

Advanced Software for Roof and Wall Modelling and Material Estimating

# **Roof Wizard**

Incorporating: all roof systems, labour and materials, wall cladding and trim

# **Learning Guide**

For metric and English units

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# Section 1 – Introduction

Australian software developers have a world-wide reputation for innovative and unique products. AppliCad is an application developer based in the Australian southern city of Melbourne, and has proven once again that this is indeed the case. With the release of the software package for roof design and estimation called Roof Wizard, AppliCad has set new standards with functionality, ease of use and outstanding value for money.

The Roof Wizard software is integrated with a full function 3D CAD (Computer Aided Design) modelling system and takes advantage of the powerful 3D capabilities. The Roof Wizard software provides estimators with a complete suite of tools for roofing design, estimating, waste optimisation and presentation. The basic principle of Roof Wizard is based upon a simple overview of the design process using the information you get with a request for quotation whether an Architect's PDF, a hand drawn sketch or an aerial image – Roof Wizard works the way you do.

While no previous computer aided design (CAD) experience is considered necessary to use the Roof Wizard software, a certain level of understanding of roofing and building is expected. Roof Wizard takes the chore out of roof design and estimating. The estimator gains immediate benefits in producing accurate roof geometry and has the tools to check that the model is correct so that precise quotations for a wide range of roof designs and material systems may be output automatically. A complete set of detailed forms is produced so that everyone involved in the process has a record of the proposed transaction for both labour and materials.

The purpose of this document is to provide an over-view of the Roof Wizard functions for estimating roofing, cladding, trim, accessories, insulation and underlay.

The **Learning Guide** has specific exercises arranged in a way that provides a graduated learning program. New operators must work through this part of the manual from start to finish to gain the level of competence to confidently tackle any job that comes along.

**The Learning Guide** is actually in two parts because each has been specifically written and annotated with the base units in mind – that is metric and English units. The Learning Guides take the operator from a simple roof shape all the way through to rather complex roof geometry and how to extract a client proposal.

Operators must also take advantage of all the extra information that is updated and added to on a regular basis that is provided on the AppliCad web site – <u>www.applicad.com</u>. You may also get many tips from watching the many video clips on our YouTube channel. Simply search 'AppliCad' on YouTube.

AppliCad also has an interactive online learning system at - www.academy.applicad.com.

This manual is intended for users of the fully integrated Roof Wizard software. It handles all roofing and wall cladding systems and **must** be read in conjunction with the detailed Reference Manual. At the very least, a new user must read Section 1 of the Reference Manual so that a basic understanding of the layout and conventions used.

### Feedback

At AppliCad, our role is to create the best products we can. Your feedback helps us get better at meeting your needs. We know you set high standards, and so do we. Let us know how we can improve our service to you.

# Section 2a – Learning Guide (Metric Units)

# The Learning Guide

Construct

Mod-Root

Check

Cover

Report

The purpose of this Section of the manual is to provide you a set of tutorials to work through with **Roof Wizard**. Some detailed advice has been provided but it should be read in conjunction with Section 5 of this Reference Guide, which describes the commands in more detail.

This guide has been divided up into 10 parts that takes you step by step through a typical job. These are;

- 1. The Interface
- 2. Modelling
- 3. Cover Tile
- 4. Cover Flashing
- 5. Cover Metal
  - 6. Estimate Metal
  - 7. Cover Built Up Roof
  - 8. Layout Built Up Roof
  - 9. Cover Downpipes, Underlay (Sarking), Insulation etc
  - 10. Costing/Reporting

There may be sections in this manual that don't relate to you (ie. The section for metal roofs will not be of much interest if you are doing tile roofs). When you do come to one of these sections, simply skip it. All the information to help learn the AppliCad software for all material types has been included in this guide, so there may be surplus information if you are a specialist roofer.

### The AppliCad Process

The foundation of the *AppliCad* software is based upon the creation of accurate roof geometry - ie the roof geometry must first be correctly modelled in 3D space. It is from this 3D definition of the roof that the roof areas and quantities are extracted. Clearly, if the roof modelling is not accurate, the whole process is compromised.

To assist the operator in the roof modelling process, we have included some very sophisticated but simple, single mouse 'click' operations that allow a roof model to be built from basic principles.

The usual starting point for a roof using this system is an outline of the roof from which the hips and valleys are created. From this, just about any roof may be modelled by adding all the architectural features including dormers, atriums, gables, verandahs etc.

After the roof geometry has been created, the roof cover material must be selected\*. This is done by selecting the material to be used from a list of user defined materials be it tile, shingle slate or metal. The program automatically accounts for other associated and required fixtures, fittings and accessories. You may also select the type of flashings you want to use.

After creating the material list, costing of the job is automatic, providing you with the ability to modify the quote prior to printing the necessary reports.

### **Roof Creation and Modification**



The purpose of the following section is to familiarize you with the process of creating a roof in 3D from an Architectural drawing or site survey measurements.

The modelling tutorials will be divided into two sections. The first is the creation of basic roof shapes using **Construct-Roof** including simple hip and gable roofs, flat and mono-pitch roofs, variable pitch gables and verandahs, as this is the 'foundation' of our estimating system.

The second section will involve making modifications to the initial roof geometry using **Modify Roof**, adding Architectural features such as dutch gables, corner gables, atriums, cut-outs etc. This will be followed by tutorials on coverage and costing.

### **Before We Start**

Before we start we make sure that your **Preferences** are set up correctly. This is set under the **Set-Up** > **Preference Settings** > **System Preferences** menu. This was outlined in **Section 2**.



Track Outline

For the first example, we will use a photocopy of a roof plan, just as you might get during the course of a day's work. The dimensions shown refer to the wall outline and the eaves are offset from the walls by 300mm and at the gable end the barge lines are offset from the wall by 150mm.

It is useful to ensure that the eave height is entered accurately as this will affect the relative location, lengths and areas of any other or future roof planes butting onto the existing roof.

First select the **Construct-Roof** option from the **Pulldown Menu** at the top of the screen.



We will use **Track Outline** to input the wall outline as this will be the <u>most usual method</u> of outline definition. Select **Construct Roof > Track Outline**.

**Note:** (If you had measurements of the eave outline instead of wall outline dimensions as we have here, you could enter those dimensions, but remember to change your eave offset and gable overhang to be zero.)

If a previous job has been started but interrupted for any reason, the Message box below appears so that you can work with the previous outline.





The outline start point is automatically set at x,y screen coordinates 0,0. The **Wall Direction and Distance** dialog box will now appear (see below):

Wall Direction	and D	)istance	×
Direction 0.00 Distance 0.00 Pitch • 0	mm 	Digitize Zoom	\ U / L O R / D \
Delete Underlay Hid	e	Scale	/Rotate
Insert Close Step Back Cancel	H, Options	/V Ste	Finish p Fwd ?

The buttons marked Left, Right, Up and Down, allow you to navigate around the plan as you put in the brickwork or wall measurements. The angled lines are for walls that are at 45 degrees.

The **[H/V]** button is to allow the operator to insert wall lines that are not square with the rest of the structure ie 2000 along and 3500 up. The **[o]** button in the middle of the Left, Right, Up and Down buttons is used to set a **reference point**. More on this later.



*Time Saving Note:* Enter the letter "U" for up, "D" for down, "L" for left or "R" for right, in front of the length of the wall or eave. Then click enter.

On this job, you could have typed in U8000 {Enter} R8000 {Enter} U8000 {Enter} R8000 {Enter} and then Close the outline as a Square. You may also simply type C (short cut for close square){Enter} in the distance field on the dialogue. You can also input U8M indicating metres if you're working in Metric.

The process is to select the direction of the wall that you want to draw in, or by typing in the angle in the direction field, the **Distance** field will be highlighted. Type in the length of the wall and select **Insert**. Or press the **Enter** key. A dashed line is drawn on screen and a designation indicating line 1 and the length in mm. You are now ready to put in the next wall and the next wall and so on.

Using our example, we will start at the bottom left hand corner of the house, select **Up**, and then type in 8000 for the length of the wall. Select **Insert**.

Now select Right and type in *8000*, then **Insert**. You could also type *R8000* in the direction field for the same result; or R8m for 8 metres.

If you make a mistake, select **Step Back** and redo the wall line.

[Continue] around the plan until you reach the top right hand corner. At this point, select **Close** from the dialogue box. The **Select the close method** dialog box will appear. Select **Close Square.** You may also simply type **C** (close-square) and {enter} and the outline will close for you.

This will insert a right-angled line from the first point of the outline and the last point of the outline. Where these two lines meet, a point will be inserted which will be the lower right corner of the wall, in this instance.

You should always let the software determine the close as it will then allow you to check the last two measurements against the drawing.

Following this check, if the outline is correct, press Finish or simply type

**F** and {enter}. If not, select **Step Back** and redo that part of the outline which is was incorrectly input. The wall outline is now complete. It is represented by white dashed lines. These are construction lines only, no roof geometry exists yet.

Ro	oof Defaults	×
Roof Type	Pitched Roof	
Roof Material	Metal 💌	
Storey	1	÷
Pitch	35	
Eave Overhang	350	m
Gable Overhang	200	m
Eave Height	3500	
Rafter Spacing	600.00	m
Eave Type	Fascia-Gutter 💌	
Cancel	<< Back OK	?

The **Roof defaults** dialog box will now appear on the screen. This is used to specify the roof parameters of generic material type, roof pitch, eave offset etc.

Select whether the roof geometry is going to be a pitched roof (that is hips and/or valleys) or a flat roof (which maybe be pitched but has no hips and valleys).

Change the pitch to **30** degrees, the eaves to 300, and the verge overhang to 150. To do this, simply double click with your mouse in the cell to highlight and change, or select TAB key on the keyboard to move down through each cell to change the options.

When you are happy with all the options, select **[OK]**.

At this point, a dialog box will appear asking if you want to Define Vertical Planes, Change Eave-Verge Overhangs and Define Barge Line.

Select the Close Me ×				
Close Straight				
Close Square				
Close Extend				
Close 2 Lengths				
Step Back				
Change Snap Axes				
Align Axes with Last Line				
Reset Snap Axes				
Change Snap Values				
Check Close Distances				
Finished Digitizing				
Continue Digitising ?				

Select R	Coof Modification Options	×			
	1 Define Vertical Planes				
	2 Change Eave-Gable Overhangs				
	1				
_	Cancel << Back Continue	2			

Click on **Define Vertical Planes**. Using the left mouse button, select the left hand **wall** of the building outline (which is to have the gable end).

You will notice in the prompt area (at the bottom of the screen), that it is still asking you to **locate a wall**. As there is only one gable on this building, press the right mouse button to cancel out of the selection process.

A message box will now appear advising you of how many entities were located. You will then be asked if you want to use this entity. Select **Yes.** 

The Roof Modification dialog box will appear again. If you wanted to change the eave or verge overhang for a wall, we would select that button, followed by the eave that we would like to change. In this instance, all of our eaves are at 300mm, so we ignore it.

We are also asked if we would like to Define Barge Lines. For this case we will ignore it as we will explain this command a little later. Now click [Continue]

### The hip and valley roof is automatically created in 3D.

Return to the Main menu by pressing the right mouse button.

If you wish to view the roof from another angle, you can change the view by selecting the **View** menu at top. Select the required view (in this case we'll select **Isometric View**.



Select **Isometric View** and then **[OK]**. This will enable us to look at the house in an isometric view. You may have to zoom fit the model by double clicking the centre mouse button to fit the entire model into the workspace.

**Note:** If you change views and your roof seems to disappear, it is simply that you are zoomed into a small section of the drawing. You may need to zoom fit the appropriate view.

This completes the exercise using Track-Outline.





# Save Your Job

To save your job select **File > Save** from the **Main** menu. The following dialog box will be displayed.

ile Name:		Model Name:	OK
Training.dab		Exercise	Cancel
Tony_Help2.dab Tony_Help3.dab Too Easy Builders1.dab Toolangi.dab topview.dab Tracey dab.dab Tracey dab.dab	*	ex23 ex23-SC ex23-SS ex24a ex25 Ex2a Ex2a Ex3	Canoci
raining1.dab raining2.dab rainingMetric.dab REE 2.dab REE.dab rees 1.dab rees 3.dab	-	Ex4 Ex5 Ex6 Ex7 EX8 EX8 EX8a Exercise 1	
irectories:			
My Computer  C:\ C:\ C:\ C:\ C:\ C:\ C:\ C:\ C:\ C:			

Type in your project or customer name in space under *File Name* and the job name in the space under *Model Name*, then select [OK].

For this exercise, use File Name TRAINING and Model Name Exercise 1.

You're Done!



**Note:** When you start work on real jobs, you will use your own job naming convention. You might for example use the name of the builder as the file name, and the site address as the model name. Eg: **MightyBuilders** for the file name, and **27LongStreet** as the model name.

Do not use special keyboard characters in the file name – such as #,?,/,|,&, etc - in the names as it confuses software programs.

To begin the next exercise, select **File** from the Pulldown menu at the top of the screen and select **New**. This will automatically clear the screen of the current job, or prompt you to save the current job if you haven't already done so.



Now, for the practice, and using the process described previously, do the following roof using the **Track Outline** command and using the dimensions shown.



You will use Construct Roof > Track Outline then (we will start at the bottom left hand corner of the job) type in U11000 {enter} R13000 {enter} U4000 {enter} R3000 {enter} D4000 {enter} R2000 {enter} D6000 {enter} L7000 {enter}, then (C) CLOSE SQUARE, then (F) FINISH.



In this instance we will use the same roof defaults as the previous exercise. Remember that when you are asked to Define Vertical Planes etc, you need to click on Define Vertical Planes and select the 3000 line at the top and the 6000 on the right.

If you select **Isometric** from the view menu, (and remember to **Zoom Fit** the view – you do this by double clicking the middle mouse button), you should see a roof looking like this:



Something else you may want to do is to rotate the view to take a look at your roof model from a different angle. To rotate a roof in Isometric

view, hold down the **Ctrl** key and the middle mouse button and move the cursor to position your model. You may also zoom in and out from your model using the middle mouse scroll wheel.



When you have finished, select File > Save As (from the top menu).

You should see a file called **Training.dab** (which you created previously). Select this file on the left hand side and then type in Exercise 2 in the **Model Name** field.

To begin the next exercise, select **File** from the pulldown menu at the top of the screen and select **New**. This will automatically clear the screen of the current job.



Now, using the commands already shown, try the roof outline below.

An important thing to remember before you first begin to enter the values is to work out the best location of the *Start Point* based on what information you have been given. In this instance, there is one line which isn't dimensioned (like that never happens on real drawings!) so we will use this line as our *Closing* Line, ie let the software calculate the length.

We will be using the 45 degree direction button on the track outline dialogue this time. Another important thing to remember is that we cannot use **Close Square** on this job as the first and last lines are not at right angles to one another. We will use the **Close Straight** button this time. Leave the **Roof Defaults** as previously set.

Try it for yourself and compare the result to the drawing below for the way it should have worked out.



Select Construct Roof > Track Outline, then select the button 1 (see above) and entered a distance of 10000 {enter} then button 2 and enter a distance of 15000 {enter}, then down and enter 15000 {enter}, then R10000 {enter}, type C to Close and Press Enter. Then select Finish (or the short cut F {Enter}. Now stop! Stop for a moment or two and compare the wall dimensions displayed with what is on the plan.

This is a way of checking the outline compares with the job dimensions.

When you have finished, select **File > Save As**. You should see a file called **Training.dab** (which you created previously) . Select this file on the left hand side and then type in Exercise 3 in the **Model Name** field.

**Note:** By now, you should be fairly comfortable with the basics of entering a roof or wall outline and generating a 3D roof from it. As you have seen, the software creates a hip and valley roof from the outline and assumes that the eave line is the same height. If you have a number of different eave heights for your roof, you may need to break the job down into separate components. This is covered with our Project Gable command section below.

To begin the next exercise, select **File** from the pulldown menu at the top of the screen and select **New**. This will automatically clear the screen of the current job.

So far, we have dealt with the command **Track Outline** which automatically generates a Hip and Valley roof from the outline and the pitch when that option is selected. There may be times when you need to create a simple flat (or single slope) roof, or have a roof simply sloping up from one eave line, in the form of a flat plane.

The following exercises will demonstrate how this is achieved.

Before we do this, we will see how we check the roof model geometry.

# Checking your job – The AppliCad Process

Before we proceed with the next exercise, we will use the Tools menu to check one of the previous jobs we have done.

#### This is a most important step:

- add dimensions overall and up the slope,
- add dimensions ridge to eave,
- show roof pitch, check storey
- show line types,
- show four views, look at the picture
- display total roof geometry (Tally Quantities)

Tools	Menu On/Off	Help	)
Show/Hide Planes			
Show I	Pitches		
Show I	Line Types		
Dimen	sion Roof	>	Auto-Insert Dimensions
Projec	t Walls		Insert Pnt to Pnt Dim.
Display Roof Quantities			Insert Line to Line Dim.
			Roof Line Lengths
Chang	e Entity	>	- Reposition Dimension
Measu	re	>	- Delete Dimension
Verify	Entity		Roof Plane Areas
Check	Model		Tile Coursing Dimensions
		ľ	
Set Dis	splay		

This is a vital and integral part of **the AppliCad Process** and provides you with the tools to check the job before committing to materials and labour in your quotation.

From the **Tools** menu select **Dimension Roof** > **Auto-Insert Dimension** to add overall eave to eave dimensions.

You may need to **Zoom Fit** the view to see all of the dimensions. Depending on the size of the roof, the dimensions may be too small to read.

If they are too small because of the scale of the job (that is it might be a huge job), this is adjusted by selecting **View** from the pulldown menu, followed by **View > Plot Scale**. A dialog box pops up and you are prompted to change the Plot Scale. Change the plot scale of the current job to say, 150, and select **[OK]**. The dimensions are redrawn at a more legible size.

	_			
View	Zoom	Tools	Mer	
Top	or Plan Vi	ew		
Fron	t View			
Right	t View			
Left View				
Back View				
Isometric View				
Perspective View				
Select View				
Reset View				
Spin View of Roof				
Single View				
Four	Views			
Split	Screen	>		
Plot S	Scale			

Then select **Tools** > **Dimension Roof** > **Roof Line Lengths** to display the length of each line up the slope of the roof.

Then select **Tools > Show Pitches** to display the roof storey and the roof pitch of each roof plane. This is a 'toggle' switch. This means that you select it to display and select it again to turn them off.

Then select **Tools > Show Line Types** to display the category of each line on the roof. There are occasions where you may decide to change the line type, but we will deal with this later. This is a 'toggle' switch. This means that you select it to display and select it again to turn them off.

Go to the pulldown menu and select **View > Four Views** to display four views of the roof model. The default setting is Top view, ISO view, Front View and Right View. You may have to zoom fit the screen (double-click centre mouse button) in each view to display the full extents of each view of the roof model.

Finally, to get geometric quantities, select Tools > Tally-Quantities. Select this and a dialog box is displayed with a summary of the geometric areas and lengths of the current roof.



×

?

This function may also be accessed from the Icon Menu -

Tools Menu On/Off H	Summary of Roof Qua	Summary of Roof Quantities			
Show/Hide Planes	Tally roof quantities fo	r Combined 💌	Show-full		
Show Pitches Show Line Types Dimension Roof >	Roof volume cu m Roof Area sqm Curve quality Area sq	First 0.00 0.00 m 0.00	Second 0.00 0.00 0.00	Total 0.00 0.00 0.00	
Project Walls Display Roof Quantities Change Entity > Measure >	Ridge Length m Monoridge m Hip Length m Valley Length m Fascia and Gutter Leu Gutter Only Length m	0.00	0.00 0.00 0.00 0.00 0.00 0.00	14.78 0.00 52.82 21.08 72.20 0.00	
	Fascia Only Length m Barge Length m Fascia as Barge Leng Apron Length m Batten Length m Batten2 Length m Box Gutter Length m Step Length m User1 m User3 m User4 m	0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	
	Shell Ends Hip Apexes Export XLS	8.00 5.00 Export CSV	0.00 0.00 Print	8.00 5.00	

Important Note:

The steps described above are imperative. Use them on every job without fail PAGE 24 so that you check every aspect of the roof geometry BEFORE you determine material quantities. Better to find a problem now, than when you have delivered the job!



Notice also that you can export this information to a .csv (Comma Separated Values) format ascii text file using the **Export CSV** as well as an XLS file format button, so that this basic roof geometry information may be used in other systems that may be using in your business with Microsoft Excel.



Go to **Construct Roof > Track Outline**. Then enter the outline as before. (I'll start bottom left (U8000, R7000, D5000, R4000 Close Square, Finish.)

This time, after clicking **Finish** you will will select Roof Type = Single Slope Roof.

Enter the details of the roof as shown. It is not necessary to enter a pitch if your roof is completely flat. As there is a pitch in this case, [8 degrees] we need to tell the software where we are sloping the roof up from, ie the pitching line.

Roof Defaults					
Roof Type	Single Slope Roof				
Roof Material	Metal				
Storey	1 ÷				
Pitch	8				
Eave Overhang	0.00 m				
Eave Height	3200				
Rafter Spacing	600 m				
Eave Type	Fascia-Gutter 🗨				
Cancel	<< Back OK ?				

When you click **[OK]**, another dialog appears asking you to *Locate the Pitching Line* This refers to the "Eave" or lowest part of the roof where the roof pitches up from. This refers to the "Eave" or lowest part of the roof. In this instance we need to select the longest line as our Pitching Line.

Select Roof Modification				
1 Change Overhangs				
2 Define Eave/Pitching Line				
Cancel << Continue ?				

A further option exists to change the overhangs on any side of our roof shape. In this case, we do not wish to make such changes.

Using the same commands as before, you can view the roof from any angle.

When you have finished and are happy with the roof, you can save the job **File/Save As** and then save it is Exercise 4 within Training.dab.





# Exercise 5 - Track Outline (for Single Slope Roofs)

Now try this one, using the 45 degree angle button where required. Use the same roof defaults as the previous exercise. Select the lower line as your *Pitching Line* when prompted.



Save this job as Exercise 5, within Training.dab. Select File > New to prepare for the next job.

# Exercise 6 - Track Outline (for Single Slope Roofs)

This time, we will use another command within the **Track-Outline** box called **[H/V]**. This allows us to enter the "coordinates" for the end point of the line, without knowing its length or angle. We will use the following outline:



To achieve this outline, select **Construct Roof > Track Outline**. Then insert the first line as **U5000 {enter}**. The next line is going at an angle and we don't know the angle or the length but we know the location of the end point. Select **[H/V]** and you will see the following box appear;

Enter the values as shown and click [OK] and you will see the line on the screen. The next line is horizontal so we can simply enter **R2000 {enter}.** 

The next line is at an angle so click on **Hor-Vert** and enter the Horizontal and vertical values again. It is important to get the correct values, either Positive or Negative, depending on the direction of the line.

Enter a value of **3000** for the **Horizontal Distance** and **(negative) – 2000** and click [OK]. Next we need to use **[H/V]** and enter a **Negative** value for both horizontal and vertical distances. You can end the outline the by **Closing Straight** and then **Finish**.

Horizontal-Vertical Distances
Horizontal Distance 3000
Vertical Distance 1000
Resultant Distance 0
Locate Point on Screen
Cancel OK
?

Set a pitch of 0 this time. When you have finished, have a practice with changing views and when ready, save the job as Exercise 6 in Training.dab.

It is very important to get your head around the concept of 3D space and positive and negative numbers. Any distances going to the **Right** or **Up** are **Positive**, distances to the **Left** or **Down** are **Negative**.

The purpose of adding the dimensions is to further confirm that the outline has been correctly defined.



**Note:** the dimensions in this exercise refer to the actual roof outline – not the wall outline, so they will take into account any eave and gable overhang. If you were digitising the wall and you had overhang, then don't forget to add it in the field provided.

# Exercise 7 - Gable Roofs

As you have seen so far, if you had a straight forward Gable to Gable roof, you could use the **Construct Roof > Track Outline** command to enter the dimensions, then indicate that you required a Gable end at each end and the software will produce a gable roof.

However, there may be times when you need to produce a gable roof where the ridge is not in the centre, or where the pitch on one side is different to the other. The easiest way to achieve this is to use the **Construct Roof > Gable** command. Firstly select **File > New**.

For this next exercise, we will create the following roof.



When inserting this type of roof, select **Construct Roof > Gable Roof** and you will be asked to *Locate Start of Ridge* – just left click anywhere on the screen (or you could type a known start point such as 0,0). Now you will be asked to *Locate End of Ridge*. You may notice that there appears to be a "rubber band" attached to the end of your cursor now – it is tempting to click somewhere on the screen, but I recommend another method.

When asked for the End of Ridge, I want you to type in the distance from the first point to the end of the ridge, and also the direction that the point is in. To do this we need to firstly use the **incremental** command – shortened to I (as in I for Incremental), then followed by the direction (either x = across the screen or y = up and down the screen), followed by the amount. (Remember the positive and negative rule applies to this also).

You will need to type in **iy10000 {enter}** this refers to incremental distance in the positive y axis (up the screen) of 10000. When you hit enter, the following box will appear;

Enter the details of the roof as shown – a pitch on the left of 30 degrees, a pitch on the right of 45 degrees, a span left of 4000 and a span right of 2000 and a left eave height of 3000. As you can see, you can change the length here also.

Depending upon your preference settings (Set-Up > Preferences) you may use %, slope, or degrees of pitch.

Instead of using the incremental measurement option, you can also simply type  ${f U}$  for up relative to the CPL (Construction Plane) and  ${f D}$  for Down,  ${f L}$  for left and  ${f R}$  for right. Indeed you can use either or both methods of defining a line length.

Gable Roof Defaults			×
Roof Type	Metal	-	
Storey	1	÷	
Pitch Left	45		
Pitch Right	35		
Span Left	4000	m	
Span Right	2000.00	m	
Left Eave Height	3000		
Length	12000	m	
Cancel		ОК	
			?



You should end up with a roof

looking like this. You may have to **Zoom-Fit** the screen if you can not see all of it (double-click middle mouse button).

When you have finished, try inserting dimensions, changing the views around and getting the areas and lengths from the roof.

Now save the roof as Exercise 7 as before in Training.dab.

# Inserting Verandahs (first storey or porch roofs)

There will be times when you have a main roof and a second roof lower down to cover an entrance way or first storey window. We have built in a **Verandah** command to make this process easy. It can also be used to add a Verandah or Porch!



For this next exercise, I want you to open up the drawing we did in Exercise 2.

Go to **File > Open**, select Training.dab on the left hand side and double click Exercise 2 in the right hand pane. If you forgot to save Exercise 2, then redo it.

# Exercise 8 - 🔛 Adding a Verandah

You should now have the roof drawing done on exercise 2. We are now going to add the verandah. *Important Note:* When Inserting Verandahs, always ensure that you have the roof in a Top View rather than an Isometric View. This is critical to determine correct position of the Verandah relative to the original structure.

With the roof in a *Top View* select **Construct-Roof > Add Verandah**. You will then notice a new menu appear on the right – select **Simple** in this case (the differences between Complex and Simple is beyond the scope of this exercise. It is covered later in the Reference Guide).

Then you will notice that you have cross-hairs on the screen and you are being asked to *Locate the first line to attach the Verandah to.* The verandah can be attached to eave lines or wall lines, but in this instance I want you to use the wall line (which should be the blue line – not the outside eave line which is usually green). See below for the two lines I want you to use. In theory, we could continue selecting lines around the perimeter but in this instance we are only using the two. After selecting the second line, we can cancel out of this part of the command by *right clicking* the mouse.

