



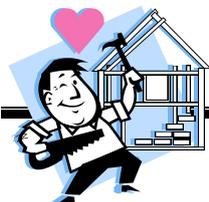
COURSE IN OWNER BUILDER COMPLIANCE

NTIS code: 91509NSW

MODULE 5 MANAGING THE WORK



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Department of Services Technology and Administration**



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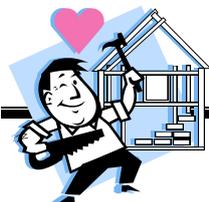
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MANAGING THE SITE

Building operations require a mixture of.....

MEN - MATERIALS - MACHINERY



This recipe, put together on the site, can be quite volatile unless careful planning and administration is undertaken, both before and during the building operations.

As the works progress, elements of the following will appear on site at various stages.

PERSONNEL Sub Contractors, Labourers

EQUIPMENT Machinery (moving) Cranes, Hoists, Conveyors.

Fixed (static) Scaffolding, Platforms, Signs, Hoardings,
Barricades

MATERIALS To be incorporated into the works. Timber, Steel, Bricks etc
Rubble to be removed from site.

Someone has to assume responsibility for administering the complete operation, including the daily running of the site.

This responsibility rests with the Principal Contractor – you the Owner Builder.

As the Principal Contractor you are responsible for everything that happens on your site.



Source: Project Management 10 Minute Guide – Jeff Davidson Publisher - Macmillan USA

SEVEN WAYS TO SUCCEED AS A PROJECT MANAGER

Now that you have a firm understanding of the kinds of issues that befall a project manager, let's look at seven ways in particular that project managers can succeed, followed by seven ways that project managers can fail.

1. Learn to use project management tools effectively

Such a variety of wondrous project managing software tools exist today that it is foolhardy to proceed in a project of any type of complexity without having a rudimentary understanding of available software tools, if not an intermediate to advanced understanding of them. Project Management tools today can be of such enormous aid that they can mean the difference between a project succeeding or failing.

2. Be able to give and receive criticism

Giving criticism effectively is not easy. There is a fine line between upsetting a team member's day and offering constructive feedback that will help the team member and help the project. Likewise, the ability to receive criticism is crucial for project managers.

As the old saying goes, it is easy to avoid criticism: Say nothing, do nothing, and be nothing. If you are going to move mountains, you are going to have to accept a little flack.

3. Be receptive to new procedures

You don't know everything, and thank goodness. Team members, other project managers, and those who authorise the project to begin with can provide valuable input, including new directions and new procedures. Be open to them, because you just might find a way to slash \$20,000 and three months off of your project cost.

4. Manage your time well

Speaking of time, if you personally are not organised, dawdle on low-level issues, and find yourself perpetually racing the clock, how are you going to manage your project, a project team, and achieve the desired outcome on time and on budget?

5. Be effective at conducting meetings

Meetings are a necessary evil in the event of completing projects, with the exception of solo projects.



6. Hone your Decision Making Skills

As a project manager you won't have the luxury of sitting on the fence for very long in relation to issues crucial to the success of your project. Moreover, your staff looks to you for yes, no, left, and right decisions. If you waffle here and there, you are giving the signal that you are not really in control. As with other things in project management, decision making is a skill that can be learned. However, the chances are high that you already have the decision-making capability that you need. It is why you were chosen to manage this project to begin with. It is also why you have been able to achieve what you have in your career up to this point.

Trusting yourself is a vital component to effective project management

7. Maintain a sense of Humour

Stuff is going to go wrong, things are going to happen out of the blue, the weird, and the wonderful are going to pass your way. You have to maintain a sense of humor so that you don't do damage to your health, to your team, to your organisation, and to the project itself. Sometimes, not always, the best response to a breakdown is to simply let out a good laugh. Take a walk, stretch, renew yourself, and then come back and figure out what you are going to do next.



SEVEN WAYS TO FAIL AS A PROJECT MANAGER.

Actually, there are hundreds of ways to fail as a project manager. The following seven represent those that have been seen too often in the workplace.

1. Fail to address issues immediately

Two members of your project team can't stand each other and cooperation is vital to the success of the project. As project manager, you must address the issue head on. Either find a way that they can work together professionally, if not amicably, or modify roles and assignments. Whatever you do, don't let the issue linger. It will only come back to haunt you further along.

2. Reschedule too often

As the project develops, you can certainly change due dates, assignments, and schedules. Recognise though, that there is a cost every time you make a change, and if you ask your troops to keep up with too many changes you are inviting mistakes, missed deadlines, confusion and possibly hidden resentment.

3. Be content with reaching milestones on time, but ignore quality.

Too often, project managers in the heat of battle, focused on completing the project on time and within budget, don't focus sufficiently on the quality of work done.

A series of milestones that you reach with less than desired quality work adds up to a project that misses the mark.

4. Too much focus on project administration and not enough on project management

In this high tech era with all manner of sophisticated project management software, it is too easy to fall in love with project administration. Making sure that equipment arrives, money is allocated, and assignments are doled out to the neglect of the project management, taking in the big picture of what the team is up against, where they are heading and what they are trying to accomplish.

5. Micromanage rather than manage

This is reflected in the project manager who plays his cards close to his chest, and retains most of the tasks himself, or at least the ones he deems to be crucial, rather than delegating. The fact that you have staff implies that there are many tasks and responsibilities that you should not be handling. On the other hand, if you should decide to handle it all, be prepared to stay every night until 10.30, give up your weekends, and generally be in need of a life.

Micromanaging isn't pretty. The most able managers know when to share responsibilities with others and to keep focused on the big picture.



6. Adapt new tools too readily.

If you are managing a project for the first time and counting on a tool that you have not used before, you are incurring a double risk. Here's how it works. Managing a project for the first time is a single risk. Using a project tool for the first time is a single risk. Both levels of risk are acceptable. You can be a first-time project manager using tools that you are familiar with, or you can be a veteran project manager using tools for the first time.

However, it is unacceptable to be a first time project manager using project tools for the first time.

Risk . *The degree to which a project or portions of a project are in jeopardy of not being completed on time and on budget, and, most importantly, the probability that the desired outcome will not be achieved.*

7. Monitor project progress intermittently

Just as a ship that is off course one degree at the start of a voyage ends up missing the destination by a thousand miles, so too a slight deviation in course in the early rounds of your project can result in having to do double or triple time to get back on track. Hence, monitoring progress is a project-long responsibility. It is important at the outset for the reasons just mentioned, and it is important in mid and late stages to avoid last minute surprises.

SUMMARY

Project managers are responsible for planning, supervising, administering, motivating, training, coordinating, listening, readjusting, and achieving.

Five basic principles of effective project management include:

1. being conscious of what you are doing,
2. investing heavily in the front-end work,
3. anticipating problems,
4. going beneath the surface, and
5. staying flexible.

Project Managers who succeed are able to effectively give and receive criticism, know how to conduct a meeting, maintain a sense of humour, manage their time well, are open to new procedures, and use project management support tools effectively.

Project Managers who fail are those that let important issues fester, fail to focus on quality, get too involved with administration and neglect management, micromanage rather than delegate, rearrange tasks or schedules too often, and rely too heavily on unfamiliar tools.



PROJECT MANAGEMENT FUNCTIONS

Source: Managing Projects Author: Ian Davison Publisher: Ian Davison Pty Ltd: Wollstonecraft NSW

Project Management Steps

The steps necessary in the management of a project will usually include:

1. Defining the objectives to be attained.
2. Determining the steps to be taken to reach those objectives.
3. Preparing a schedule of times and resources.
4. Allocating personnel and resources as necessary.
5. Supervising implementation of the work.
6. Reviewing the results achieved to confirm that they are satisfactory and taking any necessary corrective action.

The project should be planned so that no more resources are utilised than strictly necessary to reach the next stage. That is, it should be possible to cancel the project economically at any stage should a decision be made not to proceed.

Preparing Project Schedules

The activities required in the planning and scheduling of a project include:

1. Preparing a program of the work to be completed.
2. Preparing a schedule of the activities necessary.
3. Determining any significant time constraints.
4. Establishing cashflow predictions where applicable.
5. Preparing personnel and resource schedules.
6. Modifying the initial plan to optimise the use of resources, the project cashflow, capitalised interest charges and to take into account any constraints.
7. Preparing a refined schedule of activities.
8. Establishing a flowchart of information to record who is to be advised of what.



Allocating Project Resources

The resources required on a project are determined from the programming and scheduling stage described above. Providing the necessary resources may require:

1. Arranging finance and reviewing resources with regard to the revised schedule of work.
2. Preparing specifications, drawings and other technical documentation as necessary.
3. Arranging for the quotation and supply of goods and services.
4. Arranging for the transport, storage, delivery and installation of plant and equipment.

Supervising Implementation

The implementation of the project may require:

1. Arranging for a monitoring system to be established to monitor progress against program.
2. Arranging for a monitoring system to be established to monitor costs against the budget.
3. Arranging for a quality assurance or quality control system to be established to ensure that the quality of work is satisfactory.
4. Arranging for a follow-up and expediting system to be established to identify and expedite delayed work.
5. Arranging for a reporting system to be established to provide progress reports as appropriate.
6. Arranging for any statutory approvals to be obtained.
7. Providing for risk analysis, risk abatement and risk transfer as far as this is economically justified.
8. Ensuring that all insurances provisions have been allowed for.
9. Providing directions for the execution of the work.



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SELF TEST QUESTIONNAIRE

	Question	Ref Page
1	What are the 3 resources required for building operations?	3
	Answer	
	1	
	2	
2	List 5 ways to succeed as a project manager	4-5
	1	
	2	
	3	
	4	
	5	
3	List 5 ways to fail as a project manager	6-7
	1	
	2	
	3	
	4	
	5	
4	What are the 5 basic principles of effective project management?	7
	1	
	2	
	3	
	4	
	5	
5	What are the steps necessary in the management of a project? – List 3	8
	1	
	2	
	3	
6	What activities are required in planning and scheduling? – List 5	8
	1	
	2	
	3	
	4	
	5	
7	List 5 of the 9 steps to supervise the implementation of the project	9
	1	
	2	
	3	
	4	
	5	

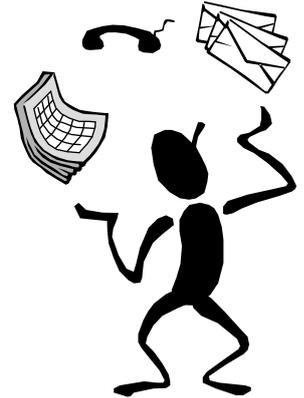


COMMUNICATION

HAVE A COMMUNICATION PLAN

Poor communication is a major source of conflict so give this serious attention before you start the project work. Ask yourself:

-  Who needs to know?
-  What do they need to know?
-  How much do they need to know?
-  How often must they be informed?



Establish distribution list(s) as appropriate but avoid generating large volumes of paper. Decide the ground rules you will impose on everyone to get prompt feed back to the prevailing situation with the work in progress. Effective monitoring and tracking of the project is dependent on good communication. You need prompt feedback about:

-  Current progress of the active tasks.
-  Problems encountered with the work.
-  Problems anticipated with work waiting to be done.
-  Technical difficulties being encountered.



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THE COMMUNICATION PROCESS

First of all, we need to understand a little about how communication works.

The words you wish to write or say are:

THE MESSAGE

You, as the person who is writing or speaking the message is:

THE SENDER OF THE MESSAGE

And the person who is reading your letter or listening to you is:

THE RECEIVER OF THE MESSAGE

So for every communication there are three important factors:

1. THE MESSAGE
2. THE SENDER
3. THE RECEIVER

PLANNED COMMUNICATION

As the **Sender** carefully plan:

What the key points of the information are.

-  Which descriptive words or phrases will best get the correct message across.
-  The order in which you wish the key points to be mentioned. (Keep the flow)
-  Areas of the information that may be questioned. Try to anticipate possible questions. (set out to find a devils advocate)

Being prepared gives you a certain degree of control

Reasons for poor or incorrect interpretation.

Mannerisms

Senders may display habits or mannerisms, which not only distract the *receiver* but also may even be annoying.

Our hands are perhaps the greatest offenders. We fidget with pens, rulers, papers or any other available object. We rub our hands together or cross our arms, or continually flex our fingers.

Some mannerisms are verbal. We continually say 'Ahh', 'Um', 'OK' etc. We cough or tap our feet.



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All of these mannerisms are distractions, which will contribute to concentration being lost by the receiver, and lead to misunderstanding of the message.

All mannerisms are in the control of the sender. Good communicators take steps to identify them and overcome them.

Incorrect use of the Voice

The voice is a very effective and useful tool if used correctly, and serves several purposes. The tone in particular can show friendliness or encouragement. It can be used to ridicule, frighten, threaten or show interest or sincerity. The voice can be used to show emphasis, knowledge of the subject, or lack of understanding.

Alter the tone and pitch of the voice. Speak strongly to show emphasis, softer and questioning to create thought. Be firm to guide the listener back if they are off the track.

Change the tone as often as the situation demands. Nothing is more boring than to listen to a speaker who talks with a monotone sound.

Poor Eyeballing

Eyeballing is simply eye contact. It should be a natural action to look at people when we speak to them, but few speakers do it. It is such an important part of communicating and fulfils so many functions, that entire lessons have been prepared and delivered on the aspect of communication alone.

-  It gains control.
-  It gives feedback.
-  It is used as emphasis on key points.
-  It indicates and helps maintain interest.
-  It creates, for the sender, respect from the receivers.

Coupled with careful use of the voice, eyeballing is an exceptionally powerful tool of communicating. A stern look of just a few seconds, together with a slight slowing or pause of the voice will usually regain control from an individual who is becoming disruptive.

Watching carefully for facial expressions on the listener will give feedback on interest, or understanding of the topic. A frown from someone may indicate the message was not understood.



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CAUSES OF COMMUNICATION BARRIERS

Ref: The Business Communications Handbook - Third Edition - Judith Dwyer
Chapter One - Page 14

Effective communication often passes unnoticed whereas poor communication is obvious. The complete message and its meaning are distorted or interrupted.

Some of the factors that cause communication barriers are:

-  Inappropriate choice of words
-  Inappropriate channel
-  Inappropriate message
-  Receiver inattention
-  Lack of courtesy by the sender or the receiver
-  Non-verbal communication that does not support the words
-  Poor layout and presentation
-  Poor timing
-  Inadequate feedback.

FACTORS THAT WILL AFFECT COMMUNICATION

LANGUAGE:	Good, Bad, Incomplete
TONE OF VOICE:	Conveys Its Own Meaning
JARGON:	Using Words to Convey Local Meaning
TIREDFNESS:	Poor Choice of Words, Inattention when Listening
NOISE:	Words Missed - Meaning Incomplete
BOREDOM:	Mind Wandering
LOW ATTENTION SPAN:	Mind Wandering
PHYSICAL DIFFICULTIES:	Unclear Messages And Not Understood Words
PREJUDICES:	Different Meanings For Words Used



LISTENING IN COMMUNICATION

Good communicators recognise that a very important aspect of communicating is listening. We tend to give attention to our presentation skills but neglect our listening ability. This is possibly because we understand, or believe, that if we present accurately, the message will get through accurately. This may be true, but in a talk back situation we think on our feet, and we then become the receiver as well as the sender.

This means we send a message, receive feedback, then send another message in the form of an answer to a question.

A major obstacle to listening is distraction, and these distractions are usually in our own minds. The normal speed of speech is between two hundred and three hundred words per minute. Our brain is capable of absorbing and sorting eight hundred to one thousand words per minute. This is called thought speed.

So even though we are listening, our brain is not really working at anywhere near full capacity and it solves this problem by thinking ahead of the audible words it is hearing.

We begin to wander or switch off. Or we begin to construct an answer to a question as soon as we hear the basic direction the question is taking. We indulge in wishful hearing, which is hearing only what we want to hear.

Statistical methods of gathering information teach us that we make decisions based only on the data we have before us. Communicating is no different. As a speaker we must have all possible data to ensure interpretation of our message is correct and accurate.

There are several methods of overcoming these listening distractions.....

1. Give full concentration by making the effort.
2. Read between the lines - practice body language. Look for other validating signals.
3. Take written notes if appropriate.
4. Ask for the question to be repeated, or further explained.
5. Get a mental picture of the subject being discussed.

Communication is LISTENING



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FIRST !!

IDEA

Before you begin writing, you must work out clearly in your own mind what the idea is that you are trying to get across.

STYLE

Decide on the right style, tone and wording for the particular person you are writing to.

CHANNEL

Check that a written message will be the most effective way to get your message across.

Memo? Letter? Report?

Remember if it:

-  Needs to be on record.
-  Is complex material.
-  Needs particularly careful wording.
-  Needs to be carefully considered before replying.
-  Is to be legally binding.
-  Then it is probably best in writing.

But if:

-  You could explain it better face to face, with the receiver able to ask questions
-  You need immediate feedback
-  It is a simple and straightforward message
-  It does not need to be recorded

Then a face to face conversation or telephone call *may* be more effective

HOWEVER – if the communication relates to your project and it was a face to face or telephone conversation – always confirm the outcomes of every conversation, without exception, in writing by either Facsimile, Memo, Letter or Email.



WRITING GOOD LETTERS

Source: Extracts - Effective Business Writing - A Self-Learning Guide by Heather Salmon - Champagne Consultants

LAYING OUT A LETTER

By using a consistent procedure you will not only enhance your professional image, but also save yourself a lot of decision making over what to include and where to put it.

On the following page you will see a letter set out following the basic procedure. Follow the index numbers as we refer to the different sections of the letter.

It is now customary to use the fully blocked layout with all typescript parts of the letter starting from the same left-hand margin. The body of the letter is punctuated normally, but in all other parts punctuation is omitted.

1. **Letterhead stationery:** Identifies who you are. Including Postal Address, Telephone, Facsimile numbers. STD numbers should be typed in brackets before Telephone and Facsimile numbers. For Example NSW (02), QLD (07), VIC (03)
2. **Date:** Day, Number, Month, Year - no punctuation.
3. **Recipient's name and address:** these may be referred to by job title only, but where the actual recipient's name is known, it is better to use it and support it with the recipients title/position (if known) within the organisation.

Where it is specifically intended for a particular person within that organisation, direct it by using the word - *Attention:*

5. **Letter reference:** Where appropriate these are used to aid identification. "Our reference" indicates the writer and "Your reference" relates to the recipient's letter.
6. **Salutation:**

Either	Dear Sir	or:	Dear Mr. Evans	if name
	Dear Sir/Madam		Dear Mrs. Evans	and title
	Dear Madam		Dear Ms Evans	is known

7. **Subject heading:** Wherever appropriate use a subject heading. This not only makes the subject of the letter obvious, but also helps with retrieval. Set out in block capitals or underline with space above and below to highlight.
8. Allow white space between paragraphs and sentences for an attractive presentation and easy reading. (The norm is to leave 1 line between each paragraph and 2 spaces after the full stop prior to commencing the next sentence.)
9. The **subscription,** or **"signing off"**

Sign off as 'Yours faithfully' for all business letters

Only use 'Yours sincerely' – if you are writing a reference, apology etc.



10. **Writer's name and job title** - set out after a space for signature. It is helpful for women to include preferred title: Mrs., Miss, Ms.
11. **Enclosure reference:** The abbreviation enc. (xxxxxx) or encl.(xxxxxxxx) draws to the reader's attention whatever has been included with the letter.
12. **Copies** to another person or department are indicated by 'copy' (copies) to or 'cc(s)' at the foot of the letter.
13. Check the layout of the letter before printing. Ensure the format is balanced.
14. **Before** putting the letter into an envelope or sending it. Print out the letter and read it. Check for grammar and spelling errors.

STRUCTURING YOUR LETTERS

1. OPENING PARAGRAPH - SITUATION

Explains the situation and puts the message into context by:

-  Introducing the topic of the letter or
-  Referring to what has happened so far

In this paragraph you will:

-  Explain why the letter is being written.
-  Thank the reader for any previous correspondence, mentioning the date it was received, the subject and any given reference number.
-  Give reminders of names, places or dates which will help to put the letter into context.

2. MIDDLE PARAGRAPH(S) – DEVELOP THE MESSAGE

The body of the letter in which information is set out clearly and logically:

-  Where necessary use several paragraphs, each dealing with separate aspects. This will make complicated messages easier to follow.
-  Organise information into lists, tables or schedules wherever appropriate.

3. CLOSING PARAGRAPH - ACTION AND COURTESY

-  In a complex letter this section may include a summary of the information given in the body of the letter.
-  The main purpose of a letter is frequently to stimulate some action by the reader. By setting out the required action simply and clearly in the final paragraph, this remains uppermost in the reader's mind.
-  The letter then finishes with a courteous statement.



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No. 1
Your Name
Address
Address

ALWAYS SET OUT LETTERS, REPORTS, FACSIMILE, EMAILS ETC IN BLOCK (LEFT HAND ALIGNED) FORMAT.

No. 2. Begin with the Date: (Day, Date, Month, Year)
Monday 19th February 2008.

(Leave 1 line blank from Date on 2nd Line....)

No. 3 Insert Name of Person you are addressing the letter
Insert Position the person holds within the organisation
Insert Name of Organisation
Insert Street Address or P.O. Box number
Insert Suburb, State and Postcode (Do not underline)

No.4 Attention: XXXXXXXXXXXX (insert persons name if not shown above)

(Leave 1 line blank from Attention Line on 2nd Line....)

No. 5 Insert a Reference Number/Name – if applicable

(Leave 1 line blank from Reference Heading on 2nd Line....)

No. 6 Insert Dear this may be the persons first name if you have already had a verbal discussion OR if you know the person is a male or female Insert Dear Mr. or Mrs or Ms. then surname. If you only have a title, address the letter as Dear Sir/Madam.

No. 7 Leave 1 line blank from Dear Sir etc on 2nd line include a Subject Heading
Re: XXXXXXXXXXXXXXXXXXXXXXXX

No. 8 Leave 1 line blank from the Subject Heading and on the 2nd line start the opening paragraph.

Remember to leave a line before starting the next paragraph and 2 spaces before commencing the next sentence.

No. 9 End letter – leave 1 line blank from last sentence of letter on 2nd line, sign off as shown below. If you have had previous discussions, correspondence or have developed a good rapport with the person you are writing to, you may sign off as Regards or Kind regards:

Yours faithfully,

Name of Organisation (in Bold print – optional if on the first page that shows a letterhead and logo)

Leave about 4 -5 lines (room enough for a signature)

Note: At no time are electronic signatures to be used in any communication – all signatures must be hand signed.

Name of Writer (in bold print)

Position of Writer (in bold print.)

Encl: (list what documents you have enclosed/attached with the document)



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EXAMPLE

Monday 19th February 2007

Ms. Susan Stephens
Managing Director
Back to Basics Business Training Pty Ltd
20 Morehead Street
LAMBTON NSW 2299

Reference: WC/10/02/07

Dear Susan

Subject: WRITING LETTERS

Thank you for the opportunity to learn how to set out a letter. If the letter is only short you may wish to space the letter out with 1 or more spaces between each section.

