on behalf of the principal for a specific type of work.</td>
</tr>
<tr>
<td>Non-entire Contract</td>
<td>A contractual agreement whereby all materials are supplied by the owner and only labour is quoted for.</td>
</tr>
<tr>
<td>Open Tenderer</td>
<td>A description of tenderers who have replied to an advertisement in the newspaper to submit tenders. The tenders are open to anyone wishing to tender who feels they have the capability and capacity to do the work.</td>
</tr>
</tbody>
</table>
GLOSSARY

P

PRB Painters' Registration Board.

Painting General Sections of a specification where clauses relate specifically to the painting trade.

Percentage Retainable A percentage deducted from progress payments and deposited into a retention fund and payable to the contractor on Final Completion Date when all works have been completed.

Perimeter Distance around a room measured in linear metres

Perpendicular Height The height of a line at 90° to a horizontal line.

Physical Resources Ability to possess or obtain materials, labour, scaffolding to complete project.

Pi (π) Lower case letter “p” in the Greek alphabet (π) used to represent the value of 3.14 in formulas to calculate surfaces with circular form.

Plan Details Refers to section of building plans that provides more details in certain areas of the project (eg. footings, concrete slab dimensions).

Plans Same as “Drawings”.

Post-Tender After the tender process when the principal has received all prices.

Practical Completion Date The date when the building is handed over to the principal for the purpose in which it was designed and built.

Preliminaries List of conditions and legal clauses in specification.

Preparatory Products Item used specifically to prepare surfaces prior to application of paint (eg fillers, washing solutions).

Pre-registered Tenderer A tenderer who has been listed on a register from which a principal will invite them to tender for a specific (specialised) type of work.

Prime Cost Contract Same as Cost Plus Contract.

Prime Cost Sum An amount of money specified to be included in a tender amount to cover the cost of goods to be supplied by a firm. They are to be nominated by the principal and are usually of a specialist nature but the amount is unknown and the exact selection to be determined.

Principal The project owner.
Private Tender  A tender issued by a private (non-government) organisation.

Progress Payments  Monetary reimbursement made by the principal to the contractor for works completed. There may be a number of progress payments in the duration of the contract.

Protection  Refers to the protection of surfaces from paint spots or marks and can be accomplished either by removal or covering over by items such as drop sheets, masking tape.

Provisional Item  An item inserted into a Bill of Quantities to provide a basis for future adjustment on a pro-rata-basis or work (the precise nature and exact extent of which is not known at the time of tender being prepared.)

Provisional Quantity  Similar to Provisional Item, but where the nature is known at the time of tender documents being prepared.

Provisional Sum  Amount of money specified by the superintendent to be included in the tender amount to cover for work of a specialist nature not normally performed by the contractor. The precise nature and exact extent of the work is not known at the time of preparing tender documents.

Public Liability  Insurance to cover for any damage caused to persons of the public and/or objects.

Public Openings  Disclosure to the public by notices in newspaper or by request of the tender price accepted by the principal for a given project.

Pythagoras  (Πθγωρας)  Greek philosopher who founded a school in southern Italy that sought to discover the mathematical principles of reality through the study of geometry. The development of 3.14 (π) in relation to measurement of a circle was ascribed to him.

Q

Quantity Surveyor  A person who calculates the quantities of materials for each trade required for a given project.

Questionnaire  A written or verbal series of questions to obtain information about specific points of interest or issues.

Quote or Quotation  An itemised cost to be submitted by the contractor which binds the contractor to complete the work therein specified. It must now include GST.

R

Retention Fund  An amount of money kept back in accordance with the contract, from monies due to the contractor for work done, as security that the contractor will fulfil his/her obligation.
| **Responsibility for Backgrounds** | Upon application of a coating by either brush, roller, spray or other means, the contractor accepts full responsibility for the condition of the paint coating for the period guaranteed. |
| **Room-by-room** | One method of setting out a specification in the Works Schedule. It addresses each room separately beginning from the front of the building to the rear and its surfaces from the ceiling to the floor. |
| **Registered Painter** | A painting contractor who is licensed to operate a painting business in Western Australia. |
| **Removal of Fittings** | The removing of hardware prior to painting. (eg door and window fittings). |
| **Re-call Tenders** | Following a principal’s decision to reject all tenders for whatever reason, he/she can request tenderers to re-submit. |
| **Radius** | A straight line from one side of circle or sphere to the center. Half of a diameter  \( \text{radius} \). |
| **Samples** | Examples of paint coatings, texture, wallpaper, decorative effects applied to sample boards and presented to clients for approval. |
| **Saw-toothed** | Building with roof design similar to teeth of a saw. |
| **Scale Ruler** | A ruler with various scalings (eg. 1:100; 1:20) When used to measure building plans the scalings increase the measurements to the actual dimensions of the items on the job site. A Scale 1:100 means that every increment on the ruler represents 100 times its size. |
| **Scope of Contract** | Same as “Extent of Works”. |
| **Sectional Elevation** | An elevation type drawing showing the inside of a building as if the building has been cut in two. |
| **Security in Lieu** | The principal agrees to a bank guarantee or similar instead of retention fund. |
| **Selected Tenderer** | A description of a tenderer who has been chosen by the principal to submit a tender. Their name is then included on a list for any future projects. |
| **Signatories** | Person who sign contracts (eg principal, superintendent, contractors, sub-contractors, witnesses). |
Site Inspection  A physical visit by the contractor/builder to a project site to inspect conditions prior to submitting a tender.