You will then be asked to *Locate the side of Verandah in Relation to first Line.* This means that you need to tell the software where the Verandah will be sloping to – simply click somewhere **outside** the building relative to the first line you selected.



You should then see a dialog box looking like the one below:

As you can see, you can set various features of the verandah, including the Storey, Type of Verandah and Fascia configuration.

Set the *Width* to be 2800 and set the *Height* of *Gutter* to be 1800. (Note: if you cannot see the **Height** of *Gutter* button, click on **Height at Wall** – you can use either, but the software uses whichever you select quite literally).

You can also set the finish at the each end of the Verandah, either Hip, Gable or Butts Wall. The pitch can be different to the main roof if required. For this exercise, leave the last 3 fields as 0. We will use these in the next exercise.

Verandah defaults			<b>— X</b>
Roof type	Metal 💌		
Storey	1	÷	
Type of Verandah	Straight	]	
Fascia configuration	Fascia-Gutter 💌		
Width	1800.00	m	
Height at wall	2800		
Start preparation	Hip 💌	[	
End preparation	Hip 💌		
Pitch	10.00		
Distance from first point	0.00	m	
Distance from last point	0.00	m	
Underlap (for bellcast style	) 0.00	m	
Cancel	Preview	ОК	?

If you wish to see what the verandah may look like, click **Preview** and you should see your verandah (displayed with white lines) on the screen. Things to check in the preview are the start and end preparation, as selecting the correct treatment ensures that the right material will be applied when you get to that stage. If they are not correct, change the setting and select preview again.



**Note:** If the dialog box obscures the view of the roof, move your cursor to the blue strip at the top of the box and, whilst holding down the left mouse button, drag the dialog box to a more suitable location on the screen.

If the Verandah looks correct, click [OK] and you should see this.



As you know, you can change the view to make sure that it has gone in at the correct height. If you make a mistake with any Roof Modeling functions such as inserting the Verandah, you can use the **Undo** and **Redo** commands on the Icon Menu to step back to the previous command. Try it for yourself.

Now that we have made some changes, we might want to save it as a new name. Select **File > Save** as and then save it as **Exercise 8** within **Training.dab** 



For this exercise, we will open up the roof we created in Exercise 1. The end result will look like this:



In the previous exercise, you will have noticed that the verandah was built along the full length of each wall that we selected. There will be many instances where the verandah is only part of the way along a wall. For this function we need specify the *Distance from First Point* and *Distance from Last Point* (It is indicated on the screen which are the first and last points)



After making sure that your roof is in a top view, select **Construct-Roof > Add Verandah** and select the two wall lines (blue lines) where the verandah is attached. Then right click the mouse and when asked for the side of the verandah, left click somewhere outside the building, in relation to the first line you selected.

Start preparation	Hip 💌	
End preparation	Gable 💌	Fascia&Barge 💌
Pitch	30.00	]
Distance from first point	2000	
Distance from last point	10000	

This time, when entering the information about the verandah, change the *Start Preparation* to **Hip** and set the *Distance from first point* to 2000 and *Last Point* to 10000.

Preview the roof and then click [OK] when happy. Change the views to check the height is correct.



**Note:** A common mistake when inserting Verandahs is to insert at the wrong height. If your verandah looks wrong, UNDO and repeat the process, ensuring that you have set the correct **Height of Gutter** or **Height at Wall** button on the dialog box.

Undo 🚺 🕥

Redo

Save this job as Exercise 9 in Training.dab.

## **Exercise 10 - More Track-Outline Examples**

Now that you have input these relatively simple roof designs, try the next one. Remember, if you make a mistake keying in the wall length, select **Stepback** and re-insert the correct value.

To begin the next exercise, select **File** from the pulldown menu at the top of the screen and select **New.** This will automatically clear the screen of the current job. As before, select **Construct-Roof** from the pulldown menu, then **Track Outline**. Start at the point indicated and work in a clockwise direction around the wall line.

When creating the multi-hip or 'bay' at the rear of the house, select the diagonal buttons from the track outline dialog:

Wall Direction and Distance			
Direction 0.00 Distance 0.00 Slope  0 /12 Enable Underlay Show Scal			
Insert Close H/V Step Back Cancel Options S	Finish Step Fwd ?		

As you work around the wall line, you will get to the wall dimension 7100mm (wall number 17), click the 'Close' button and select 'Close Square' from the dialog box as described previously.

This will automatically complete the wall definition for you. Complete the **Roof Defaults** box , giving a pitch of 35 and an eave height of 4000mm and an eave overhang of 300mm then select **[OK]** to finish.

When you've finished, save this job as Exercise 10 in Training.dab.





The following exercise is designed to consolidate the functions you have learned so far. Begin the job by clearing the existing work. You do this by selecting **File > New** from the pulldown menu, then commence the job using **Construct-Roof > Track Outline.** 

The start point is not relevant, start anywhere on the wall boundary, you may go around the outline in either direction also.



When you get to the second last wall line to insert, type **C** or select **Close** and **Close-Square** from the close dialog box. This step allows you to check the last two dimensions to ensure that you haven't made a mistake elsewhere.

If you make a mistake in typing in a wall length select step back, and reinsert the correct wall length. Add the Vertical Planes when prompted to do so.

Save this job as Exercise 11 in Training.dab when you have finished. (File > Save As)

You should be fairly comfortable with drawing up the main roof by now so we will now go through some of the **Modify Roof** (Modify Roof) commands.

### The inline calculator

At any time the operator is prompted to insert a number in a field on a dialog box, the **'Inline'** calculator may be called up. To do this, place your cursor into number field or cell, and select the keyboard function key F3. The system calculator as displayed here drops down. This allows the operator to perform

quite complex arithmetic. When the desired answer is displayed, select '=' to confirm the answer, and then select **[OK]**. The answer is automatically inserted into the number field.


#### The Modify Roof Command



The **Modify Roof** command is found on the Main menu and presents you with a vast array of options for modifying the initial roof geometry.

However, before we do any modifications, we must have a roof. We will use one of the roofs already created so select **File > Open** and select **Exercise 10** from **Training.dab**.

At the moment, your roof should look like this (in ISO view):



We will then use many of the **Modify Roof** commands to modify the roof to look like that below.



### Exercise 12 - Modify Roof > Atrium

First of all we will add an Atrium to our new roof. This could also be used to create the space required for a chimney or an adjoining structure.

Select Atrium from the Modify Roof menu. You will be prompted to Locate eave line.

Using the left mouse button, locate the eave line towards the bottom of the right hand eave line. This way the **Distance along eave** that you type in, will be measured from the bottom of the line and not the top. The start point from which it is calculating the distance is flashing, to highlight the fact to the operator.

Atrium Defaults	×
Distance along Eave	5000 m
Atrium Width	4000 m
Atrium Depth	2500 m
Cancel	OK ?



Set up the values in the defaults dialog box in accordance with the picture below. Select [OK] with the left mouse button and the Atrium is automatically drawn in.

**Hint:** A negative depth value would create a drag-down effect on the eave line ie project past the eave line at the same pitch of the roof, rather than cut into the roof. You may select UNDO from the icon menu to remove the atrium you just added, and try adding a dropped eave using the Atrium command.

### Exercise 13 - Modify Roof > Valley-Gable



The **Valley-Gable** command allows you to create Vertical Planes on either internal or external corners (ie valleys or hips). In some situations, and as we have shown here, it is best to firstly ignore this roof feature when defining the wall outline, knowing we have the tools to insert it accurately and far more easily later. The command may also be used to add a flat plane roof section.

(refer to Section 5 for more details).





select **Valley-Gable** from **Modify Roof** menu. You be prompted to *Locate hip line to add a gable.* 

the hip line in the top right corner of the example plan.

dialog box below:

	×
Gable	
1800	m
35	
0.00	m
ОК	2
	1800  35   0.00

Click **[OK]** when you're happy with the numbers and the gable is created.

We will now do the corner gable in the courtyard area of the plan ie. on the valley line.

The procedure is the same as a corner gable on a hip, except in this case, we will be putting in a value of 1500mm for the extension and a roof pitch of 35 degrees. The distance along the fascia in this case will be 2000mm.

Valley Gable Defaults	<b>—</b> ×	
Roof Type to Insert Distance along each Eave Pitch Extension	Gable 1800.00 m 35.00 1500 m	
Cancel	OK	

This function has a further option which becomes evident when you select the Gable button. The options expand to include a function for adding a flat plane along the valley to a known pitch or to the apex of the ridge and valley. This option is dealt with further in the Learning Guide.

Valley Gable Defaults	<b>—</b>	Valley Gable Defaults	<b>×</b>
Roof Type to Insert	Flat Plane	Roof Type to Insert	Flat Plane
Distance along each Eave	1800.00 m	Distance along each Eave	1800.00 m
Pitch Calculation	Known Pitch	Pitch Calculation	To Apex
Pitch	35.00		
Cancel	ок	Cancel	ОК
	?		?



#### Select Gable To Hip from the Modify Roof menu.

Locate the ridge line of the gable at the front of the house at the eave end.

Enter the New Pitch	<b>—</b>
Pitch 25.00	
Cancel	OK ?

A dialog box will appear asking you to enter the new pitch. We want it to be the same pitch as the rest of the roof, so accept the default of 35 degrees. This value was automatically extracted by the system from the pitch used for the whole roof. (You can change this pitch if required).

It has now been converted to a hip end.

# Exercise 15 - Modify Roof > Dutch Gable

On that same part of the roof as in Exercise 13, we now need to create a Dutch Gable.

Select **Dutch Gable** from the **Modify Roof** menu.

You will be prompted to **Locate ridge at hip end**. (the eave line will now flash) to indicate that the measurement of the base of hip is from the eave line.







**Useful Tip**: When you select a line or point and you may see a dialog box appear asking you to 'Enter Y to use this entity'.

It means that the software has found a number of points in the vicinity, and is asking you to confirm if the feature flashing on the screen is the correct one. You can select the options on this dialog box by using the mouse button short cuts:

**yes – no – cancel** can be selected by **left – middle – right** on a three button mouse without selecting the buttons on the dialog. Try this, it saves time when you get accustomed to it!



Select **Flying Gable** from the **Modify Roof** menu. You will be prompted to **Locate eave line** followed by the hip.



The dialog box below will appear. Set the values in the dialog box to:

Flying Gable Defaults		<b>— X</b>
Horizontal Distance from Eave to Top of H	lip : 4262	
Distance of Gable from Eave	1450	m
Distance of Gable Apex from Top of Hip	1450	m
Cancel	ОК	?

*Note:* If we had typed in zero for the *Distance of gable apex from top of hip*, instead of 1500, the flying gable would have started at the intersection of the ridge and hip.

For flying gables that sit flush with the eave line, type in zero in the **Distance of gable from eave** field.



**Note:** This command may also be used to add a layback gable on a gable end as well as a hip.



- Modify Roof > Slice Hip

Select **Slice Hip** from the **Modify Roof** menu. You will be prompted to **Locate eave**.

The dialog box below will appear. Set the value in the dialog box to:

Enter the Stati	on/Slice	Amount 💌
Distance	500	m
Cancel		ОК ?

The station value is the amount you want to "cut off" the hip end. Save this job as Exercise 18 in Training.dab





Well Done! That concludes this job and the roof should now look like this;





For this exercise, I need you to open up the job we did in Exercise 1. Go to **File/Open**, select Training.dab on the left hand side and double click on **Exercise 1**.







**Note:** There may be times when the software finds two lines at the eave and it will ask if you want accept the first entity, always say "No" to the first line and say "Yes" to the second. The first line selected will usually be the Wall line not the eave line.

Using the Dormer command, we are going to create the following types of dormers



Select **Dormer** from the **Modify Roof** menu. You will be asked to **Locate the eave line.** Select the bottom Eave line towards the gable end. It is important to select the Eave Line at the correct end of the line, as this is the reference point where the dimensions will be taken for the location of the dormer. The following dialog bot will appear.

Set the values in the dialog box to:

	Dormer Defaults	×	
Dormer Material	Metal 💌	Locate the Dormer by :	select fascia at
Type of Dormer	Gable 🗨	Insert at Apex	this end
Pitch	25	Insert along Hip	
Distance to Dormer Centre	3000 <u>m</u>		
Setback from Eave	1000.000 m		f projection
Width	2000 <u>m</u>		
Projection Length	0.000 m		
Draw Side Walls ?	Yes		<u>\$</u>
Side Eave Overhang	0.000 m		
Gable Overhang	0.000 m		
Gap Width	0.000 m		
Offset from Eave to Gap	0.000 m		offset from eave
Side Style	Both Horizontal		
Eave Type	Fascia-Gutter		$\backslash //$
Continue	Preview	Insert	
		?	

Once you have entered the values shown, (as per the above sketch), select **Preview** and you should see the Dormer appear. If you are happy with the shape and position (that is to say that it matches the plan), select **Insert** and then **[Continue]** (as there are more dormers we need to insert).

When thinking about which measurements affect which part of the dormer, think in terms of the whole created in the roof. All the measurements relate to the hole in the roof, the Dormer is built around the hole.

Now reselect that same Eave line, at the same end (as we are taking our dimension from that corner.). This time we will be changing the *Type of Dormer* to be **Hip** and we will change the *Distance to Dormer Centre* to be 6000. Again **Preview** the Dormer before **Insert**ing, and **[Continue].** 

Next we will insert a Single Slope Dormer (this is referred to also as a Flat Roof Dormer).

With a Single Slope dormer, you need to enter the correct pitch of the flat roof, and it's *Distance along eave* to 9000. Select **Preview**, then **Insert** and then **[Continue]**.

The last dormer we will insert is a Barrel Dormer. After selecting **[Continue]**, reselect the same eave line in the same place, then change the *Type of Dormer* to be **Barrel** and the *Distance along eave* to be 12000, and diameter of 2000.

After previewing and Inserting, your roof should now look the same as the one shown. To cancel out of the command, right click on your mouse a few times.

To save your job select Save from the Main menu. The save dialog box will be displayed. Type in your project or customer name in space under *File Name* and the job name in the space under *Model Name*, then select **[OK]**. For this exercise, use File Name TRAINING and Model Name Exercise 19.



Before we explore the **Split Gable** command, we need to have a simple gable roof on screen first. Select **File > New** and then select **Construct-Roof > Track Outline** and enter the following wall dimensions;

Roof Defaults	<b>×</b>		⊢ 10000 —
Roof Type	Pitched Roof 💌	т	<i>{}}}}}</i>
Roof Material	Metal 💌		
Storey	1		
Pitch	35.00	0	
Eave Overhang	300 m	- 7000	
Gable Overhang	150 m		
Eave Height	3000		
Rafter Spacing	600.00 m		
Eave Type	Fascia&Gutter 💌		
Cancel	<< Back OK ?		

Using the values shown on the left, create your roof and remember to select the left and right wall lines when asked if you want any Gable Ends.

After you have created the gable roof, select the **Modify Roof** menu, then **Split-Gable.** You will be prompted *to Locate ridge at gable end*. Locate the ridge at the end closest to the left of the screen. The end of ridge you select determines which end the Split-Gable is inserted on the roof.



So that you can go back to this exercise, you should save it. To save your job select **Save** from the **Main** menu. The save dialog box will be displayed.

Type in your project or customer name in space under *File Name* and the job name in the space under *Model Name*, then select [OK]. For this exercise, use File Name TRAINING and Model Name Exercise 20



Using the roof from the previous exercise, we will draw a line indicating a boundary line.

To draw the boundary line, select **Modify Roof** from the **Main** menu, then select **Advanced**, **Ins-Line**, then **Free**. With the left mouse button, digitise two points on screen where you want the boundary line to appear. For the purposes of this exercise, digitise your boundary line anywhere approximately as shown below. Then double click the right mouse button to cancel the line insert function as you have finished inserting the line.



Select Project Gable from the Modify Roof menu.

You will then be prompted to **Locate ridge at gable end.** Locate the ridge line of the "split-gable" roof at the boundary line end.

You will then be prompted to **Select Plane Specification.** The text menu on the right hand side of the screen will now have changed to list a number of "**Plane Type**" options. Select **Line**, and using the left mouse button, select the boundary line. The gable end is extended to meet the boundary line and automatically trimmed to be aligned with the boundary line.



The second picture is an example of projecting a gable into another roof plane. To achieve this, you would draw up the main roof first, using **Construct Roof > Track Outline** then draw up the second roof, detached from the main roof. Then by using the **Modify Roof > Project Gable** command, we select the ridge of the new, smaller roof (at the end nearest the main roof), then select that we wish to project onto a **Plane** (instead of a line), and then enter a **Tuck Under** value.

This is the amount that the eave of the new roof is tucking under the eave of the existing roof. Note that you only get prompted for a tuck under distance if the eave is a different height and a tuck-under is required as shown below.



# Exercise 22 - Review of Track Outline

The purpose of this exercise is to combine some of the commands you have used in the previous sections, thus consolidating your learning.



Using **Construct-Roof** > **Track Outline**, create the following roof outline.

**Note:** You will notice that there is a bay window on the plan, which is slightly different to the one you did previously.

This one has a hip **and** a valley coming from where the angled wall of the bay meets the wall of the house. The software will automatically put in a valley **only** when it comes across an internal corner, so to force it to construct a valley, we have to make a small adjustment when inserting the walls.

If you look carefully, you will see a very short length of wall between the bay and the main wall of the house. The length of this wall is calculated by multiplying the eave overhang by 0.6. In this case, the eave overhang is 450mm, therefore using the above calculation -  $450 \times 0.6$ , the length of this wall is 270mm. (When this exercise is complete, perhaps insert the outline without adding the short segment and see the difference in the resultant roof shape.)

Also be aware that we add the **valley gable** end on the hip, lower right side, and the extended eave on the northern-most wall AFTER the rest of the roof has been created using the **Track Outline** function. If you forgot to do this, you must re-insert the correct outline.

Select **Modify Roof** > **Valley Gable** to add the gable on the hip end, and select **Mod Roof** > **Atrium** to add the extended eave - remembering to use a negative value for the offset so that it extends out from the eave line instead of into the roof line. Save the job as Exercise 22.



We have covered the insertion of Bay Windows by the **Track Outline** method, but there may be times when the bay window may have different dimensions to the norm and require different pitches. To cater for this we can use the **Modify Roof > Bay Window** command.

Firstly, we need a roof, so open up Exercise 1. (File > Open)



We are now going to insert a Bay Window on the right hand eave.

Firstly, select **Modify Roof > Bay Window** and when prompted to select an eave line to locate the bay window, click on the eave line (not the wall line) as shown. Then you will see a dialog box appear. Fill in the values shown and click **[OK]**.



# Exercise 24 - Modify Roof > More... > Cut-Out

The next exercise will involve the creation of a typical 2 storey house.

We will be using a command called **Cutout**, which will be used to remove the area of roof from underneath the second storey.

Firstly, draw the single storey first, to the dimensions below, with a pitch of 22.5° and an eave overhang of 450mm. Select **Construct-Roof** then **Track Outline**.



In order for us to position the second storey correctly, relative to the first storey, we need to specify a reference (or datum) start point for the wall outline of the second storey. From this reference point, we then indicate the distance from the reference point to the start point of our second storey. The important thing to remember is that we need to be very precise in locating our Reference Point, so we will use the middle button on your mouse to "Snap" to the correct point indicated on the drawing overleaf. (If you haven't already setup your middle mouse button, please refer to the Set-Up Guide).

After the first storey is completed, select **Construct-Roof** ,and after the **Track Outline** dialogue pops up, select datum button in the middle of the accelerator

buttons



Horizontal-Vertical Dist	tances 💽
Horizontal distance	3400
Vertical distance	1300
Locate Point	on Screen
Cancel	OK 2

Then you will be prompted to for a reference point from

which to set the new start point. Middle button 'snap'. Snapping to a point uses the existing point to start the outline instead of creating a new point.

If you are not using a 3 button mouse, you can also 'snap' the point by holding the Shift key whilst pressing the left button over the point indicated.

Once you have "snapped" to that point, you will see the following box appear.

You should be familiar with the workings of this box, but this time we are simply entering the offset distances to reach the Start Point of the Second Storey outline relative to the reference point.

In this instance, we will need to enter the Hor-Vert distances shown in the dialog above



Once you click **[OK]** and you will then see the normal **Track Outline** box appear (a clue here – it will be headed at the top with **Wall Direction and Distance**). Now you can enter **R10900 {enter} U6200 {enter} C** or Close Sq., then **F** or Finish.

When the **Roof Defaults** dialog box appears, be sure to set the **Storey** to 2, and the **Eave height** to 6000mm.



You should now have 2 roof shapes, one over the other, looking like this;

We are now ready to cutout the portion of the first storey roof that lies within the boundary of the second storey walls. We presume in this exercise that the wall outline of the second storey is the same as we used to develop the roof shape. This may not always be the case.

Select **Modify Roof** from the **Pulldown** menu, followed by **More...** and then **Cut-Out (Multiple Planes).** 

You would like to draw the cut out. For this exercise select the option, **Auto Tracking the Cutout**, and select the planes by **Selecting the Storey to Cutout** as ahown below.

Cutout Defaults		<b>-</b> X
Define the Cutout Area by	Auto-Tracking the Cutout	•
Select the Roof Planes by	Selecting the Storey to Cutout	•
Keep or Delete Pieces ?	Delete the internal pieces	
Cancel	ОК	?

You will now be prompted to digitise the first cut out boundary line – select one of the second storey wall lines. Since it is a closed polygon, it is assumed that it fully defines the cut out shape. You are then prompted for which planes, from which storey are to be cut out. You may have multiple level structure and this allows you to be very selective.

Select [OK] and the software will automatically cut and remove all selected roof planes.

Cutout Defaults	
Define the Cutout Area by	Digitizing the Cutout
Select the Roof Planes by	Selecting the Roof Planes to Cutou 💌
Keep or Delete Pieces ?	Delete the internal pieces
Cancel	OK ?

Select Storey(s) to	Cut Through 🔜
1st Storey	(Yes
2nd Storey	No
3rd Storey	No
4th Storey	No
5th Storey	No
6th Storey	No
7th Storey	No
8th Storey	No
9th Storey	No
10th Storey	No
Cancel	OK ?

You may choose to digitise or track the cut out using actual dimensions. In which case select the option as shown below:

Digitising Constrain Values	s 💌
Constrain the Angles to	22.50
Constrain the Lengths to	1
Turn Image O	n
Scale Model	
Cancel	ОК ?

You are then prompted to set the Digitising Constrain Values to limit the movements. of the cursor. This helps when selecting items free hand. Since we're 'snapping' as described below, then this is less relevant and you can select [OK].

If digitising, using the middle mouse button, "snap" to the corners of the second storey walls.

[Continue] in a clockwise direction around the walls until you reach the bottom left hand corner. Press the right mouse button to cancel, and the dialog box below will appear.

Select the Close Method Close Straight Close Square Close Extend Do Not Close Step Back Check Close Distances Continue Digitising



**Note:** You may also type **U/D/R/L** and an exact measurement in the required direction and use **C** to close the outline square while in this command.

Select Close Square (as described earlier in Tutorial one)

Next you will see the Instruction to select the roof planes to cut-out.

Message 🗾
Now Select the Planes to be Cut
Continue

Using your mouse, you will need to select all of the roof planes that you wish to be affected by the cutout. In this instance it will be most of the first storey roof planes.



These are the roof planes that will be affected by the walls of the second storey. Select each of these. They will change colour after you have selected them. When you have finished selecting the planes, right click your mouse once and you will be asked if you want to use these entities. Say **Yes.** 



The first storey roof within the selected boundary will now be automatically removed.

Your job should look like this when viewed in ISO view: (Main View Select ISO).

## Exercise 25 - Modify Roof > More... > Cut-Out

The next exercise will also involve a 2 storey house, however in this case, the lower storey will be "cut in" to the second storey. We will still be using the **Cutout** command, but applying it in a slightly different way.

Draw the second storey first, to the dimensions overleaf, with an eave overhang of 450mm and an eave height of 5000mm. Next, draw the lower storey at a height of 2400mm, using **Construct-Roof > Track Outline.** Use the method described above to establish the start point for the second storey as before. Then enter the values shown below.





You should get a series of roofs looking like this:



Now proceed to remove the portion of the lower storey roof that intrudes into the upper storey area. Using **Modify Roof > More...> Cut-Out**, use the same settings as the previous example;

Cutout Defaults	<b>X</b>
Define the Cutout Area by	Auto-Tracking the Cutout
Select the Roof Planes by	Selecting the Roof Planes to Cutou 💌
Keep or Delete Pieces ?	Delete the internal pieces
Cancel	OK ?

When you click [OK], select the Wall Lines of the larger roof, and then select the first storey as the storey to cut. When viewed in **ISO**, your plan should look like the one below.



This completes the tutorials for generating roof geometry. Now we must deal with the estimating and take-off aspects of the task. Please review the work you have completed, and when comfortable, progress to the next stage.

### **Cover Command For Flashings**



Exercise 26 - Ex

This exercise deals with generating flashings or trim for the roof. If you don't quote flashings and trim, you can skip this section.

Select **Cover > Flashings** and the **Roof flashing material** dialog box will appear, listing all of the roof trim components to be specified. Only those categories of roof trim on the model will be listed in the dialog box. (We will skip battens/purlins for now, they are dealt with in the next exercise.)

Select/Generate Roof Bat	ten & Trim < DEFAULT >
Install Pay Schedule	Use Metal-rates Allowances in Use DEFAULT 💌
Roof Batten	
Batten 1	Steeline Batten Metal 6.000mm Za [YR/0.60/S]
Batten 2	None Accessories
Roof Trim	
Ridge	Steeline Ridge Corrugated Cb [RC/0.55/C]
Hip	Same as Ridge
Valley	Steeline Valley Za [VI/0.55/Za]
Fascia	Steeline Fascia (Bx/Ww) Cb [FHT/0.42/C]
Gutter	Steeline Gutter Half Round CB [SHRG/150/CB]
Barge	Steeline Window Edge Cb [FL/0.55/300/3/C]
Apron	Steeline Apron Cb [FL/0.55/300/2/C]
Allowances	Load Delete Save-As Colour Set
Generate	Set All to None Single-Line User-Lens Delete Flashings
Cancel	Show View List OK ?

Starting at the top of the Roof Trim section, select the drop down arrow **Ridge**. After selecting **Ridge**, the list of available choices for the ridge capping is displayed.

Select/Generate Roof Batt	en & Trim <default></default>	•		<b>×</b>
Install Pay Schedule	Use Metal-rates	✓ Allowance:	s in Use DEFA	JULT 💌
Roof Batten				
Batten 1	Steeline Batten Metal	6.000mm Za [YR/0.60/9	5] 🗸	Accessories Insert/Modify
Batten 2	None		•	Accessories
Roof Trim				
Ridge	Steeline Ridge Corrug	ated Cb [RC/0.55/C]	•	Accessories
Нір	None Custom Assembly			Accessories
Valley		p Cb (RR/0.55/C) p Za (RR/0.55/Za)	=	Accessories
Fascia	Steeline Ridge Roll To Steeline Vented Ridge	p Ga [RR/0.55/G] Za [RVC/0.55/600/8/2	[a]	Accessories
Gutter	Steeline Ridge Steel C	ilad Cb (R1/0.55/C) ilad Ga (R1/0.55/G)		Accessories
Barge	Steeline Ridge Lokdek	ilad Za (R1/0.55/Za) < Cb (RHR/0.55/C) < Ga (RHR/0.55/G)	+	Accessories
Apron	Steeline Apron Cb		•	Accessories
Allowances	Load	Delete	Save-As	Colour Set
Generate	Set All to None	Single-Line	User-Lens	Delete Flashings
Cancel	Show	View List		ОК
				?