Always keep the letter aligned against the left hand side of the page, leaving a suitable margin on the Left Hand Side and Right Hand Side of the document.

Remember to break up the paragraphs and sentences rather than have long drawn out paragraphs which are difficult to read.

The smaller paragraphs not only make it easier to read it, also keeps the reader alert to the content.

Try not to be repetitive with your terminology.

Remember keep it short – if pages and pages are required, consider a written report and use the letter as a short introduction/attachment to the report.

Always sign off in the following manner. Do not use *Yours sincerely* unless you are writing a reference, giving an opinion, offering condolences etc. Remember always note that the second word –faithfully, sincerely, regards is always shown as lower case.

Yours faithfully,
<insert name of organisation – if it applies>

Note: At no time are electronic signatures to be used in any communication – all signatures should be hand signed.

John Smith
Principal



WRITING MEMOS, FACSIMILES & EMAILS

Source: Extracts - Effective Business Writing - A Self-Learning Guide by Heather Salmon - Champagne Consultants

The situations when a Memo/Facsimile would be used include:

- Disseminating information of new policies and decisions.
- Relaying asked for information.
- Presenting facts for consideration.
- Reporting progress.
- Suggesting Ideas.
- Setting responsibility for work to be done.
- Expressing your opinion on an issue.
- Communicating useful data or information.
- Confirming verbal discussions.
- Expressing appreciation or building morale.

The Facsimile is particularly valuable in situations where you need to:

- Communicate the same information to several individuals at once.
- Provide a written record of directions, instructions, responsibility.
- Get the message through to someone who is difficult to contact.
- Make sure the information will not be forgotten or misunderstood.
- Confirm or recap points discussed in meetings or on the telephone.



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When writing Memos/Facsimiles it is important to keep in mind that they are really letters.

In particular:

-  Know who you are writing to. Analyse your reader in terms of existing knowledge and information required.
-  Keep in mind that the people to whom you write Memos and Facsimiles may be at a different level in the Organisation or may have a less specialised knowledge. Adjust your style of writing accordingly.
-  The “You” attitude is just as important when dealing with your own Company members as with outside people or Organisations.
-  Beware of sounding demanding or critical. Choose a suitable tone and express yourself with courtesy and politeness. Colleagues appreciate it too!
-  Identify the purpose of your Memo/Fax – what exactly are you intending to achieve? From this you can decide on the appropriate style.
-  Use the same organisation of material as for letters ie:

Enquiry	Direct approach	Explain situation and problem. Ask for information. State action required and the date by which it is needed.
Information or Good News	Direct approach	Explain situation and context. Give information/grant request. Give explanation if necessary End positively.
Refusal	Indirect approach	Begin with a neutral statement about which both sides can agree. Give explanation if necessary End positively.
Persuasive	Indirect approach	Use “you” approach to capture attention Develop a need Establish shared goals for both your reader and yourself. Give our solution Explain how the solution will solve the need Encourage Action.

-  It is particularly important to indicate clearly what action or response is expected. Otherwise Memos/Facsimiles tend to be read and forgotten.
-  Memos/Facsimiles should be short and concise. Wherever possible, aim for no longer than one page.



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Because Memos/Facsimiles are intended as quick and easy communications within your organisation, a standard format has been developed which speeds up the process.

Below is an example of a standard format for a Memo

MEMORANDUM

To: All Staff
From: Susan Stephens – Manager
Date: 4 August 200X

Subject: Standard Format for Memos

As staff are sometimes confused about the correct layout of Memos, I am setting out the main features:

1. They are usually printed on letterhead papers, and headed with the word Memorandum
2. The headings, TO, FROM, DATE and SUBJECT should be set out as shown above.
3. After FROM: the name and title of the writer should be inserted
4. The subject heading should show accurately and specifically the topic of the memo. It should be underlined.
5. As with letter writing, use “you” approach to encourage readers to relate to your message.
6. Information should be arranged logically, with headings and lists wherever possible.
7. Paragraphs should begin with the topic sentence
8. Encourage action at the end of the Memo
9. There is no need for *Yours sincerely* in the subscription. Typed name and job title is sufficient, although you may choose to initial the Memo to show that it is checked and ready for sending.

By adhering to these procedures, I am sure that you will all find Memo writing quicker and more efficient.

Susan Stephens
Manager.



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Below is an example of a standard format for a facsimile

FACSIMILE	
TO:	_____
FAX NO:	_____
DATE:	_____
FROM:	Susan Stephens
FAX NO:	(02) 4953 2896
TOTAL NO OF PAGES:	_____
REGARDING:	_____
MESSAGE	
Refer to the Memorandum points 1 to 9 on previous page.	

EMAIL COMMUNICATION

Begin the email with the persons name and then the body of the text. Do not type body of text in capitals it gives the impression that you are YELLING.

You *may* use the term 'Kind regards' or 'Regards' when signing off. Yours faithfully, is not required.

If the email is a formal reply or quotation – always prepare the reply, report, quotation, letter as a formal letter and attach it to the email **do not** set out the formal reply in the body of the email.

Always sign off using your full name and position and your contact telephone numbers.

Always carefully re-read an email prior to sending.

DO NOT send emails in the heat of the moment. Always read the email carefully, adjust the tone – where possible have someone else read the email prior to sending. OR leave sending the email until the next day. (Cool Off First!)

Always reopen any/all attachments to ensure the correct attachment is being sent. Check that the attachment is there prior to sending the email.



WRITING REPORTS

PREPARING YOUR REPORT

There are 5 basic stages in preparing a report

1. *Understanding the Brief*

Before you begin, make sure that you understand:

-  The purpose of the report
-  Its scope
-  Whether you are intended to make recommendations
-  Who it is to be presented to
-  The deadline for its completion

2. Researching Information

This may include:

-  Consulting records
-  Talking to people involved
-  Carrying out your own research/observations/tests/experiments
-  Contacting other organisations

3. *Organising the Information.*

-  Group your material into subject headings
-  Reject unnecessary data
-  Identify the main points
-  Arrange information in logical order



4. Composing the Rough Draft

-  Use standard layout format so that information is easy to follow and important considerations are not omitted.
-  Present your findings factually and objectively. Your opinion is revealed only in the recommendations.
-  Justify statements with facts and figures.
-  Check that your conclusions and recommendations are logical and practicable.
-  Organise your points so that information is set out in the order of importance – main points first.
-  Use headings, scoring's, indenting and numbering the help your readers follow complex material.

5. Preparing the Final Draft

Check that:

-  All necessary headings have been included.
-  Your chosen format is appropriate. Memo Report? Letter Report? Short Report? Formal Report?
-  Your style and register is appropriate and you have presented information objectively.
-  You meet your deadline.



Basic Report Layout as used for the Short, Formal Report

This is the most commonly used report layout. It varies slightly with the degree of formality of the report, but by using the following headings and layout you can be sure that all aspects are covered. Your information is easy to follow and understand, and there is consistency in report-writing styles which makes reports easy to read and refer to.

Introduction.

This sets out clearly the brief of the report – its purpose, scope and any relevant background.

Summary

This provides a quick reference to the main theme of the report, and the summary or conclusions and recommendations.

Methods of Research

This outlines the way research was carried out and where data was found.

Findings or Analysis

The information considered is set out clearly, logically and objectively, in order of importance, under appropriate headings.

Conclusions

Here the conclusions, which must be based on findings, are drawn together. It should not include any new information, but may give a personal assessment of the value of the findings.

Recommendations

These are not always asked for in the brief. Here the writer gives suggestions for solving the problems, which the report is concerned with. These should always relate to the conclusions given.

It is often helpful to number recommendations again with major points first.



VARIATIONS IN REPORT FORMAT

Memorandum Reports

Where the report is of relatively low importance, is brief and for internal reference between departments, the Memorandum Report format may be used.

Layout

Memorandum headings are used

Introduction	Outlines purpose and authorisation Scope Broad overview of conclusions and recommendations
Body	Gives details of findings, usually listed
Ending	Gives more detail of conclusions and recommendations

Style

Informal, conversational style. Can include use of “I”, but must retain an objective factual approach.

Letter Report

Where a report is asked for by letter from a customer or outside organisation, you may decide to present your report in a letter form.

Eg: a request for comparisons between two products available for purchase.

Layout

Set it out as for a letter

Introduction:	Reminds of situation and context
Body:	Sets out the information required
Ending:	Draws conclusions and makes recommendations
Final Paragraph:	Expresses courtesy and goodwill

Style

-  “You” approach, considering reader’s needs throughout.
-  Tone must be adapted to suit the reader
-  Headings and lists are used as appropriate
-  Personalised expressions of goodwill and courtesy.



Formal Report

Where a report is in considerable depth to enable a major decision to be made, the Formal Report format will be used. This is particularly so where the report is for Senior Management decision-making, or where the report is to be made available outside of your organisation.

Layout

Title Page	Showing title, recipient, author and date
Letter of Transmittal	A letter from yourself to the person/persons who authorised the report in which you: Introduce the report Explain the topic Include recognition of help given End with thanking for the opportunity to work on the report.
Table of Contents	Indicating major headings and sub headings
List of Tables and Illustrations	(Optional)
Synopsis	A brief summary of the contents of the report, concentrating on conclusions and recommendations.
Introduction	Explanation of subject, authorisation and scope of the report. It may include necessary background material.
Methods of Research	How research was carried out and where data was found
Findings (Analysis)	Sets out the information in a logical order and under appropriate headings
Conclusions	Lists the results of the investigation
Recommendations	Makes suggestions for decision making based on given conclusions
Appendix	(Optional) Gives details of research or data referred to in the body of the report, often through graphs, charts or tables.

Style

Use formal tone. Take particular care to be correct and consistent with typing, spelling, grammar and layout.



SELF TEST QUESTIONNAIRE

	Question	Ref Page
1	What key factors would you expect to see on a Communication Plan	12-14
	1	
	2	
	3	
	4	
	5	
2	What are the factors that cause communication barriers	17
	1	
	2	
	3	
	4	
	5	
3	What are the key factors that will affect communication	17
	1	
	2	
	3	
	4	
	5	
4	What methods could you use to overcome listening distractions	18
	1	
	2	
	3	
	4	
	5	



NEGOTIATION

NEGOTIATION DEFINED

Negotiation is a process that requires two or more people with a common or conflicting interest who have a need to resolve an issue or business transaction. Negotiation is the process of reaching an agreement. This process may include competition, collaboration, compromise, the need to accommodate or to walk away at any stage of the process



In the initial stages of negotiation, it is necessary to have clear objectives to achieve the optimum results. Planning the objectives and having an understanding of the negotiation process, its scope and boundaries will help you achieve the desired outcomes.

Strategies of the negotiation process

Throughout the negotiation process the needs of both parties are essential. To achieve optimum results a level of honesty is essential. Honesty builds trust, manipulation or coercion creates an atmosphere of mistrust. It is vital to maintain a *level playing field* by treating each other as an equal.

The effectiveness of the negotiation will be shown in the outcome and may not always end in agreement. Consider the differences between the following three strategies.

1. Win-Win Strategy
2. Win-Lose or Lose-Win Strategy
3. Lose-Lose Strategy

Each strategy has a different result. In the first both parties win, in the second one wins and one loses and in the third both parties lose.

Win-Win Strategy

A win-win strategy occurs when both parties are satisfied with the settlement negotiated. Consider the following situation.

THE SCENARIO

The drywall plasterer is notified of a change to the ceiling alignment of a unit in a medium density development yet to be completed. His contractual arrangements require him to provide a schedule of rates for his works. When the supervisor notifies the subcontractor of the impending change he ends the conversation with “we need to sit down and discuss this.” The subcontractor checks his schedule of rates and identifies the variation would be worth \$800 but is aware of the impending discussion with the supervisor.



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The supervisor has also checked the schedule of rates and identified the cost of \$800 prior to the suggestion for the need to discuss the variation. The supervisor also establishes that the subcontractors bottom line is most likely \$500.

The subcontractor enters the meeting suspecting by the tone of the supervisors suggestion to discuss the variation there was an error in the original calculations. After establishing his bottom line of \$500 his intent was to ask for \$600.

THE MEETING:

The supervisor briefly outlines the scope of works relating to the variation and introduces the benefit of notice of prior to commencement on this particular unit. The supervisor suggests that costs could be reduced and it is his estimate the subcontractors bottom line is \$500.

Whilst outlining his case the supervisor identifies the reason for the discussion being he had submitted a variation to the client without checking the measurements and has since found an error in his calculations. His offer based on this information is \$650 to the subcontractor to complete the works.

The subcontractor considers his original intention of requesting \$600 and subsequently agrees to the offer of \$650.

SUMMARY

The subcontractor is satisfied with the offer. The supervisor is pleased with the outcome. A *win win* situation.

Similar strategies apply in any negotiation situation. If you are negotiating the sale of a vehicle, your purpose is to achieve the best possible price, therefore, you may ask for more, knowing that you can fall back to a lower price. The buyer offers a lower price and negotiates upwards until the selling or market price is met. Each party is satisfied.

Successful negotiation is achieved when both parties concentrate on strategies that solve the problem and communicate effectively to achieve a win-win result.

Win-Lose or Lose-Win Strategy

A win-lose/lose win situation is created when one party is satisfied and one is dissatisfied. As you can see in this situation the supervisor initiated the negotiation and this will determine the relationship of the outcome. Using our example the supervisor in the following scenario is in a lose win position and the subcontractor is in a win lose position. The same situation suggested above can be negotiated to a win-lose result.



Lose/Win

The subcontractors position could be affected by the need for him to engage more employees to complete the works and is not prepared to negotiate down from his schedule of rates outlined in the contract and therefore after receiving the supervisors offer of \$650 refuses to complete the works for less than his contract agreement.

The supervisor has no alternative but to accept the situation as it is. A *win lose* situation

Lose-Lose Strategy

The lose-lose situation is created when neither of the parties are willing or able to compromise.

The supervisor needs to advance his program forward 2 weeks to avoid liquidated damages from accumulated circumstantial losses. To achieve this gain it is evident that only one trade provides the opportunity for this to occur. The supervisor approaches the subcontractor (A) to negotiate a time gain. The subcontractor (A) is unable to provide the manpower necessary to achieve the result. The supervisor is then forced into a position to reorganise the contract to the subcontractor (A) to allow the engagement of another subcontractor (B) to complete a portion of the works in conjunction with the original contract and therefore gain time. Subcontractor (A) has now lost part of the contract.

In this negotiation the supervisor was required to pay a premium over the original budget to engage subcontractor (B). Although the supervisor may have maintained rapport with his client for finishing on time his loss was financial against the project.

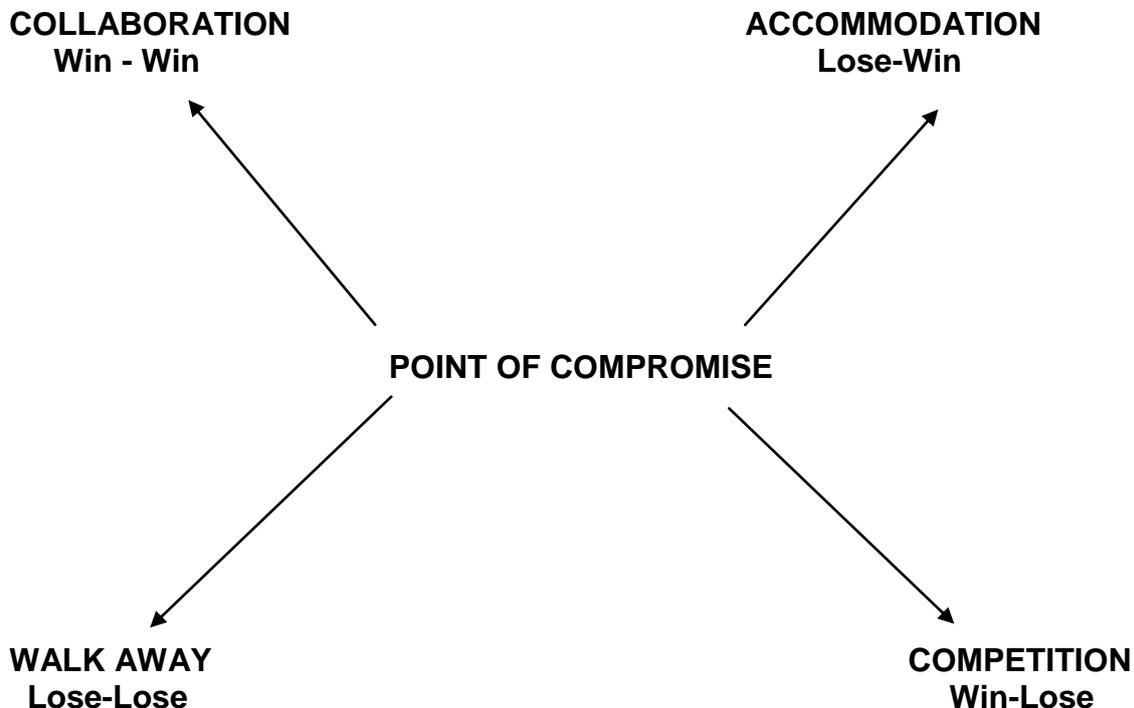
Throughout the negotiation process it is recommended that you are aware of the other persons objectives and expectations and should always try to avoid a lose/lose situation

NEGOTIATION OUTCOMES

Collaboration	can lead to.....	Win – Win
Competition	can lead to.....	Win – Lose
Accommodation	can lead to.....	Lose – Win
Withdrawal or avoidance	can lead to.....	Lose – Lose
Compromise	can lead to.....	Any of the four outcomes are possible



FOCUSING NEGOTIATION STYLES



With the first publication of “Getting to Yes: *negotiating an agreement without giving in*”, Roger Fisher and William Ury made an enormous contribution to the understanding of negotiation theory and practice. This book proves a comprehensive analysis of what the authors describe as ‘principled negotiation’.

POSITIONAL VERSUS INTEREST-BASED NEGOTIATION

Position negotiators (or bargainers) attempt to solve a problem by beginning with solution or demand and trying to convince the other party or parties to the negotiation that their solution is the best of all possible solutions. The objects of the positional bargainer include:

-  Winning
-  Maximising the benefit to them
-  Avoiding compromise
-  Giving less than the other parties to the negotiation.
-  Settling for as little below the initial demand as possible.

Interest based negotiators begin with the problem and focus on the needs which must be satisfied in order for a solution to be reached. The basis of principled negotiation is that negotiation is an opportunity for joint problem solving rather than an opportunity for one side to “win”. By focussing on the needs of each party to the negotiation it is possible that solutions to the problem can be found which were not immediately apparent.

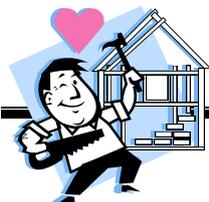


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The objectives of the interest-based negotiator include:

-  Finding a mutually satisfactory solution to the problem
-  Maximising the benefit to all parties
-  Compromising only if to do so is the best of many options
-  Satisfying their needs (and the needs of the other parties)
-  Exploring all possible solutions until the best solution is apparent and can be chosen.

Negotiations can be conducted directly between the parties.



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FISHER'S SEVEN ELEMENTS OF NEGOTIATION

ELEMENT	DESCRIPTION	GOAL
1. Interests	The needs, concerns and fears which motivate the parties	To satisfy our interest well, theirs acceptably and others tolerably.
2. Options	Possible solutions to individual issues identified by the parties	To find many possible options which satisfy interests. To find solutions which minimise waste
3. Alternatives	Possible actions that do not require agreement between the parties. I.e. what we can do elsewhere to solve this problem	To identify our (and each party's) Best Alternative to a Negotiated Agreement (BATNA). To identify our (and each other party's) WATNA (Worst Alternative to a Negotiated Agreement) and MLATNA (Most Likely Alternative to a Negotiated Agreement).
4. Legitimacy	The criteria by which the fairness (or otherwise) of the agreement will be assessed.	To identify independent and objective standards with which to compare options.
5. Commitment	What is each party prepared to do in the future?	Commitments should be well-planned, realistic and operational.
6. Communication	The messages and the method of conveying information between the parties	To find a means of communication which is efficient and clear and which will avoid misunderstanding (now and in the future).
7. Relationship	The way in which the parties interact with each other within and outside the negotiation	To develop the type of relationship that the parties desire – may be a good working relationship or may be one which allows these negotiations to proceed efficiently and productively.

Source: "Getting to Yes: Roger Fisher and William Ury



Avoid Confrontational Negotiation

What you say in the first few moments of a negotiation often sets the climate of the negotiation. The other person quickly gets a feel for whether you are working for a win-win solution, or whether you're a tough negotiator who's out for everything you can get.

So, be careful what you say at the beginning. If the other person takes a position with which you totally disagree, don't argue. Arguing always intensifies the other person's desire to prove himself or herself right. You're much better off to agree with the other person initially, and then turn it around by letting them know that you know just how they feel and that if they take a closer look at the offer they will find they it really is a good offer.

Respond with: "I understand how you feel about that. Many other people have felt exactly the same way as you do right now. (Now you have diffused that competitive spirit. You're not arguing with them, you're agreeing with them).

BASIC PRINCIPLES

A) Get The Other Side To Commit First

You will usually be better off if you can get the other side to commit to a position first. A couple of reasons are immediately obvious:

-  Their first offer may be much better than you expected.
-  It gives you information about them before you have to tell them anything.

The less you know about the other side or the proposition that you're negotiating, the more important the principle of not going first becomes.

If both sides have learned that they shouldn't go first, you can't sit there forever with both of you refusing to put a number on the table. But, as a rule, you should always find out what the other side wants to do first.

B) Acting Dumb Is Smart

In negotiation, smart is dumb and dumb is smart. When you are negotiating, you're better off acting as if you know less than everybody else does, not more.

The dumber you act, the better off you are unless your apparent IQ sinks to a point where you lack any credibility.

There is a good reason for this. With a few rare exceptions, human beings tend to help people that they see as being less intelligent or informed, rather than taking advantage of them.

Of course, there are a few ruthless people out there who will try to take advantage of weak people, but most want to compete with people they see as brighter, and help people they see as less bright. So the reason for acting dumb is that it diffuses the competitive spirit of the other side.



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Negotiators who understand the importance of acting dumb will retain these options:

-  Requesting time to think it over so that he can thoroughly appraise the dangers of accepting, or the opportunities that making additional demands bring.
-  Deferring a decision while he or she checks with others.
-  Asking for time to let legal or technical expert's review the proposal.
-  Pleading for additional concessions.
-  Using Good Guy/Bad Guy to put pressure on the other side without confrontation.
-  Taking time to think under the guise of reviewing notes about the negotiation.

Be careful that you're not acting dumb in your area of expertise. A carpenter should not say that he doesn't know the difference between F4 and F8 graded timber - the other side might start to smell the rat!