Site Plan  A section on building plans that shows how a building will be situated on a site in proportion to the boundaries of the land and the road.

Skillion  Sloping roof building.

Slant Height  Relates to the dimension of the side of an object (eg. cone) which is angled and not at 90° to the object.

Sloping Height  Same as “Slant Height”.

Specifications  Written documents that gives specific directions/descriptions of works required.

Specimen  A sample or example.

Sphere  A three-dimensional surface, all points of which are central from a fixed point (eg. sphere of the earth).

State Government  Government organisation in any state of Australia.

Sub-contractor  A contractor who operates under a contractor.

Sub-letting  Same as “Sub-contracting”.

Superintendent  The principal’s representative/agent but ethically unbiased towards the principal or the contractor.

Supplement to Preliminaries  Same as “Preliminaries” further legal clauses.

Surface-by-surface  Alternative method of setting out a specification in the Works Schedule. Lists each name of surface on a project and specifies what is to be done (eg Galvanised Iron; Timber [New]; Timber [old]).

Survey  Same as “Questionnaire”.

Tests  Examinations made by measuring thickness of paint coatings. This can be done either by Wet Film Thickness (WFT) Gauges or Dry Film Thickness (DFT) Gauges.

Technical Resources  The possession of technical knowledge to be able to carry out works on a specific project requiring professional abilities.

Tender Documents  Information in written form obtained from the principal detailing project details, legal responsibilities, drawings, to assist in submitting an accurate tender.
<table>
<thead>
<tr>
<th>Term</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Tenderer</td>
<td>A person or persons who submits quotes.</td>
</tr>
<tr>
<td>Tenders Close</td>
<td>Notification of cut-off date to submit tenders.</td>
</tr>
<tr>
<td>Touch-ups</td>
<td>Same as “Making Good”.</td>
</tr>
<tr>
<td>Trade Off</td>
<td>Seeking to obtain a better price from a tenderer by providing them with a lower price from another tenderer and requesting to do better.</td>
</tr>
<tr>
<td>Validity Period</td>
<td>Time period in days or months or even years, in which a tendered priced will remain current and not subject to increase.</td>
</tr>
<tr>
<td>Variations</td>
<td>Extra work beyond what was stipulated in the specification and tendered for.</td>
</tr>
<tr>
<td>WC</td>
<td>Water Closet (Toilet)</td>
</tr>
<tr>
<td>Witness</td>
<td>A person who verifies in writing that they observed parties engage a contract agreement.</td>
</tr>
<tr>
<td>Works Programme</td>
<td>A detailed written or tabled diagram stipulating Commencement and Practical Completion Date for entire project or starting and finishing dates for each section of works.</td>
</tr>
<tr>
<td>Works Schedule</td>
<td>A detailed description of what specific work will be carried out to every surface (eg. preparation to surfaces, number of paint coatings, colour and type of paint). It can be set out as a room-by-room or surface-by-surface method.</td>
</tr>
<tr>
<td>Workers Compensation</td>
<td>Insurance taken out by the contractor/builder to cover financially for any worker injured on site.</td>
</tr>
</tbody>
</table>
BUILDING

PAINTERS ESTIMATING & SPECIFICATIONS

DESCRIPTION
The majority of qualified painters will have completed an apprenticeship and learnt the various skills associated with applying paint to a variety of surfaces. They may have also developed some subsidiary skills such as imitating artificial marble, wood graining, creating broken colour finishes and applying wall coverings. However, in many situations, painters who operate, or are about to operate a business need to learn and add other skills to their repertoire. These skills include:

• Reading and writing legal specifications
• Calculating accurate quotations
• Interpreting building plans
• Familiarity with the tendering process
• Developing good customer service
• Appreciating the value of job planning.

EDITION
Second

CATEGORY
Building and Construction

LEARNING OUTCOMES
Chapter 1 – Specification and Contract
• Produce a detail specification for painting works and interpret a detailed multi-trade specification for a building project as prepared by an architect.
• Identify the various forms of contract used in the building industry and produce a contract for painting works.
• Produce written quotations for new and renovation contracts as per the standard Painter's Registration Board Standard Quotation Form.

Chapter 2 – Estimating
• Interpret detailed architectural drawings in order to take off quantities for painting works.
• Identify the methods for quantity surveying in the painting industry and systematically develop a costing rate for common substrates using conventional coatings systems.
• Produce accurate trade calculations for given situations in the painting and decorating industry.

Chapter 3 – Contract Management
• Describe the significance of job planning and identify the factors that contribute to the success and profitability of a painting and decorating project.
• Define customer relations and identify skills appropriate to facilitate a custom focus philosophy.
• Identify the processes involved in tendering for contracts in the private and public sectors.

COURSES AND QUALIFICATIONS
• Certificate IV Painters Registration

ORDERING INFORMATION:
Tel: (08) 6212 9700 Fax: (08) 9227 8393 Email: sales@dhw.dwd.wa.gov.au
Orders can also be placed through the website: www.vetinet.dhw.wa.gov.au

Government of Western Australia
Department of Training and Workforce Development