Select the required flashing item, and it will be inserted into the list. You will then be asked to select the colour of the ridge capping, if colour is to be specified. Whether colour is to be used is determined when the trim materials are initially defined. When you have chosen your colour, again press **[OK]**.

The complete **Roof Trim material** dialog box will reappear. Now select the drop down arrow for **Valley**, **Fascia**, **Gutter etc.**.

Select/Generate Roof Batt	en & Trim <default></default>	×
Install Pay Schedule	Use Metal-rates  Allowances in Use DEF,	AULT 👤
Roof Batten		
Batten 1	Steeline Batten Metal 6.000mm Za [YR/0.60/S]	Accessories Insert/Modify
Batten 2	None 💌	Accessories
Roof Trim		
Ridge	Steeline Ridge Roll Top Cb [RR/0.55/C]	Accessories
Нір	Same as Ridge	Accessories
Valley	Steeline Valley Za (VI/0.55/Za)	Accessories
Fascia	None Custom	Accessories
Gutter	Assembly Steeline Valley Cb. [VI/0.55/C] Steeline Valley Za. [VI/0.55/Za]	Accessories
Barge	Steeline Valley Ca [VI/0.55/G] Steeline Valley Cb [VT/0.55/C]	Accessories
Apron	Steeline Valley Ga [VT/0.55/G] Steeline Valley Za [VT/0.55/Za] Steeline Valley Gutter Cb [FL/0.55/800/4/C]	Accessories
	Steeline Valley Gutter Cb [FL/0.55/1100/4/C]	1
Allowances	Load Delete Save-As	Colour Set
Generate	Set All to None Single-Line User-Lens	Delete Flashings
Cancel	Show View List	ОК ?

Select the required flashing item, followed by a colour. The Roof Trim material dialog box will appear.

Now select **Fascia**. Select the required flashing item, followed by a colour.

The **Roof Trim material** dialog box will reappear. Now select the drop down arrow for **Valley, Fascia, Gutter etc.**.

After you have set up all of the flashing/trim options, your **Roof Trim material** dialog box will look like the one above. Select **[OK]** to confirm your selections.

If you use this combination of roof trim often, you may save the selection as a default selection, saving the time to reselect them next job. You will get a prompt as shown below; type a meaningful name and click **[OK]**. This definition will be saved for future use.

Select a Flashing Default File	
System Default Corrugated Flashings DEFAULT Double-Battened EbsStd Rays Trim Rheinzink SS SCRoofSyst Slon SnapLock Stratco-Corru TrimDekTrim	
Corrugated Flashings	
Cancel	

Install Pay Schedule	Use Metal-rates	✓ Allowar	ices in Use DEFA	AULT 👻
Roof Batten				
Batten 1	Steeline Batten M	etal 6.000mm Za [YR/0.6	60/S] 💌	Accessories Insert/Modify
Batten 2	None		•	Accessories
Roof Trim				
Ridge	Steeline Ridge Co	rrugated Cb [RC/0.55/C]	-	Accessories
Hip	Same as Ridge	Same as Ridge		
Valley	Steeline Valley Z	Steeline Valley Za [VI/0.55/Za]		
Fascia	Steeline Fascia (Bx/Ww) Cb [FHT/0.42/C]			
Gutter	Steeline Gutter Ha	lf Round CB [SHRG/150	J/CB] ▼	Accessories
Allowance	s Load	Delete	Save-As	Colour Set
Generate	Set All to No	ne Single-Line	User-Lens	Delete Flashings
Cancel	Show	View List	Chg. LineType	ОК

You can define the estimation method for each flashing in the **Set-Up > Flashings** menu (refer to the Reference Manual or setup guide). This ensures that the flashing items and their associated accessories such as end caps, splice plates and brackets etc. will be correctly quantified. Flashings may be supplied (and therefore quantified) based on stock lengths or cut to length, as one would if you have a continuous gutter machine.

## Exercise 27 - Inserting Purlins/Battens (For Metal Roofs)

Please note that battens and purlins are essentially the same thing with a different name in different markets. To insert battens on our job we need to select the **Batten** drop down arrow option on the **Flashing** dialog box.

Select/Generate Roof Ba	tten & Trim <corrugated flashings.fl6=""></corrugated>
Install Pay Schedule	Use Metal-rates  Allowances in Use DEFAULT
Roof Batten	
Batten 1	Steeline Batten Metal 6.000mm Za [YR/0.60/S]   Accessories Insert/Modify
Batten 2	None  Accessories
Roof Trim	
Ridge	Steeline Ridge Roll Top Cb (RR/0.55/C)
Нір	Same as Ridge
Valley	Steeline Valley Za [VI/0.55/Za]
Fascia	Steeline Fascia (Bx/Ww) Cb [FHT/0.42/C]
Gutter	Steeline Gutter Half Round CB [SHRG/150/CB]
Barge	Steeline Window Edge Cb [FL/0.55/300/3/C]
Apron	Steeline Apron Cb [FL/0.55/300/2/C]
Allowance	is Load Delete Save-As Colour Set
Generate	Set All to None Single-Line User-Lens Delete Flashings
Cancel	Show View List OK
	?

From here select **the required purlin or batten** followed by **[OK]**. This will then take you back to the select Flashing dialog box.

The next step is to select the **Insert/Modify** button at the right hand side of the battens field. This will then bring up the **Batten Spacings** dialog box.



**Note:** These battens are used for metal roofing only. For tile roofing, the battens are selected and applied when selecting the Tile within the **Cover > Tile** command.

atten Spacings					<b>E</b>
Interval Spacing from Eaves					
Closest to Eave	50.00	Second Closest	600.00	Third Closest	0.00
Intermediate Spacing					
Fixed Spacing	1200.00				
Interval Spacing from Ridge					
Closest to Ridge	100.00	Second Closest	0.00	Third Closest	0.00
Other Batten Options				Batten Modify Optio	ns
Apply to Straight Verandahs	Yes			Insert Rafte	r/Truss Lines
Apply to Bullnose Verandahs	Yes			Delete Rafte	er/Truss Lines
Apply to Ridges	Yes	Spacing from Ridge	110.00	Divide at	Rafter Line
Apply to Hips	Yes	Spacing from Hip	95.00	Divide All a	t Rafter Line
Apply to Aprons	No			Merge Ba	atten Lines
Apply to Valleys	Yes	Spacing from Valley	188.98	Delete B	atten Line
Apply-All	Delete-All		Dele	te Apply-S	elected
Continue	Change Batten	Divide-Planes	Save Spa	acings Load S	pacings

This box displays the default settings for the batten spacing. The batten spacing is the distance from the eave to the first batten in from the eave line, and subsequent spacings are shown from the previous batten. If you wish to change any of the spacings, simply click in the field to change, and type in the desired spacing. The intermediate battens may set at fixed spacing or equally spaced up to a maximum spacing.

Type in the new spacing, and all of the fields in the **Batten spacings** dialog box will change to 1000. All you have to do then is manually change the values for spacing 1 and 2 only. By selecting **Apply Selected** you can select a different spacing for different roof planes on the job.

As you can see, you can control where the battens are applied, , i.e, ridges, hips, valleys etc and the spacing from the respective line.

You can also change the batten material for certain roof planes on the job job - – by changing the batten required and using 'Apply-Selected'.

After selecting **[OK]**, the batten layout will automatically be drawn on the roof. Your plan should now look similar to the one below:



If you wish to turn the battens off so they are no longer displayed, select **Set Display** from the **Tools** menu, and set **Battens** to **No**. This does not delete them, it just blanks them in this view.



**Note:** even though we have inserted the battens, they will not yet be estimated. That will be done when we generate the flashings cutting list.



Select **Flashings** from the **Cover** menu and the following dialog box will appear showing the flashings that you previously selected.

	Select/Generate Roof Batten & Trim <default></default>
Install Pay Schedule	Use Metal-rates  Allowances in Use DEFAULT
Roof Batten	
Batten 1	Steeline Batten Metal 6.000mm Za [YR/0.60/S]
Batten 2	None Accessories
Roof Trim	
Ridge	Steeline Ridge Corrugated Cb [RC/0.55/C]
Нір	Same as Ridge
Valley	Steeline Valley Za [VI/0.55/Za]
Fascia	Steeline Fascia (Bx/Ww) Cb [FHT/0.42/C]
Gutter	Steeline Gutter Half Round CB [SHRG/150/CB]
Allowance	s Load Delete Save-As Colour Set
Generate	Set All to None Single-Line User-Lens Delete Flashings
Cancel	Show View List Chg. LineType OK

By selecting the **Allowances** button the following dialog box will appear.

Fla	shing Allow	vances <di< th=""><th>EFAULT&gt;</th><th>×</th></di<>	EFAULT>	×
	Run Allowance	Lap Allowance	Internal Corner Allowance	External Corner Allowance
Ridge	200.00	150.00		
Hip	200.00	150.00		
Valley	200.00	150.00		
Barge	0.00	150.00		
Fascia as Barge	120.00	100.00		
Batten 1	150.00	100.00		
Batten 2	150.00	100.00		
Apron	200.00	100.00		
Box Gutter	300.00	100.00		
Step	150.00	100.00		
User1	0.00	100.00		
User2	0.00	100.00		
User3	0.00	100.00		
User4	0.00	100.00		
Custom	300.00	100.00		
Gutter	150.00	50.00	200.00	350.00
Fascia	120.00	50.00	100.00	200.00
Combine Similar L	ength Flashings	50.00		
Minimum Run Length			1500.0C	
Round-off Flashin	Round-off Flashings to Next (mm)			
Flashing Annotati	on - Text Size		1.75	
Loa	d	Delete	Save-As	
Cano	el Si	ngle-Allow	ОК	1
				?

**Allowances** are the values that determine the amount that is added to the measured length for each piece of material up to the stock length.

For example, when flashing lengths are calculated, the maximum length for the flashing is now taken into account. The way it works is to divide the given length into a series of equal length pieces. If the length of a run was 20900mm, and the maximum stock length is 8000mm, the original length is broken into  $3 \times 6966$ mm. The allowance is then added to each of these pieces.

These will be the default settings and will appear next time you come back to this dialog box. With your allowances now set click **[OK]**. This will take you back to the Flashing dialog box. From here select

**Generate** and your flashings will be generated, bringing up a dialog box similar to the following. This is the complete list of flashing materials required for the current job, total length of coil plus each individual piece length.

Flashings			
Ridge Steeline,Ridge	Corrugated,Cb,RC/0.5 /4860 1/4230 1/2420	 5/C )	
Valley Steeline,Valley; 1/5090 Total : 5090	Za,VI/0.55/Za		
	a (Bx/Ww),Cb,FHT/0.4 /7100_2/6780_1/6500		
	Half Round,CB,SHRG. /7030 2/4980 1/3700		
	Code FB	Qty	
Name Fascia Bracket Spring Clips Over Straps External Corner Internal Mitre Internal Mitre Angle Int Joining Sleeve Pops Brackets External Corners Internal 90' Corners External 90'	SOGPC QGO FEC/C FIM/C FIMA FIS SHRGPOP/90/Za SHRGEB/150/C SHRGE90/150/C	99 74 5 1 1 3 6 74 5	

Note that the **Accessories** as defined for each flashing category will be listed below the trim list. The list depends entirely on what was previously defined and care must be used to ensure that the accessories have been correctly associated. Review the notes in the Set-up Guide and the Reference Manual for more details.

This is the detail that will be added to the panel cut list to create your detailed material summary at the reporting stage.

#### **The Cover Command - Tile Roofs**



#### Introduction



#### Quantity by Coursing or Unit Area - Tiles and Tiles+ Database

Before going ahead and select your tiles for the roof, you have to decide the best method of determining the tile quantities. You have the choice of generating tile quantities by unit area (ie tiles per square metre) or the more precise method of coursing which lays the tiles course by course and applies a more flexible waste calculation.

**In addition** you have two tile database structures that you can work with – what AppliCad calls Tiles database and the Tiles+ database.

The Tiles+ database is a comprehensive database of tiles and accessories plus components, that is most suited to the UK and European markets, where-as the Tiles database is a much simplified tile database generally suitable for the Australian and USA markets.

Once you have decided which database structure best suits you (call AppliCad if you're not sure), you set the database type using **Set-Up > System Preferences**. Now you are ready to quantify your tiles. Section 3 explains the differences in more detail.

The **Cover** command lets you select new tiles, shingles or shakes for this job. You can also apply sarking and generate tile courses.





#### Tile Roofs - TILES Database



**Note:** This section is only for those who are using the standard Tiles database. If you are using Tiles+ database, please skip this exercise.

Exercise 29 - Select a Tile

This exercise deals with selecting the tiles (or shingles/shakes) to cover the roof. If you don't use tiles, you can skip this section.

To choose a tile select **Cover** followed by **Select-Tile**. This will bring up the following dialog box asking you to select a tile. When you have selected your tile the following dialog box will appear showing the details of the tile you have just selected.

			Current Tile		×
Supplier	Bristile		Profile	Tile	
Name	Concrete Tile		Material	Concrete	
Colour	TBA	•	Product Code	Concrete Tile	
Coverage	10.80 pieces per sqm		Tile width	300.00 mm	
Max. Coverage Length	360.00 mm		Min. Coverage Length	320.00 mm	
Hip Format	Bed and Point (Normal)	-	Batten	None Apply to	
Ridge Format	Bed and Point (Normal)	-	Batten Len per Unit Are	a 0.00	
Gable Format	Dry (Normal)	-	Fastener		
Valley Format	Dry (Normal)	-	Num. Fasteners per Tile	0.00	
Flexible Pointing	No		Counter Batten	None	
Pay Rate Schedule	None	•	Underlay	None	
Tile Waste File			Fall Protection	None	
			Fall Prot. Height	2100.00	
The Estimation Method	is the AREA method				
	Cancel Change		Coursing	Accessories OK	?
					- 2

So that the system will automatically cost the correct battens, the operator must select a particular batten size. After the tile is selected and the colour selected, click in the batten prompt box and a list of batten options is displayed. Select the batten to be used and then **[OK]**.

From this tile dialog box you also set the rate of pay that you would like to use by clicking on the selection arrow at the end of the **Pay Rate Schedule** field. If you have not set any pay rates this will be explained later in Exercise 45.

Select the [Acessories] button and the accessory items for the selected tile profile are displayed.

Accessory Name	Product Code	Finish	lterns per Box	Cost per Box	Number or Dist.	Estimation Method
Ridge Tile	Concrete Tile-RT	Concrete '	1	0.00	350.00	Spaced Along Ridge
Hip Tile	Concrete Tile-HT	Concrete	1	0.00	350.00	Spaced Along Hip
Gable Tile	Concrete Tile-BT	Concrete	1	0.00	350.00	Spaced Along Gable - M X
			0	0.00	1.00	Not Estimated  MX
			0	0.00	1.00	Not Estimated  M ×
			0	0.00	1.00	Not Estimated
			0	0.00	1.00	Not Estimated
			0	0.00	1.00	Not Estimated 💌 M 🗴
			0	0.00	1.00	Not Estimated  MX
			0	0.00	1.00	Not Estimated

By clicking **[OK]** now, your roof will be estimated using the area method. If however you would like to estimate using the coursing method, select the **Coursing** button and the following dialog box will appear.

When you have set the allowances click [**Apply**] and coursing lines will be applied which determines the exact number of tiles required. Essentially, the course lines are the tile batten lines and these are divided by the tile width to determine the number of tiles.

Note that the quantity displayed does **not** include waste. Waste is applied when you go to the **Reporting > Supply** screen.

Tile Coursing	, ×
Supplier	Bristile
Profile	Tile
Name	Concrete Tile
Material	Concrete
Max Gauge	360.00
Min Gauge	320.00
Required Gauge	360.000 mm
Gauge Calculation	Use Required Gauge
Coverage Width	300.00C mm
Gutter Overhang	50.000 mm
Max Ridge-Gap	75.000 mm
Tolerance for Extra Course	0.000
Tolerance for Extra Tile/Course	0.000
Add tile per Hip Intersection	1.000
Subtract tile per valley Intersection	0.000
Extra Tiles to Add per Course	1.000
Cancel Apply De	lete OK ?

Tile Coursing Tally	x
Coursing Tally There are 3058 Tiles 46 Ridge Tile 132 Hip Tile Total Batten Length: 810478 mm Total Counter-Batten Length: 0 mm Perimeter Batten Length: 0 mm Total No. Course Lines: 117 No. Hip Intersections: 178 No. Valley Intersections: 41	
Cancel	?

The tiles are laid on the roof model as if you were there actually doing it, with size of each piece and the course lines displayed. The result is displayed in a 'Tally' dialog similar to that shown above.


If you want to add fall protection you must first create a new flashing under **Set-Up > Flashing** called Fall Protection. An example of how to set it up follows.

When you have entered all the details select ADD.

Go back into the tile selection box and click on the arrow at the end of the Fall Protection field.

A drop down box will appear and the fall protection that you just created will be there. Select it, and you will have fall protection added to your job on all eaves that are above the FP Pitch Break.

Define flashing (rec =	195 of 488)
	<u> &lt;&lt;  &lt;  &gt; &gt;&gt;</u>
Type of flashing	User defined
Manufacturer	Steeline
Finish	Fall Protection
Fastener Code	
Description	Hand Rail
Product Code	ZZZmmFP
Fasteners per m	0.00
Maximum Length	1000.00 mm
Gauge	
Costing Method	per length
Cost per Unit	0.00
Estimation Method	Split total run length into maximum length piece: 💌
Pay Rate Schedule	Default
Select	Delete Add Update
Cancel	Accessories Stock-Lengths OK ?

•	ooun	or botton	,	_
•	Unde	rlay	None	•
	Fall p	rotection	None	•
•		FP Pitch break	None Edge Protection	~
		TBA	Scaffold per Face Sqmtr Scaffold Highset Flat G	
		TBA	Fall Protection - LDWP Edge Protection	
		TBA	Edge Protection	×
		TRA	-	



**Underlay/Sarking** (also known as vapour barrier, underlayment or insulation)

To select a sarking you need to first setup a sarking or insulation material. Select **Set-Up > Insulation** to create your sarking. Select **ADD** when you have entered the details.



**NOTE:** You need to have the **Name** of your sarking set to **Sarking** so that it may be selected under the sarking option. Otherwise it is considered a regular insulation material and can be selected under the Insulation option.

Below is an example of how to set it up.

Define Insulation (rec = 6 of 6)				
			<< <	> >>
Manufacturer	Sample Sup	oplier		
Name	Sarking			
Code	SA-01			
Description	Sample Sar	king		
Large roll size	14.00	sqm		
Small roll size	12.00	sqm		
Cost of large roll	9.00			
Cost of small roll	8.00			
Select	Delete		Add	
	Update			
Cancel			ОК	?

From here we can go back into out **Select-Tile** dialog box and change Sarking from **None** to the Sarking we just created, in this case Sarking1. Sarking will now be applied to the entire roof.

Underlay	None	•
Fall protection	None Sample Sarking	^
FP Pitch break	30# felt	$\mathbf{v}$

#### Tile Roofs - TILES+ database



The coverage command lets you select plain tiles, profile tiles and slate for this job. You can also apply sarking and generate tile quantities by unit area (ie tiles per square metre) or the more precise method of coursing which lays the tiles course by course and applies a more flexible waste calculation.



**Note:** This section is only for those who are using the **Tiles+** database. If you are not using the Tiles+ database, please skip this section. The Tiles+ database is a comprehensive database of tiles, accessories and components that are most suited to the UK and European markets.



The main difference between the Tiles and Tiles+ databases is the number of accessories available. Within Tiles+ you can define many different types of Ridge, Hip, Valley tiles etc, as well as ridge and eave vent systems and other accessories and components plus material and labour costing. Indeed, every permutation and combination of tiles and accessories may be defined as required for a job.

Another important feature about Tiles+ is the fact that we can apply a Tile and a Half or Double Tile (or slate) to the roof and the software will quantify these automatically for us.



Exercise 30 - Select a Tile

This exercise deals with selecting tiles to cover the roof. If you don't use tiles, you can skip this section.

To choose a tile, select **Cover** followed by **Select-Tile**. This will bring up the following dialog box asking you to select a tile.



**Note**: you will have indicated in the **Set-Up > Preference Settings > System Preferences** section, which Tiles database you wish to use, either **Tiles** or **Tiles+**. Upon selecting **Cover > Select-Tile**, the relevant database will open up. In this section we are dealing with **Tiles+**.

In this instance we will use a Redland Heathland tile as it allows us to look at the Tile and a Half usage.

Remember that we refer to Tiles but the same rules apply to Slate. When you have selected the tile,

LICK [UK] and the I	ollowing box will appear.					
Current Tile						×
Manufacturer Name Colour Coverage Max Gauge	Sandtoft Calderdale TBA 0.00 pieces per sqm 345.00 mm		Profile Material Code Tile width Min Gauge	Interlockin Concrete TilSanCal 294.00 mr 300.00 mr	n	
		Change Tile				
Labour Options			Additional Roof Option			
Pay Rate Schedule	Copy (2) of LabourFile_New		Batten	None		-
Labour Options	Select Labour Options		Counter Batten	None		
Flexible Pointing	No		Counter Batten Faster	her		
			CBatt Fastener	Spacing	0.00	mm
Estimation Method	COURSING METHOD		Underlay	None		-
No. of Field tiles	2103		Fall Protection	None		-
			Fall Protection	Pitch Break	0.00	deg
	Calc Coursing	Special Tiles		Accessories		
	Cancel			OK	]	?

click **[OK]** and the following box will appear.

As you can see, we are reminded of the size of the tile, as per how it was defined. We can select a colour for the tile if you like, and you can also nominate a particular type of finish that you wish to apply to your hips, ridges, etc. This is important from a labour point of view as we could have set a different labour rate for finishing our gables with a bed & point, as opposed to a dry finish. You will also select a particular Labour Rate for this job (remember we defined these in the Set-Up Guide).

Special Tile Optior	15							×
Position	Special Tile	Frequency		Qty	Second Special Tile	Frequency	Qty	
At Left Verge	Half Tile 💌	Alternate Course	-	17.0	None 💌	None	0.0	
At Right Verge	Half Tile 💌	Alternate Course	•	18.0	None 💌	None	0.0	
At Left Step	Half Tile 💌	Alternate Course	•	0.0	None 💌	None	0.0	
At Right Step	Half Tile 💌	None	•	0.0	None 💌	None	0.0	
At Hips	None 💌	None	•	0.0	None 💌	None	0.0	
At Valleys	None	None	•	0.0	None 💌	None 💌	0.0	
Total Field Tiles	- Reduce by Special Tiles?	Yes			Reduced Field Tiles By: 10	633.33 Tiles		
			Set a	as Default	1			
				20 2 5 6 Gui	]			
	Cancel		R	e-Calc		ОК		
								?

In the middle of the tile dialogue box, we can see a section called **Special Tiles.** This is where we nominate the frequency of application for the various Special Tiles such as Tiles and a Half or Double Tiles, verge tiles step tiles etc. This "rule of Thumb" varies from roofer to roofer. Select from the "drop-down" boxes to chose your own frequency. You can also nominate if you wish to **reduce field tiles by** 

**tile + half pieces?** This means that you can either quantify for the tile and a halves in addition to the field tiles on the roof (as if there were no tile and a halves), or reduce the field tiles by the correct amount for a more accurate quotation. You may set the definition as a default so it available for the next job.

On the bottom left of the Tiles page, we have the **Coursing** section. Here is where we can change the coursing values for that tile if required, as well as specify a *Gutter Overhang* and *Ridge Gap*. Normally the software will **Use best fit gauge** to quantify the courses up each slope, but if you needed to, you can "force" the gauge by entering a value in the **Required Gauge** field (as long as it is between the max and min gauge range). If you wished to do this, you would change the **Gauge Calculation** to read *Use Required Gauge*.

If you use a **Required Gauge** the software mathematically works out the number of courses and number of tile widths by dividing the gauge into slope length and eave length. There may be times when the software will round up to the next number of courses or next tile width, which may cause you to over-quantify the number of tiles. To alleviate this problem, we have included the ability to set a **Tolerance** for both "Courses" and "width" so that if you specify a tolerance of say "0.2" and the software calculates that there are 45.18 courses on a slope, it will round it down to 45 courses, rather than round it up.

When you have input the required settings, click on **Apply Coursing** and you will see that there are a series of lines applied to the roof – these are the actual coursing lines. A value will appear next to the *Field Tiles from area* field. This is the quantity of tiles required before waste is applied.



**Note,** if you have elected to use the area method to calculate the tiles – select **Calculate Using Area** but this will not quantify the tile and a halves or some other accessories. You set the starting preference (Coursing or by Area in the **Tools > Preferences** option).

Tile Coursing Calculations	
Gauge Range : 345.0 - 300.0	
Required Gauge	345.00 mm Tolerance 0.20
Gauge Calculation	Use Best-Fit Gauge
Coverage Width	294.00 mm Tolerance 0.10
Gutter Overhang	60.00 mm
Max Ridge Gap	75.00 mm
Add Tile Amount per Hip Intersection	1.00
Subtract Tile Amount per Valley Inters	s <mark>1.50</mark>
Apply All Coursing Match	Coursing Delete All Coursing
Change Plane Inquire	e Plane Delete Plane
Coursing Length: 572.66 m * Field tiles From Coursing: 2103 Field tiles From Area: 0	
Cancel Re-	Calc OK ?

When you defined the tile, you may have already defined a size of batten that you would normally use, in which case, that would be indicated here. You can also change that selection on a job-by-job basis. You will also select your material for your Sarking (insulation or underlay). When you have made this selection, select **Accessories** to nominate the accessories to accompany the tile. When you click

Select Accessories	and Components			<b>—</b>
Field Tiles Ridge Mono Ridge	Accessories None AlumRingShankNail50x3.35 kg <stock> (f TileClip [ClipSanCalTClip]</stock>		Accessories and Components for Category 1. Qty(2103.0) x None Colour(TBA)	: FIELD TILES
Hip Valley		Add Assembly >>		
Eave Course Top Course Left Verge	Components			
Right Verge	Colour	Add Component >>		
Right Step Hip Apex	TBA 🔹	<< Modify Line >> Delete Line</td <td></td> <td></td>		
Ridge End Shell End	2103.00 Extra	Add Extra >>		
Apron				
C	ancel Show All Fields Re	set Category Save	Template Load Template	ОК?

Accessories the following box will appear;

As you can see, once you have selected the field tile, you can select the accessory type (such as type of Ridge Tile, Hip Tile etc available for that profile of tile and what you need for this job. It is important to remember that you can change the accessory items to any one of the options you have previously defined and then add the required components required to install those accessories. The same applies to items like cloaked verge and dry-verge systems.

As you can see from the previous page, you can select the appropriate components such as fasteners and clips for the different accessories on the roof. The components are defined as a subset of accessories and may include fasteners. The fasteners were defined within **Set-Up > Fasteners**. Refer to the **Set-Up Guide** for more information on this.

When you have made your selection, click **[Continue]** and click **Close** on the **Tile Accessories** box. Then click **[OK]** on the **Current Tile** box.

This essentially completes the selection and application of tiles to the roof and now you go to the costing command to fully quote the job.

This essentially completes the selection and application of tiles to the roof and now you go to the costing command to fully quote the job.

### The Cover Command - Metal Roofing

Exercise 31 - Selecting the Metal Coverage

Selecting Cover from the Main menu, brings up the menu at the right.

To specify the roof covering for our model, select **Select-Metal** from the menu. The Select Roof Material dialog is displayed with the default settings in the sort criteria of All. As each option is selected, the data filter displays the remaining material options that fit that criteria, often resulting in just the oine option that meets your needs.