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SELF TEST QUESTIONNAIRE

	Question	Ref Page
1	List 3 – 4 Negotiation Strategies	38
	1	
	2	
	3	
	4	
2	List the 5 Negotiation Styles	40-41
	1	
	2	
	3	
	4	
3	List the 7 Elements of Negotiation	43
	1	
	2	
	3	
	4	
	5	
	6	
	7	



AVOIDING THE DISPUTE

The role of the Owner Builder necessitates the development of a new set of people skills.



These skills need to focus on **communication** as the basis identifying, and avoiding conflict.

for

Have a Communication Plan – Refer also to Topic Communication on Pages 12-19

Poor communication is a major source of conflict so give this serious attention before you start the project work. Ask yourself:

- Who needs to know?
- What do they need to know?
- How much do they need to know?
- How often must they be informed?

Establish distribution list(s) as appropriate but avoid generating large volumes of paper. Decide the ground rules you will impose on everyone to get prompt feed back to the prevailing situation with the work in progress. Effective monitoring and tracking of the project is dependent on good communication in the team, between you and the team and your key stakeholders. You need prompt feedback about:

- Current progress of the active tasks.
- Problems encountered with the work.
- Problems anticipated with work waiting to be done.
- Technical difficulties being encountered.

When a conflict arises it need not be a negative. Conflict can be positive – Consider the following ideas on the following pages.



CONFLICT

Source: Construction Management Induction Program – Module 1 Interpersonal Communicating Skills for Construction Managers. *Extract* from Topic Managing Conflict. –Construction Property Services Industry Skills Council (CPSISC) WELL Program – in Association with BMA Consulting.

Every relationship that we have contains an element of conflict. Conflict can occur whenever the actions of one person or group frustrate, or are perceived to frustrate, the actions or goal achievement of another. The main causes of conflict include:

-  Misunderstandings - especially concerning messages, roles, responsibilities and tasks.
-  Personality clashes.
-  Differences in goals.
-  Sub-standard performances or quality.
-  Differences over methods to be used.
-  Problems relating to areas of responsibility.
-  Lack of cooperation.
-  Problems relating to areas of authority.
-  Individual differences.
-  Competition for limited resources.
-  Non-compliance with rules and policies.
-  Competing schedules.
-  Pressing deadlines and project management concerns.

Today it is generally thought that it is not so much conflict that breaks down effective working relationships, but the destructive nature of some conflict and the inability to effectively manage it.

Distinguishing between the destructive or constructive nature of conflict is important. Conflict in itself is healthy and can generate change and creativity.

Conflict can be positive when it:

-  Helps to open up discussion of an issue.
-  Results in problems being solved.
-  Increases the level of individual involvement and interest in an issue.
-  Improves communication between people.
-  Releases emotions that have been stored up.
-  Helps people to develop their abilities.
-  Continues to surface without resolution.



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Conflict can be negative when it:

-  Diverts people from dealing with the really important issues.
-  Creates feelings of dissatisfaction among the people involved.
-  Leads to individuals and groups becoming insular and uncooperative.
-  Leads to avoidance or distraction from work, the real issue or topic.

Another way to look at conflict is to consider some examples of where it stems from a more practical and personal level such as:

-  Personality differences, eg between team members or staff and supervisors
-  Value differences, eg differences between peers or team members on the importance of certain values over others, differences over how people should be treated, recreation or break time considerations, disagreement over the way people are treated to get results.
-  Perceptual differences, eg not seeing an issue the same way or not agreeing on a product or solution.
-  Differences in objectives, eg project priorities and timelines.
-  Competition for limited resources, eg competing priorities for subcontractors, equipment use etc.
-  Interdependence or reliance on other people, sites or work areas.
-  Role pressures, eg having to play the tough guy when you don't really want to, needing to impose limits, pressure of expectations of those above you or clients to perform and to get the team performing better.



CONFLICT RESOLUTION STYLES OR METHODS

(Source: Adapted from Johnson and Johnson 1991.)

Withdrawing or avoiding: The person who chooses this method of conflict resolution will stay away from the conflict and the people involved in it.

Avoidance should be used when:

-  The issue is of minor or passing importance.
-  There is insufficient information to effectively deal with the conflict.
-  You have low power relative to the other party.
-  Others can more effectively resolve the conflict.

Forcing or competing: This method of conflict resolution leads to the overpowering of others by forcing them to accept your solution. It could be useful when quick, decisive action needs to be taken but usually results in satisfying your needs at the expense of the other person.

Forcing should be used when:

-  Emergencies requiring quick action.
-  Unpopular actions must be taken for long-term organisational effectiveness and survival.
-  Self-protective action is needed.

Smoothing or accommodating: The relationship is of utmost importance in this method of resolving conflict. The person who uses smoothing wants to be accepted and liked by others and wants to avoid conflict to appease the other person.

Accommodating should be used when:

-  There is a need to defuse a potentially explosive emotional conflict situation.
-  There is a short-run need to keep harmony and avoid disruption.
-  Conflict is primarily personality based and cannot be easily resolved.

Compromising: A person who compromises is willing to give up part of their goals and attempts to persuade the other party to the conflict to do the same. In reality this becomes a lose-lose situation, as the result is more acceptable than optimal for either party. However if the loss on both sides can be minimised and is mutually perceived as equal then it does offer some solutions



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Compromising should be used when:

- Agreement enables each party to be better off, or at least not worse off, than without an agreement.
- Achieving a total win-win agreement is not possible.
- Conflicting goals block agreement on one person's proposal.

Collaborating: In this situation the parties each value their own goals and relationships and attempt to seek a solution that achieves both their goals and the goals of the other person. This is the only win-win strategy among the styles.

Collaborating should be used when:

- There is a sufficient level of required interdependence of conflicting parties.
- There is sufficient equality in power of conflicting parties.
- There is potential for long-run mutual benefits.
- There is sufficient organisational support to take the time and energy for collaboration.



FOUR STAGES TO CONFLICT RESOLUTION

There are four stages or steps you can use to identify, manage and resolve conflict. These are listed below.

1. Identify the problem

Remember that it is your problem - you are the one who has perceived its existence.

When describing the problem to the other party you could say, "I have a problem I would like to talk to you about". When you do state the problem to the other person describe it in terms of:

-  The behaviour that has occurred.
-  The consequence of the behaviour.
-  How you feel about the problem.

You should not accuse the other person or put them down when describing the problem to them. You should, though, persist until you feel the other person has received your message.

2. Generate solutions to the problem

Request that you both meet to discuss solutions to the problem. At the meeting encourage the other person to express opinions and solutions. Rather than hitting them with the big picture all at once, an idea might be to approach the problem in bite size chunks. Focus particularly on the here and now, not dredging up old issues or unrelated issues at the same time. It is counter-productive to do so.

This step is particularly useful especially if you have not yet established a close working relationship with the person. Focus on things that you share in common such as mutual goals. This will act as a good starting point to ensure you both get the result that you want.

3. Develop an action plan

Check that the other person understands the solution as you understand it. Make sure you both agree to, and support the plan. Do not assume everyone knows how to work out the details for implementing the plan. All parties should be aware of their responsibilities and should agree on how the decision will be monitored. When conflict exists for a client or workplace it can often be within a crisis context which further complicates the ability to see solutions.

4. Ensure follow up

This monitoring could be as simple as attendance at another meeting. You should also be flexible enough to change the plan if required.

When time pressures are not a problem and when everyone wants a solution to a particular problem, then the problem solving or collaborative method of conflict resolution should satisfy the concerns of everyone. It will not only meet the goal requirements of all parties but it will ensure you maintain effective working relationships.



RESOLVING CONFLICT

There are a number of suggested methods and approaches for resolving conflict.

Three methods that are practical and easily understood are the **TLC method**, the **AEIOU method** and the **DESC method**.

The **TLC Method** requires that you:

- T** – Treat the other person with respect.
- L** – Listen until you understand the other person’s point of view.
- C** – Convey your position with “I” statements.

The **AEIOU method** requires you to:

- A** Assume the other person means well.
- E** Express your feelings.
- I** Identify what you would like to happen.
- O** Outcome expected - positive and highlighting the potential negatives.
- U** Understanding on a mutual basis - getting agreement- show benefits to all sides.

The **DESC method** requires that you:

- D** – Describe the situation.
- E** – Express your feelings.
- S** – Specify what it is you want to happen.
- C** – Consequences – make sure they are clear and understood.

To help resolve conflict it is important to:

-  Remember to listen and hear the other viewpoint.
-  Understand where the other side’s motive may lie.
-  Be assertive and offer win-win solutions.
-  Use suggestive language rather than directive language in communication such as “I wonder if ...”.



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Overall there are 12 skills of conflict resolution that will help you to resolve conflict:

- 1. Win/win approach** - A new look at conflict and cooperation, and the possibilities for mutual gain.
- 2. The creative response** - Seeing conflict as an opportunity. Though conflict is frequently seen as a crisis, it may also be regarded as an invitation for change.
- 3. Empathy** - Seeing the other person's point of view from their perspective. Recognising the motivations behind apparently uncaring behaviour of other people helps to understand the issue and to find the best approach towards a solution.
- 4. Appropriate assertiveness** - Knowing your needs and rights and how to state them clearly.
- 5. Cooperative power** - The difference between power over someone else and power with someone else.
- 6. Managing emotions** - Handling your own anger and frustration.
- 7. Willingness to resolve** - Understanding the role that resentment plays in preventing successful negotiation.
- 8. Mapping the conflict** - Drawing up a map of the conflict which includes looking at the underlying needs, values, objectives and visions of participants.
- 9. Development of options** - Creating a smorgasbord of choices from which conflict participants can choose.
- 10. Negotiation skills** - Creating suitable environments for working together towards resolution.
- 11. The third party mediator** - Understanding the special role of the mediator and the importance of neutrality.
- 12. Broadening perspectives** - Recognising your view as one point of view and understanding the other point of view as also valid and necessary as part of the whole.

If you are experiencing problems with your builder or tradesperson, the following steps may help you reach a quick resolution. You should first discuss your dispute with your builder or tradesperson (ie. contractor). If that fails, then talk to your local Fair Trading Centre before involving the Consumer Trader and Tenancy Tribunal (CTTT).



BUILDING DISPUTES & RESOLUTION



Fair Trading is also able to offer a dispute resolution service where damage has occurred to any structure or work (eg. on a neighbour's property), as a result of the residential building work being carried out. Contact the Office of Fair Trading for further information.

Step 1. Talk about it

Develop and maintain positive communication with your contractor. As soon as you become aware of a problem, you should let your contractor know. Talking things over initially could resolve the problem. It may simply be a misunderstanding which can be resolved by communication.

Step 2. Write a letter

Following your discussion, write a letter outlining what you have both agreed to do and by when. Keep a copy of the letter for your records and note the date you posted it. Registered post and/or email provide proof that the letter was sent. If your dispute remains unresolved, then contact the Office of Fair Trading.

Step 3. Contact the Office of Fair Trading

Contact your local Fair Trading Centre in writing (a verbal complaint is acceptable if the building work has created a health or safety risk for you). The Fair Trading staff member may suggest you get a copy of the *Guide to Standards and Tolerances* if your dispute is about the building work itself.

Produced by the Victorian Building Commission the *Guide* will help you understand what standard of work is acceptable. For example, it explains how much shrinkage around timber windows and doors is tolerable under NSW building standards. Go to www.buildingcommission.com.au to access the *Guide to Standards and Tolerances*.

The Office of Fair Trading will attempt to negotiate a suitable outcome between you and your contractor. In the majority of cases, the Office of Fair Trading is successful in reaching a resolution. If the complaint is not resolved, the next step for a homeowner will depend on the issues in dispute. If the complaint is about defective or incomplete building work, the complaint may be referred to a Fair Trading Building Inspector.



Step 4. Building inspections

The role of Building Inspectors is to help resolve disputes. They will inspect the issues reported in the complaint, and then discuss their findings with you and your contractor with a view to resolving the dispute. The Inspectors do not do a general inspection but rather visit the site to look at specific items that are the subject of the complaint.

Where the Building Inspector determines that there are matters requiring rectification by the contractor, a Rectification Order may be issued.

Step 5. The Consumer, Trader and Tenancy Tribunal (CTTT)

If the Rectification Order is not complied with or you are not satisfied with the decision made, you may lodge a building claim with the Consumer, Trader, and Tenancy Tribunal (CTTT). A building claim may also be lodged with the CTTT by you or the contractor where defective work is not involved, EG. For money owed.

For more information about the building dispute resolution process go to the Office of Fair Trading website. www.fairtrading.nsw.gov.au – Home Building Section – Resolving a Building Dispute

For more information about the CTTT access the website www.cttt.nsw.gov.au.



SELF TEST QUESTIONNAIRE

	Question	Ref Page
1	What are the main causes of conflict – List 5	50
	1	
	2	
	3	
	4	
	5	
2	When could conflict be determined as positive – List 5	50
	1	
	2	
	3	
	4	
	5	
3	When could conflict be determined as negative – List 4	51
	1	
	2	
	3	
	4	
4	Where can conflict stem from – List 5 areas	51
	1	
	2	
	3	
	4	
	5	
5	List the conflict styles	52-53
	1	
	2	
	3	
	4	
	5	
6	List the 4 stages of conflict resolution	54
	1	
	2	
	3	
	4	
7	Be able to describe the TLC Method of Conflict Resolution	55
	T	
	L	
	C	
8	Be able to describe the AEIOU Method of Conflict Resolution	55
	A	
	E	
	I	
	O	
	U	



OWNER BUILDER COURSE



SELF TEST QUESTIONNAIRE

	Question	Ref Page
9	Be able to describe the DESC Method of Conflict Resolution	55
	D	
	E	
	S	
	C	
10	List 6 of the 12 skills of conflict resolution	56
	1	
	2	
	3	
	4	
	5	
	6	
11	What are the 5 steps in relation to Building Disputes & Resolution	58-59
	1	
	2	
	3	
	4	
	5	
12	What is the purpose of the CTTT	59
	Answer	



MEETINGS

Much can be accomplished at a properly planned and conducted meeting.



Meetings with no pre-planning will accomplish very little, and will be a waste of your time and that of one of your most valuable resources.

Meetings will be convened at several stages of a Project, and initially may involve only the Principal Contractor and Key Personnel....eg. Principal, Estimator, Accountant, to discuss and consider the feasibility of the Project, based on the Construction Documents.

- Meetings are called to discuss those matters/issues, which cannot be resolved by other means.
- Meetings should result in a RESOLUTION.
- Meetings take the key people away from other tasks, so....
 - ☞ Ask yourself - Is the meeting really necessary?
 - ☞ Could the matter/issue be resolved by other less time consuming means?
 - ☞ Select the Agenda items carefully. Only include those items which MUST be resolved.

If an item requires the attention of only two or three persons, leave that item until last and allow other persons to leave the meeting, or have your discussion with the two or three BEFORE the main meeting commences.

DON'T WASTE THE TIME OF YOUR SITE PERSONNEL!!

SUMMARY

-  Is the meeting necessary?
-  What is to be discussed (Agenda Items)?
-  Select Attendees per the Agenda.
-  Arrange Agenda items so key personnel are not kept at the meeting unnecessarily.

Finally - ensure that minutes of the meeting are taken by a competent person, and typed copies of the minutes are distributed to all concerned.



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MEETING NOTICE (AGENDA)

PROJECT _____

DATE _____

VENUE _____

ATTENDING _____

AGENDA

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____

9. _____

10. _____



LEAD UP MEETINGS

Meetings held prior to a project commencing fulfil a number of important functions:

-  Responsibilities of the different members of the site management staff.
-  Ordering of Job Materials.
-  Allocating Trades, Site Personnel.
-  Commencement and completion dates of the project.
-  Control procedures for the job.
-  Progress Claim procedures.

Unless the site personnel have a very clear picture of these issues and what their role is in terms of bringing these tasks to a satisfactory conclusion, the site is headed for the potential problems. The lead-up meeting can help eliminate such problems before they have a chance to manifest themselves.

Secondly, the outcomes of the lead-up meetings help provide the key people with information from the site which then aids co-ordination of the project as a whole.

Lastly, the lead-up meetings can identify any unique requirements which may need ongoing and special attention over the life of the project.

The need for such meetings are prior to the projects commencement.

Covering such items as...

-  Procedures for the ordering of materials, labour and administrative needs.

What is a Lead-Up Meeting:

Meetings where the co-ordination mechanisms of the site are established.

These mechanisms and procedures are usually established in line with the Bill of quantities and Job Specifications.

Certain items on the Bill of Quantities can form key project milestones.

WHO SHOULD ATTEND.

Site Supervisor (Yourself as the Owner Builder), Site Foreman/Supervisor – should you engage one, Estimator and Nominated Sub Contractors.



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EXAMPLE 1 - SITE MINUTE

NAME OF PROJECT

Minutes of Construction Meeting No. XX – Dated

Location: 106-108 SOMEWHERE STREET, BUILDERSVILLE

Present:	Malcolm Brown	Owners (Own)
	Garry White	Huge Designers Pty Ltd (HDPL)
	Dallas Black	Artistic Builders(AB) Project Manager (ABPM)
	Bob Green	Artistic Builders Site Manager (ABSM)

Distribution: As Above

PROCEDURE

Previous Minutes

All present accepted the previous meeting minutes as correct.

Any directions or decisions of this meeting so minuted constitute an instruction under the Contract.

All correspondence, instructions, selection, approvals, request for information details and the like required for the execution of the works by AB to be provided by the Superintendent HDPL. The Builder and Superintendent to provide copies of correspondence between both parties to the principal.

AUTHORITIES & APPROVALS

Not Applicable



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EXAMPLE OF SITE MEETING MINUTE CONTINUED

PROGRAM	ACTION
Insert Details of the Job Schedule – Current Position, Changes, Delays, Extension of Time Submissions etc.	Insert Date of Action and who is to be responsible
Revised date for practical completion	
Revised program	
CONSTRUCTION	
INSERT DETAILS RELATING TO THE PROGRESS OF THE CONSTRUCTION STAGES.	
INCLUDE VARIATION NOTICES	
INCLUDE P.C'S	
INCLUDE EOT	
INCLUDE SAFETY ISSUES	
VARIATIONS TO CONTRACT Insert List of Variations to Date	Insert the Cost of Each Variation
V1	
V2	
V3	
V4	
V5	
Note: T.B.C indicates costs unknown at this stage COSTS TO BE CONFIRMED	



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EXAMPLE OF SITE MEETING MINUTE CONTINUED

NEW ITEMS	
INSERT DETAILS OF NEW ITEMS OR ISSUES TO DATE	
INSERT DETAILS OF IMPLEMENTATION OF THE NEW ITEMS	
INFORMATION TABLED	
Insert a list of progress claims, documents, information, inspection, reports etc that were tabled at the meeting	
NEXT MEETING	
Next Meeting to be held on site <insert date and time>	
NAME OF PERSON CHAIRING THE MEETING	
Number of Meeting	



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EXAMPLE 2 - SET OF MINUTES

MINUTES OF <INSERT PROJECT NAME. MEETING HELD AT <INSERT LOCATION OF MEETING> ON THE <INSERT DATE OF MEETING> AT <INSERT TIME OF MEETING>.

PRESENT:

APOLOGIES:

PREVIOUS MINUTES:

CORRESPONDENCE:

TOPICS IN ORDER OF AGENDA - INCLUDE ALL MOTIONS AND AMENDMENTS AS VOTED ON, WITH THE NAMES OF THE MOVER AND SECONDER AS APPROPRIATE. SUMMARY OF ANY DISCUSSION MAY BE INCLUDED IF NORMAL PRACTICE AT YOUR MEETINGS. RECORD ACTIONS TO BE TAKEN AND THE NAMES OF THOSE NOMINATED TO TAKE ACTION.

E.G. A motion put forward that the Petty Cash Float be increased from \$100 to \$200

MOVED: Jason Bland
SECONDED: Beryl Smith
CARRIED

OR

After discussion it was found necessary to gain more detailed information regarding the installation costs of the Telephone System and presented at the next meeting.

ACTION: Beryl Smith

Next Meeting to be held on DATE at PLACE at TIME

There being no further business the meeting closed at TIME

CONFIRMED Thisday of.....20.... Chairman



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SELF TEST QUESTIONNAIRE

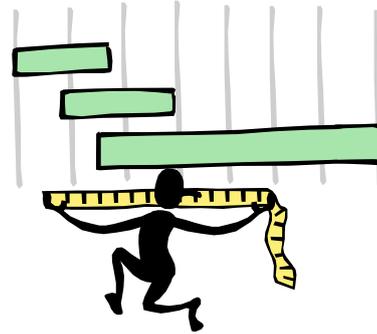
	Question	Ref Page
1	In summary what are the key factors of holding a meeting	63
2	What is the purpose of holding a 'lead up meeting' prior to starting a project	65
	1	
	2	
	3	
	4	
	5	
3	What information would you expect to see in a set of minutes from a site meeting	66-69
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
10		



PLANNING

Good planning begins with the following:

-  Developing a positive attitude to managing self and time.
-  Establishing clear goals.
-  Setting the right priorities.
-  Analysing your use of time.
-  Planning work on a regular basis.
-  Scheduling your work.
-  Controlling interruptions.
-  Running effective meetings.
-  Delegating work.
-  Conquering procrastination.
-  Developing time management strategies as part of a team.



As soon as you set foot on site as the owner builder supervising the site there is an air of expectancy that it is going to be an awesome task. Make the assumption that you are inexperienced and there will be some hiccups not to mention the disruption to your household.

The quickest way to get into trouble is not to plan the job thoroughly. The following needs to be addressed early:

PLANS/SPECIFICATIONS

-  Be thorough with the detail in your plans and specifications.
-  Make all the necessary selections prior to commencement.
-  Agree to all variations prior to commencement of any works in writing.

SCHEDULE

-  Make up a working schedule.
-  List sequence of events.
-  Time line.
-  Projected cash requirements.
-  Projected income.



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ORDERS

-  Order all materials with an expected delivery date. (Mark date to be confirmed).
-  Book all of your sub contractors according to your schedule, (date to be confirmed).
-  Make up a call forward sheet.

RECORDS

-  Keep your job diary (day book, site diary) up to date.
-  Record all wet days, and expect an extension of time from contractors even if you are in front of your schedule.
-  Record all accidents, no matter how trivial.
-  Record all site instructions, to you and from you – keep copies.
-  Do not do variations without them being in writing and approved.

RECORDS

Photographs: Take photographs of the existing dwelling and gardens prior to commencement. Be particular and photograph faults and irregularities in the existing structure. Do not forget to get photos of the neighbours house, their fences and paths, paying particular attention to irregularities. Take internal shots looking particularly for cracks, and sagging lintels, broken windows. Make a copy of these photos for the neighbours/client.

Take photos during construction and at completion. These will serve not only as a record for you and your brag book, OR if there is a dispute.

Written Records: Make written notes of all irregularities and faults you see PRIOR to commencement, keep a copy in your job file. Record any damage to the footpaths, road and nature strip. Advise council.