Cover Reporting View	Select Roof Material	×
Select Tile	Manufacturer All	•
Select Shingle	Profile All	-
Select Shake	Gauge All	
Select Metal		-
- Select One Plane	Finish All	-
- Select One Panel	Coverage All	•
- Reset Material		
- Estimate Panels >	Hebel Panel 600.00mm Cb 0.42 Steeline Corrugated 762.00mm Ga 0.42	
	Steeline Corrugated 762.00mm Za 0.42 Steeline Corrugated 762.00mm Zb 0.42	=
	SteelineCorrugated762.00mmZa0.48SteelineCurve Quality762.00mmCb0.60SteelineCurve Quality762.00mmGa0.60SteelineCurve Quality762.00mmCa0.42SteelineSteel Clad762.00mmCb0.42SteelineSteel Clad762.00mmGa0.42SteelineSteel Clad762.00mmCa0.42SteelineSteel Clad762.00mmCb0.42SteelineSteel Clad762.00mmCb0.48SteelineSteel Clad762.00mmCb0.42SteelineSteel Span700.00mmCb0.42SteelineSteel Span700.00mmCb0.48SteelineSteel Span700.00mmCa0.48SteelineSteel Span700.00mmCa0.48SteelineSteel Span700.00mmCa0.48SteelineSteel Span700.00mmCa0.48SteelineSteel Span700.00mmCa0.48SteelineSteel Span700.00mmCa0.48SteelineSteel Span700.00mmCa0.48SteelineSteel Span700.00mmCa0.48SteelineSteel Span700.00mmZa0.48SteelineSteel Span700.00mmZa0.48SteelineSteel Span700.00mmZa0.48SteelineSteel Span700.00m	-
	Substrate Not Defined System Not Defined Assembly File Corrugated_762.CSV	
	Cancel OK	?

The dialog box below will appear listing all available sheeting materials. The material list is created during setup, however new materials may be added at any time. This is done through the **Set-Up** menu option on the Main menu. For more details refer to Section 5.

The products listed may be filtered by selecting either Supplier, Profile, Gauge, Finish and Coverage so that by elimination, only those options that fit the specification are displayed.

Select Roof Materia	ıl	×
Manufacturer	All	•
Profile	All	-
Gauge	All	-
Finish	Za	
Coverage	All	-
Steeline Corru Steeline Curve Steeline Steel Steeline Steel Steeline Steel Steeline Steel Steeline Lock Steeline Lock Steeline Mini ( Steeline Steel Steeline Steel	Clad         762.00mm         Za         0.48           Span         700.00mm         Za         0.42           Span         700.00mm         Za         0.48           Rib         500.00mm         Za         0.48           dek         680.00mm         Za         0.42           dek         680.00mm         Za         0.42           dek         680.00mm         Za         0.42           Parel         850.00mm         Za         0.42           Panel         850.00mm         Za         0.42           V         800.00mm         Za         0.42           ngline         305.00mm         Za         0.42	
Hebel Panel	600.00mm Cb 0.42	
Substrate	Not Defined	
System	Not Defined	
Assembly File	Panel_600.CSV	
Cance	al OK	?

In this case products are filtered so tat only Zincalume options are displayed. Select the desired sheet, then select **[OK]**, and the summary dialog box is displayed.

Roof Metal Panel Material			×
Straight Metal pay rate	Use Metal-rates 📃 💌	Curving Metal Pay Rate	Use Metal-rates 🔹
Allowances in Use	Corrugated762		
Straight Metal		Curving Metal	
Supplier	Steeline	Supplier	Not set
Profile	Corrugated762	Profile	
Product code	C/0.48/762/C	Product Code	
Finish	Сь	Finish	
Gauge	0.480000	Fastener	
Fastener	ZIPS/M6/50/C	Fasteners per sqm	0.00
Fasteners / m of purlin	6.00	Clip	
Coverage Width	762.00 mm	Clips per m	0.00
Underlay	None	Coverage Width	0.00 mm
Fall Protection	Hand Rail Special 📃 💌	Change Curved Metal	
FP Height	3000.00		
Change Metal	Accessories		
C	Cancel		OK ?

The next dialog to appear will prompt you to select a colour for the particular metal sheeting that you have nominated, if it is specified to be a painted product.

Select any colour at this time.

Your selection will now appear at the bottom of the dialog box.

#### Select [OK].

After the colour has been selected, the roof cover material dialog box will come up, detailing the sheeting you have selected, its colour, product code, and associated fastener (which was set when the sheet was defined).

Select New Color	×
<mark>Gull Grey</mark> Woodland Grey	
Gull Grey	
Cancel	ОК

of Metal Panel Material			-
Straight Metal pay rate	Use Metal-rates 📃 💌	Curving Metal Pay Rate	Use Metal-rates 📃 💌
Allowances in Use	Corrugated762		
Straight Metal		Curving Metal	
Supplier	Steeline	Supplier	Not set
Profile	Corrugated762	Profile	
Product code	C/0.48/762/C	Product Code	
Finish	Сь	Finish	
Gauge	0.480000	Fastener	
Fastener	ZIPS/M6/50/C	Fasteners per sqm	0.00
Fasteners / m of purlin	6.00	Clip	
Coverage Width	762.00 mm	Clips per m	0.00
Underlay	None	Coverage Width	0.00 mm
Fall Protection	Hand Rail Special 📃 💌	Change Curved Metal	
FP Height	3000.00		
Change Metal	Accessories		
	Cancel	I	ок

At this point, you can also amend your selection by clicking on the **change** button for either straight or curved roofing. Bullnose verandahs will automatically adopt the curved material you have selected.

If a job has more than one type of sheeting, the option **Cover > Select Metal > One-Plane** is selected. This allows you to change the profile and/or colour for a specific area of the roof. You can also set the properties of a single roof sheet using the option **Cover > Select Metal > One-Panel**, and this will be covered later.

To specify the material for a bullnose verandah select **Change** from the right hand side, or Curving Side of the previous dialog box. Select the required Curving Quality panel and click **[OK]**. The attributes for the selected panel will appear on the previous dialog box on the right hand side.

## The Estimate Command - Metal Roofing

2

Selecting **Estimate** from the main menu displays the Estimate menu as displayed to the left. This menu option only applies to metal roofing.

It is here, you generate the sheet cutting list. The process involves

- setting allowances
- sing the appropriate sheet estimation method (blocks, offcuts or sheets)

From there, you can insert lap direction arrows which will later appear on the roof drawing.

P	anel Allowan	ces <corrugated762.sa2></corrugated762.sa2>	×
Offset-Roof Options		Generate-Offcuts Options	
Gutter Overhang	50.00	Show Pitches	Yes
Hip Clearance	100.00	Show Panels	No
Ridge Clearance	100.00	Annotation Format	Standard
Gable Clearance	0.00	Generate-Panels Options	
Valley Clearance	200.00	Panel-Side Underlap Distance	0.00
Apron Clearance	0.00	Show Panel Direction Arrows	Yes
Batten Thickness	0.00	Panel Lay Direction	ptimized 💌
Blocking Options		Tally-Panels Options	
Show Pitch on Block Label	No	Combine Similar Length Panels	0.00
Round Panels in Each Block	No	Round-Off Panels to Next (mm)	10.00
Reduce Width of Straight Blocks	No	Annotate Panels With (Rnd) Panel Le	ngth Only 💌
Holes in Roof Planes	nore All 🔹	Annotation Text Size	2.00
Drawing Style of Block Or	iginal 💌	Apply the Minimum Panel Length?	Yes
Block-Cutting Text Size	3.50	Move Text for Panels Shorter than	1000.00
		Add Square Brackets to Sheet Dimension	No
		Apply Offset Values without Offsetting	Yes
Load Cancel		Delete Save-As OK	?

**Note:** Each method of determining the cut list and sheet placement has advantages and disadvantages, especially as regards waste optimization. The preferred method for your situation will be determined by the style of sheet, the experience of your estimator and the skills of your installers. Call AppliCad if you wish to discuss the merits of each and which will best suit your company.



The first option in the estimate menu, **Allowances**, sets the allowances that the software uses for set-backs at ridges hips etc when creating the as built roof planes with the Estimate **Offset-Roof** command plus other options for the way the roof panels are annotated.

When you click **[OK]**, the allowances are saved for use with all subsequent jobs.



**Note:** If your jobs have different allowances, the operator **must** check and set these allowances for each job. Different allowance files may be created and saved for future use for specific roof systems.

To load a previously defined Allowance file select **Load** and select the required file from the list.

Cover	Reporting	View	Zoom	Tools	Menu On	/off
Select	: Tile					
Select	Shingle					
Select	Shake					
Select	Metal					
- Se	elect One Plar	ne				
- Se	elect One Par	nel				
-Re	eset Material					
- Es	stimate Panel	s >	Allowa	nces		
Wall M	1aterials	>	Auto-B	locking		>
			Genera	ate Offci	uts Layout	>
Zones	;		Genera	ate Pane	Layout	>
Select	Membrane					
Fall Pr	otection	>	Tapere	ed Panels	5	>

	Panel Allo	owances <default></default>
Offset-Roof Options		Generate-Offcuts Options
Gutter Overhang	50	Show Pitches Yes
Hip Clearance	50	Show Panels No
Ridge Clearance	75	Annotation Format Standard
Gable Clearance	50	Generate-Panels Options
Valley Clearance	100	Panel-Side Underlap Distance 0.000
Apron Clearance	50	Show Panel Direction Arrows Yes
Batten Thickness	50	Panel Lay Direction Optimized 💌
Blocking Options		Tally-Panels Options
Show Pitch on Block Label	No	Combine Similar Length Panels 0.000
Round Panels in Each Block	No	Round-Off Panels to Next (mm) 5.000
Reduce Width of Straight Blocks	No	Annotate Panels With Ident. & (Rnd) Panel Ien.
Holes in Roof Planes	ore All 📃 💌	Annotation Text Size 2.000
Drawing Style of Block Blo	ck-Cut Style 💌	Apply the Minimum Panel Length? No
Block-Cutting Text Size	5.000	Move Text for Panels Shorter than 750.000
		Add Square Brackets to Sheet Dimension Yes
		Apply Offset Values without Offsetting Yes
Load Cancel		Delete Save-As OK



Draw up the house below at 30 degree pitch with a 450mm overhang. We won't be putting downpipes on this job, so the eave height is not critical. We will be using this plan for both the automatic and manual methods. Don't forget to specify the type of sheeting and flashings.



#### Select Estimate > Auto-Block from the Main menu.

You will be prompted for the option of reducing the width of straight blocks (where a block of straight sheets (with no cuts) overlaps into an area of cut sheets at hips and valleys. The usual answer will be Yes, as this tends to help reduce waste material, but on some jobs can make the quantity very tight.

You are also prompted with the option of rounding the sheets in each block. This has the effect of rounding up each roof plane to whole numbers then the cutting list is determined. If you select No to

this option, the rounding is done once all the roof sheets of a particular length have been determined. This has the effect of reducing the number of sheets in a job, thus reducing waste. It assumes that the installers are mindful of re-using off-cuts to reduce waste instead of throwing off-cuts into the scrap bin.

Select Sheet Estimate Options	<b>x</b>
Do you want to reduce the width of straight blocks ?	(No]
Do you want to round the sheets in each block ?	Yes
Cancel	
	?

The software will now automatically insert cross-hatched rectangles or 'blocks' over the entire roof area. Each block will contain the number of sheets in the block, the length of the sheets and also confirms the pitch. The fat orange line you see on screen indicates the bottome edge of the sheets.

Therefore, a block designated **8 x3150 (22.5)** indicates 8 sheets at 3150mm long on a pitch of 22.5 degrees.

Your roof plan should now look like the one below.



It must be noted that the effective utilization of the sheets as determined by the blocking method is very much dependent upon the skill of the installers, especially on a more complex roof shape. The software does allow for modification of the blocks in the case where an experienced operator can see a more effective block layout than that produced by the software. This is covered in the Reference Manual .

The next step is to view the results of the automatic blocking in the form of the **Sheet cutting list summary** dialog box. Select **Tally-Blocks** from the **Estimate** menu to create a sheet cutting list summary.

The dialog box below will appear. It provides the sheet cutting list and a summary of the Roof Area and the Sheet Area and Total Sheet Length (the amount of coil required from your inventory).

Panel Cutting List Summary	x )
Material: Hebel, C/0.42/762/C-4500, Panel, Cb, 0.42, 600.0	
77 / 5620, 16 / 4770, 17 / 3910, 8 / 2860,	
Sheeting Accessories	
Total Sheet Length : 598.410m	
Sheet Area : 359 m2	
Total Roof Area : 332 m2	
Block Area : 349 m2	
Waste : 7.4 %	
0022.dab : m9	
Sheet Allowances Used: <default></default>	
Export Proface	
Export CSV OK	
	?

This completes the section on the automatic blocking method. If you wish to make any changes on an automatically created block layout, there are commands available to make these modifications. These will be covered in the following section where will look at inserting blocks manually.



As mentioned previously, we will be using the same roof plan that we used for the automatic method. The aim of this exercise is to come up with exactly the same answer as the automatic method.

Cover Reporting View	Zoom	Tools	Menu On	/off	Help	
Select Tile						
Select Shingle						
Select Shake						
Select Metal						
- Select One Plane						
- Select One Panel						
- Reset Material						
- Estimate Panels >	Allowa	nces				
Wall Materials >	Auto-E	Blocking		>	Auto Block	1
	Genera	ate Offci	uts Layout	>	Auto Block	2
Zones	Genera	ate Pane	Layout	>	Block-Cut	
Select Membrane					Modify Block	>
Fall Protection >	Tapere	ed Panels	;	>	Tally Blocks	
Flashings					Delete All Blo	cks

Select Cover > Estimate Panels > Auto-Blocking > Modify Block from the Estimate menu.

The menu at left will appear.



We will now go through the two methods used to insert a block onto a roof panel. These are **Insert-Rect** and **Insert-Line**. To describe these two methods we will insert the long rectangular block at the top of the plan. It is then up to you which method you use to complete the blocking. In some instances it may be easier to use a combination of both these methods. We'll look at the rectangle method first.

Select Insert-Rect from the Blocks menu.

You will then be asked to select the line which determines the direction of the block. For this case we will use **D3**. When you have selected the corresponding line, the dialog box below will appear asking you to select the storey for the roof. This is a single storey house, so select **[OK]**.

Enter the storey to which this	; block refers
1	÷
Cancel	OK

This will then bring up the following dialog box asking you for the pitch of the roof. Type in 30, as this is the pitch of the roof we are using.

Ente	r the pit	ch		×
F	Pitch	35.00		
	Cancel		OK	?

You will then be prompted to locate the "first corner of the rectangle".

Using the middle mouse button select point d1.

Then drag the mouse and form the rectangle by "snapping" to p2.

You will then be prompted to "select the line which defines the length of the block" (the direction that the sheets will run). Select line d3.

The block will then be inserted. Your plan should now look like the one below.

We will now insert the same block using the line method.



Before we do, we must delete the block we have just created.

Select **Delete-All** from the **Blocks** menu. This command will automatically delete **all** blocks from a roof. If you want to delete only specific block(s), select **Delete-One** and locate the blocks to delete.



Select **Insert-Line** from the **Blocks** menu. You will then be asked to select the line which determines the direction of the block. For this case we will use the line **D2**. When you have selected the corresponding line the following dialog box will appear asking for the pitch of the roof. Enter 30.

Enter the pit	ch		×
Pitch	35.00		1
Cancel		OK	?

You will then be prompted to "locate a line to generate a block". Select line d1.



A hatched square will appear over the hip end. You will then be prompted to "select the line which defines the length of the block". Select line d2.

Your plan should now look like the one at right.

The next step is to "extend" the right hand edge of this block so it covers the same area as was created using the automatic method.

Select **Extend-Edge**. You will then be prompted to "locate a line to move". Select line d3. You will then be prompted to "locate its new position:". Snap to point d4. The block will now automatically extend to this point, and the text inside will be updated.



Your plan should now look the one below.



[Continue] inserting the remainder of the blocks using whatever method you prefer.



**Note:** The method of extending edges as described above, can be used to "push and pull" the edges of blocks that have been created using the automatic method.

This concludes the section on the blocking method of estimating roof panels/sheets..



Notice that the **Estimate > Generate Panel Layout > Set Plane Parameters** command has an option for inserting the lap direction of the sheets. This is particularly important in areas of high wind. Most suppliers also specify the lap direction with respect to prevailing winds and their warranty is only valid if the roof has been fixed with this in mind.

Note that when you select and insert a panel a lap direction is automatically inserted if you haven't specified it already.

To insert lap direction arrows, select **Lap-Ins-Dir-Auto**. If the lap direction that has been inserted is incorrect you can change then by selecting **Swap-Lap-Dir**. For example:



Exercise 37 - Gen-Panels Method

The second common method of estimating is the **Panels Method**. To use this method select **Estimate > Generate Panel Layout > Generate Panels** from the **Estimate** menu. This method will automatically generate panels for the roof. The panels are generated with respect to the lap directions you have specified.



If you are using short panels, you would then use the **Split Panels** button and indicate the purlin or batten centre that you wish to divide the panels along. Note: You will need to have inserted your purlins at this point.

You can also use the **Split Panels** command for insertion of translucent panels for skylights. (Refer to a later section of this manual for more details on this subject). When this has finished, you have two choices of estimating the sheets.

However, for this exercise, we will not be splitting sheets/panels. You have two choices of estimating the sheets. The first of these is the **Tally-Panels** option. Clicking on this will tally the panels, giving you the following dialog box:

Panel Cutting List Summary	×
Material: Hebel, C/0.42/762/C-4500, Panel, Cb, 0.42, 600.0	
46 / 5560, 1 / 5530, 2 / 5500, 1 / 5130, 1 / 4930, 2 / 4770, 5 / 4700, 1 / 4530, 4 / 4400, 1 / 4350, 1 / 4320, 1 / 4280, 2 / 4150, 2 / 4030, 8 / 3850, 1 / 3790, 1 / 3750, 1 / 3720, 8 / 3670, 2 / 3610, 1 / 3540, 1 / 3300, 1 / 3060, 8 / 2930, 2 / 2870, 2 / 2810, 5 / 2790, 1 / 2570, 1 / 2520, 1 / 2510, 4 / 2450, 1 / 2320, 3 / 2230, 9 / 2200, 3 / 2140, 1 / 2080, 1 / 1840, 5 / 1680, 1 / 1670, 1 / 1650, 1 / 1590, 9 / 1470, 2 / 1410, 2 / 1350, 2 / 1100, 1 / 860, 1 / 840, 1 / 830, 9 / 740, 2 / 680, 1 / 610, 3 / 560, 1 / 370, 1 / 130,	
Sheeting Accessories	
Total Sheet Length : 608.270m	
Sheet Area : 365 m2	
Total Roof Area : 332 m2	
Waste : 8.8 %	
0022.dab : m9	
Sheet Allowances Used: <default></default>	
Export Proface Delete	
Export CSV Change Mat'l OK	?

The cutting list is displayed with tiotal number of panels of each length required. Also reported is the total length of coil required for this job and the expected waste factor. This list is also used to create a cutting details report that matches the panel layout drawing. These are standard report oprions. Note also that you can export the cutting list to a CSV text file and to a roll forming machine controller such as AMS, Beck, Proface and others. This reduces errors caused by machine oerators keying incorrect cutting details into the machine controller.



A further option with the **Gen-Panels** method, is to select **Linear Nesting**, at the bottom of the **Estimate** menu. This method has been devised to reduce waste on a complex hip and valley roof and to create a material parts list that may be sent directly to the roll forming machine. It was developed for a machine that will also pre-cut the sheets to the required angle for that roof shape. It will also tally the sheets.

This method is an advanced development of **Gen-Panels** where the software takes each sheet and compares it with with every other sheet on the roof to see if their ends can match up. It takes account of the seam side and produce a new cut list where one cut yields two sheets thus optimizing the sheet lengths giving the absolute minimum wastage. An output file is also produced, called a Piece Coordinate File (PCF) which may be used to program a sheet angle cut machine to pre-cut all the roof sheets.

	$\Sigma$
[	

Selecting **Linear Nesting** will bring up the following dialog box and then you are prompted for the nesting parameters:

Linear Nesting Defaults	×	]
Maximum Panel Length	0.00 mm Max.	
Nesting of Narrow Pieces	Add to end of sequence	
Detailing of Narrow Pieces	As combined pieces	
Create New Sheet for Square Cut Pieces	No 💌	
Combine Lengths of Sheets	No 💌	
No. of Planes to Process Together	0	
Cancel	OK ?	1

Set the maximum sheet or panel length you typically use (to allow for easy delivery etc) and then click [OK]. When the sheets have been nested the following dialog box will appear listing all the combined sheet lengths and quantities, including a wastage factor.

Nesting provides for the most efficient method for creating the roof cutting list, but does require consideration of what the install team are likely to prefer as a cutting list output. The waste factor would tyically be reduced by 5 - 10%. It should be noted that for many situations, the linear nesting process is totally inappropriate. Use only if you have installers experienced with pre-cutting panels and re-using the offcut material.

More details of the complete process is described in **Section 5** of this manual.

### The Cover Command - Insulation and Downpipes

Exercise 38 -	U)
Insulation 🛛 💽	
Select-Default	
Apply-to-Plane	
Remove	
Reset-Plane	
Negative-Plane	
Verify	
Show	
Cancel OK	2

### **Selecting Insulation**

The next step in completing your quotation is to specify the type and placement of the insulation, if this is required for your job.

Select Insulation from the Cover menu.

The text menu at the left will appear. It is suggested that you have roof planes turned so that you can select individual planes if necessary.

Select the option **Select-Default** from the **Insulation** menu. This will bring up the following dialog box. The purpose of the dialogue box is to provide you with the opportunity to create a combination of insulation or underlay materials such as vapour barrier plus insulation blanket etc. Once the items are selected, and the appropriate fasteners, you may save the combination you have made as an insulation system so that you can use it again next time you use this combination of materials.



Select **Add-Insul** and the following dialog box will appear.

Select the insulation	×
Celotex Thermax Themax board 222 Grace Ice Water Shield Undrerlay icw123 Grace Sarking 30# felt 30liyt ::56.0 Hilltop Slate Roofing felt Roofing felt for slate HS-RF JohnsManville 0.5 Perlite JM Perlite JM05P44 JohnsManville 1.5 ISO JM Insulation sheets JM15ISO48 Sample Supplier Aluminium foil AI foil AF-1 Sample Supplier Sarking Sample Sarking SA-01	:45.00 0.00 0 0.00
Cancel	ок

Select the required insulation material and select [OK].

The dialog box below will appear specifying the insulation you have selected.

Insulation list		<b>—</b>
Insulation 1	Celotex Thermax Themax board 222	··· +
Insulation 2	Grace Tce Water Shield Undrerlay icw123 :45.00	0.00 • +
Insulation 3	Grace Sarking 30# felt 30liyt :56.00 0.00	· +
	Select system Save system	
	Cancel Add-Insul Add-Fastener OK	?

The insulation is automatically applied to all roof planes when you select [OK].

Select Verify from the Insulation menu if you wish to check what type of insulation has been applied.

Section 5 of this manual provides a more detailed description of the function of the Insulation function.

## Exercise 39 - Selecting Downpipes

The last step that remains to be done as far as your roof cover quotation is concerned, is to specify the position and type of down pipes.

Select **Down pipes** from the **Coverage** menu. The **Select new DownPipe** dialog box will appear.

Select new Downpipe	×
Corowa Plumbing Rectangular 225mm 2.00 UPVC 0 Corowa Plumbing Round 100mm 1.50 PVC PVC/100/C Corowa Plumbing Round 150mm 0.55 Stainless Steel Stainless Steel Corowa Plumbing Round 150mm 1.50 PVC 1st PVC/R/150/C Corowa Plumbing Round 75mm 1.50 PVC First Corowa Plumbing Round 75mm 1.50 PVC First Corowa Plumbing Round 75mm 1.50 PVC PVC/R/90 Steeline Rectangular 100 x 50 0.45 C/B DSR/0.45/100/50/2400/C Steeline Rectangular 100 x 50 0.45 C/B DSR/0.45/100/50/2400/C Steeline Rectangular 100 x 75 0.45 C/B DSR/0.45/100/75/2400/C Steeline Rectangular 100 x 100 0.45 C/B DSR/0.45/100/75/2400/CB Steeline Round 100 0.45 C/B DCR/100/2400/CB Steeline Round 100 0.45 C/B DCR/100/2400/CB Steeline Round 100 0.55 C/B R/200/C	* III *
Cancel	



Select the required downpipe select **[OK]**. The **Select new colour** dialog box will appear. Select any colour and select **[OK]**. Now that we have specified the type of down pipe we will be using, the next step is to position them around the structure.

You will now be prompted to **Locate a line to insert the down pipe on.** Using the left mouse button, locate an eave line, remembering that where you select the line will be the position of the down pipe.

Position the down pipes as per the drawing below.



	[	Downpipe	e values	×
Downpipe Height of Gutter Offset to Wall	Steeline 3750 0.000	100 ×100	0.45 Z/A DSR/0.45/100/7	5/2400/Za
Optional Items	Exclude		Include Boot Elbow	
Dot Size Cano	2.000	Chan	ge OK	

After selecting an eave line, the following dialog box will appear, check the optional items that you need for this job.

The height of gutter is read from the eave height value that you specified when you first created the roof. If the eave height is different, in the case of a sloping building site, then you may change the value determined by the software.

You also have three options for the base of the down pipe - shoe, nothing and elbow.

Select nothing for this example and then [OK].

This finishes the definition of downpipes. Obviously, if you are not supplying downpipes on a job, you do not have to add them to your job. The costing process will not count them if they're not there.

Having finished defining the various roof cover materials, it would be useful to Save the job at this point. From the pulldown menu select **File Save**, and type in the project or customer name and add the job name, then select [OK]. Ensure that **Preview** is checked so that the preview picture is displayed next time you go looking for this job.

If you already have a job of similar shape and detail of the same name, you will have to select **File Save-As**. This allows the operator to use an existing job, make slight modifications and save as a different name for later recall.

## The Cover Command – BUR/Single Ply Roofing



The roof assembly we will be drawing, is a multi-layered structure made up of several discrete plies, with the following specifications:

1 layer of JM ISO 40mm 1 layer of JM Perlite 10mm Mechanically fastened with screws and plates – 2 every 1 sqm Layer of ashphalt at 10 kgs per 30 sqm 1 layer of JM Glass 6 Layer of ashphalt at 10 kgs per 30 sqm 1 layer of JM Glass 6 Layer of ashphalt at 10 kgs per 30 sqm 1 layer of JM Glass 6 Layer of ashphalt at 14 kgs per 30 sqm 1 layer of JM glass cap

Our roof structure for this exercise will be a concrete slab with a parapet wall around all sides 1 meter high.

The edge detail all around is:



#### **Exercise 40 - BUR Material Description**

We have decided that the materials we will be using are as described below. We have not used these materials before so we must enter them into our database. Once entered they are then available for future use.

#### Roof

Туре	Description	Size	Cost
Insulation	JM 40mm ISO	32 sqm	\$8/sqm
	JM 10 Perlite	16sqm	\$6/sqm
Roof membranes	JM Glass 6	500 sqm/roll	\$22/roll
	JM Glass Cap	100 sqm/roll	\$13/roll
Asphalt	JM Type III	5litres/Bucket	\$13/Bucket
Screws	JM 12x65 " Ultra Grips	1000 / box	\$78/box
Plates	LM Metal Plates	1000 / box	\$42/box

#### Flashing

	Description	Size	Cost
Metal lengths	Parapet Capping	12000mm lengths	\$2/ m
	BHP Apron	12000mm lengths	\$2/ m
	OFR Counter Flashing	12000mm lengths	\$2/ m
Fastener	Drive pins	3/ m	\$0.10 ea
Timber cant strip	10mm Cant strip	12000mm lengths	\$2 / m

Exercise 41 - Define the Roof Outline

Draw up the following flat roof using the command **Construct-Roof > Track-Outline** from the main menu. The Track-Outline and select 'flat roof' and the command generates an outline without hips and and valleys.



The **Construct-Roof > Track Outline - Plane** outline generator dialog looks like the illustration below, and allows you to input the perimeter dimensions and direction by clicking the direction buttons. You may also simply type **r70000** for a line created to the right, 70 meters (70000mm) long.

Once you get to the second last perimeter line, simply select C {enter} or **Close** and **Close Square**. The system will automatically compute the correct geometry to close the perimeter and draw the remaining outline. Check that the last two dimensions are correct. If they are, then you may proceed to the next step. At this stage the lines are construction lines only and don't really exist, until we select **F** {enter} or **Finish** on the dialog box.

Roof plane bounda	iry		×
Direction Distance Pitch 🗨	0.00 4500 0.00	mm L /	U / Ø R D \
Insert	Close Bay	Hor-Vert	Finish
Stepbac	k Canc	Stepfor	ward ?

If they are not correct, then the information is incorrect or you made a mistake in setting the perimeter dimensions. In the event of a mistake, select **Stepback** until you delete the wrong line and re-insert it.

Once complete with cross-hatching to represent our roof surface, you are ready to get a roof geometry summary immediately. Select **Tools > Tally-Quantities** from the main menu and the result is

displayed.

We now need to select materials and apply them to our roof as a roof material system that is made up of various plies. Working up from the roof base, we will select each material in turn. While the order does not matter from a take-off point of view, it certainly helps in the interpretation to have the materials listed in the order they are to be laid. We will start with the underlay.

on

Insulation list			
There is no ir	sulation selected Select system Save system		
Car	cel Add-Insul Add-Fastener OK ?		
Insulation list			<b>-</b>
Insulation 1	Hilltop Slate Roofing felt Roofing felt for slate HS-RF		C +
Insulation 2	Sample Supplier Aluminium foil Al foil AF-1	:18.00 18.00	· +
Insulation 3	Sample Supplier Sarking Sample Sarking SA-01		· +
	Select system Save system		
	Cancel Add-Insul Add-Fastener	ОК	]?

Using the command from the main menu **Cover > Insulation > Select-default**, select the types of insulation and the screws and plates with the **Add-Insul** and **Add-Fastener** buttons.

Since it is likely you will use this same order of material in the future, you may save it as a "system" so that you can recall it again pre-defined. To save it select the **Save System** button and type in a system name to describe it when prompted.

Notice on the right hand side of this dialog box three buttons. These are used to delete, change a line item relating to that material ply or add a ply before the line item.



When you have defined your insulation, select **[OK]**, to finish and go to the next step, which is to add the roof cover material – the Built Up Roof system. Using **Cover > Select-Membrane > Select-Default**, select the plies and fasteners (asphalt) as you did for insulation. You may also save a set of plies as a roof system. To do this, select **Save System** and give it a name so that it can be easily identified and used again.

Membrane l	ist for configuration : <>	
	o membrane selected           Select system         Save system           Cancel         Add-Membrane         Add-Fastener         OK	
lembrane list fo	or configuration : <jm-4gig></jm-4gig>	x
Membrane 1	JM JM GlasPly Premier JM Glass Ply Premier JM-GPP 🛄 +	
Membrane 2	JM JM GlasPly Premier JM Glass Ply Premier JM-GPP 🗾 +	
Membrane 3	JM JM GlasPly Premier JM Glass Ply Premier JM-GPP 🗾 +	
Membrane 4	JM JM Glass Cap JM Glass roll Cap JM-G-Cap +	
Membrane 5	JM Gravel Gravel JM-GVL · +	
Fastener 1	50.0 per m2 · … +	
Fastener 2	50.0 per m2 · +	
Fastener 3	50.0 per m2 · … +	
Fastener 4	50.0 per m2 · … +	
Ca	Select system Save system	

When you have defined your membranes, select **[OK]**, to finish and go to the next step. At this point we can check costs for the supply and installation of our base materials. This is done from the menu – **Reporting > Supply and Install**.

# Exercise 44 - Flashing Assembly Details

In our example we are assuming that the flashing runs around the entire perimeter of the roof, and the edge should be finished as recommended by the supplier. Now apply the edge assembly to each line of the flat roof. In this example there is a graphic which gets inserted as supplied by the supplier.

Refer to the Set Up Guide and the Reference Manual for more details on defining and using the Flashings Assembly Details.

Select **Cover > Flashing Assembly Details > Set** from the main menu. Indicate the perimeter lines that will have the edge treatment you specified when prompted. Finish your selections by clicking with the right mouse button and confirm them with the left mouse button. You are then prompted for the parapet wall height.

(This is for information only as the software doesn't do anything with it at this time.)

Flashing-Detail 🔀
Set
Tally
Delete
Cancel OK ?



The edge or Flashing Assembly Detail is automatically drawn where you indicate and will be added to all subsequent reports when they are printed.

If all your materials have been correctly specified, when you select **Cover > Flashing details > Tally** you will get a dialog similar to the following. It is a summary of all the trim that is required to waterproof the Flashing Assembly.

Fla	shing Cutting List Summary
	Flashings
	Batten Bradford,Foam 1200mm,Foam,B105 74/1200 Total : 88800
	Box Gutter Steeline,Box Gutter,Stainless Steel,FSS/0.55/1000/2 1/7790 2/6570 4/6380 2/5800 1/5130 2/4730 2/4290 1/3610 Total : 84830
	User len Steeline,Bottom Flashing,Za,FL/0.55/300/3/Za 1/7590 2/6430 4/6270 2/5670 1/4930 2/4590 2/4160 1/3410 Total : 82710
	Accessories

### The Reporting/Costing Command



Once you have defined the roof cover and extracted the sheet cutting details, all that remains is to report costs for the job. The costs are based on two things - the geometry of the roof already defined and the material data files. The material data files contain the information about the types of material available to be used, the stock lengths, the fixing required and the sheet coverage.

The data files must be checked and modified to suit the materials and costs etc that are used by your company. They must also be maintained as prices may change from time to time. Editing these files is dealt with in a later section of the manual. There are two types of labour pricing files for each roof category of tile or metal – Metal pay or Metal Rates (Tile pay or Tile Rates).

Reporting	View	Zoom					
Multi-GRIN	Multi-GRIM Out						
Supply On	ly						
Supply and Install							
Nett Only							
Fascia Gutter							
Print Draw	ings						

The Metal Rates pricing file is a relatively simple rate table based on fixed rates per square metre or linear metre regardless of finish, pitch or storey. The Metal-Pay pricing file is the comprehensive labour pay scale that takes account of all the variables of pitch, storey and finish.

You may have as many Metal Pay rates as you need for your business, but you can have only one Metal Rates file.

With Metal Pay, you can have a different pay rate for different clients, for different crews or different sub-contractors. You may also have a different rate for different roof systems. Remember that however many pay rates as you set

up, they all have to be maintained and kept up to date with the latest pay rates.

You must carefully consider which gives your business the desired result on the client quotation you will subsequently submit.

## Exercise 45 - Pay Rates For Metal Roofs

For the exercise we will review the Metal Pay labour pricing file.

#### Select **Reporting** from the **pulldown** menu, followed by **Set-Up > Set-Up Pay Rates > Metal pay Rates -Variable**.

This will bring up the following dialog box where you can see the level of detail that is available for you to use. Don't forget that you need to set a rate for each increment of pitch and for each storey, represented by each page of the dialogue displayed.

Set-Up Job Info CAI	O Construct Roof Modify Roof				
Set up Pay Rates >	Tilers' pay rates - fixed				
Preference Settings >	Tilers' pay rates - variable				
Tiles	Tile waste factors				
Shingles					
Shakes	Metal pay rates - fixed				
Metal Panels	Metal pay rates - variable				
Flashing	Curved metal pay rates				
Fasteners					
Insulation	Nett pay rates				
Tile Colours	Quote Groups				
Metal Colours					
Tiles+	Wall cladding pay rates				
More >	1				

istaller Pay Rates for Metal (rec = 2 of 2) Page 1 of 2									
Name Sample Pay Rate									
Storey 1 🔣	> Note : The	pitch interval IN	ICLUDES the h	igher range val	ue				
Pitch intervals	30.0 -> 35.0	35.1 -> 40.0	40.1 -> 45.0	45.1 -> 55.0	> 55.0				
Straight roof / sqm	4.00	4.40	4.80	5.20	6.00				
Ridge m	3.00	3.30	3.60	3.90	4.50				
Hip / m	3.00	3.30	3.60	3.90	4.50				
Valley / m	3.00	3.30	3.60	3.90	4.50				
Fascia-only / m	3.00	3.30	3.60	3.90	4.50				
Gutter only / m	3.00	3.30	3.60	3.90	4.50				
Fascia-barge / m	3.00	3.30	3.60	3.90	4.50				
Fascia and gutter / m	3.00	3.30	3.60	3.90	4.50				
Barge / m	3.00	3.30	3.60	3.90	4.50				
Apron and Step / m	3.00	3.30	3.60	3.90	4.50				
Batten / m	2.50	2.75	3.00	3.25	3.75				
Box gutter / m	4.00	4.40	4.80	5.20	6.00				
User lengths / m	3.00	3.30	3.60	3.90	4.50				
per downpipe	3.00	3.30	3.60	3.90	4.50				
Roof removal / sqm	1.50	1.65	1.80	1.95	2.25				
Auto-Fill Interval Auto-Fill Storey									
Select Delete Add Update									
Add-User Del-User Next Page >>									
Cancel		Intervals		ОК					

From here you can enter your pay rates for different pitches and stories. Name your pay sheet and select **Add**. This pay rate will now be added to the database.

## This does not mean you have selected a pay rate for your job. You select the required pay rate for your job when you select the material to be applied on the Cover > Select-Metal dialog box.

For a detailed description of setup and use of these options, refer to the Reference Manual.

# Exercise 46 - Pay Rates for Tile Roofs

Select **Set-Up > Setup Pay Rates > Tiler's pay rates - variable** from the **Main** menu. The Installer pay rates dialog box will appear.

Name New Rates 2010 Roof unit by Area 💌										
Storey 1 < 🔀	Note : The pitch	Note : The pitch interval INCLUDES the higher range value								
Slope in 12	0.0 -> 30.	0 30.1 ->	35.0 35.1 -> 40	0.0 40.1 -> 4	5.0 45.1 -> 5	50.0 > 50.0				
Roof / sqm	1.00	0.00	0.00	0.00	0.00	0.00				
Normal Hip / m	2.00	0.00	0.00	0.00	0.00	0.00				
Seal / m	3.00	0.00	0.00	0.00	0.00	0.00				
Butt / m	4.00	0.00	0.00	0.00	0.00	0.00				
Normal Valley / m	5.00	0.00	0.00	0.00	0.00	0.00				
Bed and Point / m	6.00	0.00	0.00	0.00	0.00	0.00				
Seal / m	7.00	0.00	0.00	0.00	0.00	0.00				
Normal Ridge / m	8.00	0.00	0.00	0.00	0.00	0.00				
Seal/m	0.00	0.00	0.00	0.00	0.00	0.00				
Butt / m	0.00	0.00	0.00	0.00	0.00	0.00				
Normal Gable / m	0.00	0.00	0.00	0.00	0.00	0.00				
Bed and Point / m	0.00	0.00	0.00	0.00	0.00	0.00				
Seal/m	0.00	0.00	0.00	0.00	0.00	0.00				
Rake Ridge/m	0.00	0.00	0.00	0.00	0.00	0.00				
Underlay and Insulation / sqm	0.00	0.00	0.00	0.00	0.00	0.00				
Select Add-User	nterval te	Auto-Fill SI Add	torey	Update Next Page	>>>					
Cance	. 1	Inter			ок					

It contains all of the installer labour rates for the individual roofing components in either m2 or lineal meters, depending on the item, and a different value is possible for each range of roof pitch. You can change the number of intervals and their spacing by clicking **Intervals**.

For the exercise, type in a name, change a few of the values to suit the rates that your company uses and select **Add.** 

These rates are saved as soon as you select **Add**. If you want to you can save a number of different installer rates. When you have chosen the rate that you would like to use click on **[OK]**.



**Note:** This does not mean you have selected a pay rate for your job. You select the required pay rate for your job when you select the material to be applied on the Cover > Select-Metal dialog box.

For a detailed description of setup and use of these options, refer to Section 5.

## Exercise 47 - Supply Only

There are two options available under the **Reporting** menu for the calculation of materials, pricing and labour. These are **Supply-Only** and **Supply-Install.** 

The **Supply-Only** option will give us a breakdown of all material quantities and pricing for the particular job **excluding** any labour component.

Supply only Quote : <no-name></no-name>										
Roof Cover										•
Manufacturer Easyroof Kingspan	Description CQ60-2,Snap Lock, Woodland Grey 4325,KS1000 SF- Steel, Galvanised - Painted		Qty 9.71 10.21	Rate 14.00 18.50	SubTotal D 135.94 188.85	scount % -20.00 0.00	135.94	Category Straight Siding	E	
Flashings										
Manufacturer BlueScope	Cartage Cartage			Qty 0.00 1.00 15.49	Rate 0.12 0.00 0.00	SubTotal D 0.00 0.00 0.00	scount % 0.00 0.00 0.00	0.00	Category Cartage Cartage Custom	
Steeline Steeline Steeline	RR/0.55/C,Ridge Roll Top, Cb V1/0.55/C,Valley, Cb V1/0.55/C,Valley, Cb FHT/0.42/C,Fascia, Cb @ 3073			78.08 20.12 44.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	0.00 0.00 0.00	Ridge Valley Fascia	
Steeline Steeline Steeline Milform	QG/0.55/Za, FL/0.55/200	,Fascia, Cb @ 3302 ,Gutter Quad, Za )/3/Za,Barge Cappi 75BMT Batten Met		4.00 105.56 7.72 177.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00	Fascia Gutter Barge Batten	
Steeline		)/3/C,B/Gutter Flas		13.77	0.00	0.00	0.00		User len	-
			Labour Items			Material Items	,		Totals	
						Material Sub	Total	646.35	Job Total (ex GST)	646.35
						Material Mar	kUp	0.00	Rebate/Extra	0.00
						Material Tota	al	646.35	GST (0.00%)	0.00
Quote Groups									Total (incl GST)	646.35
Notes	Save	Set Suppliers	Add Item							
Export GRIM	Load	Set Discounts	Add Other							
Export CSV	Delete	Set Finishes	Tile Waste						Cancel Print	ОК

After selecting **Supply-Only** from the **Reporting** menu, the following dialog box will appear.

As can be seen from the dialog box, all of the materials for the job have been itemised, listing the quantity for each item and their respective rates. A subtotal for each item is then produced and an allowance is made for the operator to apply a discount to any or all of these items.

If you wish to make a change to any of the values in the table, double-click in the field you wish to alter and select **Re-Calc.** All of the values in the table that are affected by this change will automatically be updated. In the above example, there are actually 3 pages of materials that have been quantified. To see the other two pages, select the **Next-Page** button.

If you wish to insert any notes onto the client quotation form, select the **Notes** button. The following dialog box will appear.
Print Reports		×
Available Printing Templates Quotation Letter Quotation Form Installer Pay Summary Quotation Details Installer Pay Summary - QG RonsReporThing User Form 2 User Form 3 User Form 3 User Form 4 Order Forms Tax Invoice 1 Tax Invoice 1 Tax Invoice 2 Bill of Quantities Roof Quantities Roof Quantities AppliCad Full Report - Solar	To Be Printed Quotation Acceptance Material Cutting List	
Print Zero Quantity Line Items?	? Cancel	ОК

From here select the form that you would like to add notes to, bringing up the following dialog box.



Selecting the **Add-Predef-Note** allows you to select from a list of pre-defined notes:

Select Report Notes	<b>—</b>
No CleanUp Included	Select
GST Included GST Excluded	
No CleanUp Included CleanUp Included Standard Inclusions	
New Note	
	Cancel
	?

Selecting **Check/Add Notes** allows you to modify or add to the selected notes that will be inserted on the quotation or proposal.

Enter note for the Quotation Form re	port			×
	nup are not included in this quotation. up, or to have this included on the quotation, pleas dog seen on site during first inspection.	ie contact us.		
	Clear	Cancel	_0K	

### **Finishing and Saving Proposal**

Once you are happy with all of the values, and you've given yourself a hefty profit, the next step is to save the particular quote under an easily recognizable name, as our client may want us to quote on more than one profile for the same job.

Select a quick quote or enter a new name	Select <b>Save</b> . The dialog box below will appear.
	Type in the desired quote name and select <b>[OK]</b> . Use this to keep track of the proposal. You might be asked to prepare an alternate proposal for different materials or different finish
	The Supply-Only Quote dialog box will now reappear.
	The Quote name appears in the title bar at the top of the dialog box.
	The complete set of job pricing information is then saved into the model database and writes the name of the quote to a file saved in the \User folder called <i>QuoteRegister.csv</i> so that the job may be recalled by quote number from the File
Robbo's House - Re-roof 21 Nov 2010	menu.

Roof Cover				-							
Manufacturer	Description		Qty	Rate	SubTotal Di	scount %	Total	Categor	у		
Flashings											
Manufacturer	Description Cartage Cartage		Qty	Rate 0.00 1.00	SubTotal Di 0.12 0.00	scount % 0.00 0.00	Total 0.00 0.00	Categor 0.00 0.00	y Cartage Cartage		E
Accessories											
Manufacturer		ear Paint It Allowance	Qty 0.00 0.00 0.00 0.00 0.00 0.00	Rate 5.57 23.94 0.00 3.52 7.29 100.00 100.00	SubTotal Di 0.00 0.00 152.00 0.00 0.00 0.00 0.00 0.00	scount % 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Total 0.00 0.00 0.00 0.00 0.00 0.00 0.00	Categor Extra Extra 0.00 Extra Extra Extra Extra	ry Extra		
		Labou	ur Items –			Materi	al Items			Totals	
						Mate	rial SubTotal		0.00	Job Total (ex TVA)	0.00
						Mate	rial MarkUp		0.00	Rebate/Extra	0.00
Quote Groups						Mate	rial Total		0.00	TVA (19.60%) Total (incl TVA)	0.00
Notes	Save	Set Suppliers Add	Item								
Export GRIM	Load S	Set Discounts Add	Other								
Export CSV	Delete	Set Finishes Tile V	Vaste							Cancel Print	OK

To print out this particular quote, select Print and the customer quotation and all of the details in the

Supply-Only Quote table will be automatically printed.



The **Supply+Install** option will give us a breakdown of all material quantities and pricing for the particular job including any labour component. After selecting **Supply+Install** from the **Reporting** menu, the following dialog box will appear.

Supply and install	Quote : <n< th=""><th>o-Name&gt;</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th><b>×</b></th></n<>	o-Name>								<b>×</b>
Roof Cover										<u>^</u>
Manufacturer Steeline	Description I/0.42/762/0	C,Steel Clad, Cb		Qty 374.07	Rate 45.00	SubTotal Di 16833.15	scount % 7.50	Total Category 16833. 15 Straight		=
Flashings										
Manufacturer Steeline Steeline Steeline Steeline Steeline Steeline Steeline Steeline Steeline	VI/0.55/Za, FHT/0.42/C, SHRG/150/C FL/0.55/300 DSR/0.45/10 ,100 x 50 x DSC/100/50 DP/100/50/2	,Fascia (Bx/Ww), ( CB,Gutter Half Rou )/3/C,Window Edg 00/50/2400/C, 100	Cb Ind, CB	Qty 0.00 1.00 39.02 5.09 63.10 57.32 7.34 1.00 1.00 1.00 1.00 1.00	Rate 0.12 0.00 12.00 14.00 0.00 0.00 0.00 0.00 1.12 2.12 3.12	SubTotal Di 0.00 468.24 71.26 883.40 0.00 0.00 0.00 0.00 0.00 3.36 2.12 3.12	scount % 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	Total Category 0.00 Cartage 0.00 Cartage 468.24 Ridge 71.26 Valley 833.40 Pascia 0.00 Gutter 0.00 Window Edge 0.00 D Pipe 0.00 D Pipe 3.36 D Access 2.12D Access 3.12D Access		
Quote Groups Notes	Save	Set Suppliers	Labour Items Labour SubTot Labour MarkUp Labour Total Add Item		545.6 12.0 611.0	0 Ma	erial Items Iterial SubTotal Iterial MarkUp Iterial Total	18264.65 0.00 18264.65	Totals Job Total (ex TVA) Rebate/Extra TVA (19.60%) Total (ind TVA)	18875.73 0.00 3699.64 22575.37
Export GRIM Export CSV	Load Delete	Set Discounts Set Finishes	Add Other Tile Waste						Cancel Print	ОК

As you can see, the dialog box is very similar to the one that appears for Supply-Only.

The difference is that there is now a button marked **Labour subtotal**. Underneath this button, there is a field to add a labour markup, and then a labour total. Click on the **Labour subtotal** button. The following dialog box will appear.

Roofing Labour charges Page 1 of 1								<b>—</b>
Description	Qty	Rate	Total	Description		Qty	Rate	Total
Straight roofing [1/0.42/762/C] sqm	374.07	1.00	374.07	Ridges m		39.02	1.00	39.02
Valley m	5.09	1.00	5.09	Fascia only m		63.10	1.00	63.10
Gutter only m	57.32	1.00	57.32	Downpipes ea		1.00	7.00	7.00
Window edge m	7.34	0.00	0.00					
				LABOUR SUB-TOTAL				545.60
								,
Misc-it	em		Add li	neltem	Re-C	alc		
Cancel							7	
							_	?

The **Quantity**, **Rate and Total** for each individual roofing item are listed. Experiment with some of the labour costings and notice the effects to the totals when you change them. The procedure for recalculating, saving and printing a quote is identical to that for **Supply-Only** as described above.

# Exercise 49 - Printing Reports

To print your quotes. Select print from the **Supply + Install** dialog box and the following dialog box will appear.

Print Reports			×
Available Printing Templates Quotation Letter Quotation Acceptance Installer Pay Summary Material Cutting List User Form 1 User Form 2 User Form 3 User Form 3 User Form 4 Order Forms Tax Invoice 1 Tax Invoice 2 Bill of Quantities	> <	To Be Printed Quotation Form Quotation Details Installer Pay Summary - QG	
✓ Print Zero Quantity Line Items?		Cancel	

Select the reports that you would like to print by double clicking the required drawing to **Print**, and then select **[OK]**.

At this point the software will retrieve the drawing of the roof and insert the relevant information in accordance with the information set up in **Job Info** e.g. site address etc. and any other information that you may have specified to appear on the report or drawing by way of key text strings. This process will be visible on the screen.

The Windows **Print** dialog box will then appear. If we had a printer connected, we would select **[OK]**, and the required report will be printed automatically.

After the report has been printed, the roof model will be redrawn on the screen.

# The Reporting/Drawings command

The final step in the quotation process is the printing of the drawings.

Exercise 50 -	4	Printina	Drawings
		' i i i i i i i i i i i i i i i i i i i	Diawings

To print your drawings, select **Reporting > Print Drawings** from the main menu, and the following dialog box will appear. Select the drawings that you would like to print by double clicking the required drawing to **Print**, and then select **[OK]**.

Print Drawings		<b>—</b> ×
Available Printing Templates	To Be Printed	
Batten Layout Block Layout Offcut Layout Panel Sequence Panel Cutting Details Flashing Drawing Flashing Profiles Single-Ply Layout Wall Plan Wall Elevation 3D Drawing Arc Roof Drawing Scaled Ruler Roof Sketch Pad [L] Roof Sketch Pad [A4]	Panel Layout Roof Plan	
	Cancel	ОК

At this point the software will retrieve the drawing of the roof and insert the relevant information in accordance with the information set up in **Job Info** e.g. site address etc. and any other information that you may have specified to appear on the report or drawing by way of key text strings. This process will be visible on the screen.

The Windows **Print** dialog box will then appear. If we had a printer connected, we would select **[OK]**, and the required drawing will be printed automatically.

After the dfrawing has been printed, the roof model will be redrawn on the screen.

The standard template is used unless you have modified or created your own templates. Refer to that section later in this manual for details about how you create and edit report or drawing templates.

# **Wall Creation and Modification**

The purpose of the following tutorial is to familiarize you with the process of creating a wall in 3D from an Architectural drawing. The Walls option may not be available if you have not purchased the Walls module.

The modelling tutorials will be divided into two sections. The first section will explain how to use the Track-Walls command, and the second will explain about Projecting Walls from either the outline we have drawn, or from a Roofing job already completed.

Walls Cover Reporting Show/Hide Walls Show/Hide Wall Direction Change Wall Direction Draw Wall Outline Track Wall Outline Draw Single Wall Track Single Wall Project Walls Add Gable End Merge Wall Planes Track Wall Edge Orientation of Cladding Windows/Doors > Show Wall Quantities Apply Wall Materials >

This will be followed by tutorials on coverage and costing.

Before we start we make sure that your **Preferences** are set to **Metric**, **English** and **Degrees**. This is set under the **Set-Up > Preference Settings > System Preferences** menu.



## Exercise 1 - Track-Outline

First select the Walls option from the Main menu

We will use **Track-Walls** to input a wall outline as this will be the <u>most usual</u> <u>method</u> of outline definition. Imagine we have received a job to cost via the fax. The drawing is fully dimensioned.

Select **Track-Walls**. A horizontal and vertical line will appear on the screen forming a cross. The intersection of these two lines is the point used for plotting or locating various points. At the bottom of the screen in the prompt area, it will ask you to **Locate start point**. This works in the same way as when using our roofing software.

Using the left mouse button, locate a point anywhere on the screen. The **Wall Direction and distance** dialog box will now appear. (see below) :



The buttons marked Left, Right, Up and Down, allow you to navigate around the plan as you put in the external brickwork measurements. The angled lines are for walls that are at 45 degrees.

The **Hor-Ver** button is to allow the operator to insert wall lines that are not square with the balance of the structure ie 2000 along and 3500 up.

After selecting the direction of the wall that you want to draw in, or by typing in the angle in the direction field, the **Distance** field will be highlighted. Type in the length of the wall and select **Insert.** You are now ready to put in the next wall.

Starting at the bottom left hand corner of the house, select **Up**, and then type in 8000 for the length of the wall. Select **Insert**.

Now select **Right** and type in 8000, then **Insert**. You could also type r8000 in the direction field for the same result. If you make a mistake, select **Stepback** and redo the wall outline.

Following is a simple "L" shaped house that we will use in this example.



[Continue] around the plan until you reach the bottom right hand corner.

At this point, type **C {enter}** or select **Close** from the dialog box. The **Select the close method** dialog box will appear.

### Select Close Straight.

This will automatically close the plan to its start point as described above. Following this you must type **F {enter}** or press **Finish**. If you wanted, you could now continue and create another outline, or if you have finished, click the right mouse button to cancel out of that command.

The wall outline is now complete. It is represented by a solid line. These are construction lines only, no wall geometry exists until we project these walls up to a specified height.

Now that we have the "footprint" of the wall, we now need to **Project** the walls, by selecting Project Walls to Height on the Pulldown menu. You will be asked to Enter the height of the walls.