This record could be in the form of a Dilapidation Report – See Topic Site Inspections in this Section

Start your job file, job diary and job records.



CONSTRUCTION PLANNING - WHAT IS IT?

Your supervision role will require you to be able to communicate on a technical level with the elements of each trade throughout the process of construction and may require you to make decisions that affect other trades based on the information as you understand it.

From the commencement of the project, you as the site supervisor, would normally be presented with a package of information, and if the project has been won perhaps by competitive tender, these may be referred to as the '*Contract Documents*'. As the Owner Builder you are the Site Supervisor so it is your responsibility to ensure these documents are available.

These documents would include the following:

-  Drawings: Architectural
 Engineering - Structural
 Mechanical
 Hydraulic
-  Specifications
-  Consent approvals
-  Consultant Reports
-  Contract Conditions

All of the above items would contain different pieces of information pertaining to the objectives for the project. As the Site Supervisor for the project, you are responsible for the collection of this information that may include the following:

-  Project time frame
-  Material requirements
-  Labour requirements
-  Equipment requirements
-  Operational constraints
-  Regulatory requirements

This data may then be used to develop strategies to be employed throughout the construction process to eliminate or minimise their effect.



Establish a Plan

Another of the duties that a Site Supervisor would be responsible for or at least involved in is establishing the “**Construction Plan**”.

In developing a plan we usually adopt simplistic approaches and rely on diagrammatical charts, graphs and sketch drawings to predict the expected outcomes for the project. The charts most commonly used in this process are known as ‘**Gantt**’ or ‘**Bar**’ charts, they usually are constructed based on the time frame allocated for each of the trades involved throughout the construction process, indicating order of precedence of trades activity and process.

The construction plan must be *realistic* and *achievable*, which will require some key considerations such as the provision of:

-  Adequate time to complete each activity or process
-  Adequate and acceptable material to complete the task
-  Adequate and suitably qualified people to complete the task
-  Financial capability to provide the resources required

The ‘Plan’ usually follows the sequence of works conducted throughout the project and is commonly known as the ‘Trade Order’. If we consider logic for one moment the defining of the ‘Trade Order’ or ‘as built’ approach gives value to overcoming omissions or errors in the process.



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CONSTRUCTION CHECKLIST

Clients

Name.....Phone(H).....(B).....

Clients Address.....Post Code.....

Contract Date / / Target Completion Date / / Actual Completion Date / /

Council Inspector..... Phone.....B/Permit No.....

Notes:

.....

STAGE	SITE ACTION	COMPLETE DATE		ACTION	FORWARD PLAN	DATES		
		TARGET	ACTUAL			BOOKED	REQ'D	REC'D
PRELIMINARIES/Floor Level				Book	Site Preparation			
1. Preliminaries					Concretor			
Sign					Carpenter			
Survey/BM					Bricklayer Bottom			
Water				Release	WC			
Power					Bin			
Site Storage					Fill Sand			
WC					Steel Reinforcing			
2. Site Preparation					Pest Control			
Clear				Release	Stage 1 Items			
Excavate					Bricks			
Piers					Structural Steel			
CHECK				Book	Inspections			
3. Footings/Slab					- Council/Footings			
Check Profiles					- Engineer			
Check Steel					- Lending Authority			
Check Conduits					- Surveyor			
Check Drains					- Building Line			
Check Pest Treatment					- Floor Level			
4. Surveyor					- Bricklayer, Top			
Check Survey if req'd					- Plumber			
**INSPECTIONS/FOOT'GS					- Electrician			
Verify Approval Before Proceeding				Notify	- Shortages, Damages			





OWNER BUILDER COURSE

STAGE	SITE ACTION	COMPLETE DATE		ACTION FORWARD PLAN	DATES			
		TARGET	ACTUAL		BOOKED	REQ'D	REC'D	
5. Pour				Release	- Surv'r Eaves, Gut			
PROGRESS CLAIM NO.1					- Roofing			
6. Bottom Brickwork					- Brick's Hardware			
- Check Dimensions					- Sand			
CHECK					- Stage 2 Items			
FRAMING/FLOOR & WALLS				Book	L/Auth.Inspect for			
7. Stage 1 Delivery					Payment No.1			
8. Surveyor				Book	Internal Linings			
Floor Level Certificate					Kitchen Cupboards			
9. Carpenter					Stairs			
B & J					Wet Areas Flashing			
Floor				Book	Inspections			
Frame & Roof					- Council/Frame			
Fascia Board					- Lending Authority			
Windows					for Payment No.2			
CHECK				Book	Drainer			
PROGRESS CLAIM NO.2				Release	Garage Doors			
10. Surveyor, Gutter					Internal Linings			
LOCK UP					Kitchen			
11. External Clad/Bricks					Stairs			
12. Plumber, Gutter				Book	Ceramic Tiles			
				Deliv.				
13. Roofer					Tiler			
14. Brick Clean					Inspection			
15. Electrician Rough In					- Council/Flashing			
16. Plumber Rough In				Book	Painter			
CHECK					L/Auth Inspect for			
PROGRESS CLAIM NO.3					payment No.3			



OWNER BUILDER COURSE

STAGE	SITE ACTION	COMPLETE DATE		ACTION FORWARD PLAN	DATES		
		TARGET	ACTUAL		BOOKED	REQ'D	REC'D
17. Carpenter				Glazier/SS/Mirrors			
	External Fix			Plumber			
	Ready for Inspection			Electrician			
**INSPECTIONS/FRAME							
	Verify Approval Before Proceeding						
DRAINAGE							
				Release Shower Screens			
18. Drainer				Mirrors			
	Sewer Drainage			Wardrobe Walls			
	Septic / TA			Concretor			
	Stormwater			Final Inspections			
LININGS & FIT-OUT							
19. Int. Lining/kitchens				BA			
PROGRESS CLAIM NO.4							
				Floor Sander			
20. Wet Area Flashing				Yard Clean			
**INSPECTIONS/FLASHING							
	Verify Approval Before Proceeding						
21. Garage Doors							
22. Pavior							
23. Carpenter							
	Fit-Out & Lock Up						
CHECK							
INTERNAL FINISHES							
24. Joiner							
	Vanities						
	Stairs						
25. Yard Clean							



OWNER BUILDER COURSE

STAGE	SITE ACTION	COMPLETE DATE		ACTION FORWARD PLAN	DATES		
		TARGET	ACTUAL		BOOKED	REQ'D	REC'D
26.	Plumber, Fit Wastes						
27.	Ceramic Tiler						
28.	Glazier						
29.	Plumber, Finish Off						
30.	Plaster, Patch & Sand						
31.	Painter						
COMPLETION				NOTES			
32.	Electrician, Finish Off						
33.	Concretor, External						
34.	Carpenter, Final						
CHECK							
35.	PRE-Final, Owner						
36.	Floor sander						
37.	Pest-Treat - B & J						
38.	Cleaner						
	Internal						
	External						
**INSPECTIONS FINAL							
	Lending Authority						
	Council						
	Owner						
CHECK				OTHER ITEMS			
39.	Hand Over						
FINAL CLAIM							



PROGRAM MANAGEMENT

Source: Managing Projects – Author/Publisher Ian Davison Part 4.8 Program Management

The importance of Planning

Good planning is essential to successful project management. This means planning the work in sufficient detail so that all functions are carried out in time to meet the required completion date in the most cost – effective manner possible. Projects that are inadequately planned will most invariably suffer cost and time over-runs, and give rise to disputes. Programming the work depends on first carrying out planning and then setting times against activities or sections of work proposed. Planning is concerned with work-method, construction technique and sequence of activities and not primarily with time. Once the work-method has been decided the times for activities are determined and the program developed and optimised.

TYPES OF PROGRAMMING TECHNIQUES

Bar Chart Programming

The simplest type of programming tool, useful for small and short term projects, is the bar chart. With this technique the various activities on a project are listed on the vertical axis of the chart while the horizontal axis comprises the time base.

A solid horizontal bar is drawn on the chart representing the time for each particular activity. As with all programming tools it is essential that realistic estimates of time be employed. Where it is desired to show a greater number of activities than can be done by utilising 'milestones' of each activity line to further break that activity into sub activities.

Bar charts are particularly useful for planning simple projects, for summarising detailed information derived from network planning, and for recording progress on the work. Since they are readily understood, bar charts simplify communication and understanding of the overall project. The disadvantages of bar charts is that they do not show dependency relationships, ie what depends upon what, they do not show the critical path and they are cumbersome to change since any alteration has to consider both sequence and timing of the activities.



BAR CHARTS

(Source TAFEPLUS)

When the drawings for a building project have been completed, it is helpful to present it in a format which is easily understood and may be used by all personnel on a building job.

Bar Charts are drawn up with the activities shown down the left-hand side and the time periods shown horizontally.

Often the activities are shown only as a number or coded letters but most often by the full name of the activity.

Times to complete each activity are shown by means of bars, which may be open or coloured in. Often the bar charts are coloured in to show the work completed to that date also indicating the percentage of work completed, this allows the actual progress of the job to be compared to the scheduled program.

For larger projects there are more than one bar chart. There is a chart for each section of the project and a master program is drawn up to co-ordinate all sections of the job.

A typical bar chart, as shown in our example, should include:

- * Expected start, duration and completion dates
- * A method of controlling or monitoring the progress

This can be achieved in the suggestions listed below:

- * Colouring in the bars
- * Drawing parallel bars
- * Coloured pins
- * Highlight markers etc.

There is no set design of a bar chart, however a chart should include the minimum information as set out below:

- * Project name
- * Time scale (eg. daily, weekly, monthly etc)
- * Dates
- * Activity description (in order of progress on site)
- * Activity to activity which supports each other or is dependant on each other.
- * Method of showing the time elapsed
- * Method of recording the progress of each activity
- * Completion date (contract date/established date of completion)



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In the second example a chart is drawn up using the method of working days only, omitting weekends yet showing all holidays.

The time estimated to complete a specific activity or trade on the site is marked in either line or box section (see third example), starting from when the activity starts to when it is finished.

Using an example of three activities or trades which must be carried out in sequence, and the duration times are

-  Trade/Activity A, 1 day
-  Trade/Activity B, 1 day
-  Trade/Activity C, 2 days

This would be shown on the chart as our third example demonstrates.

This shows quite clearly how work should progress. Note that the lines of dependency/support show the interrelationship of the trades, for example...

Trade B cannot commence until Trade A has been completed.
Likewise Trade C follows Trade B.

Taking the example further, if the project has been running for three weeks (15 working days) and the bar chart has been used to monitor progress then it may look like the fourth example shown on the following pages.

The information may be extracted from the bar chart includes.

-  Activity A should be complete, and is complete;
-  Activity B should be complete, and is complete;
-  Activity C should be complete, and is complete;
-  Activity D should be complete, and is complete;
-  Activity E should be complete, and is complete;
-  Activity F should be complete, and is complete;
-  Activity G is only 60% complete but should be complete;
-  therefore, as Activity G is on the critical path the project may be seen to be behind by two working days

The job of the site foreman/supervisor is now to determine what action needs to be taken to bring the project back on schedule.

To be realistic a construction program is only as good as:

-  The initial intent of the planners
-  The accuracy of information available
-  The knowledge of the contract drawings & documents
-  The experience of the team
-  The number of updates that the program undergoes
-  The lines of communication.



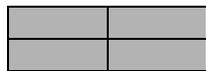
OWNER BUILDER COURSE

Example 1

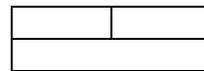
Time Schedule	MONTH	MAY	JUNE	JULY	AUGUST	SEPT	OCT	NOVEMBER	DECEMBER	JANUARY
OPERATION	DATE									
A	CLEAR & LEVEL SITE	■	▨							
B	EXCAVATE FOR FOOTING		▨	▨						
C	CONCRETE FLOORING		■	■	▨					
D	CONCRETE FRAME			■	■					
E	EXTERNAL BRICKWORK									
F	ROOF CONSTRUCTION									
G	ROOF PLUMBING									



Scheduled Work



Percentage of Work Completed



Actual Time Worked





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Example 2

PROJECT NAME

Contact No.

Date	1 5					8 12					15 19					22 26					29	
Working Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
No.	Description																					
A	Establishment Site																					
B	Set Out																					
C	Footings																					
D	Drains																					
E	Brickwork																					
F	Bearers & Joists																					
G	Wall Frame																					

Example 3

PROJECT NAME

Contact No.

Date	1 5					8 12					15 19					22 26					29	
Working Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
No.	Description																					
A	Establishment Site																					
B	Set Out																					
C	Footings																					
D	Drains																					
E	Brickwork																					
F	Bearers & Joists																					
G	Wall Frame																					

Example 4

PROJECT NAME

Contact No.

Date	1 5					8 12					15 19					22 26					29	
Working Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
No.	Description																					
A	Establishment Site																					
B	Set Out																					
C	Footings																					
D	Drains																					
E	Brickwork																					
F	Bearers & Joists																					
G	Wall Frame																					





THE PROGRAMMING PROCESS

The programming process on a project may include:

1. Planning refers to activities and resources and includes decisions on the relation and sequence of activities. Planning should:
 - (a) Identify the required selection of work-method.
 - (b) Identify the order of work to be adopted.
 - (c) Assist to optimise the work procedure overall.
2. Estimating the time required to complete each activity or group of activities.
3. Scheduling, which involves determining the timing of the operations making up the project and of the overall project completion time. Scheduling depends on accurate planning, ie determination of work-methods.
4. Monitoring, which includes assessing the current situation on the project, comparing it with what was expected, and deciding on corrective action;
5. Rescheduling where necessary to allow for changes in conditions affecting the program of the work;
6. Controlling, which requires execution of corrective action to bring the work back onto program.

Progress Monitoring and Reporting

Progress monitoring and reporting is essential on any project except perhaps the very smallest contracts. Progress monitoring is generally carried out against a program of work, usually presented as either a bar chart or a critical path diagram. Often, actual progress is marked up on the program so that an original program and a work-as-executed program are conveniently shown on the one presentation.



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JOB FLOW PROGRESS CHART

NAME:		Site Control									JOB NO:		O410E				DATE COMMENCED:						SOME TIME				
JOB ADDRESS:		Cnr Pacific Hwy. & Pitt St., Builderville															DATE COMPLETED:						LATER				
Weeks		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Date																											
Preliminaries		█																									
Excavation		█																									
Concretor		█	█																								
B & J \ Flooring				█																							
Windows				█																							
Frames & Truss				█	█																						
Bricks \ Labour				█	█	█																					
Fascia & Gutter					█																						
Roof Cover						█																					
Lockup						█	█																				
Electrical							█	█																			
Plumbing								█	█																		
Plasterboard									█	█																	
Wet Area Floor										█	█																
Mouldout											█	█															
Joinery Items												█	█														
W & F Tiler													█	█													
P.C. Items															█	█											
Services Fitoff																█	█										
Painter															█	█	█										
Landscaping																	█										
Internal Clean																											
External Clean												█															
Final Finish																	█										
EXTENSION																											
Rain																											





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Learning Activity 58 – Construction Checklist



Using the notes on the previous pages, develop a Construction Checklist of your project (use the checklist on pages 76-79 as a guide), then develop a Construction Plan/Bar Chart for your project. Include all the planning stages, setting up the site (preliminaries) as well as the actual construction process. – The Chart below is an example only. Prepare your own chart.

CONSTRUCTION CHECKLIST

Project/Site Details.....
 Council Inspector..... Phone.....B/Permit No.....
 Notes:

STAGE	SITE ACTION	COMPLETE DATE		ACTION	FORWARD PLAN	DATES		
		TARGET	ACTUAL			BOOKED	REQ'D	REC'D

	PRELIMINARIES/Floor Level			Book	Site Preparation			
1. Preliminaries					Concretor			
	Sign				Carpenter			
	Survey/BM				Bricklayer Bottom			
	Water			Release	WC			
	Power				Bin			
	Site Storage				Fill Sand			
	WC				Steel Reinforcing			
2. Site Preparation					Pest Control			
	Clear			Release	Stage 1 Items			
	Excavate				Bricks			
	Piers				Structural Steel			
	CHECK			Book	Inspections			
3. Footings/Slab					- Council/Footings			
	Check Profiles				- Engineer			
	Check Steel				- Lending Authority			
	Check Conduits				- Surveyor			
	Check Drains				- Building Line			
	Check Pest Treatment				- Floor Level			
4. Surveyor					- Bricklayer, Top			
	Check Survey if req'd				- Plumber			
**INSPECTIONS/FOOT'GS					- Electrician			
	Verify Approval Before Proceeding			Notify	- Shortages, Damages			



FINE TUNING THE PLANNING PROCESS

Introduction to the Construction Schedule

From the acceptance of the project the Project Manager will need to take the conceptual Bar Chart and identify the components of each trade section into activity based segments. This process is the first step in **Construction Scheduling**.

Once the activities have been identified, the next step is to clearly establish the sequencing of the activities in each trade section. Concurrently, with the sequencing the third step is to match the time frame of the segmented steps with the overall time frame outlined in the conceptual Bar Chart.

The fourth step is to link the activities of each trade section with those of other trade sections in an attempt to inter-link the processes. The final step is to link the required delivery time of the material / activity or process with the lead up time required to make it happen to affect “*just in time*” delivery.

The benefits achieved by implementing the Construction Scheduling process can be identified as:

-  Project time efficiencies
-  Project cost efficiencies
-  Effective resource management
-  Effective Cash Flow management

Although a strict regime should be set in developing the Construction Schedule, it must be clearly understood that at some stage throughout the building process a level of flexibility must be available to allow for changes in the Project.



PROCESSING JOB CHANGES

Source: Managing Projects – Author Ian Davison Part 14 Processing Job Changes

The Nature of Job Changes

'Job changes' is a general term covering any change to the nature of a contract. It covers:

1. Changes to the way work is executed, generally described as 'variations'.
2. Scope changes requiring additional work or obligations over and above those quoted for a tender, generally described as 'extras'.
3. Reductions in workscope, often described as 'negative variations' or credit variations.
4. Changes to the program of work.
5. Changes to the conditions under which the work is carried out, including changes to site conditions, and changes in accessibility.
6. Changes made necessary due to failures by the principal contractor/owner manager.

When there are any changes to the contract, or to the conditions under which the contract is executed, these must be recorded by the site supervisor. You should examine claims for variations critically and require detailed substantiation from the sub contractor. Even where additional variations have been incurred you should check the contractual responsibility before approving payment. Claims for additional work should be received as soon as it is possible to quantify them, rather than leaving them until the end of the contract.

Mechanism for Approving Job Changes

The mechanism for processing job changes should be agreed between yourself and the sub contractor as early as possible, preferably at the coordination meeting at commencement of the contract. Items to be resolved may include:

1. The person nominated to direct changes.
2. The mechanics of executing variations, extras and changes to the contract program.
3. Time bar restrictions and any limitations on giving notice and advising of claims.
4. The time of variation to critical items which may delay the sub contractor or in other ways disrupt the program of work.

All notices in regard to job changes must be issued in strict accordance with the conditions of contract. Generally these include specific requirements as to timing and the need to advise that they are issued under a specific contract clause. For the owner builder the receipt of a proper notice provides advice that there could be an impact upon the cost, or timing, (or both) of the contract.



Types of Program Changes

Changes to the program of work will almost always have an effect on contract costs. Such program changes commonly include:

-  Extensions of time for completion of work
-  Changes to the sequence of work
-  Acceleration of the contract program
-  Prolongation of the contract program
-  Combinations of change to the work sequence with acceleration or prolongation.

Extensions of Time

Extensions of time are the most common change of program on contracts. The following apply:

1. The implications of extensions of time will depend on the conditions of contract employed as well as on the situation at the time.
2. The types of event that may form the basis of an extension of time claim are commonly listed in the contract conditions. In theory, only those events nominated justify an extension of time.
3. As with other job changes, a contract is usually forbidden to change or extend the program of work without the permission of the owner.
4. Applications for time extensions must be formally submitted, usually following a set format as defined in the contract.
5. Time bars usually apply. Should a sub contractor fail to apply for an extension of time within the time bar period, it loses its right to the time extension.
6. You must respond to applications for time extensions within a reasonable time.
7. Whether the sub contractor is entitled to additional costs as well as time extensions will depend upon the conditions of contract as well as on the circumstances.
8. All changes of program must be analysed carefully to determine their cost implications, and whether or not the costs can be passed on.



SELF TEST QUESTIONNAIRE



	Question	Ref Page
1	What are the key factors of good planning – List 5	72
	1	
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2	What are the 'Contract Documents' you need to have on hand	74
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3	What information are you as the Owner Builder responsible to collect in relation to The contract documents	74
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4	What are the key consideration of the construction plan	75
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5	What is the purpose of a Bar Chart	81
	Answer	
6	What would be included in the programming process of the project	86
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7	What are the benefits of implementing a construction schedule	90
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8	What could instigate a change to the project	91
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	6	



SITE SURVEYING

SURVEYING TECHNIQUES

The techniques used for surveying and land measurement are dependent upon the type of survey being conducted. In this section there are two choices:



Types of Survey

A simple classification is:

Land surveys which fix property lines, calculate land areas and assist with the transfer of real property from one owner to another.

Engineering surveys which collect the data needed to plan and design engineering projects. The information ensures the necessary position and dimension control on the site so that the structure is built in the proper place and as designed.

Informational surveys obtain data concerning topography, drainage and man-made features of a large area. This data is portrayed as maps and charts. Another way to make a simple classification is:

Geodectic surveys are precise and over large areas require the curvature of the earth to be considered. Distances and angle measurements must be very, very accurate. A wide variety of techniques are used including triangulation, traversing, trilateration, levelling and astronomical direction fixing.

Plane surveys which consider the surface of the earth to be a plane. Curvature is ignored and calculations are performed using the formulas of plane trigonometry and the properties of plane geometry. These may be considered accurate for limited areas.

Sub-categories of the major classes provide more insight into the various fields of surveying as follows:

Property surveys determine boundary lines, property corners, rights-of-way provide data necessary for the preparation of land sub-divisions.

Cadastral surveys are executed by the Federal Government in connection with the disposal of vast areas of land known as the public domain.

Route surveys are necessary for the design and construction of various engineering projects such as roads, railways, pipelines, canals and powerlines.

Industrial surveys, or optical metrology, are used in the aircraft and other industries where very accurate dimensional layouts are required.



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Topographic surveys are performed to gather data necessary to prepare topographic maps. These are multicolour contour maps portraying the terrain; and rivers; highways, railways, bridges and other man-made features.

Hydrographic surveys map the shorelines of bodies of water; chart the bottom of streams, lakes, harbours and coastal waters; measure the flow of rivers; and assess other factors affecting navigation and water resources. The sounding of depths by radar is involved in this type of survey.

Mine surveys determine the position of underground works such as tunnels and shafts, the position of surface structures and the surface boundaries.

Aerial surveys use photogrammetry to produce a mosaic of matched vertical photographs, oblique views of landscape and topographic maps drawn from the photographs.

Construction surveys fix elevations, horizontal positions and dimensions for construction projects.