Project Wa	all Options	×
Project Wall Lines	All C Locate	
Project Walls Up to Roof (def Hgt for	r non-int.) 🗸 0.00 r	m
Project Walls Down by Amount	✓ 4000 r	m
	? Cancel OK	

Select the Close Me ×						
Close Straight						
Close Square						
Close Extend						
Close 2 Lengths						
Step Back						
Change Snap Axes						
Align Axes with Last Line						
Reset Snap Axes						
Change Snap Values						
Check Close Distances						
Finished Digitizing						
Continue Digitising						
?						

Enter 4000 and click **[OK]**. At this point, your wall lines may disappear from view. Don't be too alarmed at this point. It is simply that the software has drawn lines over lines and this causes them to be invisible.

To make them re-appear, we may need to **Repaint** the screen, using the Paintbrush icon, located on the left of the screen.



### Viewing your Walls.

At the moment, you are looking at a top view of the building, and you may want to take a look from a different angle. To do this, select **View** from the Top menu, and then selecting the appropriate view. In this case I have used **ISO**.



After changing the view, you may not be able to see any or all of the building. If this is the case, we need to "Fit" the view to the screen by clicking on the **Fit** button found on the left menu.



Your view should now look something like the one above. This completes the first exercise using **Track-Outline.** It is advisable that you save this job as you will need to re-open it later.



Now, for the practice, and using the process described above, do the following roof using the **Walls-Track Outline** command and using the dimensions shown.



### **Getting Wall Quantities**

To get geometric quantities, select **Walls** > **Show Quantities**. Select this and a dialog box is displayed with a summary of the geometric areas and lengths of the current wall.

### You must project your walls first!

Notice you can export this information to a .csv format ascii file so that the information may be used in an external third party program such as Microsoft Excel.

Wall Quantities			×
Total wall area	459.0 sqm	459.0 sqm Number of walls	
Total wall length	143.4 m		
External corner length	16.0 m	Number of ext corners	
Internal corner length	3.2 m	Number of int corners	1
Window edge length	0.0 m	Number of edges	0
Window sill length	0.0 m	Number of sills	0
Window head length	0.0 m	Number of heads	0
Door edge length	0.0 m	Number of edges	0
Door head length	0.0 m	Number of heads	0
Wall top length	143.4 m	Number of wall tops	12
Wall base length	143.4 m	Number of wall bases	12
Export-CSV		Continue	?



# Exercise 3 - Track-Outline

Now that you have input these relatively simple wall designs, try the next one. Remember, if you make a mistake keying in the wall length, select **Stepback** and re-insert the correct value.

To begin the next exercise, select **File** from the pulldown menu at the top of the screen and select **New.** This will automatically clear the screen of the current job. As before, select **Walls** from the main menu, then **Track-Walls**. Start at the point indicated and work in a clockwise direction around the wall line.





To achieve this drawing, follow the outline above and project the walls to a hieght of 2700. Select **View-ISO**, and you should have a result like the one show.



If there are Vertical Planes on the building you must tell the software where they are. To do this select **Walls > Gable**. This will bring up the following dialog box.

Enter the pit	ch for the gable		×
Pitch	35.00		
Can	cel	OK	?

Enter the pitch of the roof and then click [OK].

Select the end(s) that you want gable end(s) on by clicking on the top wall line, then right click the mouse button, and the siding for the Vertical Planes will be inserted.

If you want the same material and orientation of panels as the base walls for your gable ends, you must select the command **Walls > Merge-Gable** and the wall and gable plane will be merged as one plane.



Select File – Save As, then save this as Training 2 with a model name of Job 2.

### Using an Existing Wall Plan

So far, we have explored the merits of "tracking" the wall outline using the Track-Walls command. However, there are times when you may have drawn up the building already whilst calculating a roof material take-off using one of our Roofing products. In this case, there is no need to re-enter the wall values again. If you recall from the previous learning guide, you go thru a similar process to enter the wall outline, prior to adding the roof, so we can now use that wall outline as if we had generated it using "Track-Walls".

In this example, I am going to use the following Outline as if we had generated it through the Construct-Roof/ Track-Outline command from the main menu (as described in detail earlier in this manual).



Add a metal or tile roof to it with a pitch of 30 degrees and an eave overhang of 400mm. Say No to Change in Overhangs, Vertical Planes and Barge Lines, so that you will end up with a roof looking like this:



Now that the software already knows the wall outline to generate the roof, we can use that same wall outline to generate the walls.



To generate the walls for the previous outline, select **Walls** from the main menu, and then select **Project**. The software already knows what the height of the walls should be, based on the eave height that you used and the eave overhang, but you can change it at this point if you wish.



After clicking [OK], you will notice that the walls are generated automatically. And you will end up with a view like this;



Finally, as there may be too much information appearing on the screen, we may want to "turn-off" the roof temporarily, so that we can concentrate on the walls. You do this by selecting **Tools** from the pulldown menu then **Set Display**. You can now select which part of the view you wish to turn off.

	Display Settings			<b>—</b>
	1 3 5 7 9			
	First	Set All Off	Second>	Set All Off
	Walls	Yes	Walls	Yes
Set to No	Rooi	No	Roof	Yes
	Sheet layout	Yes	Sheet layout	Yes
	Purlins	Yes	Purlins	Yes
	DownPipes	Yes	DownPipes	Yes
	Dimensions	Yes	Dimensions	Yes
	Coursing lines	Yes	Coursing lines	Yes
	Blocks	Yes	Blocks	Yes
	Flashing details	Yes	Flashing details	Yes
	Cancel	On-All	Off-All	ОК ?

Note: Remember to turn them back on when you have finished!

Using the Track-Edge Command

There may be times when the edge of the wall has an extension or cut into it for some other feature. This can be achieved by using the Track-Edge command. In this example, I want you to open up L Shaped roof from exercise 1. You should have the following drawing on your screen.



Now select Track-Wall-Edge and you will be prompted which method to use to re-create the wall edge.

Wall-Lines
Re-Track Wall Line by Digitising
Re-Track Wall Line by Track-Outline
Re-Track Wall Line by Auto-Tracking
Cancel OK ?

Select the desired option (in this example use Re-Track ... by Track-Outline) then the wall line at the point (Point A) indicated on the previous page. You will then see the following box appear;

Track lines			<b>—</b>
Direction Distance Pitch 💌	0.00	nm L	U / O R D \
Insert C	Close Bay	Hor-Vert	Finish
Stepback	k Cancel	Stepforv	vard ?

You will recognize this box from our Track-Outline or Track-Walls command. This time we will be entering the modification to the top line of the wall, using the Up/Down/Left/Right and Angle buttons.

For this exercise, use these values – Firstly go Up 2000, then Right 2000, Then Down 1000, then Right 5000, then Up 2000, then Right 5000, then Down 1000, then Right 4000, then Down 2000. Now select



Close and Finish. You should now see a view looking like the one following;



### Orientation

This command is used to change the orientation of the panels on the wall, to be either horizontal or vertical. When you select this command, you will be prompted to select the plane that you want to change the orientation on, and the orientation will be changed. The default initial direction is set under Wall Cladding Allowances.



# To insert an opening, for example a door or window, select the command **Walls > Openings**. This will bring up crosshairs on the screen. You are prompted to locate a wall line to measure from. We will select the long line down to bottom (see Ref B above). When the line has been selected a point will start flashing at the end of the line you just selected. This point is taken in respect to where you selected on the line. We should have clicked on the left end of the line.

When the line has been selected the following dialog box will appear:

Define O	pening
Saved Opening Definition	▼ x
Opening Type	Door
Width	3000.00 m
Height	2500.00 m
Distance Along Wall (from Flashing Point)	1530.00 m
Height of Window Sill	500.00 m
Create Hole in Wall	
? Cancel Save Opening Inse	ert Dyn Insert Multi Insert

Fill in the details as above and select **Insert**. This will insert the door at the bottom of our drawing. You may define a library of doors and windows – refer to the Reference Manual for more details on how to do this.

To draw in the windows on this bottom wall, keep the opening dialog box open and change the opening type to **Window** by clicking on the selection box at the end of the field.

Define Opening					
Saved Opening Definition Opening Type	Window	•	x		
Width		2500.00	m		
Height		1200.00	m		
Distance Along Wall (from Flashing Point)		1800.00	m		
Height of Window Sill		900	m		
Create Hole in Wall					
? Cancel Save Opening Ins	ert Dyn Inse	rt Multi Insert			

Fill in the details as above and click **Insert**. This will now insert the first of the three windows on the bottom wall.

Keeping the **Height of window sill**, **Width of window** and **Height of window**, fields the same. Change the **Distance along the wall** to **5900**, and select **Insert**. This will insert the second window along the bottom wall. Finally change the Distance field again to **8900** and again click **Insert**, Followed by finish as you have finished inserting openings along this wall. Click your right mouse button once to cancel out of this command.

To insert the long window along the right hand wall, select **Walls > Openings** again, and select the right hand side wall that the window is on. Make sure that you select near the end where the long wall connects. From here fill in the fields as shown below.

With the fields filled in select **Insert**, to insert the window and then **Finish**. Then Right Click the mouse. You should now be presented with a view looking something like the following;



S

This completes the insertion of all of our openings in our wall outline.

### Estimating the Siding/Cladding



To estimate our siding we must first put material on it. To do this select **Walls > Select Wall Cladding** and a dialog box will appear showing you the materials available to be put on the walls. This database of materials is the same as the one containing your roof panels. Refer back to the Set-Up Guide to see how that process takes place.

For this exercise, select the BHP material shown, and click **[OK]**. If the material you selected has a color, you will be asked to select a color as well. This will bring up the following dialog box.

elect Roof Materia	al	×
Manufacturer	All	•
Profile	All	•
Gauge	All	•
Finish	All	•
Coverage	All	•
	,	_
Steeline Corru Steeline Corru Steeline Curv Steeline Curv Steeline Curv Steeline Stee Steeline Stee	11 000.00 CI 0.40	* III
Hebel Panel	600.00mm Cb 0.42	
Substrate	Not Defined	
System	Not Defined	
Assembly File	Panel_600.CSV	
Canc	el OK	?

<b>Note:</b> You define your labour rate for applying the walls within <b>Set-Up &gt;</b>		Siding	g Material 🛛 🗙
Set up Pay Rates > Wall cladding pay rates. If you have not already		Straight Metal Pay Rate	Use Metal-rates
defined a new labour rate, this section will not appear.		Allowances in Use	DEFAULT
In time you will define a number of		Straight Metal	
different labour rates for applying your different materials and it is at this		Supplier	Ampelite
point that you select which labour rate you will use for this job.		Profile	Steel Rib
		Product Code	ZSRGC/8
Notice also that an allowance file may be selected here.		Finish	Wonder Glass
		Gauge	8.000000
		Fastener	TOS/12/50/G
		Fasteners per sqm	6.000
		Coverage Width	500.000 mm
		Insulation	Blanket + Foil 24m2 💌
If you want to add fasteners and/or clips the material that you are using. Click of selection box at the end of the field, and select the required fasteners and/or clip	n the d	Change Metal	Accessories
When this is done click <b>[OK]</b> .			
The next step is to estimate the siding. is done by clicking on the <b>Generate</b>	This	Cancel	<u>ОК</u> ?

command. This will generate the sheets on

our wall, using the specifications of the material we previously specified.

If you wish to nominate an Identifying Name to each wall plane, you can use the Set-Identifier command. You will be asked be firstly locate a Wall Panel you wish to identify, and then you will be asked to give each wall plane a name. This name will appear on any reports that are generated later. Right click on your mouse when you have finished.

E.

When this is done, click on the **Walls > Apply Wall Materials > Create Panel Cut List** command and all of the sheets are tallied up and put into a cutting list, similar to the following.

Panel Cutting List Summary	×
Material: Steeline, HR/0.48/500/ZA, Steel Rib, Za, 0.48, 500.0	
7/15680, 7/10380, 7/8690, 7/8270, 7/5880, 7/4090, 7/3670, 7/3100,	
Sheeting Accessories	
Total Sheet Length : 418.320m	
Sheet Area : 209 m2	
Wall Area : 191.1 sqm	
00221.dab : 12	
Sheet Allowances Used: <default></default>	
Export Proface Delete	
Export CSV Change Mat'l OK	
	?

Click **[OK]** to exit this box. This now completes the estimation process. If you want to delete the panels you have created, select the **Walls > Delete** command.



# Wall Flashings and Trim

To put flashings on our wall, select the **Walls > Flashing** command and a dialog box similar to the following will appear. You can define your own flashings in the same way as you did with the previous Learning Guide, i.e. through Materials-Flashings and then change the Type of Flashing to apply to Walls.

Select/Generate Wall Batt	en & Tri	m <default></default>							<b>X</b>
Wall Batten									
Batten 1	None					<b>•</b>	Acce	ssories	
Wall Trim									
External Corner	Steeline	e CornerExt Ga	[FL	/0.55/300/5/G]		•	Acce	ssories	
Internal Corner	Steeline	e CornerInt Cb	[FL/	/0.55/300/5/C]		•	Acce	ssories	
Wall Top	Steeline	e DoorStile Cb	[FL/	/0.55/100/3/C]		•	Acce	ssories	
Wall Bottom	Steeline	e Bottom Flashing	Ga	[FL/0.55/200/3	/G]	•	Acce	ssories	
Allowances	;	Load		Delete		Save-As		Colour Set	
Generate		Set All to None		Single-Line				Delete Flashings	
Cancel				View List				ОК	
	-								?

From this dialog box we can enter all of the different types of flashing used on a wall. To set a material for a flashing simply click on the corresponding selection box for the required flashing. By clicking on a flashing, the material selection box will appear, and you can choose the type of material for the selected flashing. The following dialog box is an example of what the selection box will look like.

Select/Generate Wall Batt	en & Trim <default></default>	×
Wall Batten		
Batten 1	None Accessorie	s
Wall Trim		
External Corner	Steeline Corner Ext Ga [FL/0.55/300/5/G]	8
Internal Corner	Steeline Corner Int Cb [FL/0.55/300/5/C]	s
Wall Top	Steeline Door Stile Cb [FL/0.55/100/3/C]	s
Wall Bottom	None Custom Assembly	s
	Steeline DoorStile Cb (FL/0.55/100/3/C) Steeline EdgeFlashing Cb (FT/0.55/200/3/C)	
Allowances	Steeline Edge Flashing Cb [FT/0.55/300/3/C]	Colour Set
Generate	Set All to None Single-Line De	lete Flashings
Cancel	View List	ок
		?

Wall Flashing Allowances		<b></b>
	Run Allowance	Lap Allowance
Wall Top	50	75
Wall Base	50	75
External Corner	50	50
Internal Corner	50	50
Window Sill	50	50
Window Edge	50	50
Window Head	50	50
Door Edge	50	50
Door Head	50	50
Wall Battens (same as roof)	50	120
Custom	120	50
Combine Similar Length flashings	50	
Cancel	ngle-Allow	OK ?

Then select your flashing, simply highlight the required flashing and click **[OK]**. This will now be changed on the flashing dialog box.

From the flashing dialog box you also set your allowances for your flashing overlaps, underlaps etc. This is done by clicking on the **Allowances** button. This brings up the following dialog box.

As you can see there are a number of allowances that need to bet set. Run Allowance is the allowance for the end of a run (end corners). Lap Allowance is the allowance for overlaping before the end of a run. **Single-Allow** allows you to set a different allowance for a single run. When your allowances are set click **[OK]**, and you will return to the flashings dialog box. From here you can now generate your cutting list for your flashings. This is done by clicking on **Generate**.

Your flashings will now be generated using what you specified earlier. When the process is done a dialog box similar to the following will appear:

Flashings		
External Corner Stramit,External corner,Zincalume,EXCNR-12 6/3250	234	
Total : 19500		
Internal Corner Stramit, Internal corner, Zincalume, INTCNR-12	35	
2/3250 Total : 6500		
Window Sill Stramit, Sill Flashing, Zincalume, SILL-111 2/1300		
Total : 2600		
Window Edge Stramit,Edge Flashing,Zincalume,EDGE-666		
4/950		
Total : 3800		
Window Head Stramit, Head Flashing, Zincalume, Head-1234		
2/1300 Total : 2600		
Deer Edea Street Deer Edea Electrica Zinachura DEDGE 0	0	
Door Edge Stramit, Door Edge Flashing Zincalume, DEDGE-8 2/1850	0	
Total : 3700		
Door Head Stramit,Door Head Flashing,Zincalume,DHEAD-2	2	
1/2150 Total : 2150		
Total: 2130		
Accessories		
	1	
ExportCSV	Continue	

From here you can see all of the flashing that is required for this job. Click **[Continue]** to exit and the Flashings dialog box will appear again. If you wish to see this list again, click on the **View-List** command in the Flashings dialog box.

If you wish to delete the flashings for the job click **Delete** and they will be deleted. If you wish to add a flashing to a particular line, use the **Single-Line** command.

To exit the flashings dialog box, click [OK].

## **Reporting/Costing**

The costing command is where the cost of the materials and labour is calculated. Click on **Reporting** > **Supply-Only or Supply-Install button –** the same as you would have used in the Roof section, and the following dialog box will appear.

Roof Cover										
Manufacturer	Description			Qty	Rate	SubTotal Di		Total Category		
Steeline	HR/0.48/50	0/ZA,Steel Rib, Za	1	209.16	56.00	11712.96	0.00	11712.96 Siding		:
lashings										
1anufacturer	Description			Qty	Rate	SubTotal Di		Total Category		L
	Cartage			0.00	0.12	0.00	0.00	0.00 Cartage		
	Cartage			1.00	0.00	0.00	0.00	0.00 Cartage		
teeline		Ridge Corrugated,	, Cb	45.65	25.00	1141.25	0.00	1141.25 Ridge		
teeline	VI/0.55/Za,			5.09	0.00	0.00	0.00	0.00 Valley		
teeline		,Fascia (Bx/Ww),		62.32	0.00	0.00	0.00	0.00 Fascia		
teeline		CB,Gutter Half Rou		65.06	0.00	0.00	0.00	0.00 Gutter		
tramit		4,External corner,		19.50	6.40	124.80	0.00	124.80 External Corner		
tramit		35,Internal corner		6.50	1.00	6.50	0.00	6.50 Internal Corner		
tramit		ll Flashing, Zincalur		2.60	1.00	2.60	0.00	2.60 Window Sill		
tramit		Edge Flashing, Zind		3.80	1.00	3.80	0.00	3.80 Window Edge		
tramit		Head Flashing, Zir		2.60	1.00	2.60	0.00	2.60 Window Head		
tramit	DEDGE-88,	Door Edge Flashing	g, Zincalume	3.70	1.00	3.70	0.00	3.70 Door Edge		
			-Labour Items			Mat	erial Items		Totals	
			Labour SubT	Total	178.1	2 Ma	iterial SubTotal	13000.36	Job Total (ex TVA)	13199.85
			Labour Mark	Up /	12.0	0 Ma	iterial MarkUp	0.00	Rebate/Extra	0.00
			Labour Tota		199.4	9 Ma	iterial Total	13000.36	TVA (19.60%)	2587.17
Quote Groups			Labour rota	· /				J	Total (incl TVA)	15787.03
Notes	Save	Set Suppliers	Add Item							
Export GRIM	Load	Set Discounts	Add Other							
	Delete	Set Finishes	Tile Waste						Cancel Print	

Fromt this dialog box you can see, all of the relavent information about pricing the job, quantity of material, price of material, etc.

The labor component is taken from the Siding-Pay button (refer Page 19), located in the Costing menu. Here you set a labor rate for each of the different features of the wall. You can modify the results by clicking on Labour Sub-Total and then hitting the Re-Calc button.

From here you can print all of your quotation drawings by clicking on the **Print** button. You can also change some of the prices from this dialog box and save the quote using the **Save** button.

The complete set of job pricing information is then saved into the model database and writes the name of the quote to a file saved in the \User folder called *QuoteRegister.csv* so that the job may be recalled by quote number from the File menu.

At this point you can also print out elevation drawings for the walls by selecting Drawings from the main menu and then select either Wall Plan or Wall Elevation.

# Section 2b – Learning Guide (English/Imperial Units)

### About the Learning Guide

Construct

od-Reof

Yalls

Check

Cover

Estimate

Renort

The purpose of this section of the manual is to provide you a set of tutorials to work through with **Roof** *Wizard*. Some detailed advice has been provided but it should be read in conjunction with Section 5 of this Reference Guide, which describes the commands in more detail. We may refer to **Roof Wizard** but this also applies to the other packages shown above.

This guide has been divided up into 10 parts that takes you step by step through a typical job. These are;

- 1. The Interface
- 2. Modelling
- 3. Cover Tile
- 4. Cover Flashing
- 5. Cover Metal
- 6. Estimate Metal
- 7. Cover Built Up Roof
- 8. Layout Built Up Roof
- 9. Cover Downpipes, Underlay (Sarking), Insulation etc
- 10. Costing/Reporting

There may be sections in this manual that don't relate to you (ie. The section for metal roofs will not be of much interest if you are doing tile roofs). When you do come to one of these sections, simply skip it. All the information to help learn the AppliCad software for all material types has been included in this guide, so there may be surplus information if you are a specialist roofer.

### The AppliCad Process

The foundation of the *AppliCad Roof Wizard* software is based upon the creation of accurate roof geometry - ie the roof geometry must first be correctly modelled in 3D space. It is from this 3D definition of the roof that the roof areas and quantities are extracted. Clearly, if the roof modelling is not accurate, the whole process is compromised.

To assist the operator in the roof modelling process, we have included some very sophisticated but simple, single mouse 'click' operations that allow a roof model to be built from basic principles.

The usual starting point for a roof using this system is an outline of the roof from which the hips and valleys are created. From this, just about any roof may be modelled by adding all the architectural features including dormers, atriums, gables, verandahs etc.

After the roof geometry has been created, the roof cover material must be selected\*. This is done by selecting the material to be used from a list of user defined materials be it tile, shingle slate or metal. The program automatically accounts for other associated and required fixtures, fittings and accessories. You may also select the type of flashings you want to use.

After creating the material list, costing of the job is automatic, providing you with the ability to modify the quote prior to printing the necessary reports.

### **Roof Creation and Modification**



The purpose of the following section is to familiarize you with the process of creating a roof in 3D from an Architectural drawing or site survey measurements.

Outline The modelling tutorials will be divided into two sections. The first is the creation of basic roof shapes using **Construct-Roof** including simple hip and gable roofs, flat and mono-pitch roofs, variable pitch gables and verandahs, as this is the 'foundation' of our estimating system.

The second section will involve making modifications to the initial roof geometry using **Modify Roof**, adding Architectural features such as dutch gables, corner gables, atriums, cut-outs etc. This will be followed by tutorials on coverage and costing.

### **Before We Start**

Before we start we make sure that your **Preferences** are set up correctly. This is set under the **Set-Up** > **Preference Settings** > **System Preferences** menu. This was outlined in Section 2.



Track Outline

For the first example, we will use a photocopy of a roof plan, just as you might get during the course of a day's work. The dimensions shown refer to the wall outline and the eaves are offset from the walls by 1'6" and at the gable end the barge lines are offset from the wall by 1'.

It is useful to ensure that the eave height is entered accurately as this will affect the relative location, lengths and areas of any other or future roof planes butting onto the existing roof.

First select the **Construct-Roof** option from the **Pulldown Menu** at the top of the screen.

Construct Roof Modify Roof	W
Roof Preferences	
2D Roof Design	>
Smart-Lines 3D Roof Design	>
Digitise Outline	
Track Outline	
Recover Outline	
Multi-Hip Roof	
Add Verandah (Porch)	>
Underlay Image >	
More	>



We will use **Track Outline** to input the wall outline as this will be the <u>most usual method</u> of outline definition. Select **Construct Roof > Track Outline**.

**Note:** (If you had measurements of the eave outline instead of wall outline dimensions as we have here, you could enter those dimensions, but remember to change your eave offset and gable overhang to be zero.)

If a previous job has been started but interrupted for any reason, the Message box below appears so that you can work with the previous outline.

	Message	×
Start with Incomplet	e Outline from	Last Track Session?
Yes	No	Cancel

The outline start point is automatically set at x,y screen coordinates 0,0. The **Wall Direction and distance** dialog box will now appear (see below):



The buttons marked Left, Right, Up and Down, allow you to navigate around the plan as you put in the brickwork or wall measurements. The angled lines are for walls that are at 45 degrees.

The **[H/V]** button is to allow the operator to insert wall lines that are not square with the rest of the structure ie 16' along and 12' up. The [o] button in the middle of the Left, Right, Up and Down buttons is used to set a **reference point**. More on this later.



**Time Saving Note:** Enter the letter "U" for up, "D" for down, "L" for left or "R" for right, in front of the length of the wall or eave. Then click enter. On this job, you could have typed in U16 {Enter} R16 {Enter} U16 {Enter} R16 {Enter} and then 'C'(short cut for close square) {enter} in the distance field on the dialogue.



The process is to select the direction of the wall that you want to draw in, or by typing in the angle in the direction field, the **Distance** field will be highlighted. Type in the length of the wall and select **Insert.** A **dashed line is drawn on screen and a designation indicating line 1 and the length in feet/inches.** You are now ready to put in the next wall, and the next wall and so on.

Using our example, we will start at the bottom left hand corner of the house, select **Up**, and then type in **16** for the length of the wall (as in 16 feet). Select **Insert** or press {enter} key.

Now select Right and type in **16**, then **Insert**. You could also type **R16** in the direction field for the same result. You may also type 16' (with the Feet mark), if the dimension was 16feet 6inches you could insert 16'6 or 16'6" or 16.5'.

If you make a mistake, select **Step Back** and redo the wall outline.

[Continue] around the plan until you reach the top right hand corner. At this point, select **Close** from the dialogue box. The **Select the close method** dialog box will appear. Select **Close > Square.** You may also simply type **C** and {enter} and the outline will close for you.

This will insert a right-angled line from the first point of the outline and the last point of the outline. Where these two lines meet, a point will be inserted which will be the lower right corner of the wall, in this instance.

You should always let the software determine the close as it will then allow you to check the last two measurements against the drawing.

Following this check, if the outline is correct, you must press **Finish** or simply type **F** and {enter}. If not, select **Step Back** and redo that part of the outline which was incorrectly input.

The wall outline is now complete. It is represented by white dashed lines. These are construction lines only, no roof geometry exists yet.

Rc	oof Defaults
Roof Type	Pitched Roof
Roof Material	Metal 💌
Storey	1 ÷
Slope	8 in 12
Eave Overhang	1'6'' <u>m</u>
Gable Overhang	1' m
Eave Height	11'
Rafter Spacing	4' m
Eave Type	Fascia-Gutter 💌
Cancel	<< Back OK ?

The **Roof Defaults** dialog box will now appear on the screen. This is used to specify the roof parameters of generic material type, roof pitch, eave offset etc.

Change the slope or pitch to 8 in 12, the eaves overhang to 1'6", and the verge overhang to 1'. To do this, simply double click with your mouse in the cell to highlight and change, or select TAB key on the keyboard to move down through each cell to change the options.

When you are happy with all the options, select **[OK]**.

At this point, a dialog box will appear asking if you want to Define Vertical Planes, Change Eave-Verge Overhangs and Define Barge Line.



Click on Define Gable Ends. Using the left mouse button, select the left hand **wall** of the building outline (which is to have the gable end).

You will notice in the prompt area (at the bottom of the screen), that it is still asking you to **locate a wall**. As there is only one gable on this building, press the right mouse button to cancel out of the selection process.

A message box will now appear advising you of how many entities were located. You will then be asked if you want to use this entity. Select **Yes.** 

The above dialog box will appear again. If you wanted to change the eave or verge overhang for a wall, we would select that button, followed by the eave that we would like to change. In this instance, all of our eaves are at 1', so we ignore it.