Control surveys provide basic horizontal and vertical position data. These are called datum. For most surveying work the vertical position of points in terms of height above a curved reference surface is mean sea level. The Australian Geodetic Datum (AGD) is the surface that passes through mean sea level at thirty tide gauges. Heights obtained from the GPS satellite system do not refer to the AGD, but to the mathematical reference surface (the ellipsoid). The difference between these two surfaces is known as the geoid ellipsoid separation



SURVEYING EQUIPMENT

Surveying and mapping involves the measurement of distance, both horizontal and vertical, and direction to determine the relative position of points above, on or beneath the surface of the earth. It is a process of collecting information about the earth's surface.

Measuring distance (range)

Tapes. Taping is frequently used. Most surveyors' tapes are made of steel ribbon with a favoured length being 100m. Metal tapes suffer from kinks and are easily broken. Non-metallic tapes are woven from synthetic yarns with or without metallic threads. These tapes are strong and wear well but can be subject to errors due to temperature and moisture changes. Many modern tapes are made of durable 'plastic' or fibreglass and these will probably be the type available for use in your school. All tapes need to be handled with care.

Stadia. A stadia is a graduated measuring rod that is held vertically at a location whose distance is required to be known. The rod is sighted through the optical equipment (transit, theodolite, alidade, telescope) and the distance read on the stadia rod is in proportion to the distance from the equipment to the rod. A simple demonstration of the stadia method of measuring distance is included in the Practical Activities section of this topic. The activity is called 'In the Distance'.

This method was demonstrated by Bob Christopherson, HOD Ipswich Girl's Grammar as a very effective means of helping students understand the principles of measurement with surveying equipment, in particular the dumpy level.

Electronic Distance Measuring (EDM) equipment is of various types relying on the reflection of electromagnetic radiation such as microwaves, infra-red, and laser radiation waves from a reflector at the distant station.

Chain. Chaining is an older means of measuring distances. The chain is made of metal and has 100 links. Each link is 7.92 inches long, and each chain is 66 feet long @ $7.92 \times 100 = 792$ inches @ $792 \div 12 = 66$ feet. The Surveyors Museum located in the Land Centre at Woolloongabba has examples of these chains that were used in early surveying work in Queensland. I believe only a few remain although many were in existence.

Trundle Wheel or Perambulator. For early surveying work the perambulator was used to measure distances. It was pushed along and the number of revolutions of the wheel counted either manually (room for lots of error) or by an odometer attached to the frame. Depending on the radius of the wheel distance could then be determined by calculating circumference \times number of revolutions. A perambulator is on display at the Surveyor's Museum located in the Land Centre at Woolloongabba. Trundle wheels, which work in the same manner, should be available in schools. They measure a standard one metre per revolution.



Measuring direction (bearing, angle, azimuth)

Compasses. These have been discussed at some length in the topic [Compasses and Bearings](#).

Alidade. This instrument consists of a telescope mounted on a column. The telescope can be rotated vertically and horizontally. The instrument can be used for levelling and for plane table surveying. Simple alidades for use by students can be made using a ruler (or straight length of wood) with a nail positioned vertically at each end. Place the ruler flat on the plane table so that sightings can be made by aligning the nails.

Plane table. A plane table is a portable drawing board mounted on a tripod. It consists of an alidade, board and tripod. The locations of lines and points are plotted directly on the drawing paper. Setting up the table requires care to ensure that it is level and that it is oriented correctly with a reference meridian (e.g. north line). The table is moved and re-oriented at each station along the survey route.

Transit. This is an angle-measuring device based on a telescope with the capability of being able to turn fully on its supports. The advantage of this characteristic is that a reverse bearing can easily check a bearing once taken. Transits have been used since the early 19th century.

Dumpy level. This is an instrument used primarily for levelling. It is able to measure the differences in elevation of observed features. Horizontal angles can also be measured and distances determined with the aid of a stadia rod. The term “dumpy level” originated from the dumpy appearance of some older models which had inverting eyepieces and relatively short telescopes.

Theodolite. A theodolite is a more sophisticated version of a transit. They are the principal instruments used in the measurement of angles in triangulation. A labelled diagram of a theodolite can be found at <http://www.theodolite.com/>

A site to investigate if you are interested in historical equipment relevant to surveying in Australia is <http://www.usyd.edu.au/su/macleay/welcome.htm>
Select scientific equipment, advanced search and then enter the name of the equipment you are interested in, in the appropriate box. A further site for antique equipment giving descriptions and enlarged pictures of the items is <http://www.gemmary.com/instcat/index.html> Even though this is a catalogue, it is a very good site to look at old equipment.



SIMPLE SURVEYING TECHNIQUES

A.1 Use of the line level for surveying

Introduction

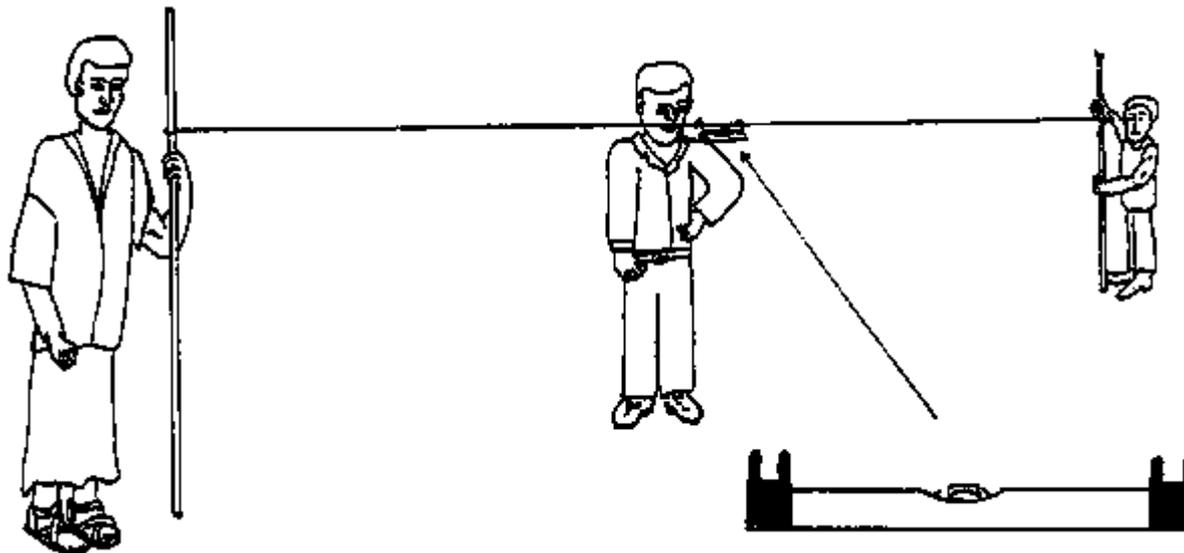
1. The line level is a simple surveying instrument which can be used to lay out contours and gradients, and also to measure the slope of land. It is simple to operate and is easier to transport than other similar surveying tools such as the A-frame. It is especially quick and very accurate when used properly. However a line level does require three people to operate it.
2. A line level consists of two poles, between which a length of string is suspended. A spirit level is hung on the string. The level is the type used by builders, but has small hooks at either end.
3. The poles should be of even height (about 1.5 m) and the string (about 2 mm in diameter) and precisely 8 metres in length. A notch is made in each pole at exactly the same height (say 1.4 m above ground level) and the ends of the string tied around these notches.
4. The centre of the string (4 m from each end) is marked and the level itself is suspended there.

Laying out a contour

5. The poles are held apart by operators with the string extended and the spirit level positioned exactly in the middle of the string. When the bubble in the level is between the two marks this means that the poles are positioned on level points on the land - in other words on the contour. The poles must be held vertically.
6. To lay out a contour across a slope, the team begin at the edge of the field. The operator holding the pole at the field's edge (operator A) remains stationary while the operator holding the other pole (operator B) moves up and down the slope until the third operator is satisfied that the bubble is centred. Points A and B are then marked (with stones or pegs). Operator A then moves to B and operator B moves onwards and the process is repeated. This continues until the contour line reaches the far end of the field.
7. Care should be taken that small obstacles, such as minor high spots, or rills, are avoided by skipping forward a pace or two. This avoids sharp irregularities in the contour.
8. When the contour has been laid out, the curves can be smoothed by eye according to the guidelines given for stone or earth bunds.



Figure A.1 Use of the line level



Laying out a graded contour

9. A graded contour deviates slightly from the true contour and is normally used to align a channel, such as a diversion ditch, or to stake out a graded earth bund.

10. In order to lay out a graded contour, further notches must be made on one of the poles. These notches are made below the original notch at intervals of 2 cm.

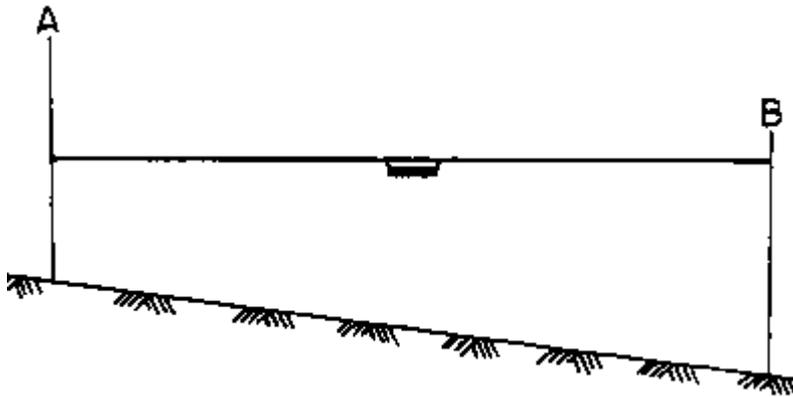
11. The usual gradient for a structure such as a diversion ditch is 0.25%. The string of the near side operator (A) should be affixed to the second notch down his pole (2 cm below the original) and the far operator (B) retains his string at the original notch. When the bubble in the level is between the two marks, this now implies that A is 2 cm above B, which is equivalent to a 0.25% slope over the distance of 8 metres. For a slope of 0.5%, Operator A fixes his string to the third notch down his pole (4 cm below the top notch) and, when Operator B finds a position where the level reads dead centre, he is at a ground level 4 cm below that of Operator A. Over a distance of 8 metres the slope is then 0.5%.

12. The operation now proceeds as before, operator A moving forward to the spot occupied by B, and B moving onwards - slightly downslope. Once again minor irregularities should be avoided and the curve smoothed.

13. If a diversion ditch must follow a precise field boundary it can be excavated so that the bottom of the ditch is given a suitable gradient. Surveying will therefore take place during excavation.



Figure A.2. Measuring the slope with a line level



Measuring the slope of the land

14. It is simple to use the line level to measure the slope of the land. Operator A stands exactly upslope of Operator B and adjusts the string to the notch which gives a level reading. For example if this notch is the 3rd (i.e. 4 cm below the top notch) the gradient is 0.5%, if the notch is the eleventh (i.e. 20 cm below the top notch) the gradient is 2.5%, etc.

15. Up to 21 notches should be marked on pole A and the following table shows the percentage slope indicated by each.

Notch on Pole A	% slope
Top	0 (level)
2nd (2 cm below top)	0.25
3rd (4 cm below top)	0.50
4th (6 cm below top)	0.75
5th (8 cm below top)	1.00
7th (12 cm below top)	1.50
11th (20 cm below top)	2.50
21st (40 cm below top)	5.00



Important points to remember

16. Always check the spirit level - by placing it on a horizontal surface and noting the position of the bubble which should be between the two marks.
17. Check the centre point of the string each day and its length also,
18. Remember that when laying out a gradient that operator (A) is upslope.
19. Make sure poles are held vertically.
20. Avoid placing the poles in depressions or on top of minor high spots in the field.

A.2 Use of the water tube level for surveying

Introduction

1. The water tube level is straightforward to use, and farmers can be quickly taught to layout contours. The concept itself - of matching up levels of water - is especially easy to understand. Advantages of the water tube level are that it can be operated by only two people and is more sensitive than the line level on very low slopes. It is, however, slightly less portable than the line level, and is not so simple to use for determining slopes or laying out graded contours.

2. The components of the water tube level are as follows:

A length of transparent plastic tubing, 6-10 mm inside diameter and about 14 metres long.

Two poles or staves of about 2 metres in length.

Four rubber straps (easily made from a bicycle inner tube) to attach the plastic tubing to the poles.

One to two litres of water. Muddy water is preferable as it is more easily visible in the tube.

3. The plastic tubing is firmly attached to the poles or staves using the rubber straps, or other securing devices. The ends of the tube should be about 10 cm from the top of each staff and the bottom fixing point about 20 cm from the bottom of each staff.

4. The tube is then filled with muddy water until the water level is about halfway up each staff. It is essential that no air bubbles are trapped in the tube and, if necessary, they can be removed by tapping with the finger. Wherever the two staves are set, the free water surfaces in each tube will be at the same level.



Laying out a contour

5. The two staves are placed back to back at the starting point, marked with a peg (A). After any air bubbles have been removed and the water has come to rest, a mark is made on both staves, indicating the water level.

6. The lead man takes one staff and drags the tube in what seems to be the direction of the contour line. When the tube is almost stretched, the lead man moves slowly up and down the slope until his staff is at a position where the water level in the tube coincides with the mark. The staff is then at a position where the ground level's the same as at peg A. A second peg (B) is placed at this point. The back man now moves from peg A to the other side of peg B where the lead man remains stationary. It is now the back man's turn to find the correct spot which is marked by peg C. This procedure continues until the end of the field.

7. The operators then measure, or pace, the horizontal distance required between the contours and begin to lay out the second contour.

8. The contour may then be "smoothed" by eye, according to the design specifications.

Important Points to Remember

9. Work should be carried out during the coolest time of the day because heat causes the plastic tube to stretch and this affects the water levels, which may have to be re-marked.

10. It is important to avoid spillage of water, or the water levels will need re-marking. Water is usually spilled during movement of the staves and this can be avoided by closing the ends of the tube with plugs during movement. It is, however, essential to remove the plugs while making measurements.

11. The poles or staves should always be held vertically.

12. Minor depressions or isolated high spots in the field should be avoided.



SITE PREPARATION

Source: Building Your Own Home Authors: George Wilkie & Stuart Arden Publishers: Landsdowne Publishing Pty Ltd Sydney Australia

Before any work on the building proper can commence, the site has to be prepared to enable work on and around the building. Site preparation comprises clearing of the site, setting out of the building and excavation for the footings.

Clearing the Site

Clear the site of underbrush and trees over the area designated for the building proper. Clear away any roots stumps and tree limbs. Remove any underground wood, rocks to a distance of approximately three metres from the building zone. Check with local authorities for any old or existing water gas or sewer lines that may pass through the site. If the top soil is of good quality, remove it with a bulldozer for later use in landscaping.

When the site is sloping, create a level platform at the approximate location of the house. If the slope is steep you may need a bulldozer to level the estimated building area.

There are two types of excavation. The first one is called *bulk excavation*. This is excavation that clears a level area for the building. Usually a bulldozer or tracked loader type vehicle is employed.

The second type of excavation is called *specific or footing excavation*. The same type of vehicle with a back-hoe or shovel can be used, but in order for footing excavation to take place, the building must be set out in its proper place with respect to site building alignments so that trench excavation for footings can proceed.

Site Set Out

The following refers to the diagrams on the following pages in a simplified procedure of setting out or locating the building. The set out lines are the outside surface of the base wall materials. Allowance will have to be made for the width of the footing. Operators of excavation equipment prefer either the centre line of the trench marked or the outside edge of the trench marked. Marking usually takes place by running along the ground with a bag of lime, marking out in a straight line the wall outline.

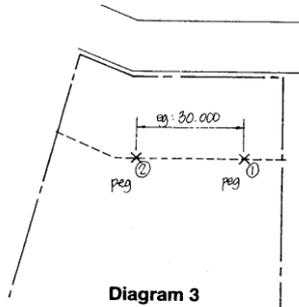
- a. Check to see if survey pegs have been placed at the exact corners of the site. Run a string line between the nails in the top of the stakes across the front boundary, using the boundary line as a guide.

The front building line can be found by measuring back into the property at 90° (degrees) to the string line. Note, the front building line runs parallel to the front boundary line. If the front boundary of the property curves or has an angle in it, then so does the front building line.

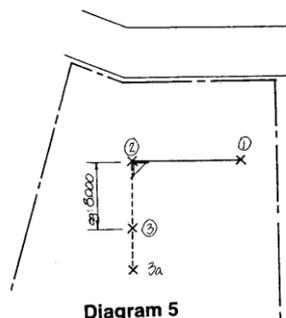
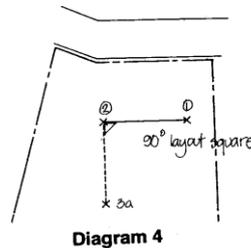


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- c. Starting at corner one, measure along the front building line the length of the front of the house and locate corner number two. Check by measuring along the remainder of the front building line and see if the summation matches the front building line total. (Diagram 3)



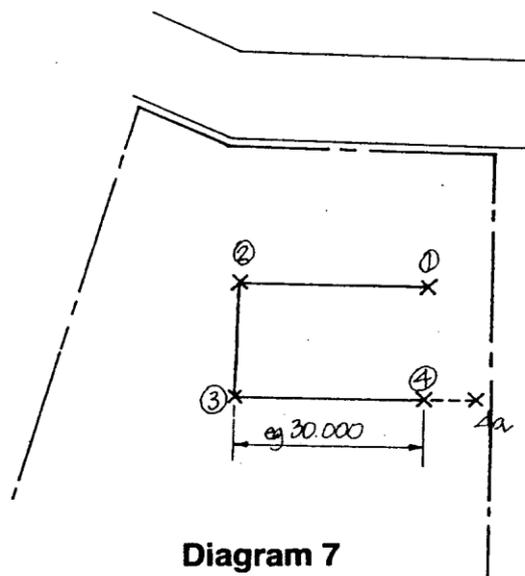
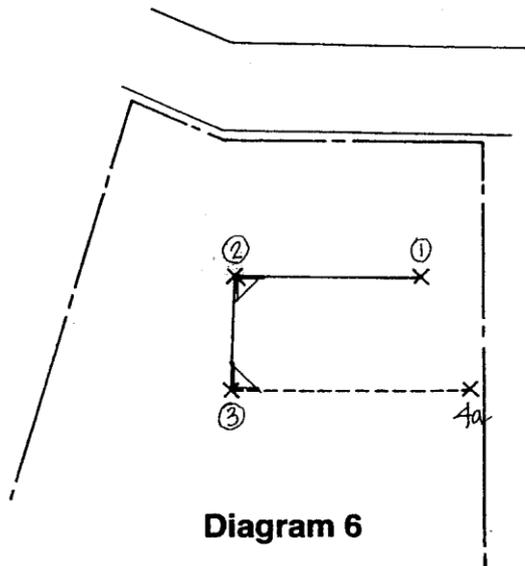
- d. Once the front two corners are found use a layout square to find corners three and four. Place one leg of the square directly beneath line one/two, the adjacent leg will indicate the perpendicular. Measure along this line approximately two to three metres longer than the dimension of the side of the house. Drive a stake at point 3A. Run a string line between 2 and 3A. Measure this side dimension and drive a stake at corner 3. (Diagram 4, 5)





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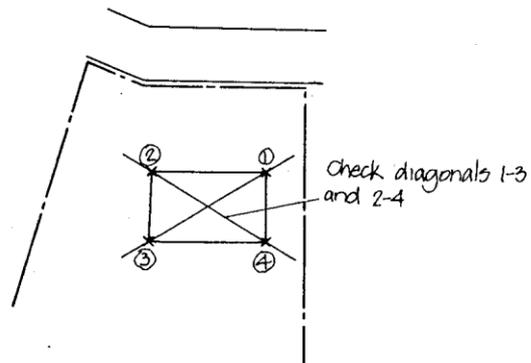
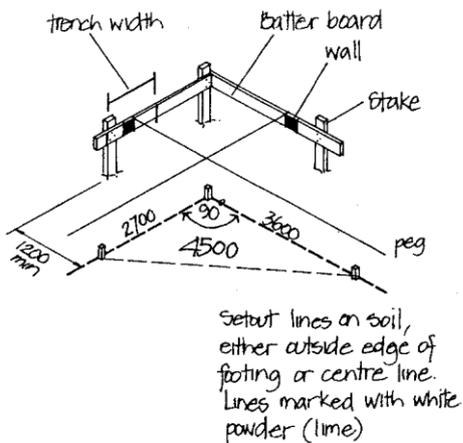
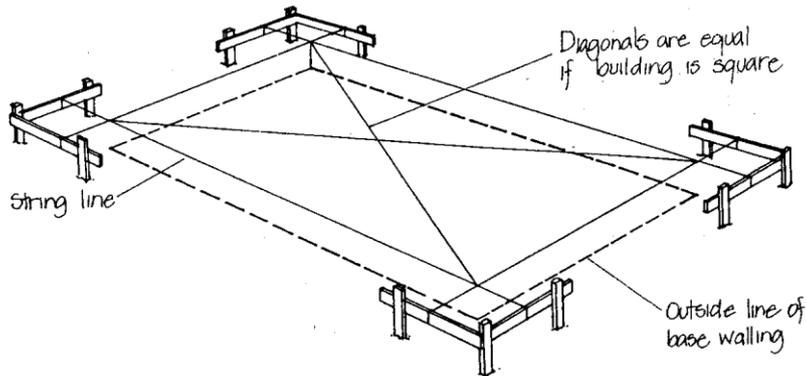
e. Repeat this procedure to find corner number four. (Diagram 6, 7)





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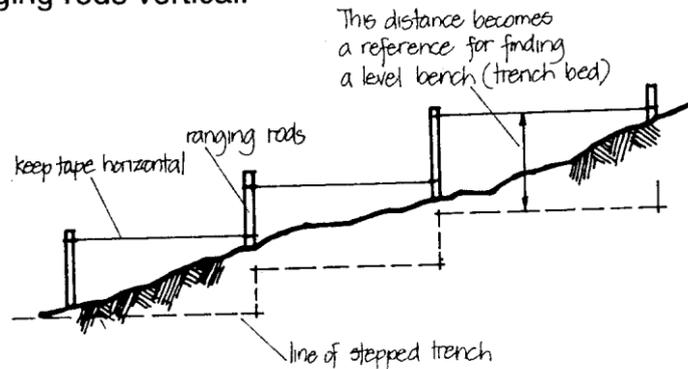
- f. The accuracy of the corners should be checked by measuring the lengths of the diagonals one-four and two-three. The diagonals of a perfect rectangle are always equal. If there is a discrepancy adjust the lines accordingly by repeating the above procedure. Double Check all dimensions. Please note, all other construction is based on these first steps





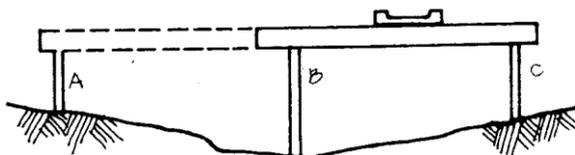
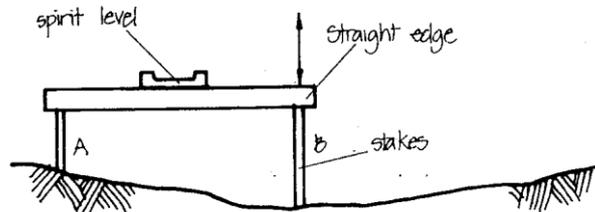
If the set out is on sloping ground measuring along the surface of the sloping ground will not give the correct horizontal distance between two points. Over a short length of slope measure the distance in stages. Always keep the tape horizontal and the ranging rods vertical.

Keep the ranging rods vertical.



When the distances become longer, one has to look at one of the four methods of establishing a level line or plane on a sloping site. These are:

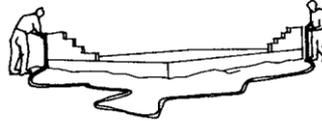
- (i) Straight edge and spirit level. The straight edge should be a piece of timber about three metres long by 150 mm deep and 25 mm in cross section, planed perfectly true. Drive a peg at point A at the highest point and point B the length of the straight edge. Rest the straight edge between the pegs and apply the spirit level. Knock the peg B into the ground until horizontal level is achieved. Check by reversing the spirit level on the straight edge. Drive another peg at C and repeat the operation.



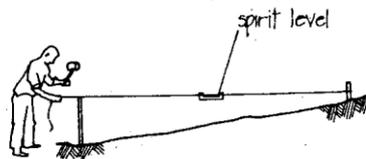


OWNER BUILDER COURSE

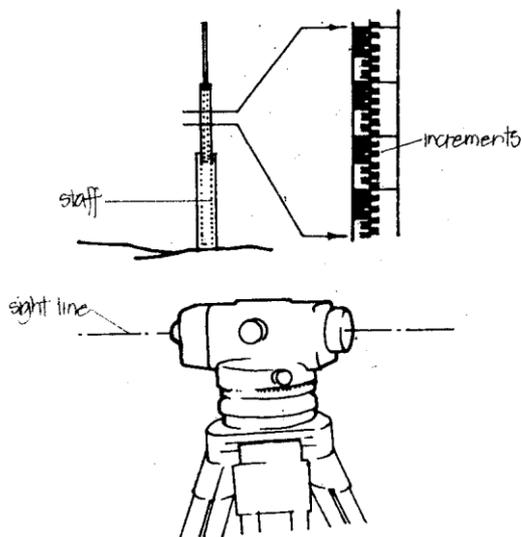
- (ii) Water level. Consisting of two glass or plastic tubes connected by a garden hose or alternatively a long run of clear plastic tubing. The water surfaces being always equal give two equal levels. This is a good method for transferring levels around corners. It has an accuracy to +5 mm independent of the distance covered.



- (iii) A line level. (Bricklayers line). A string line and a small spirit level hung by two hooks on to the line at its middle. One end is attached to the reference peg, the other pulled tight. This level can be accurate but (a) the level should be at the mid point of the line, (b) no part of the line is in contact with anything except where secured at the ends and, (c) the line is pulled tight

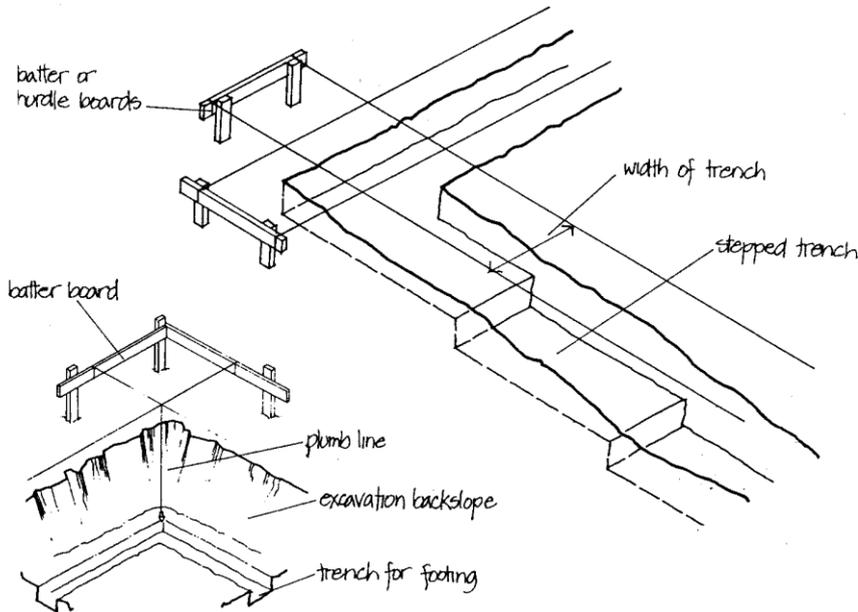
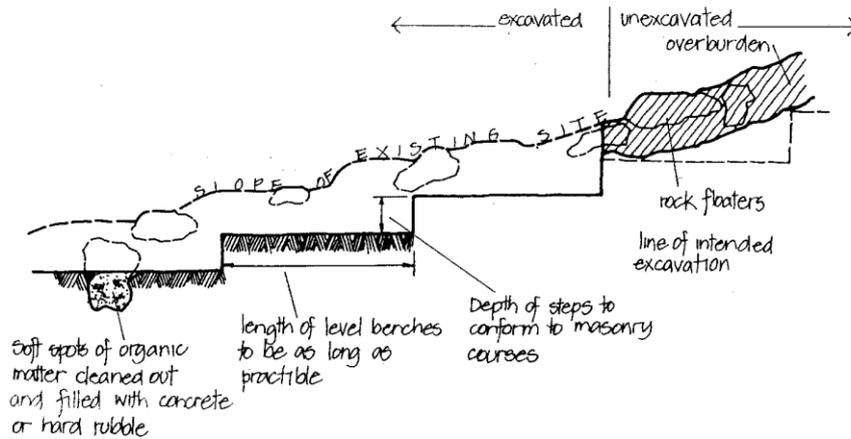


- (iv) A surveyor's tripod and dumpy level. These require a small amount of training although they can be hired; they provide the most accurate method of site setout.



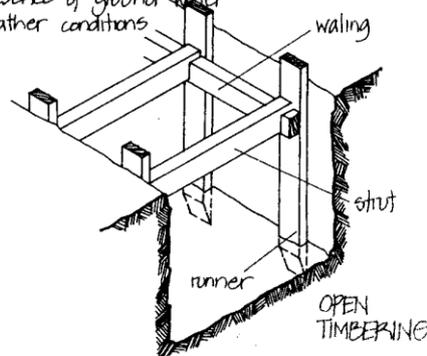
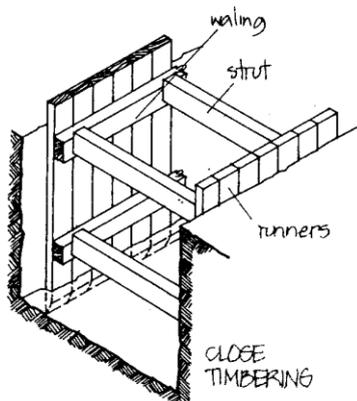


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Factors determining Method of Timbering

1. nature of the ground
2. depth of trench
3. length of time trench is likely to remain open
4. presence of ground water
5. weather conditions





On Irregular Sites

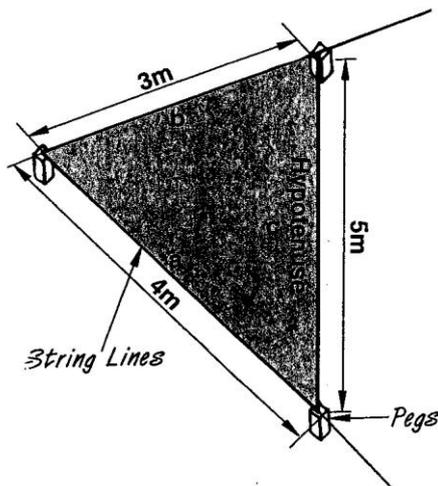
If the house is parallel to one boundary only: Square the building from this boundary ensuring again the legal minimum distances (as required by your Local Council) are maintained from all boundaries.

When the house is not parallel to any boundary: Step 1. Establish one side, front, or rear of the house in position desired. Ensure legal minimum distances between house wall or eaves and boundaries are maintained.

Step 2. Then proceed to measure off and peg out another wall, using the first wall to square from.

Apply 'Pythagoras Theorem' or the '3, 4, 5' rule (see text below).

Step 3. Establish remaining walls, squaring off the first two. Again check that boundary legal minimum clearances have been adhered to.



HOW TO ESTABLISH SIDES AT RIGHT ANGLES.

Pythagoras Theorem ($\sqrt{a^2 + b^2}$) is the simplest, using the example shown below:

Square side 'a' $4 \times 4 = 16$, then square Side 'b' $3 \times 3 = 9$, add them together $16 + 9 = 25$, 25 is the square of side 'c'. Find the square of 25 by using the ' $\sqrt{\quad}$ ' button on the calculator. 5 becomes the length of 'c'

The 3,4,5 Method of Squaring: A right angle can be established by the 3, 4, 5 method or their multiples such as 12, 16, 20 etc. Peg out the right angle roughly using the two smallest figures – 3 and 4 m. Adjust them until the diagonal measures 5m. For accurate squaring of a large area, use greater multiples. It is important to hold the tape measure true and accurately to measure.



OWNER BUILDER COURSE

SELF TEST QUESTIONNAIRE



	Question	Ref Page
1	List 5 of the sub categories of surveys that may be conducted	96-97
	1	
	2	
	3	
	4	
	5	
2	What is the purpose of levelling	98
	Answer	
3	What is meant by the term Surveying	99
	Answer	
4	What items are used to measure distance (List 3 Items)	99
	1	
	2	
	3	
5	What items are used to measure direction (List 3 Items)	100
	1	
	2	
	3	
6	List the procedures necessary to clear a site	106
	Answer	
7	Describe the 2 types of excavation	106
	1	
	2	
8	Name and describe the method of establish a level line or plane on a sloping site	111-112



AMENITIES FOR CONSTRUCTION WORK



Planning by the principal contractor

The principal contractor, as the person in control, has a statutory duty under the OHS Act to provide and maintain a workplace that is safe and without risks to health for their workers and any other person present at the workplace or affected by the work in relation to those matters over which he or she has control.

To fulfil these obligations the principal contractor should plan for the provision of amenities. The level of amenities required will depend on the type of workplace.

Types of Workplaces

For the purpose of the code, workplaces are divided into four types.

TYPE 1 Major Construction

This is usually of fixed location where there are more than 10 persons or the duration of work is more than two consecutive weeks. For example commercial building, engineering construction and multiple residential construction. For housing construction, see Type 4.

TYPE 2 Minor Construction

This is usually of fixed location where there are less than 10 persons and the duration of work is less than two consecutive weeks. For example, minor building, road construction or road maintenance.

TYPE 3 Building Alterations (with access to amenities)

This is usually of fixed location, such as major or minor fit-outs, alterations and extensions, with reasonable access to existing building amenities

TYPE 4

(A) Workers working away from base

This is a workplace for workers who start and finish work at the base, such as council, road or rail workers, lines-persons, workers who receive daily work by telecommunication (as in road maintenance or other public utility work in remote areas).

(B) House Construction

A workplace where workers carry out construction of, or alterations to a house

(C) Tunnel Construction

Tunnel construction work with established type 1 amenities on main site.



General Provisions for all Workplaces

At the planning stage of each construction project, the principal contractor responsible for amenities on site should plan for the following:

- a) The provision of the type of amenities required as determined by the type of workplace.
- b) The safe and convenient location of amenities required.
- c) Where they are required, enclosed amenities should:
 -  Be of sound construction and weatherproof.
 -  Have adequate ventilation, heating, cooling and lighting.
 -  Be protected against insects.
 -  Be appropriately insulated against weather conditions.
- d) All amenities should be kept clean and sanitary. (Surfaces should be finished to allow for regular and easy cleaning).
- e) Waste water from amenities should be adequately discharged to ensure hygiene and safety.
- f) An adequate supply of cleaning equipment and accessories, such as soap, hand drying facility, toilet paper, cleaning agents, mops and brooms.
- g) All amenity areas should be positioned or constructed to prevent external flooding and allow safe access for disabled persons, if required.
- h) Access to all amenities, and facilities within, should be kept clear at all times.
- i) Amenities should not be used for the storage of any building materials or equipment, with the exception of employees' personal work tools and protective equipment.
- j) All power supplied to amenities should comply with the WorkCover NSW approved *Code of practice - Electrical practices for construction work*.
- k) Adequate lighting (natural or artificial) should be provided for safe access to amenities.
- l) Where change rooms and meal rooms are provided, they should be separate or separated by an internal wall.



Learning Activity 61 – Site Amenities



Using the notes on the previous pages – determine what amenities you will need to provide for all the workers on your site.

Type of Amenities Required	Where would you get it from	When would you need it
1		
2		
3		
4		
5		
6		

Why would you **not** need Amenities?



SELF TEST QUESTIONNAIRE

	Question	Ref Page
1	What are the 4 types of workplace that would require amenities	117
	1	
	2	
	3	
	4	
2	What should be considered in relation to the amenities for a construction site	118
	1	
	2	
	3	
	4	
	5	
	6	
	7	
	8	
	9	
	10	



WASTE MANAGEMENT: WHERE TO BEGIN?

Success in controlling waste on-site means the involvement of every player in the building process:

-  The owner or developer who carries responsibility for commissioning the work
-  The builder who controls and supervises the building process and site works
-  The site supervisor or foreman who establishes and co-ordinates good practices on-site.
-  The suppliers who can take back unwanted material or packaging for reuse
-  The individual trades responsible for their work and actions.



Much can be achieved if all contribute to and carry out procedures that incorporate waste management principles. This will require leadership to introduce, explain and encourage new work practices. Action that can be taken includes:

-  Keep abreast of all new legislation requirements and council regulations in relation to waste minimisation and disposal. Continuously watch for new products or opportunities to reduce waste.
-  There is a current push to challenge the level of standardisation within the industry. You can influence your suppliers to be more flexible and provide materials in non standard sizes to avoid cutting on-site and the resulting off-cut waste.
-  You could require your subcontractors to prepare a waste management plan as part of the conditions of the contract, outlining how waste will be treated on-site, and its destination once leaving the site. This may include making subcontractors responsible for their own waste.
-  Methods of delivery and packaging can be an important contributor to waste. For example, if your bricks are loosely delivered there is a good chance the bottom layer will be crushed, whereas a palette would prevent this. If your materials are delivered closer to installation time they would require less protective wrap, particularly plastic wrapping, and there would be less chance of damage. This measure would also assist in reducing the possibility of theft from the site.
-  Adopt a quality management approach to your work and reduce the possibility of mistakes and rework



Here's what YOU can do to reduce erosion and sediment from YOUR site

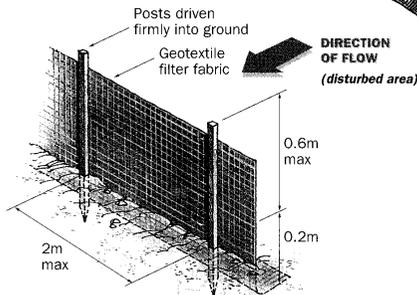
The following site management practices will minimise sediment run-off from YOUR building site.

■ Minimising disturbance when excavating

Preserve as much grassed area as possible as these areas not only improve the appearance of your site, they also filter much of the sediment from stormwater run-off before it reaches the drainage system.

■ Catch drains and perimeter banks

Where possible allow for diversion of up slope stormwater around the work site and other disturbed surfaces.



■ Install a sediment barrier

Sediment barriers down slope of the building site filter coarse sediment before it can wash into gutters, drains and waterways.

Sediment Barrier Techniques

- geotextile sediment fabric attached to posts with the geotextile buried in an upstream trench; or
- place turf of a minimum 600mm width along kerb line; or
- straw bales, staked in a 100mm (min) deep trench.

■ Sand and soil stockpiles

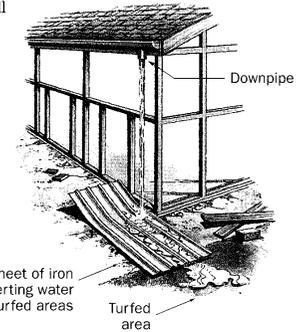
Stockpiles should be placed wholly on the construction site and behind a sediment barrier.

■ Single gravelled entry-exit

Restrict vehicle access to one entry-exit point where possible. Gravelling the access point will allow all weather access, will reduce the amount of soil carried off the site by vehicles, and will provide a permanent base for the driveway.

■ Early stormwater drainage connection

Connect a temporary or permanent downpipe/s to the stormwater system before laying the roof – or slow and spread the flow from downpipes to avoid localised erosion. Downpipe/s may be temporarily removed during wall construction. All stormwater should discharge in a manner that does not cause soil erosion.



■ Concrete waste and washing

Waste concrete and household paint should not be allowed to wash into the gutters or the street.



Reuse and Recycle

Construction and Demolition operators generate tonnes of waste which is disposed as landfill each year.

Construction and Demolition waste disposal, costs operators millions of dollars annually in disposal fees alone. There are many additional costs including transport and opportunity costs associated with the use of virgin materials.

Materials such as:

-  Metals (ferrous and non Ferrous)
-  Concrete, bricks and tiles
-  Timber and plasterboard
-  Carpet and underlay
-  Plastics and glass
-  Fill

Can be reused, recycled or resold with significant savings in transport and disposal costs alone.

Source Separation

Materials for reuse, recycling or resale often require categorising and placement into separate storage areas. These areas should also have adequate signage. Storage areas may include (but are not limited to) plastic bins, skip bins or assigned stockpile areas. Other options for smaller Construction and Demolition sites are 44-gallon drums or fenced off areas made from corrugated iron and star pickets. If the area of the work site is not adequate for source separate then off site storage and sorting facilities may be required.

Savings

With a small amount of planning and education a waste management program can be implemented by the contractor, which may result in significant savings.

An example of this was a construction firm saving \$40,000 by protecting new carpet with carpet off-cuts instead of plastic. There are many more successful case studies on the implementation of recycling techniques by construction firms.

Waste Reduction Techniques

-  Encourage manufactures and suppliers to reduce or remove packaging brought on-site
-  Use as much pre-fabrication as possible (e.g. plasterboard pre-cut to the required wall heights). It also saves time!
-  Crush concrete and reuse as road base or drainage material
-  Mulch or chip wood and timber for reuse for landscaping on site.
-  Reuse old carpet as padding on scaffolds or for floor protection instead of plastic.
-  Sell materials to 2nd hand building material companies.



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Learning Activity 62 – Recycling & Waste Management



What recycling and waste management measures would you need to consider for your project?

What materials could be recycled	How would you use these recycled materials	If you could not use them how would you dispose of them
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Name of Waste	How do you intend to dispose of your waste materials	Where would you take the waste products
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		



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SELF TEST QUESTIONNAIRE



	Question	Ref Page
1	What materials on site can be recycled	124
	1	
	2	
	3	
	4	
	5	
	6	
2	What techniques can you use to reduce waste	124
	1	
	2	
	3	
	4	
	5	
	6	



SITE INSPECTIONS



What Inspections are necessary?

Several inspections are carried out during the construction program of the project.

-  The first being your own inspection prior to a tender being processed.
-  Council Inspections (these inspections can also be carried out by accredited consultants and engineers)
-  E.P.A inspections
-  Services Inspection eg Electricity & Gas
-  Plumbing inspections by Sydney Water or Hunter Water for sewerage, fire meter etc
-  WorkCover - eg Occupational Health & Safety
-  Quality Assurance

Initial Site Inspection prior to preparing the budget

The more information gathered prior to preparing the budget on a project only enhances the service provided by the contractor to the client.

A detailed site inspection is vital to the final pricing procedure. When there are no surprises there are few to no on site problems, and even less extra costs incurred for the builder and the client.

On the following pages are examples of site inspection forms that can be used.



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SITE PLAN

COMMENTS BY SUPERVISOR/INSPECTOR

SIGNED

DATE

PRINT NAME

ESTIMATOR COMMENTS

MANAGERS COMMENTS



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SITE REPORT

HOUSE NO. LOT NO. STREET
SUBURB

Please tick answer, if answer unknown leave blank

- IS THE BLOCK EASILY IDENTIFIED? YES NO
- WILL THIS DESIGN FIT ON THE BLOCK? YES NO
- IS THERE ANY SET SIZES OF BUILDING? YES NO
- IS THERE ANY EASEMENTS OR SPECIAL FEATURES OF THE BLOCK? YES NO
- PLEASE SKETCH PLAN ON SITE PLAN WITH SET BACK DISTANCES
- WHAT IS THE EXPOSED SITE TO WIND CATEGORY? (33) (41)
- IS THIS BLOCK EFFECTED BY A WATER COURSE OR SWAMP YES NO
- WHAT IS THE SOIL CLASSIFICATION OF SITE? (STBL) (M/REACT) (H/REACT)
- IS THERE ROCK SHOWING OR PRESENCE OF ROCK YES NO
- IS THE BLOCK SUITABLE TO BE CUT LEVEL YES NO
- IF NO THEN CUT AND FILL YES NO
- WILL PIERING BE NECESSARY (SHOW LEVELS ON PLAN)? YES NO
- WILL THIS BLOCK SUIT BEARERS AND JOIST CONSTRUCTION? YES NO
- DESCRIBE ACCESS TO BLOCK GOOD FAIR BAD
- DOES THE BLOCK NEED AN ALL WEATHER ACCESS ROAD? YES NO
- WILL A CONCRETE PUMP BE NECESSARY? YES NO
- ARE THERE ANY TREES ON THE BLOCK? YES NO
- IF YES HOW MANY AND WHAT SIZE? NO.....SIZE.....
- DO TREES HAVE TO BE REMOVED FROM BLOCK? YES NO



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- IS IT FENCED OR PART FENCED (SHOW ON SITE PLAN)? YES NO
- IS THERE KERB AND GUTTER? YES NO
- IS THERE A CROSS OVER (SHOW ON SITE PLAN)? YES NO
- IS THERE A CONCRETE FOOTPATH? YES NO
- IS THERE TOWN WATER AVAILABLE? YES NO
- POSITION OF WATER MAIN (SHOW ON SITE PLAN) STD CEN/RD LONG
- ARE WATER TANKS REQUIRED? YES NO
- IS SEWER AVAILABLE (SHOW ON SITE PLAN)? YES NO
- SEPTIC/ENVIROCYCLE SYSTEM REQUIRED? (SHOW ON SITE PLAN) YES NO
- WILL POWER HAVE TO BE EXTENDED BY POWER AUTHORITY? YES NO
- IS THERE POWER AVAILABLE (SHOWN ON SITE PLAN)? U/GRD O/HD NIL
- WILL THERE BE A PRIVATE POWER POLE NECESSARY? YES NO
- WILL STORM WATER GO TO? (A) Street Gutter (B) Interlotment drainage
(C) Pits (D) Water Tanks (E) Other
- ARE THERE ANY OTHER DETAILS TO BE NOTED? YES NO

WIND CLASSIFICATION

- GEOGRAPHIC REGION (NOTE STANDARD IS 'A') _____
- TERRAIN CATEGORY _____
- SHIELDING CLASSIFICATION _____
- TOPOGRAPHIC CLASSIFICATION _____
- WIND SPEED BASED ON ABOVE AS 4055 _____



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STATUTORY INFORMATION FORM

Do any of the following have jurisdiction over the works?