We are also asked if we would like to Define Barge Lines. For this case we will ignore it as we will explain this command a little later. Now click [Continue]. The hip and valley roof is automatically created in 3D.

Return to the **Main** menu by pressing the right mouse button.



If you wish to view the roof from another angle, you can change the view by selecting the **View** menu at top. Select the required view (in this case we'll select **Isometric View**.

Select **Isometric View** and then **[OK].** This will enable us to look at the house in an isometric view. You may have to zoom fit the model by double clicking the centre mouse button to fit the entire model into the workspace.

**Note:** If you change views and your roof seems to disappear, it is simply that you are zoomed into a small section of the drawing. You may need to zoom fit the appropriate view.



View	Zoom	Tools	Mer
Тор	or Plan Vi	ew	
Fron	t View		
Right	View		
Left	View		
Back	View		
Isom	etric Viev	v	
Pers	pective V	iew	
Selec	t View		
Rese	t View		
Spin	View of F	loof	
Singl	e View		
Four	Views		
Split	Screen	>	

This completes the exercise using Track-Outline.

### Save Your Job

To save your job select File > Save from the Main menu. The following dialog box will be displayed.



Type in your project or customer name in space under *File Name* and the job name in the space under *Model Name*, then select [OK].

For this exercise, use File Name TRAINING and Model Name Exercise 1. You're Done!



When you start work on real jobs, you will use your own job naming convention. You might for example use the name of the builder as the file name, and the site address as the model name. For example, **MightyBuilders** for the file name, and **27LongStreet** as the model name.

**Note:** Do not use special keyboard characters in the file name – such as #,?,/,|,&, etc - in the names as it confuses software programs..

To begin the next exercise, select **File** from the pulldown menu at the top of the screen and select **New**. This will automatically clear the screen of the current job, or prompt you to save the current job if you haven't already done so.



Now, for the practice, and using the process described previously, do the following roof using the **Track Outline** command and using the dimensions shown.



You will use **Construct Roof > Track Outline** then (we will start at the bottom left hand corner of the job) type in **U37 {enter} R42'6 {enter} U13 {enter} R10 {enter} D13 {enter} R7 {enter} D20 {enter} L24 {enter},** then **(C)** CLOSE SQUARE, then **(F)** FINISH.



In this instance we will use the same roof defaults as the previous exercise. Remember that when you are asked to Define Vertical Planes etc, you need to click on Define Vertical Planes and select the 10' line at the top and the 20' on the right.

If you select **Isometric** from the view menu, (and remember to **Zoom Fit** the view – you do this by double clicking the middle mouse button), you should see a roof looking like this:

Something else you may want to do is to rotate the view to take a look at your roof model from a different angle. To rotate a roof in Isometric view, hold down the **Ctrl** key and the middle mouse button and move the cursor to position your model.

You may also zoom in and out from your model using the middle mouse scroll wheel.



When you have finished, select **File > Save As** (from the top menu).

You should see a file called **Training.dab** (which you created previously). Select this file on the left hand side and then type in Exercise 2 in the **Model Name** field.

To begin the next exercise, select **File** from the pulldown menu at the top of the screen and select **New**. This will automatically clear the screen of the current job.

Exercise 3 - Track Outline – (using Angles)

Now, using the commands already shown, try the roof outline below.

An important thing to remember before you first begin to enter the values is to work out the best location of the *Start Point* based on what information you have been given. In this instance, there is one line which isn't dimensioned (like that never happens on real drawings!) so we will use this line as our *Closing* Line, ie let the software calculate the length.

We will be using the 45 degree direction button on the track outline dialogue this time. Another important thing to remember is that we cannot use **Close Square** on this job as the first and last lines are not at right angles to one another. We will use the **Close Straight** button this time. Leave the **Roof Defaults** as previously set.



Try it for yourself and compare the result to the drawing below for the way it should have worked out.

You will achieve this by doing the following:

Select Construct-Roof > Track Outline, then select the button 1 (see above) and enter a distance of **30' {enter}** then button 2 and enter a distance of **45 {enter}**, then down **45 {enter}**, then **R30 {enter}**, type C to Close and Press Enter. Then select Finish (or the short cut F {Enter}. Now stop! Stop for a moment or two and compare the wall dimensions displayed with what is on the plan. This is a way of checking that the outline compares with the job dimensions.

When you have finished, select **File > Save As**. You should see a file called **Training.dab** (which you created previously) . Select this file on the left hand side and then type in Exercise 3 in the **Model Name** field.



**Note:** By now, you should be fairly comfortable with the basics of entering a roof or wall outline and generating a 3D roof from it. As you have seen, the software creates a hip and valley roof from the outline and assumes that the eave line is the same height. If you have a number of different eave heights for your roof, you may need to break the job down into separate components. This is covered with our Project Gable command section below.

To begin the next exercise, select **File** from the pulldown menu at the top of the screen and select **New**. This will automatically clear the screen of the current job.

So far, we have dealt with the command **Track Outline** which automatically generates a Hip and Valley roof from the outline and the pitch. There may be times when you need to create a simple flat (or low slope) roof, or have a roof simply sloping up from one eave line, in the form of a flat plane. The following exercises will demonstrate how this is achieved.

However, before we do this, let's look at how we check that our job is correct.

# Checking your job – The AppliCad Process

Before we proceed with the next exercise, we will use the Tools menu to check one of the previous jobs we have done. This is a most important step:

- add dimensions overall and up the slope,
- add dimensions ridge to eave,
- show roof pitch, check storey
- show line types,
- show four views, look at the picture
- display total roof geometry (Tally Quantities)

This is a vital and integral part of **the AppliCad Process** and provides you with the tools to check the job before committing to materials and labour in your quotation.

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Π	Ĺ

From the **Tools** menu select **Dimension > Auto-Insert Dimension** to add overall eave to eave dimensions.

Tools Menu On/O	ff Hel	p		
Show/Hide Planes				
Show Pitches				
Show Line Types				
Dimension Roof	>	Auto-Insert Dimensions		
Project Walls		Insert Pnt to Pnt Dim.		
Display Roof Quantities		Insert Line to Line Dim.		
		Roof Line Lengths		
Change Entity	>	- Reposition Dimension		
Measure	>	- Delete Dimension		
Verify Entity		Roof Plane Areas		
Check Model		Tile Coursing Dimensions		
Set Display				

You may need to **Zoom Fit** the view to see all of the dimensions. Depending on the size of the roof, the dimensions may be too small to read.

If they are too small because of the scale of the job (that is it might be a huge job), this is adjusted by selecting **View** from the pulldown menu, followed by **View** > **Plot Scale**. A dialog box pops up and you are prompted to change the Plot Scale. Change the plot scale of the current job to say, 150, and select **[OK]**. The dimensions are redrawn at a more legible size.



Then select **Tools** > **Dimension Roof** > **Roof Line Lengths** to display the length of each line up the slope of the roof.

Then select **Tools > Show Pitches** to display the roof storey and the roof pitch of each roof plane. This is a 'toggle' switch. This means that you select it to display and select it again to turn the annotation off.

Then select **Tools** > **Show Line Types** to display the category of each line on the roof. There are occasions where you may decide to change the line type, but we will deal with this later. This is a 'toggle' switch. This means that you select it to display and select it again to turn the annotation off.

Go to the pulldown menu and select **View > Four Views** to display four views of the roof model. The default setting is Top view, ISO view, Front View and Right View. You may have to zoom fit the screen (double-click centre mouse button) in each view to display the full extents of each view of the roof model.

Finally, to get geometric quantities, select **Tools** > **Tally-Quantities**. Select this and a dialog box is displayed with a summary of the geometric areas and lengths of the current roof.

View	Zoom	Tools	Mer
Тор о	or Plan Vi	ew	
Front	t View		
Right	View		
Left	View		
Back	View		
Isom	etric Viev	v	
Persp	pective V	iew	
Selec	t View		
Rese	t View		
Spin	View of F	loof	
Single	e View		
Four	Views		
Split	Screen	>	
Plot 5	Scale		



This function may also be accessed from the Icon Menu -

Tools Menu On/Of	f Hel	Summary of Roof Quantitie	5		(	X
Show/Hide Planes		Tally roof quantities for C	Combined 🛛 💌	Show-full		
Show Pitches		1	First	Second	Total	
Show Line Types		Roof volume cu ft	2735.06	0.00	2735.06	
Dimension Roof	>	Roof Area sqft	1388.62	0.00	1388.62	
Project Walls		Curve quality Area sqft	0.00	0.00	0.00	_
Display Roof Quanti	ties	Ridge Length lft	42.81	0.00	42.81	
Dispidy Root Quarte	uca	Mono ridge lft	0.00	0.00	0.00	
		Hip Length Ift	89.41	0.00	89.41	
Change Entity	>	Valley Length Ift	38.60	0.00	38.60	
		Fascia and Gutter Length If		0.00	153.87	
Measure	>	Gutter Only Length Ift	0.00	0.00	0.00	
		Fascia Only Length lft	0.00	0.00	0.00	
		Rake Length Ift	19.55	0.00	19.55	
		Fascia as Rake Length lft	19.55	0.00	19.55	
		Skirt Length Ift	0.00	0.00	0.00	
		Purlin Length Ift	0.00	0.00	0.00	
		Purlin2 Length lft	0.00	0.00	0.00	
		Box Gutter Length Ift	0.00	0.00	0.00	
		Step Length lft	0.00	0.00	0.00	
		MonoRidge Ift	0.00	0.00	0.00	
		FasciaCover Ift	0.00	0.00	0.00	
		TileBooster Ift	0.00	0.00	0.00	
		User4 lft	0.00	0.00	0.00	
		Hip Starts	5.00	0.00	5.00	
		Hip Apexes	2.00	0.00	2.00	
		Export XLS E	Export CSV	Print	Continue	

Additional model Information including No. of Roof Planes, No. of Eave Heights, No. of Pitches, No. of Roof Holes and No. of Barge Lines to the Display Tally dialog when Show Full is selected.
External 90 Cnrs	0.00	0.00	0.00
Internal 135 Cnrs	0.00	0.00	0.00
External 135 Cnrs	0.00	0.00	0.00
Total Corners	0.00	0.00	0.00
No. of Roof Planes No. of Eave Heights	10.00 7.00	0.00	10.00
No. of Pitches	3.00	0.00	0.00
No. of Roof Holes	0.00	0.00	
No. of Barge Lines	2.00	0.00	
Export XLS	Export CSV	Print	Continue



#### Important Note:

The steps described above are imperative. Use them on every job without fail so that you check every aspect of the roof geometry BEFORE you determine material quantities. Better to find a problem now, than when you have delivered the job!

Notice also that you can export this information to a .csv (Comma Separated Values) format ascii text file using the **Export CSV** as well as an XLS file format button, so that this basic roof geometry information may be used in other systems that may be using in your business with Microsoft Excel.



This time, after clicking **Finish** you will see a different box appear:

R	pof Defaults
Roof Type	Single Slope Roof
Roof Material	Metal
Storey	1 .
Pitch	2
Eave Overhang	0.00 m
Eave Height	10
Rafter Spacing	24" m
Eave Type	Fascia-Gutter 💌
Cancel	<< Back OK
	· · ·

Enter the details of the roof as shown. It is not necessary to enter a pitch if your roof is completely flat. As there is a pitch in this case, [2/12] we need to tell the software where we are sloping the roof up

from, ie a pitching line.

When you click **[OK]**, another dialog appears asking you to *Locate the Pitching Line* This refers to the "Eave" or lowest part of the roof where the roof pitches up from. In this instance we need to select the longest line (32') as our *Pitching Line*.

Select Roof Modification ×				
1 Change Overhangs				
2 Define Eave/Pitching Line				
Cancel << Continue				
Cancel << Continue ?				

A further option exists to change the overhangs on any side of our roof shape. In this case, we do not wish to make such changes.

Using the same commands as before, you can view the roof from any angle.

When you have finished and are happy with the roof, you can save the job **File/Save As** and then save it as Exercise 4 within Training.dab.



# eave height

This will be the line at 10'

Pitching Line -

### Exercise 5 - Track Outline (for Single Slope Roofs)

Now try this one, using the 45 degree angle button where required. Use the same roof defaults as the previous exercise. Select the lower line as your *Pitching Line* when asked.



Save this job as Exercise 5, within Training.dab. Select File > New to prepare for the next job.



This time, we will use another command within the **Track-Outline** dialog box called **[H/V]**. This allows us to enter the "coordinates" for the end point of the line, without knowing it's length or angle. We will use the following outline:

Horizontal-Vertical Distances				
Horizontal Distance	10			
Vertical Distance	-3			
Resultant Distance	0			
Locate Point	on Screen			
Cancel	OK 2			

To achieve this outline, select **Construct-Roof > Track Outline.** Then insert the first line as **U15 {enter}.** The next line is going at an angle and we don't know the angle or the length but we know the location of the end point. Select **[H/V]** and you will see the following box appear;

Enter the values as shown and click [OK] and you will see the line on the screen. The next line is horizontal so we can simply enter **R8 {enter}**.

The next line is at an angle so click on **[H/V]** and enter the Horizontal and vertical values again. It is important to get the correct values, either Positive or Negative, depending on the direction of the line.

Enter a value of 10 for the Horizontal Distance and (negative) – 3 and click [OK]. Next we need to use [H/V] and enter a Negative value for both horizontal and vertical distances. You can end the outline by Closing Straight and then Finish.

Set a pitch of 0 this time. When you have finished, have a practice with changing views and when ready, save the job as Exercise 6 in Training.dab.

It is very important to get your head around the concept of 3D space and positive and negative numbers. Any distances going to the **Right** or **Up** of a datum point are **Positive**, distances to the **Left** or **Down** are **Negative**.

The purpose of adding the dimensions is to further confirm that the outline has been correctly defined.



**Note:** In this case the dimensions refer to the actual roof outline – not the wall outline, so they will take into account any eave and gable overhang. If you were digitising the wall and you had overhang, then don't forget to add it in the field provided.

### Exercise 7 - Gable Roofs

As you have seen so far, if you had a straight forward Gable to Gable roof, you could use the **Construct Roof > Track Outline** command to enter the dimensions, then indicate that you required a Gable end at each end and the software will produce a gable roof.

However, there may be times when you need to produce a gable roof where the ridge is not in the centre, or where the pitch on one side is different to the other. The easiest way to achieve this is to use the **Construct Roof > Gable** command. Firstly select **File > New**.



For this next exercise, we will create the roof above.



When inserting this type of roof, select **Construct Roof > Gable** and you will be asked to *Locate Start* of *Ridge* – just left click anywhere on the screen (or you could type a known start point such as 0,0). Now you will be asked to *Locate End of Ridge*. You may notice that there appears to be a "rubber band" attached to the end of your cursor now – it is tempting to click somewhere on the screen, but I recommend another method.

When asked for the End of Ridge, I want you to type in the distance from the first point to the end of the ridge, and also the direction that the point is in. To do this we need to firstly use the **incremental** command – shortened to I (as in I for Incremental), then followed by the direction (either x = across the screen or y = up and down the screen), followed by the amount. (Remember the positive and negative rule applies to this also).

You will need to type in **iy30 {enter}** this refers to incremental distance in the positive y axis (up the screen) of 30'. When you hit enter, the following box will appear:

Gable Roof Defaults		<b>—</b>
Roof type	Metal 💌	
Storey	1	÷
Slope left	7	in 12 🛄
Slope right	11	in 12 🛄
Span left	12	
Span right	8	
Left eave height	13	
Length	30	
Cancel	OK	?

Enter the details of the roof as shown – a slope on the left of **7 in 12**, a slope on the right of **11 in 12**, a span left of **12** and a span right of **8** and a left eave height of **10**. As you can see, you can change the length here also.

Instead of using the incremental measurement option, you can also simply type  ${f U}$  for up relative to the CPL (Construction Plane) and  ${f D}$  for Down,  ${f L}$  for left and  ${f R}$  for right. Indeed you can use either or both methods of defining a line length.

Depending upon your preference settings (**Set-Up > Preferences**) you may use %, slope, or degrees of pitch.

You should end up with a roof looking like this. You may have to **Zoom-Fit** the screen if you cannot see all of it (double-click middle mouse button).

When you have finished, try inserting dimensions, changing the views around and getting the areas and lengths from the roof.

Now save the roof as Exercise 7 as before in Training.dab.



#### Adding a Verandah (First Storey or Porch Roofs)

There will be times when you have a main roof and a second roof lower down to cover an entrance way or first storey window. We have built in a **Verandah** command to make this process easy. It can also be used to add a Verandah or Porch!



For this next exercise, I want you to open up a drawing we did in exercise 2.

Go to File > Open, select Training.dab on the left hand side and double click Exercise 2 on the right.

### Exercise 8 - Provide Adding a Verandah

You should now have the roof drawing done on exercise 2. We are now going to add the verandah. *Important Note:* When Inserting Verandahs, always ensure that you have the roof in a Top View rather than an Isometric. This is critical to determine the correct position of the Verandah.

With the roof in a *Top View* select **Construct-Roof** > **Add Verandah**. You will then notice a new menu appear on the right – select **Simple** in this case (the differences between Complex and Simple is beyond the scope of this exercise. It is covered in Section 5 of this manual ).

Then you will notice that you have cross-hairs on the screen and you are being asked to *Locate the first line to attach the Verandah to.* The verandah can be attached to eave lines or wall lines, but in this instance I want you to use the wall line (which should be the blue line – not the outside eave line which is usually green). See below for the two lines I want you to use. In theory, we could continue selecting lines around the perimeter but in this instance we are only using the two. After selecting the second line, we can cancel out of this part of the command by *right clicking* the mouse.

You will then be asked to *Locate the side of Verandah in Relation to the first Line.* This means that you need to tell the software where the Verandah will be sloping to – simply click somewhere **outside** the building relative to the first line you selected.



You should then see a dialog box looking like the one below:

As you can see, you can set various features of the verandah, including the *Storey, Type* of *Verandah* and *Fascia configuration*. Set the *Width* to 5' and set the *Height of Gutter* to 11'. (Note: if you cannot see the **Height of Gutter** button, click on **Height at Wall** – you can use either, but the software uses whichever you select quite literally).

You can also set the finish at each end of the Verandah, either Hip, Gable or Butts Wall. The pitch can be different from the main roof if required. For this exercise, leave the last 3 fields as 0. We will use these in the next exercise.

Porch defaults		×
Roof type	Metal	
Storey	1	
Type of Porch	Straight	
Fascia configuration	Fascia-Gutter 💌	
Width	5	
Height at wall	11	
Start preparation	Gable 🔹 Fascia&Rake 💌	[
End preparation	Butts-Wall	
Slope	2 in 12	
Distance from first point	0.00	
Distance from last point	0.00	
Underlap (for bellcast style	) 0.00	
Cancel	Preview	?

It is useful to verify what the verandah may look like before inserting it - click **Preview** and you will see the verandah displayed on the screen. If you need to refine any measurements, make the change and preview again. Things to check in the preview are the start and end preparation, as selecting the correct treatment ensures that the right material will be applied when you get to that stage. If they are not correct, change the setting and select preview again.



**Note:** If the dialog box obscures the view of the roof, move your cursor to the blue strip at the top of the box and, whilst holding down the left mouse button, drag the dialog box to a more suitable location on the screen.

If the Verandah looks correct, click [OK] and you should see this:



As you know, you can change the view to make sure that it has gone in at the correct height. If you make a mistake with any Roof Modelling functions such as inserting the Verandah, you can use the **Undo** and **Redo** commands on the Icon Menu to step back to the previous command. Try it for yourself.



Now that we have made some changes, you might want to save it as a new name. Select File >Save

as and then save it as  $\ensuremath{\textit{Exercise 8}}$  within  $\ensuremath{\textit{Training.dab}}$ 

### Exercise 9 - 🚵 Adding a Verandah II

For this exercise, we will open up the roof we created in Exercise 1. The end result will look like this:





In the previous exercise, you will have noticed that the

verandah was built along the full length of each wall that we selected. There will be many instances where the verandah is only part of the way along a wall. For this function we need specify the *Distance from First Point* and *Distance from Last Point* (It is indicated on the screen which are the first and last points)

After making sure that your roof is in a top view, select **Construct Roof > Add Verandah** and select the two wall lines (blue lines) where the verandah is attached. Then right click the mouse and when asked for the side of the verandah, left click somewhere outside the building, in relation to the first line you selected.

Start preparation	Hip	V
End preparation	Gable	💌 🛛 Fascia&Rake 💌
Slope	2.50	in 12
Distance from first point	8	
Distance from last point	15	

This time, when entering the information about the verandah, change the *Start Preparation* to **Hip** and set the *Distance from first point* to 8' and *Last Point* to 15'.

Preview the roof and then click [OK] when happy. Change the views to check the height is correct.



**Note:** A common mistake when inserting Verandahs is to insert at the wrong height. If your verandah looks wrong, UNDO and repeat the process, ensuring that you have set the correct **Height of Gutter** or **Height at Wall** button on the dialog box.

Save this job as Exercise 9 in Training.dab.

#### Exercise 10 - More Track-Outline Examples

Now that you have input these relatively simple roof designs, try the next one. Remember, if you make a mistake keying in the wall length, select **Stepback** and re-insert the correct value.

To begin the next exercise, select **File** from the pulldown menu at the top of the screen and select **New.** This will automatically clear the screen of the current job. As before, select **Construct Roof** from the pulldown menu, then **Track Outline – Auto Hip Roof**. Start at the point indicated and work in a clockwise direction around the wall line.

When creating the multi-hip or 'bay' at the rear of the house, select the diagonal buttons from the track outline dialog:

Wall Direction	and Distance
Direction 0.00 Distance 0.00 Slope v 0	Ift / U / 112 / D \
Enable Underlay Sho	w Scale Model
Insert Close Step Back Cancel	H/V Finish Options Step Fwd ?

As you work around the wall line, you will get to the wall dimension 22' (wall number 17), click the 'Close' button and select 'Close Square' from

the dialog box as described previously.

This will automatically complete the wall definition for you. Complete the **Roof Defaults** box, giving a pitch of 6/12 and an eave height of 10' and an eave overhang of 1' then select **[OK]** to finish.

When you've finished, save this job as **Exercise 10** in **Training.dab**.



#### Exercise 11 - Track Outline

The following exercise is designed to consolidate the functions you have learned so far. Begin the job by clearing the existing work. You do this by selecting **File > New** from the pulldown menu, then commence the job using **Construct Roof > Track Outline.** 

The start point is not relevant, start anywhere on the wall boundary, you may go around the outline in either direction also.



When you get to the second last wall line to insert, type **C** or select **Close** and **Close-Square** from the close dialog box. This step allows you to check the last two dimensions to ensure that you haven't made a mistake elsewhere.

If you make a mistake in typing in a wall length select step back, and reinsert the correct wall length. Add the Vertical Planes when prompted to do so.

Save this job as Exercise 11 in Training.dab when you have finished. (File > Save As)

You should be fairly comfortable with drawing up the main roof by now so we will now go through some of the **Modify Roof** (Modify Roof) commands.

#### The inline calculator



At any time the operator is prompted to insert a number in a field on a dialog box, the '**Inline**' calculator may be called up. To do this, place your cursor into number field or cell, and select the keyboard function key F3. The system calculator as displayed here drops down. This allows the operator to perform quite complex arithmetic. When the desired answer is displayed, select '=' to confirm the answer, and then select **[OK]**. The answer is automatically inserted into the number field of the dialog box.



#### The Modify Roof Command



The **Modify Roof** command is found on the Main menu and presents you with a vast array of options for modifying the initial roof geometry.

However, before we do any modifications, we must have a roof. We will use one of the roofs already created so select **File > Open** and select Exercise 10 from Training.dab.

At the moment, your roof should look like this (in ISO view):



We will then use many of the Modify Roof commands to modify the roof to look like that below.



### Exercise 12 - Modify Roof > Atrium

First of all we will add an Atrium to our new roof. This could also be used to create the space required for a chimney or an adjoining structure.

Select Atrium from the Modify Roof menu. You will be prompted to Locate eave line.

Using the left mouse button, locate the eave line towards the bottom of the right hand eave line. This way the **Distance along eave** that you type in, will be measured from the bottom of the line and not the top. The start point from which it is calculating the distance is flashing, to highlight the fact to the operator.

Atrium Defaults	×
Distance along Eave	10 m
Atrium Width	8 m
Atrium Depth	6 m
Cancel	OK ?

8' 6' | 10'

Select [OK] with the left mouse button and the Atrium is automatically drawn in.

Set up the values in the defaults dialog box in accordance with the picture below.



*Hint:* A negative depth value would create a drag-down effect on the eave line ie project past the eave line at the same pitch of the roof, rather than cut into the roof. You may select UNDO from the icon menu to remove the atrium you just added, and try adding a dropped eave using the Atrium command.

### Exercise 13 - Modify Roof > Valley-Gable



The **Valley-Gable** command allows you to create Vertical Planes on either internal or external corners (ie valleys or hips). In some situations, and as we have shown here, it is best to firstly ignore this roof feature when defining the wall outline, knowing we have the tools to insert it accurately and far more easily later. The command may also be used to add a flat plane roof section.



(refer to Section 5 of this manual for more details).

First select **Valley-Gable** from the **Modify Roof** menu. You will then be prompted to *Locate valley or hip line to add a gable*. Locate the hip line in the top right hand corner of the example plan. Set the values to those in the dialog box below:

Valley Gable Defaults		<b>x</b>		
Roof Type to Insert	Gable			
Distance along each Eave	8.00		⊢−−− 8' −−−−∣	
Slope	7.00	in 12 🛄	$\overline{\mathcal{A}}$	Т
Extension	0.00			
				8'
Cancel	OK			
		<u></u>	Y//////	-

Click **[OK]** when you're happy with the numbers and the gable is created.

We will now do the corner gable in the courtyard area of the plan ie. on the valley line.

The procedure is the same as a corner gable on a hip, except in this case, we will be putting in a value of 4' for the extension and a roof pitch of 7/12. The distance along the fascia in this case will be 8'.

Valley Gable Defaults		×	
Roof Type to Insert	Gable	]	
Distance along each Eave	8.00	1	4'
Slope	7.00	in 12 🛄	
Extension	4	1	$\langle \setminus \rangle$
Cancel	ОК		
		<u></u>	

This function has a further option which becomes evident when you select the Gable button. The options expand to include a function for adding a flat plane along the valley to a known pitch or to the apex of the ridge and valley. This option is dealt with further in the Learning Guide.

Valley Gable Defaults	×		Valley Gable Defaults		<b>X</b>
Roof Type to Insert	Flat Plane	L	Roof Type to Insert	Flat Plane	
Distance along each Eave	8.00	L	Distance along each Eave	8.00	
Pitch Calculation	Known Pitch	L	Pitch Calculation	To Apex	
Slope	7.00 in 12				
		L			
Cancel	ок	L	Cancel	ОК	
	?				?



Select Gable To Hip from the Modify Roof menu.

Locate the ridge line of the gable at the front of the house at the eave end.

Enter the Slope	<b>—</b>
Slope 7	in 12
Cancel	ОК ?

A dialog box will appear asking you to enter the new pitch. We want it to be the same pitch as the rest of the roof, so accept the default of 7/12. This value was automatically extracted by the system from the pitch used for the whole roof. (You can change this pitch if required)

It has now been converted to a hip.



On that same part of the roof as in Exercise 13, we now need to create a Dutch Gable.

### Select **Dutch Gable** from the **Modify Roof** menu.

You will be prompted to **Locate ridge at hip end**. (the eave line will now flash) to indicate that the measurement of the base of hip is from the eave line.