WATER AUTHORITY:

 SEWERAGE

YES

NO

NOTES _____

COSTS _____

 TOWN WATER

YES

NO

NOTES _____

COSTS _____

 FEES OR CONTRIBUTIONS

YES

NO

NOTES _____

COSTS _____

ELECTRICITY

 SUPPLY/CONNECTION

YES

NO

NOTES _____

COSTS _____

 FEES OR CONTRIBUTIONS

YES

NO

NOTES _____

COSTS _____



OWNER BUILDER COURSE

LOCAL COUNCIL AUTHORITIES

 STORMWATER YES NO

NOTES _____

COSTS _____

 OTHER YES NO

NOTES _____

COSTS _____

 FEES OR CONTRIBUTIONS YES NO

NOTES _____

COSTS _____

MINES SUBSIDENCE BOARD

 PLAN APPROVAL YES NO

NOTES _____

COSTS _____

 OTHER YES NO

NOTES _____

COSTS _____

 FEES OR CONTRIBUTIONS YES NO

NOTES _____

COSTS _____



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 **NSW FAIR TRADING**

YES NO

COMMENTS _____

 **MARITIME SERVICES BOARD**

YES NO

COMMENTS _____

 **DEPARTMENT OF PLANNING**

YES NO

COMMENTS _____

 **HEALTH DEPARTMENT**

YES NO

COMMENTS _____

 **DEPARTMENT OF INDUSTRIAL RELATIONS**

YES NO

COMMENTS _____

 **ROADS & TRAFFIC AUTHORITY**

YES NO

COMMENTS _____

 **DEPARTMENT OF HOUSING**

YES NO

COMMENTS _____



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	SAMPLE CONSTRUCTION COMPANY	SITE INSPECTION
---	--	----------------------------

Client :		
Present address :		
Phone No : (Home)		(Work)
Project Lot No :	Street No :	Street Name :
Suburb/Town :		
Map Reference :		Nearest Cross Street :
Size of block :		

1. Council
2. Road Condition
3. Crossing Required
4. Survey Pegs
5. Survey Required/Check Survey
6. Access To Be Made
7. Site Requires Clearing/Demolition
8. Fall Of Land (Overall)
9. Fall Of Land In House Area
10. Soil Classification: Sand, Clay, Rock Etc..
11. Site Excavation
12. Remove Spoil - By Builder Or Owner
13. Concrete Pump Or Crane Required
14. Water On Site
15. Electricity - Underground/Overhead
16. Gas Available
17. Sewerage/Septic
18. Distance From Front Boundary

19. Distance From Site Boundary
20. Retaining Walls Required
21. Existing Fences
22. Natural Drainage (See Site Plan)
23. Run Of Drains
24. Other Remarks

Sketch Site Plan

(Sketch to include nearest cross street, north point, line of natural drainage, other relevant information).

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Learning Activity 63 – Site Inspection Report



Using the 2 previous examples – create a template of a Site Inspection Report.
Inspect your own site – complete a Site Inspection Report based on your own observations.
First create a freehand drawing of the site and the key features of the site.



Source: David Hall Building Appraisals

What is a Dilapidation Report?

A dilapidation report is a conditional inspection and report, with photographs, of a building or property that is undertaken prior to works commencing on an adjoining property. The proposed works can include a new unit building (particularly if there are underground garages), alterations to a retaining wall, road works, underground tunnelling or demolition.

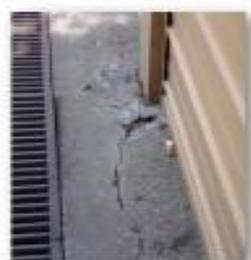
An initial inspection and report is undertaken prior to works commencing so that any cracking and/or damage is documented. A final inspection is undertaken on completion of the works and any changes are documented so that remedial works can be undertaken. Councils can request that a dilapidation report cover areas outside of a building site such as footpaths, kerbing and condition of the road as they are a Council asset and any damage must be repaired

If a dilapidation report is not undertaken then it is difficult to verify if damage occurred during construction of the adjoining property. This often leads to frustration in a claim for damages.

A dilapidation report also is not a defect report as it is not required to identify actual defects within a building. A defect report is a separate and more intrusive specialized report that identifies defects such as dampness, termite damage and inadequate or non-compliant construction.

Most Councils will require a dilapidation report as part of their approvals for a development. An independent qualified person is to undertake the inspection and reporting. This allows the expert to accurately document the condition of a building and not have any bias towards the owner or the developer. Sufficient colour copies of the report are to be made available.

All reports are to identify the type of construction and type of cracks or damage that is found on a property as well as the building. This includes movement in driveways, deflections in walls, cracks to brickwork and concrete.



Some councils will specify that a dilapidation report is signed off by an engineer.



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DILAPIDATION REPORT ON EXISTING SERVICES & CONDITIONS

STREET NO.. _____ LOT NO. _____ STREET _____
SUBURB _____

Prepare a list of the existing services and adjoining properties prior to commencing any works.

Take photos where necessary to identify existing conditions - highlight any and all existing damages or poor condition of the properties and services

It is always best to have an independent inspector eg Consulting Engineer to inspect and sign this report.

Include a Site Plan and mark where the services, special conditions etc appear on the block and adjoining properties.

CONDITION & DESCRIPTIONS

DETAILS	PROJECT PROPERTY	ADJOINING PROPERTIES
Easement		
Existing Trees		
Fencing		
Kerb & Gutters		
Footpaths		
Power Poles		
Power Lines		
Telecom Services		
Co-axial Cables		
Bus Stops		
Retaining Walls		
Underpinning		
Fire Hydrant		
Special Features		
Other		

Attachments:	1.	3.	5.
	2.	4.	6.

Inspecting Officer

Signature

Date





Learning Activity 64 – Dilapidation Report



Complete a Dilapidation Inspection on your Neighbouring properties. Complete the follow chart OR redesign one that suits your size project/site. Link this with the previous *Learning Activity No. 11 – Site Inspection Report*.

DILAPIDATION REPORT ON EXISTING SERVICES & CONDITIONS

STREET NO.. _____ LOT NO. _____ STREET _____
SUBURB _____

Prepare a list of the existing services and adjoining properties prior to commencing any works.

Take photos where necessary to identify existing conditions - highlight any and all existing damages or poor condition of the properties and services

Include a Site Plan and mark where the services, special conditions etc appear on the block and adjoining properties.

CONDITION & DESCRIPTIONS

DETAILS	PROJECT PROPERTY	ADJOINING PROPERTIES
Easement		
Existing Trees		
Fencing		
Kerb & Gutters		
Footpaths		
Power Poles		
Power Lines		
Telecom Services		
Co-axial Cables		
Bus Stops		
Retaining Walls		
Underpinning		
Fire Hydrant		
Special Features		
Other		

Attachments:	1.	3.	5.
	2.	4.	6.

Signature

Date



Council /PRIVATE CERTIFIER Inspections during Construction

The most typical of these inspections are....

FOOTINGS	When steel is placed in position and tied off.
SLAB	When slab is formed and steel laid and tied.
FRAME	When walls are standing, roof complete, exterior cladding, electrical and plumbing installed, rough in complete.
WET AREA	When tanking membrane is in place prior to placement of tiles
FINAL	Job finally or practically completed.

Other Inspections:

Some Councils see the right to do other inspections as they see fit.

Example - Duplex - check that it is placed in the correct position on site.



Inspection of Essential Services

A Certificate of Compliance for the design, installation and maintenance of Essential Services ensures these services are designed and installed in accordance with the relevant standards.

Each inspection must be carried out by an accredited consultant.

The Certificate is usually signed after the inspection by the Owner or the Architect/Superintendent.

CERTIFICATE OF COMPLIANCE

(Design, Installation and Maintenance of Essential Services)

Building Name

Address

Application Ref

Owners Name

Nature of Essential Service	Date of Inspection	Name & Address of Persons whom service was inspected/tested	*Status of Service (see below)		Relevant Australian Standard
			(i) Yes/No	(ii) Yes/No	

- (i) was the service found to be designed, installed and capable of operating to the relevant standard?
- (ii) was the service found to have been maintained and to be capable of operating at a standard not less than that which it was originally designed and installed? (relates only to annual certification and/or existing services).

I,of.....

certify that to the best of my knowledge and belief the information contained in this Certificate is, true and accurate and that each service has been inspected and tested by a person who is competent to carry out such an inspection and test.

Date of Certificate.....Signed.....
(Owner/Agent)

*Answer which ever is applicable





WORKCOVER INSPECTORS

The role of the WorkCover Inspector

WorkCover Authority inspectors have a dual role. They help employers and employees to understand their rights and obligations under occupational health and safety, rehabilitation and workers compensation legislation. They also have a range of powers to enforce compliance with the legislation.

They are empowered to act under the:

-  Occupational Health and Safety Act 1983 and associated legislation
-  Worker Compensation Act 1987

Inspectors are situated at WorkCover district offices across NSW. They have qualifications in a range of trades and professions and may hold tertiary qualifications in occupational health and safety and related disciplines.

Workplace visits

Inspectors visit workplaces to:

-  **Investigate** an accident and/or breaches of legislation.
-  **Respond** to a complaint from workers, unions, OHS committees etc.
-  **Conduct** an assessment for the issue of a certificate of competency eg, to operate a forklift truck.
-  **Give** advice and information to management, committees, unions and workers.
-  **Carry** out a random workplace inspections.
-  **Target** hazards as a part of a specific campaign.
-  **Resolve** workplace health and safety disputes.

Enforcement role

Inspectors have the power to:

-  Issue notices which require employers to remedy unsafe working conditions or hazards.
-  Issue notices which prohibit work from continuing until a hazard is fixed.
-  Issue notices requiring employers to provide proof of correct workers compensation insurance.
-  Issue on the spot fines for breaches of the OH & S legislation.
-  Collect evidence and recommend a prosecution.



Information role

Inspectors are trained to advise employers and employees about all aspects of occupational health and safety, rehabilitation and workers compensation matters. For example, they can give advice on how to:

-  Conduct a workplace risk assessment.
-  Bring plant, equipment and work methods up to the required standards.
-  Establish a workplace health and safety committee.
-  Establish a rehabilitation program.

On the following pages are sections of the Construction Safety Act 1912 No. 38 and the Occupational Health & Safety Act relating to the powers of inspectors and inspectors' notices.

It is always wise to have a current copy of all the Acts, Codes of Practices and Regulations relating to the safety issues of your section of the industry. They are easily obtained through the Government Information Office.



OCCUPATIONAL HEALTH & SAFETY ACT - DIVISION 4 - INSPECTION

Section 30 - Powers of inspectors to inspect workplaces

30 (1) An inspector who is appointed under the Factories, Shops and Industries Act 1962 may, in relation to any premises which are a place of work and which are not a mine (within the meaning of the Mines Inspection Act 1901 or the Coal Mines Regulation Act 1982), exercise the powers of entry, inspection and examination of any factory or shop under section 73 of the Factories, Shops and Industries Act 1962.

30 (2) an inspector who is appointed under the Factories, shops and industries Act 1962 may not exercise the powers conferred by subsection 91) in relation to that part of any premises being used for residential purposes except -

- (a) with the permission of the occupier of that part of the premises; or
- (b) under the Authority conferred by a search warrant issued under section 30A.

30 (3) For the purpose of the exercise of the functions of any such inspector, the inspector may

- (a) make examinations, inquiries and tests and take such photographs as the inspector considers necessary to ascertain whether the provisions of the Act and the regulations are being complied with;
- (b) take for analysis a sample of any substance or thing which in the inspector's opinion may be, contain or be contaminated by, a prescribed substance or a degradation product of a prescribed substance;
- (c) in the case of an inspector who is a legally qualified medical practitioner, carry out medical examinations; and
- (d) carry out biological tests in a prescribed manner in prescribed circumstances

Section 30A - Search Warrant

30A (1) In this section - "authorised justice" means:

- (a) a Magistrate; or
- (b) a justice of the peace employed in the Local Courts Administration, Attorney General's Department

30A (2) An inspector who is appointed under the Factories, Shops and Industries Act 1962 may apply to an authorised justice for a search warrant if the inspector has reasonable grounds for believing that a provision of this Act or the regulations has been or is being contravened in or on any premises.

30A (3) An authorised justice to whom an application is made under subsection (2) may, if satisfied that there are reasonable grounds for doing so, issue a search warrant authorising an inspector named in the warrant

- (a) to enter the premises; and
- (b) to search the premises for evidence of a contravention of this Act or the regulations

30A (4) Part III of the Search Warrants Act 1985 applies to a search warrant issued under this section.

Section 31 - Power of employee's representative to accompany inspector

31 An inspector under the associated occupational health and safety legislation who is undertaking an inspection of a place of work with respect to a matter that may affect the health, safety or welfare of persons employed at the place of work.



- (a) shall, so far as practicable, consult a representative of
 - (i) the persons so employed; or
 - (ii) an industrial union of employees registered under the Industrial Arbitration Act 1940 whose members are engaged at the place of work; and
- (b) shall, if requested to do so by such representative, take the representative with him during any such inspection.

OCCUPATIONAL HEALTH AND SAFETY (INSPECTORS' NOTICES & PENALTY NOTICES REGULATION 1989) PART 2 - INSPECTORS' NOTICES

Reg 5 Inspector May issue Improvement Notices

5 (1) If an inspector is of the opinion that any person

- (a) is contravening any provision of the Act or the regulations; or
- (b) has contravened such a provision in circumstances that make it likely that the contravention will continue or be repeated,

the inspector may issue to the person a notice requiring the person to remedy the contravention or the matters occasioning it before the date specified in the notice.

5 (2) The date before which a person is required by an improvement notice to remedy a contravention or the matters occasioning the contravention shall be at least 7 days after the issued of the notice.

5 (3) An improvement notice shall

- (a) state that the inspector is of the opinion referred to in subclause (1);
- (b) state the reasons for that opinion; and
- (c) specify the provision of the Act or the regulations in respect of which that opinion is held.

5 (4) A person who does not comply with a requirement imposed by an improvement notice is guilty of an offence.

Maximum penalty:

- (a) penalty units in the case of a corporation; or
- (b) penalty units in the case of an individual who contravenes this subsection otherwise than in his or her capacity as an employee; or
- (c) penalty units in the case of an individual who contravenes this subsection in his or her capacity as an employee

Reg 6 Inspector May Issue Prohibition Notice

6 (1) If an inspector is of the opinion that at any place of work there is occurring or about to occur any activity which involves or will involve an immediate risk to the health or safety of any person, the inspector may issue to the person who has or may be reasonably presumed to have control over the activity a notice prohibiting the carrying on of the activity until the matters which give or will give rise to the risk are remedied.

6 (2) A prohibition notice shall

- (a) state that the inspector is of the opinion referred to in sub clause (1);
- (b) state the reasons for that opinion;
- (c) specify the activity in respect of which that opinion is held; and
- (d) if in the inspector's opinion the activity involves a contravention or likely contravention of any provision of the Act or the regulations - specify that provision and state the reasons for that opinion.



6 (3) A person who does not comply with a requirement imposed by a prohibition notice is guilty of an offence

Maximum penalty:

- (a) penalty units in the case of a corporation; or
- (b) penalty units in the case of an individual who contravenes this subsection otherwise than in his or her capacity as an employee; or
- (c) penalty units in the case of an individual who contravenes this subsection in his or her capacity as an employee

Reg 7 Notices May Include Directions

7 (1) An inspector may include in an improvement notice or prohibition notice directions as to the measures to be taken to remedy any contravention or matter to which the notice relates.

7 (2) any such direction may

- (a) adopt, be reference, the requirements of any industrial or other code of practice; and
- (b) offer the person to whom it is issued a choice of ways in which to remedy the contravention or matter.

Reg 8 Revocation of Notices

8 (1) An improvement notice or a prohibition notice may be revoked at any time

- (a) by the inspector who issued the notice; or
- (b) by the Authority

8 (2) Nothing in this Part prevents the issue of a further improvement or prohibition notice on the revocation of an earlier notice.

Reg 9 Service of Notices

9 (1) In this clause “notice” means an improvement notice or a prohibition notice or an instrument revoking any such notice.

9 (2) A notice may be issued or given to a person

- (a) by delivering it personally to the person; or
- (b) by leaving it with some other person at, or sending it by post to
 - (i) the person’s place of residence or business; or
 - (ii) the place of work to which the notice relates

9 (3) Nothing in subclause (2) affects the operation of any provision of a law or the rules of a court authorising a notice or other document to be served in a manner not authorised by that subclause.



SITE SAFETY INSPECTIONS CHECKLISTS

Date:

Project Site

Site Manager

OHS & R ADMINISTRATION

- | | | |
|----|--------------------------------|--|
| 1 | Safety Management Plan | |
| 2 | Safety Inductions | |
| 3 | Emergency Telephone No's | |
| 4 | Emergency Procedures | |
| 5 | Work Site check Lists | |
| 6 | Workers Compensation Policy | |
| 7 | Worker Compensation Act 1987 | |
| 8 | Rehabilitation Policy | |
| 9 | WorkCover Cert./Permits | |
| 10 | Plant and Equipment Register | |
| 11 | Workplace Committee/Safety Rep | |

GENERAL SITE SAFETY

- | | | |
|----|-----------------------------|--|
| 12 | Site Fenced | |
| 13 | Access and Egress | |
| 14 | Amenities/Toilets | |
| 15 | Protect Public & Visitors | |
| 16 | Housekeeping | |
| 17 | Hygiene | |
| 18 | Security/Emergency Lighting | |

OCC.HEALTH AND SAFETY

- | | | |
|----|----------------------------|--|
| 19 | First Aid Kit | |
| 20 | First Aider | |
| 21 | First Aid Records | |
| 22 | Accident/Incident Reports | |
| 23 | WorkCover Accident Reports | |
| 24 | Sun Cream (SPF 15+) | |
| 25 | Alcohol & Drugs | |

MATERIAL HANDLING STORAGE

- | | | |
|----|--------------------|--|
| 26 | Chemical Register | |
| 27 | Segregated Storage | |
| 28 | Personnel Training | |

SAFE WORKING PROCEDURES

- | | | |
|----|-------------------------|--|
| 29 | Excavations & Trenching | |
| 30 | Scaffolding/Rigging | |
| 31 | Demolition | |
| 32 | Asbestos Removal | |
| 33 | Work on Roofs | |
| 34 | Confined Space | |
| 35 | Manual Handling | |
| 36 | Site Dust Control | |

PERSONAL PROTECTIVE EQUIPMENT

- | | | |
|----|-----------------------------|--|
| 37 | Hard Hats | |
| 38 | Safety Footwear | |
| 39 | Eye & Face Protection | |
| 40 | Ear Protection | |
| 41 | Safety Harness/Inertia Reel | |
| 42 | Hand Protection | |

FIRE PROTECTION & PREVENTION

- | | | |
|----|-----------------------------------|--|
| 43 | Fire Extinguishers | |
| 44 | Hose Reels Hydrants | |
| 45 | Fuel Tanks (Locations & Markings) | |
| 46 | Flammable Goods/Storage | |

WELDING & CUTTING

- | | | |
|----|------------------------------|--|
| 47 | Gas Cylinders, Storage & Use | |
| 48 | Hot Work Permits | |
| 49 | Hot Work Procedures | |

HAND & POWER TOOLS

- | | | |
|----|-----------------------|--|
| 50 | Safe Hand Tools | |
| 51 | Explosive Power Tools | |
| 52 | Air Powered Equipment | |

ELECTRICAL

- | | | |
|----|---------------------------------------|--|
| 53 | Switchboard (AS3000) | |
| 54 | Site Earth Leakage Checks | |
| 55 | Tools & Extension Cord Monthly Checks | |
| 56 | Sufficient Power Outlets | |
| 57 | Elevation of Leads (2.45m) | |
| 58 | Portable Generators (AS2790) | |

WORKING HEIGHTS

- | | | |
|----|------------------|--|
| 59 | Scaffold Systems | |
| 60 | Mobile Scaffold | |
| 61 | Scissor Lifts | |
| 62 | Boom Lifts | |

HEAVY EQUIPMENT

- | | | |
|----|----------------------|--|
| 63 | Cranes | |
| 64 | Excavators | |
| 65 | Hoists | |
| 66 | Trucks | |
| 67 | Traffic Control | |
| 68 | Electric Power Lines | |



OWNER BUILDER COURSE

Learning Activity 65 – Site Inspection Checklist



Develop a checklist of all the inspections that should and will be carried out on your site. Utilise the following checklist or design one that suits your size project/site.

SITE INSPECTION CHECKLIST

Inspection Name	Inspected by (name of inspector or firm)	Date of Inspection	Certificate Report Received		
			Yes	No	NA
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
Comments					



QUALITY INSPECTIONS – BUILDING DEFECTS

Source: Report Systems Australia Pty Ltd (RSA) – Handbook – Steve Allen

Apart from the obvious damage that is caused by accident, storm and tempest or wilful vandalism, the most frequent structural damage is caused by the following:

-  Structural Cracking and Movement
-  Deformation
-  Dampness
-  Structural Timber Pest Damage

STRUCTURAL CRACKING AND MOVEMENT

Cracking and movement is a problem that will spoil the appearance of the building and can be structurally dangerous.

The symptoms and causes outlined in the following examples are not intended to be all inclusive. However, they will give an indication of the more common characteristics which may be readily observed at the time of inspection.

ROOF STRUCTURE

Concrete roof slabs

Cracks, variable in direction and depth. Cracking will commonly result from one or more of the following causes:

-  Shrinkage during setting
-  Inadequate support
-  Thermal movement
-  Foundation movement
-  Corrosion of steel reinforcement

Small cracks may not be harmful in themselves, but if they allow moisture to penetrate readily to the reinforcement and cause progressive corrosion, the problem may become serious.



WALL STRUCTURE

Masonry – foundation related cracking

- (a) *Diagonal cracks.* Most commonly occurring at the corners of buildings, the cracking will tend to be wider at the top of a wall, while narrowing down to the bottom. However, in straight walls with no openings, there is a tendency for the cracks to occur at a point a third of the distance along the wall.
- (b) *Diagonally stepped cracking.* Localised cracking which forms in masonry walls in the vicinity of existing trees and shrubs. The cracking is often diagonally stepped and will tend to form around openings or other points of weakness in the building. In extreme cases the wall may rotate and twist considerably.
- (c) *Diagonally stepped cracking.* Localised cracking forming in masonry walls in the vicinity of recently removed trees and shrubs. The cracking is often diagonally stepped and will tend to form around openings or other points of weakness in the building. In extreme cases the wall may rotate and twist considerably.
- (d) *Stepped or vertical cracking.* The formation of the cracks is either stepped cracking around openings or vertical cracking in the wall, it is unusual for both types to occur in the one length of wall. Cracks are usually wider at the top and narrow towards the bottom.
- (e) *Diagonal and vertical cracks.* Diagonal cracks forming around openings usually wider at the top and narrow towards the bottom, and vertical cracking.
- (f) *Irregular cracking in a zig-zag pattern.* Irregular cracking occurring immediately after a sudden vibration or over a long period of continual vibration. Old cracks open, allow dust and filling to drop out, and in more severe cases new cracks will form, often in an irregular zig-zag pattern.
- (g) *Cogged or vertical cracks.* Cogged or vertical cracks appearing in masonry walls where an addition has been keyed into the existing structure. Where there has been a rotational effect, stepped diagonal cracks may occur, especially around openings.
- (h) *Horizontal cracking.* Cracks forming in a masonry wall along the side of a house parallel to a row of trees.
- (i) *General cracking.* **Localised** or wide spread cracking caused by shear failure of the foundations. Shear failure occurs where the foundation soil is forced from under a footing. Where shear failure does occur it can cause serious displacement of the footings, and even the whole building.
- (j) *General cracking.* **External walls** tend to *rotate outwards* at the top causing general cracking, especially around openings. Internal partition walls may develop cracks which will open up at the top of the wall and narrow down at the bottom. A slight bulging of the floor may occur as the supports rise.



- (k) General cracking. **External walls** tending to *rotate inwards* at the top causing general cracking. Internal walls may develop cracks that open at the bottom of the wall and narrow towards the top. The effect on the floor is that the internal supports drop below the bottom of the bearers and the floor becomes springy and sags slightly.
- (l) *General cracking*. Cracks forming **around a heat source** (eg a furnace) and in extreme cases deflection of the floor can occur.
- (m) *General cracking*. Cracks forming in areas associated with **periodic or continual dampness**.

Masonry – cracking not related to foundation movement

- (a) *Stepped or horizontal cracking*. Cracks forming in masonry walls around a piece of metal originating at the point of embedment. Cracking occurs as a result of rust and scale building up on corroded lintels, arch bars, bolts etc. and displacing the surrounding masonry.
- (b) *Horizontal cracking*. Cracking along the internal face of the external masonry walls, often at the level where the external leaf of a cavity walls terminates. The most common cause of this type of movement is spreading of a pitched roof.
- (c) *Horizontal cracking*. Cracks forming at the base of masonry walls built on suspended concrete floors. Cracking is caused by excessive deflection of the floor.

External render and stucco

- (a) *Full depth cracks*. Cracks penetrating the external render or stucco finish and its backing material. Full depth cracking occurs where the backing material has fractured. The type of failure will be indicated by the pattern and fluctuations of the cracking. Frequently it is associated with differential movements of masonry walls on expansive clay soils, or with some type of foundation failure.

Cracking problems not associated with foundation movement are frequently caused by the corrosion of embedded metal, sulphate attack, and insufficient or incorrect movement control joints. Sulphate attack is distinguished by a characteristic horizontal cracking pattern.

Internal solid plaster

Major failure. Failure of solid plaster is associated with movement of the backing material causing cracking and loss of adhesion. These problems of backing movement are similar to those in *external render and stucco*.

Internal lath and plaster, plaster sheet, and plasterboard

Major cracking. Cracking in internal plaster finishes is usually caused by movement occurring within the framing to which the plaster is fixed.



FLOOR STRUCTURE

Reinforced concrete construction

Cracks, variable in direction and depth. Often cracks will form in reinforced concrete including slab-on-ground construction, suspended slab floors, stair flights, landings and balconies or the like. Cracking will commonly result from one or more of the following causes:

-  Differential shrinking
-  Foundation movement
-  Inadequate support
-  Deformation due to creep
-  Thermal movements\
-  Or corrosion of steel reinforcement

Small cracks may not be harmful in themselves, but if they allow moisture to penetrate readily to the reinforcement and cause progressive corrosion, the problem may become serious.



OWNER BUILDER COURSE

Source: Repair and Renovate your Home (Publisher Bay Books) Authors – Julian Cassell, Peter Parham, Mark Corke, Mike Lawrence (UK)

CAUSES OF CRACKS AND REMEDIES

Type	Causes of Cracks and Remedies
Internal corners	These cracks are often a result of settlement in new homes and therefore can be filled and decorated. Persistent cracking should be monitored.
Ceiling	Ceiling cracks which are very directional, in that they have a relatively straight course or turn at right angles, tend to result from slight board movement in the ceiling structure. These can be filled and decorated or, if they persist, lining can normally prevent them from reappearing.
Cross corner	Cracks which extend across a corner from one wall to another can represent a subsidence problem, especially if lines of brick or blockwork can be picked out, in such cases, seek professional advice.
Above windows	Cracks are often visible extending from the corners of windows up towards ceiling level. So long as they are relatively small, they generally represent slight settlement or movement. However, large cracks that show a vertical shift should be investigated further
Hairline	These cracks are common, multi-directional, and suggest slight movement of a plaster surface. Numbers tend to increase with the age of the building. Most are superficial and do not represent any cause for alarm. However, if new plaster surfaces display a number of persistent cracks, this could suggest that the plaster was poorly mixed or has not bonded correctly to the wall. In such cases, replastering may be necessary
Below skirting	Gaps below skirting tend to suggest that the skirting was poorly fitted. However, cracks that continue to develop could reflect floor problems or some subsidence. Those which continue to grow should be investigated.
Circular	Cracks that form irregular, circular shapes tend to reflect areas of plaster blowing away from the wall background. This is common in old lath and plaster walls, where age has taken its toll and the plaster surface has become unstable in localised areas. The affected area can be removed and patch-plastered.
Central wall cracks	These may occur for any number of reasons and should simply be monitored to check that they do not grow wider. Seek professional advice in extreme cases.
Along top of skirting and architrave	Cracks occur in these places either because of age and slight building movement or because the materials are new and take a little time to settle to the atmospheric conditions of the particular room environment. Unless the cracks persist or grow after filling and redecoration, there is generally no cause for alarm
Above doors	See explanation for cracks around windows
Wall/ceiling junction	These cracks commonly occur during settlement in new houses, and as a result of age in older ones. Small cracks can be filled and redecorated, whereas larger types should be monitored to check that they do not expand, thus requiring structural repair.



DEFORMATION

Source: Report Systems Australia Pty Ltd (RSA) – Handbook – Steve Allen

The Glossary of Building Terms describes 'deformation' as a change of shape of a structural member or structure, resulting from the applications of load(s). In addition to deflection, deformation includes any plastic, non-recoverable movement.

Often the change will not be noticeable, but may result in trivial defects and in some cases in defects of appreciable magnitude.

The symptoms and causes outlined in the following examples are not intended to be all inclusive. However, they will give an indication of the more common characteristics which may be readily observed at the time of inspection.

ROOF STRUCTURE

Roof framing and roofing

- (a) *Distortion/lifting/damage.* Movement of the roof is commonly caused by the roof not adequately resisting wind uplift forces. Often the roofing is not adequately secured to the roof framing or the roof structure to the wall structure.
- (b) *Cupping.* Distortion of flat roof decks is caused by condensation. The condensed water can wet ceiling joists in contact with the deck, increasing the risk of fungal decay. It can also drip, damaging the ceiling below or wetting electrical cables.
- (c) *Widespread sagging.* Sagging of a pitched roof will be visible where roof coverings have dished, and ridge lines are bowed over strutting points. Deformation will commonly result from:
 - Initial poor design
 - Increase in roof covering loading
 - Corrosion of fixings
 - Long term loading
 - Lack of support
 - Or timber damage.
- (d) *Localised sagging.* Sagging of the roof **at the eaves** is often caused by excessive cutting (birdsmouth jointing) of rafters.
- (e) *Localised sagging.* Sagging of the roof in the **vicinity of services** is often caused by excessive cutting and removal of framing members for the installation of services, especially plumbing vents and flues.



WALL STRUCTURE

Framed and masonry construction

Vertical bowing and horizontal bending or even collapse of walls. Deformation is caused by the wall not resisting vertical pressures from foundations or upper floors and roofs, and horizontal pressures from strong winds and retained earth.

FLOOR STRUCTURE

Suspended concrete slabs

Excessive deflection. A reinforced suspended concrete floor may deflect producing side-effects such as failing to continue to provide support for walls built on them. In such cases a horizontal crack may often be found at the base of the wall, though it may be covered up by the skirting board. Deflection in suspended concrete floors will most commonly result from one or more of the following reasons.

-  Initial poor design
-  Substandard workmanship and practice
-  Drying shrinkage
-  Or the floor loading exceeding the designed loading.

Suspended timber ground floors

Sagging or springiness of the floor underfoot. Deformation will most commonly result from one or more of the following reasons:

-  Under-design of floor framing members
-  Insufficient structural support
-  Defective timber connectors or fastening methods
-  Poor workmanship
-  Overloading
-  Or timber pest damage



Timber upper floors

Sagging or springiness of the floor underfoot. Often cracking will occur in the ceiling below. Deformation will most commonly result from one or more of the following reasons.

-  Under design of floor framing members
-  Poor workmanship
-  Defective timber connectors or fastening methods
-  Overloading
-  Or timber pest damage.

Stairways

Unstable or even collapse of metal or timber stairways. Defective condition of internal or external stairways includes landings and any loose or fragile newel posts, handrails and balustrades. Deformation will commonly result from one or more of the following causes:

-  Poor design
-  Substandard workmanship and materials used in construction
-  Timber pest damage
-  Defective timber connectors or fastening methods
-  Metal corrosion



Source: Report Systems Australia Pty Ltd (RSA) – Handbook – Steve Allen

DAMPNESS

Dampness is a problem that occurs in many buildings, both old and new, and it is a continual source of annoyance and expense to many householders. The presence of excessive amounts of moisture in a building is most certainly the cause of a greater proportion of defects than any other single cause or agent.

The five most common sources of dampness are:

1. Defective plumbing and defective roof plumbing and flashings
2. Rain penetration
3. Rising damp
4. Condensation; and
5. Hygroscopic salts and efflorescence

The symptoms and causes outlined in the following examples are not intended to be all inclusive. However, they will give an indication of the more common characteristics which may be readily observed at the time of inspection.

WALL STRUCTURE

Ceilings

- (a) *Isolated patch.* Appearing during or after rain. The most common source of this type of dampness is defective roof plumbing and flashings.
- (b) *Isolated patch.* Appearing all the time. The most common source of this type of dampness is defective plumbing.
- (c) *Isolated patch or continuous band.* Appearing during periods of high humidity. The most common source of this type of dampness is condensation.
- (d) *Streaks.* Appearing during periods of high humidity. The most common source of this type of dampness is condensation.

External walls – upper section

- (a) *Isolated patch or continuous band.* Appearing all the time. The most common source of this type of dampness is defective plumbing and flashings.
- (b) *Isolated patch or continuous band.* Appearing during or after rain. The most common source of this type of dampness is defective plumbing and flashings.
- (c) *Streaks.* Appearing during or after rain. The most common source of this type of dampness is defective plumbing and flashings.
- (d) *Isolated patch or continuous band.* Appearing during periods of high humidity. The most common source of this type of dampness is condensation.



External walls – upper or lower sections

- (a) *Isolated patch or continuous band.* Appearing during or after rain. The most common source of this type of dampness is rain penetration.
- (b) *Isolated patch.* Appearing during periods of high humidity. The most common source of this type of dampness is hygroscopic salts.

External walls – lower section

- (a) *Isolated patch or continuous band.* Appearing all the time, or during or after rain. The most common source of this type of dampness in masonry is rising damp.

The dampness shows more clearly on the internal wall surface from ground level up to a height of about 850 mm internal plaster finishes and coatings may be damp, blistered or discoloured and 'tide marks' frequently appear on an internal wall affected by rising damp. When moisture evaporates it often leaves surface patches of crystalline deposit or a powdery bloom of water soluble salts. The skirting board may also be rotted and if the floor is a suspended timber floor it may be weak near the wall.

- (a) *Isolated patch.* Appearing during or after rain. The most common source of this type of dampness is defective plumbing and flashings, and rain penetration through cracks in mortar joints.

External walls – around openings.

Isolated patch. Appearing during or after rain. The most common source of this type of dampness is a defective flashing.

Internal walls – upper section

- (a) *Continuous band.* Appearing all the time. The most common source of this type of dampness is defective plumbing.
- (b) *Streaks.* Appearing **during or after rain**. The most common source of this type of dampness is defective roof plumbing and/or rain penetration.
- (c) *Streaks.* Appearing **during periods of high humidity**. The most common source of this type of dampness is condensation.

Internal walls - upper or lower sections

Isolated patch. Appearing during periods of high humidity. The most common source of this type of dampness is hygroscopic salts.

Internal walls – lower section (refer also to External walls – lower section (a) on previous page

Isolated patch or continuous band. Appearing all the time, or during or after rain. The most common source of this type of dampness in masonry is rising damp.



FLOOR STRUCTURE

Suspended floors

- (a) *Very wet soil or even standing water in subfloor spaces.* The most common source of this type of dampness is defective plumbing or drainage.
- (b) *Excessive water vapour or even droplets of water.* Forming on the underside of the flooring in a humid subfloor space. The most common source of this type of dampness is condensation.
- (c) *Damp patches.* Forming on or under concrete slabs. The most common source of this type of dampness is defective plumbing or drainage.

Slab-on-ground construction

Damp patches. Forming on the slab surface, or on floor coverings such as carpet. If the slab has a ceramic tile, vinyl or parquet finish, the flooring may lift and arch. The most common source of this type of dampness is rising damp.



OWNER BUILDER COURSE

DAMP AND INFESTATION

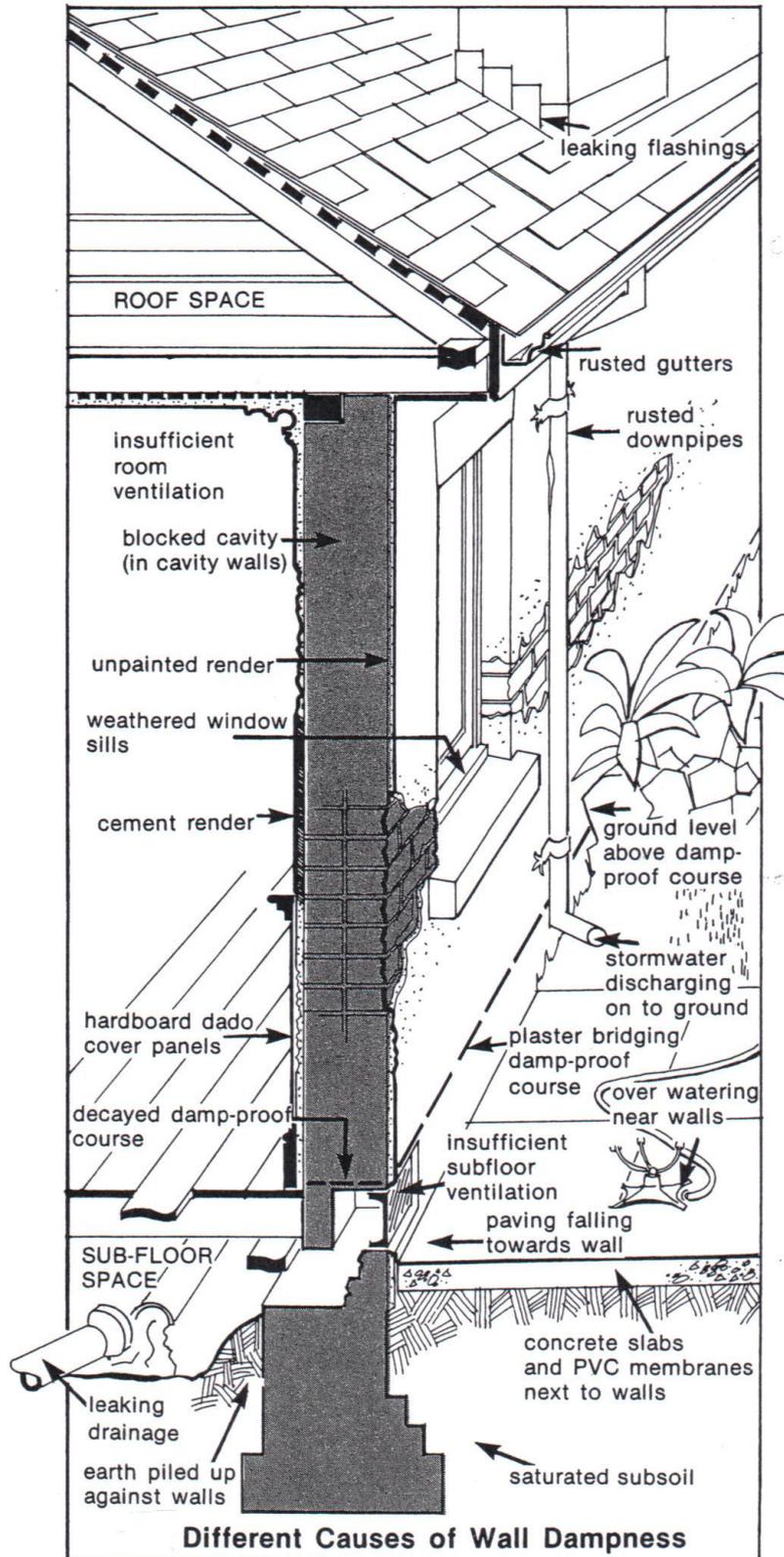
Source: Repair and Renovate your Home (Publisher Bay Books) Authors – Julian Cassell, Peter Parham, Mark Corke, Mike Lawrence (UK)

Type	Causes of Damp & Remedies
Central ceiling	These patches tend to be a result of leaking pipes in the ceiling, or at top floor level they may be a roof leak dripping on to surfaces below. Consult a plumber for fixing pipework, and carry out any necessary tile repair work at roof level.
Ceiling/chimney break junction	Damp patches which develop in these areas may be a result of a gap in flashing around the chimney. There inspect the area and effect a repair if required
Wall/ceiling junctions	At top floor level, this is often a result of a blocked gutter. Unblock the gutter to eliminate the resulting damp penetration. This sort of damp may also result from a lean-to building, where the flashing at the point where it joins the main building has deteriorated. Check the flashing and repair if necessary.
Internal corner lengths	Elongated damp patches along internal corners often indicate a blocked or cracked downpipe on the exterior of the building. Dripping water therefore gradually penetrates, causing a persistent damp wall stain. Unblock or replace the downpipe as required
Window frames	Damp penetration is common around the edges of windows due to a build-up of condensation or because of a break in the seal around the edge of the window frame itself. Check that the window is sealed correctly and reapply silicone sealant if necessary. If the problem is more condition-based, install better ventilation systems for the room or simply open windows more often.
Below windows	Seals beneath window may be damaged or the drip guard below the sill may be blocked. Check both areas and clear or re-seal as required
Areas above skirting	Large damp patches above skirting are often a result of the build-up of material, such as piles of soil, on the external side of the wall surface. This bridges the damp course and causes damp penetration. Simply remove the obstructive material, and ensure soil levels are kept below damp course level.
Central chimney breast	These patches commonly develop in disused chimneys where the chimney and fireplace have been clocked off. The disused chimney void therefore has no ventilation, causing the moist damp air to penetrate through the chimney breast. To cure this problem, install an air vent in the chimney breast in order to improve air flow and circulation.
Tide marks above skirting	If these are not a result of the damp course being bridged on the other side of the wall, then it may be straightforward rising damp. This is common in older houses with no damp course or in houses where the damp course is damaged and therefore allowing water penetration. Various damp-proofing injection systems are the most effective cure. These systems are best always carried out by professionals.
Internal corner patches	Small damp patches in walls often result from patches of damaged pointing or render on the exterior of the building. Simple repair of the appropriate material should cure the problem.
Drip staining	Visible stains from drips or running moisture on the walls tend to point in the direction of a condensation problem. This commonly occurs in kitchens and bathrooms. Simply install better ventilation systems and open windows more often.



Source: Repair and Renovate your Home (Publisher Bay Books) Authors – Julian Cassell, Peter Parham, Mark Corke, Mike Lawrence (UK)

RISING DAMP





Source: Report Systems Australia Pty Ltd (RSA) – Handbook – Steve Allen

STRUCTURAL TIMBER PEST DAMAGE

In broad terms the degradation of structural timbers results from attack by one or more of the following wood destroying agents:

-  Chemical delignification
-  Fungal decay
-  Wood borers
-  And termites.

Failure of timber from such attack is frequently associated with lack of maintenance, and contributing to this, a general lack of knowledge of the characteristics and properties of the material itself.

The symptoms and causes outlined in the following examples are not intended to be all inclusive. However, they will give an indication of the more common characteristics which may be readily observed at the time of inspection.

ROOF, WALL AND FLOOR STRUCTURES

Chemical delignification

Chemical delignification is the breakdown of lignin (the natural glue that binds the wood cells together) through chemical action. Signs of damage to structural timbers include:

-  The surface of the wood becomes hairy
-  Loss of strength resulting in deformation; and
-  Collapse

Fungal decay

Fungal decay is the microbiological degradation of timber caused by soft rot fungi and decay fungi. Signs of damage to structural timbers include:

-  Splits in timber which are sometimes longitudinal but more usually cuboidal in shape.
-  Timber which has reduced both in moisture content and size as indicated by cracking either along or across the grain or by fibres coming apart in a stringy manner.
-  Misshapen timbers, eg cupping and ridging of floorboards.
-  Loss of strength resulting in deformation; and
-  Collapse.



Wood Borers

Wood borers are wood destroying insects belonging to the order '*Coleoptera*' which commonly attack timber. Signs of damage to structural timbers include:

-  Adult beetles flight (exit) holes
-  Loss of strength resulting in deformation; and
-  Collapse (only rarely)

Termites

Termites are wood destroying insects belonging to the order '*Isoptera*' which commonly attack timber. Signs of damage to structural timbers include:

-  Abnormal depressions in the surface of timber, the grain may stand out and the surface of the timber be drawn in, and in other cases the timber may bulge out slightly
-  Loss of strength resulting in deformation; and
-  Collapse



OWNER BUILDER COURSE



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2	What information would you expect to gain from a Site Inspection – List 10 points	130
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3	What is the purpose of a Dilapidation Report	138
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4	What inspections do Council or Private Certifiers carry out	141
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7	What duties do the WorkCover Inspections carry out whilst on site	143
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SELF TEST QUESTIONNAIRE

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11	List 5 types of Dampness and its cause you could find in a building	160-163	
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12	List 4 types of Structural Timber Pest Damage	166	
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