Dutch Gable Defaults		×
Distance of gable from base of hip (+ is Towards Apex, - is Away)	5	
Gable Overhang	1'6''	
Cancel	ОК	?

#### **Useful Tip:**



When you select a line or point and you may see a box appear asking you 'Enter Y to use this entity'.

It means that the software has found a number of points or lines in the vicinity of where you selected, and is asking you to confirm if the feature flashing on the screen is the correct one.

Message		<b>x</b>
Enter 1	l to use th	is entity
Yes	No	Cancel

You can select the options on this dialog box by using the mouse button short cuts: **yes – no – cancel** maybe selected by **left – middle – right** on a three button mouse without selecting the buttons on the dialog. Try this, it saves time when you get used to it!



Select **Flying Gable** from the **Modify Roof** menu. You will be prompted to **Locate eave line** followed by the hip.



Flying Gable Defaults	<b>—</b> ×-
Horizontal distance from eave to top of H	nip : 25' 0''
Distance of gable from eave	3'
Distance of gable apex from top of hip	5'
Cancel	ОК
	?

**Note:** If we had typed in zero for the **Distance of gable apex from top of hip**, instead of 5, the flying gable would have started at the intersection of the ridge and hip.

For flying gables that sit flush with the eave line, type in zero in the **Distance of gable from eave** field.

## Exercise 17 - Modify Roof > Lay Back Gable (or Gambrel)

Select Lay Back from the Modify Roof menu. You will be prompted to **Locate ridge at hip end**. The dialog box below will appear. Set the values in the dialog box to:



Note: This command may also be used to add a layback gable on a gable end as well as a hip.



Select **Slice Hip** from the **Modify Roof** menu. You will be prompted to **Locate eave**.

The dialog box below will appear. Set the value in the dialog box to:



Enter the Station/Slice Amount		
Distance	2 m	
Cancel	OK ?	

The station value is the amount you want to "cut off" the hip end. Save this job as Exercise 18 in Training.dab

#### Well Done!

That concludes this job and the roof should now look like this;









For this exercise, I need you to open up the job we did in Exercise 1. Go to **File/Open**, select Training.dab on the left hand side and double click on **Exercise 1**.







**Note:** There may be times when the software finds two lines at the eave and it will ask if you want accept the first entity, always say "No" to the first line and say "Yes" to the second. The first line selected will usually be the Wall line not the eave line.

Using the Dormer command, we are going to create the following types of dormers



Select **Dormer** from the **Modify Roof** menu. You will be asked to **Locate the eave line**. Select the bottom Eave line towards the gable end. It is important to select the Eave Line at the correct end of the line, as this is the reference point where the dimensions will be taken for the location of the dormer. The following dialog box will appear.

Set the values in the dialog box to:

	Dormer Defaults	×	
Dormer Material Type of Dormer Slope Distance to Dormer Centre Setback from Eave	Metal ▼   Gable ▼   7 in 12   5 m   3 m	Locate the Dormer by : Insert at Apex Insert along Hip	select fascla at this end frojection
Width Projection Length Draw Side Walls ? Side Eave Overhang Gable Overhang Gap Width Offset from Eave to Gap	5 mi 2 mi Yes 0 m 2 mi 0' mi 0' mi		offset from eave
Side Style Eave Type	Both Horizontal 💽 Fascia-Gutter 💌		$\setminus \nearrow$
Continue	Preview	Insert ?	

Once you have entered the values shown, (as per the above sketch), select **Preview** and you should see the Dormer appear. If you are happy with the shape and position (that is to say that it matches the plan), select **Insert** and then **[Continue]** (as there are more dormers we need to insert). When thinking about which measurements affect which part of the dormer, think in terms of the whole created in the roof. All the measurements relate to the hole in the roof, the Dormer is built around the hole.

Now reselect that same Eave line, at the same end (as we are taking our dimension from that corner.). This time we will be changing the *Type of Dormer* to be **Hip** and we will change the *Distance to Dormer Centre* to be 12'. Again **Preview** the Dormer before **Insert**ing, and **[Continue].** 

Next we will insert a Single Slope Dormer (this is referred to also as a Flat Roof Dormer).

With a Single Slope dormer, you need to enter the correct pitch of the flat roof, and it's *Distance along eave* to 12'. Select **Preview**, then **Insert** and then **[Continue]**.

The last dormer we will insert is a Barrel Dormer. After selecting **[Continue]**, reselect the same eave line in the same place, then change the *Type of Dormer* to be **Barrel** and the *Distance along eave* to be 24', and diameter of 4'.

After previewing and Inserting, your roof should now look the same as the one shown. To cancel out of the command, right click on your mouse a few times.

To save your job select Save from the Main menu. The save dialog box will be displayed. Type in your project or customer name in space under *File Name* and the job name in the space under *Model Name*, then select **[OK]**. For this exercise, use File Name TRAINING and Model Name Exercise 19.



Before we explore the **Split Gable** command, we need to have a simple gable roof on screen first. Select **File > New** and then select **Construct Roof > Track AutoRoof** and enter the following wall dimensions;

Roof Defaults	<b>—</b>
Roof Type	Metal 💌
Storey	1 ÷
Slope	8.00 in 12
Eave Overhang	1.50 m
Verge Overhang	1.00 m
Eave Height	11.00
Rafter Spacing	4.00 m
Eave Type	Fascia&Gutter 💌
Cancel	<< Back OK ?

ĥ	30′	
×		
L		

Using the values shown on the left, create your roof and remember to select the left and right wall lines when asked if you want any Gable Ends.

After you have created the gable roof, select the **Modify Roof** menu, then **Split-Gable.** You will be prompted to Locate ridge at gable end. Locate the ridge at the end closest to the left of the screen. The end of ridge you select determines at which end the Split-Gable is inserted on the roof.

The dialog box will appear. Set the values to those shown below:

Split Defaults	<b>—</b>
Fixed side	Left
Side for New Ridge	Left
Ridge Offset	5 m
Depth	12 m
Tuck Under	.5 m
Cancel	OK ?

You should end up with the drawing below.



So that you can go back to this exercise, you should save it. To save your job select **Save** from the **Main** menu. The save dialog box will be displayed.

Type in your project or customer name in space under *File Name* and the job name in the space under *Model Name*, then select [OK]. For this exercise, use File Name TRAINING and Model Name Exercise 20



Using the roof from the previous exercise, we will draw a line indicating a boundary line.

To draw the boundary line, select **Modify Roof** from the **Main** menu, then select **Advanced**, **Ins-Line**, then **Free**. With the left mouse button, digitise two points on screen where you want the boundary line to appear. For the purposes of this exercise, digitise your boundary line anywhere approximately as shown below. Then double click the right mouse button to cancel the line insert function as you have finished inserting the line.



Select Project Gable from the Modify Roof menu.

You will then be prompted to **Locate ridge at gable end.** Locate the ridge line of the "split-gable" roof at the boundary line end.

You will then be prompted to **Select Plane Specification.** The text menu on the right hand side of the screen will now have changed to list a number of **"Plane Type"** options. Select **Line**, and using the left mouse button, select the boundary line. The gable end is extended to meet the boundary line and automatically trimmed to be aligned with the boundary line.



The second picture is an example of projecting a gable into another roof plane. To achieve this, you would draw up the main roof first, using **Construct Roof > Track Outline** then draw up the second roof, detached from the main roof. Then by using the **Modify Roof > Project Gable** command, we select the ridge of the new, smaller roof (at the end nearest the main roof), then select that we wish to project onto a **Plane** (instead of a line), and then enter a **Tuck Under** value. This is the distance that the eave of the new roof is tucking under the eave of the existing roof.



# Exercise 22 - Review of Track Outline

The purpose of this exercise is to combine some of the commands you have used in the previous sections, thus consolidating your learning.

Using Construct Roof then Track Outline, create the following roof outline.



**Note:** You will notice that there is a bay window on the plan, which is slightly different from the one you did previously.

This one has a hip **and** a valley coming from where the angled wall of the bay meets the wall of the house. The software will automatically put in a valley **only** when it comes across an internal corner, so to force it to construct a valley, we have to make a small adjustment when inserting the walls.

If you look carefully, you will see a very short length of wall between the bay and the main wall of the house. The length of this wall is calculated by multiplying the eave overhang by 0.6. In this case, the eave overhang is 3', therefore using the above calculation - 3' x 0.6, the length of this wall is 1' 9.6". (When this exercise is complete, perhaps insert the outline without adding the short segment and see the difference in the resultant roof shape.)

Also be aware that we add the **valley gable** end on the hip, lower right side, and the extended eave on the northern-most wall AFTER the rest of the roof has been created using the **Track Outline** function. If you forgot to do this, you must re-insert the correct outline.

Select **Modify Roof** then **Valley Gable** to add the gable on the hip end, and select **Mod Roof** then **Atrium** to add the extended eave - remembering to use a negative value for the offset so that it extends out from the eave line instead of into the roof line. Save the job as Exercise 22.

# Exercise 23 - Modify Roof > Bay Windows

We have covered the insertion of Bay Windows by the **Track Outline** method, but there may be times when the bay window may have different dimensions to the norm and require different pitches. To cater for this we can use the **Modify Roof > Bay Window** command. Firstly, we need a roof, so open up Exercise 1. (**FileOpen**)

We are now going to insert a Bay Window on the right hand eave.



Firstly, select **Modify Roof > Bay Window** and when prompted to select an eave line to locate the bay window, click on the eave line (not the wall line) as shown. Then you will see a dialog box appear. Fill in the values shown and click **[OK]**.



# Exercise 24 - Modify Roof > More... > Cut-Out

The next exercise will involve the creation of a typical 2 storey house.

We will be using a command called **Cutout**, which will be used to remove the area of roof from underneath the second storey.

Firstly, draw the single storey first, to the dimensions below, with a pitch of 5/12 and an eave overhang of 2'. Select **Construct Roof** then **Track Outline**.



In order for us to position the second storey correctly, relative to the first storey, we need to specify a reference (or datum) start point for the wall outline of the second storey. From this reference point, we then indicate the distance from the reference point to the start point of our second storey. The important thing to remember is that we need to be very precise in locating our Reference Point, so we will use the middle button on your mouse to "Snap" to the correct point indicated on the drawing overleaf. (If you haven't already setup your middle mouse button, please refer to the Set-Up Guide).

After the first storey is completed, select **Construct Roof**, and after the **Track Outline** dialogue pops up, select datum button in the middle of the accelerator buttons



Then you will be prompted to for a reference point from which to set the new start point. Middle button 'snap'. Snapping to a point uses the existing point to start the outline instead of creating a new point.

If you are not using a 3 button mouse, you can also 'snap' the point by holding the Shift key whilst pressing the left button over the point indicated.

Once you have "snapped" to that point, you will see the following box appear.

Horizontal-Vertical Distances		
Horizontal distance Vertical distance	10'6'' 3'10''	
Locate Point	on Screen	
Cancel	OK ?	

You should be familiar with the workings of this box, but this time we are simply entering the offset distances to reach the Start Point of the Second Storey outline relative to the reference point. In this instance, we will need to enter the **Hor-Vert** distances shown in the dialog above



Once you click **[OK]** [OK] and you will then see the normal **Track-Outline** box appear (a clue here – it will be headed at the top with **Wall Direction and Distance**). Now you can enter **R31'10 {enter} U19'6 {enter} C** or Close Sq., then **F** or Finish.

When the **Roof Defaults** dialog box appears, be sure to set the **Storey** to 2, and the **Eave height** to 16'.

You should now have a 2 roofs, one over the other, looking like this;



We are now ready to cut-out the portion of the first storey roof that lies within the boundary of the second storey walls. We presume in this exercise that the wall outline of the second storey is the same as we used to develop the roof shape. This may not always be the case.

### Select **Modify Roof** from the **Pulldown** menu, followed by **More...** and then **Cut-Out (Multiple Planes).**

The following dialog box will appear asking for you to set how you would like to draw the cut out. For this exercise select the option, **Auto Tracking the Cutout**, and select the planes by **Selecting the Storey to Cutout** as shown below:

Cutout Defaults		×
Define the Cutout Area by	Auto-Tracking the Cutout	•
Select the Roof Planes by	Selecting the Storey to Cutout	•
Keep or Delete Pieces ?	Delete the internal pieces	
Cancel	ОК	?

You will now be prompted to digitise the first cut out boundary line – select one of the second storey wall lines. Since it is a closed polygon, it is assumed that it fully defines the cut out shape. You are then prompted for which planes, from which storey are to be cut out. You may have a multiple level structure and this allows you to be very selective.

Select Storey(s) to Cut Through		
1st Storey	Yes.	
2nd Storey	No	
3rd Storey	No	
4th Storey	No	
5th Storey	No	
6th Storey	No	
7th Storey	No	
8th Storey	No	
9th Storey	No	
10th Storey	No	
Cancel	ОК ?	

Select [OK] and the software will automatically cut and remove all selected roof planes.

You may choose to digitise or track the cut out using actual dimensions. In which case select the option as shown below.

Cutout Defaults	
Define the Cutout Area by	Digitizing the Cutout
Select the Roof Planes by	Selecting the Roof Planes to Cutou 💌
Keep or Delete Pieces ?	Delete the internal pieces
Cancel	ОК ?
Digitising Constrain Values	
Constrain the Angles to	22.50
Constrain the Lengths to	1
Turn Image Or	1
Scale Model	
Cancel	ОК ?

You are then prompted to set the Digitising Constrain Values to limit the movements. of the cursor. This helps when selecting items free hand. Since we're 'snapping' as described below, then this is less relevant and you can select [OK].

If digitising, using the middle mouse button, "snap" to the corners of the second storey walls. [Continue] in a clockwise direction around the walls until you reach the bottom left hand corner. Press the right mouse button to cancel, and the dialog box below will appear.



The first storey roof within the selected boundary will now be automatically removed.



Your job should look like this when viewed in ISO view: (Main View Select ISO).



The next exercise will also involve a 2 storey house, however in this case, the lower storey will be "cut in" to the second storey. We will still be using the **Cutout** command, but applying it in a slightly different way.

Draw the second storey first, to the dimensions overleaf, with an eave overhang of 2' and an eave height of 32'.

Next, draw the lower storey at a height of 12', using **Construct Roof > Track Outline.** Use the method described above to establish the start point for the second storey as before. Then enter the values shown below.

Horizontal-Vertical Distances		
Horizontal distance	4'6''	
Vertical distance	6'1	
Locate Point on Screen		
Cancel	ОК ?	

Now, when you see the Enter Wall Direction and Distance box, enter L18' {enter} D21' {enter} Close Square, Finish.



You should get a series of roofs looking like this:



Now proceed to remove the portion of the lower storey roof that intrudes into the upper storey area. Using **Modify Roof > More...> Cut-Out**, use the same settings as the previous example;

Cutout Defaults	<b>—</b>
Define the Cutout Area by	Auto-Tracking the Cutout
Select the Roof Planes by	Selecting the Roof Planes to Cutou 💌
Keep or Delete Pieces ?	Delete the internal pieces
Cancel	OK ?

When you click [OK], select the Wall Lines of the larger roof, and then select the first storey as the storey to cut. When viewed in **ISO**, your plan should look like the one below.



This completes the tutorials for generating roof geometry. Now we must deal with the estimating and take-off aspects of the task. Please review the work you have completed, and when comfortable, progress to the next stage.
## **Cover Command For Flashings**



## Exercise 26 - Exercise 26 - Exercise 26 -

This exercise deals with generating flashings or trim for the roof. If you don't quote on flashings and trim, you can skip this section.

Select **Cover > Flashings** and the **Roof flashing material** dialog box will appear, listing all of the roof trim components to be specified. Only those categories of roof trim on the model will be listed in the dialog box. (We will skip battens/purlins for now, they are dealt with in the next exercise.)

		Select/Genera	te Roof	Batten & Ti	rim <d< th=""><th>EFAU</th><th>LT&gt;</th><th></th><th></th><th>×</th></d<>	EFAU	LT>			×
Install Pay Schedule	Use Met	al-rates	•	Allowances i	n Use	DEF	AULT	•		
Roof Batten										
Batten 1	Steeline	Batten Metal 6.00	Omm Za	[YR/0.60/S]		•		Accessories	Insert/N	lodify
Batten 2	None					•				
Roof Trim										
Ridge	Steeline	Ridge Corrugated	Cb (RC	C/0.55/C]		¥		Accessories		
Hip	Same as	Ridge				•		Accessories		
Valley	Steeline	Valley Cb [VT/	/0.55/C]			•		Accessories		
Fascia	Steeline	Fascia (Bx/Ww)	Cb [FHT	/0.42/C]		•		Accessories		
Gutter	Steeline	Gutter Internal Fol	ded Za	[FL/0.55/500	/6/Za]	•		Accessories		
Gable	Steeline	Bellcast Flashing	Za [FL	/0.55/500/3/2	[a]	•		Accessories		
Apron	Steeline	Apron Cb [FL/	0.55/300/	2/C]		•		Accessories		
Box-Gutter	Steeline	Box Gutter Cb	[FL/0.55/6	500/2/C]		Ŧ		Accessories		
Allowance	es	Load		Delete		Save-4	λs	Colour	Set	
Generati	e	Set All to None	S	ingle-Line		User-Le	ens	Delete Fla	ashings	
Cancel		Show	\	/iew List	Ch	ng. Line	Туре	ок		
										?

Starting at the top of the Roof Trim section, select the drop down arrow **Ridge**. After selecting **Ridge**, the list of available choices for the ridge capping is displayed.

Install Pay Schedule	Use Metal-rates  Allowances in Use DEFAULT
Roof Batten	
Batten 1	Steeline Batten Metal 6.000mm Za [YR/0.60/S]
Batten 2	None  Accessories
Roof Trim	
Ridge	Steeline Ridge Corrugated Cb [RC/0.55/C]
Hip	None Custom Accessories
Valley	Assembly Steeline Ridge Roll Top Cb (RR/0.55/C) Steeline Ridge Roll Top Za (RR/0.55/Za)
Fascia	Steeline Ridge Roll Top Ga [RR/0.55/G] Steeline Vented Ridge Za [RVC/0.55/600/8/Za] Steeline Ridge Steel Clad Cb [RI/0.55/C]
Gutter	Steeline Ridge Steel Clad Co [RI/0.53/C] Steeline Ridge Steel Clad Ga [RI/0.55/G] Steeline Ridge Steel Clad Za [RI/0.55/Za]
Barge	Steeline Ridge Lokdek Cb [RHR/0.55/C] Accessories
Apron	Steeline Apron Cb [FL/0.55/300/2/C]
Allowances	s Load Delete Save-As Colour Set
Generate	Set All to None Single-Line User-Lens Delete Flashings
Cancel	Show View List OK

Select the required flashing item, then press **[OK]**. You will then be asked to select the colour of the ridge capping. When you have chosen your colour, again press **[OK]**.

The Roof Trim material dialog box will reappear. Now select the drop down arrow for Valley, Fascia, Gutter etc.

elect/Generate Roof Batt	en & Trim <default></default>	<b>×</b>
Install Pay Schedule	Use Metal-rates  Allowances in Use DEFA	ULT 🔽
Roof Batten		
Batten 1	Steeline Batten Metal 6.000mm Za [YR/0.60/S]	Accessories Insert/Modify
Batten 2	None	Accessories
Roof Trim		
Ridge	Steeline Ridge Roll Top Cb (RR/0.55/C)	Accessories
Нір	Same as Ridge 💌	Accessories
Valley	Steeline Valley Za [VI/0.55/Za]	Accessories
Fascia	None All State A	Accessories
Gutter	Assentibly Steeline Valley Cb [VI/0.55/C] Steeline Valley Za [VI/0.55/Za]	Accessories
Barge	Steeline Valley Ga [VI/0.55/G] Steeline Valley Cb [VT/0.55/C]	Accessories
Apron	Steeline Valley Ga [VT/0.55/G] Steeline Valley Za [VT/0.55/Za] Steeline Valley Gutter Cb [FL/0.55/800/4/C]	Accessories
Allowances	Steeline         Valley Gutter         Cb         [FL/0.55/1100/4/C]         T           Load         Delete         Save-As	Colour Set
Generate	Set All to None Single-Line User-Lens	Delete Flashings
Cancel	Show View List	ОК ?

Select the required flashing item, followed by a colour. The **Roof Trim material** dialog box will appear.

Now select **Fascia**. Select the required flashing item, followed by a colour.

The **Roof Trim material** dialog box will reappear. Now select the drop down arrow for **Valley, Fascia, Gutter etc.**.

After you have set up all of the flashing/trim options, your **Roof Trim material** dialog box will look like the one above. Select **[OK]** to confirm your selections.

If you use this combination of roof trim often, you may save the selection as a default selection, saving the time to reselect them next job. You will get a prompt as shown below; type a meaningful name and click **[OK]**. This definition will be saved for future use.

Select a Flashing Default File	<b>-X</b>
System Default Corrugated Flashings DEFAULT Double-Battened EbsStd Rays Trim Rheinzink SS SCRoofSyst Slon SnapLock Stratco-Corru TrimDekTrim	
Corrugated Flashings	
Cancel	

Install Pay Schedule	Use Metal-rates	▼ Allow-	ances in Use DEF/	AULT 👻
Roof Batten				
Batten 1	None		•	Accessories
Batten 2	None		•	Accessories
Roof Trim				
Ridge	IMETCO Ridge A	ssembly \$300 8 1/2" Cold	r [Trim-Ridge S: ▼	Accessories
Hip	Same as Ridge		•	Accessories
Valley	IMETCO Custom	Head Assembly Color [T	rim-Head Custom] 💌	Accessories
Fascia	IMETCO Eave As	sembly S300 4'' Color ['	frim-Eave S300 - 4 💌	Accessories
Gutter	IMETCO Custom	Cricket Assembly Color	Trim-Cricket Custo 💌	Accessories
Allowance	es Load	Delete	Save-As	Colour Set
Generate	e Set All to N	one Single-Line	User-Lens	Delete Flashings
Cancel	Show	View List	Chg. LineType	

You can define the estimation method for each flashing in the **Set-Up > Flashings** menu (refer to the Reference Manual or setup guide). This ensures that the flashing items and their associated accessories such as end caps, splice plates and brackets etc. will be correctly quantified. Flashings may be supplied (and therefore quantified) based on stock lengths or cut to length, as one would if you have a continuous gutter machine.

# Exercise 27 - Inserting Purlins/Battens (For Metal Roofs)

Please note that battens and purlins are essentially the same thing with a different name in different markets. To insert battens on our job we need to select the **Batten/Purlin** drop down arrow option on the **Flashing** dialog box.

	Selec	t/Generate Ro	oof Batten & Tri	m <defau< th=""><th>LT&gt;</th><th></th><th>×</th></defau<>	LT>		×
Install Pay Schedule	Use Metal-rates	-	Allowances in	Use DEF/	AULT	•	
Roof Batten							
Batten 1	Steeline Batter	n Metal 6.000mm	Za [YR/0.60/S]	<b>_</b>		Accessories	t/Modify
Batten 2	None			•			
Roof Trim							
Ridge	Steeline Ridge	Corrugated Cb	[RC/0.55/C]	•		Accessories	
Hip	Same as Ridge			•		Accessories	
Valley	Steeline Valley	СЬ [VT/0.55/	C]	•		Accessories	
Fascia	Steeline Fascia	a (Bx/Ww) Cb	[FHT/0.42/C]	•		Accessories	
Gutter	Steeline Gutte	Internal Folded	Za [FL/0.55/500/6	6/Za] 🔻		Accessories	
Gable	Steeline Bellca	st Flashing Za	[FL/0.55/500/3/Za	] 🔽		Accessories	
Apron	Steeline Apron	Cb [FL/0.55/	300/2/C]	•		Accessories	
Box-Gutter	Steeline Box G	utter Cb [FL/0	.55/600/2/C]	•		Accessories	
Allowance	es I	.oad	Delete	Save-4	IS	Colour Set	1
Generate	e Set A	I to None	Single-Line	User-Le	ns	Delete Flashings	
Cancel		how	View List	Chg. Line	Гуре	ОК	j ?

From here select **the required purlin or batten** followed by **[OK]**. This will then take you back to the select Flashing dialog box.

The next step is to select the **Insert/Modify** button at the right hand side of the battens field. This will then bring up the **Purlin/Batten Spacings** dialog box.



**Note:** These battens are used for metal roofing only. For tile roofing, the battens are selected and applied when selecting the Tile within the **Cover > Tile** command.

urlin Spacings					<b>—</b> ×
Interval Spacing from Eave	5				
Closest to Eave	3''	Second Closest	24''	Third Closest	0.00
Intermediate Spacing					
Spaced Evenly	3.00	(Spacing Will NOT E	xceed Value Ente	ered Here)	
Interval Spacing from Ridge					
Closest to Ridge	0.33	Second Closest	0.00	Third Closest	0.00
Other Purlin Options				Purlin Modify Opti	ons
Apply to Straight Porchs	No			Insert Ra	fter/Truss Lines
Apply to Bullnose Porchs	No			Delete Ra	after/Truss Lines
Apply to Ridges	No			Divide	at Rafter Line
Apply to Hips	Yes	Spacing from Hip	0.50	Divide A	II at Rafter Line
Apply to Skirts	No			Merge	e Purlin Lines
Apply to Valleys	Yes	Spacing from Valley	0.50	Delet	e Purlin Line
Apply-All	Delete-All		De	elete Appl	y-Selected
Continue	Change Pur	lin Divide-Plan	ies Save S	pacings Load	d Spacings

This box displays the default settings for the batten spacing. The batten spacing is the distance from the eave to the first batten in from the eave line, and subsequent spacings are shown from the previous batten. If you wish to change any of the spacings, simply click in the field to change, and type in the desired spacing. The intermediate battens may set at fixed spacing or equally spaced up to a maximum spacing.

Type in the new spacing, in this case 3', and all of the fields in the **Purlin/Batten spacings** dialog box will change to 3'. All you have to do then is manually change the values for spacing 1 and 2 only. By selecting **Apply Selected** you can select a different spacing for different roof planes on the job

As you can see, you can control where the battens are applied, i.e, ridges, hips, valleys etc. and the spacing from the respective line.

You can also change the batten material for certain roof planes on the job – by changing the batten required and using 'Apply-Selected'.

After selecting **[OK]**, the batten layout will automatically be drawn on the roof. Your plan should now look similar to the one below:



If you wish to turn the battens off so they are no longer displayed, select **Set Display** from the **Tools** menu, and set **Battens** to **No**. This does not delete them, it just blanks them in this view.



**Note:** even though we have inserted the battens, they will not yet be estimated. That will be done when we generate the flashing cutting list – using **Generate**.

# Exercise 28 - Estimating Flashings

Select **Flashings** from the **Cover** menu and the following dialog box will appear showing the flashings that you previously selected.

	Select/Generate Roof Batten & Trim <bryansystem.fl6></bryansystem.fl6>	
Install Pay Schedule	Use Metal-rates  Allowances in Use DEFAULT	•
Roof Batten		
Batten 1	None Accessories	
Batten 2	None Accessories	
Roof Trim		
Ridge	IMETCO Ridge Assembly S300 8 1/2" Color [Trim-Ridge S: 💌 Accessories	
Нір	Same as Ridge  Accessories	
Valley	IMETCO Custom Head Assembly Color [Trim-Head Custom]	
Fascia	IMETCO Eave Assembly S300 4" Color [Trim-Eave S300 - • 💌 Accessories	
Gutter	IMETCO Custom Cricket Assembly Color [Trim-Cricket Custo	
Allowance	es Load Delete Save-As Colo	ur Set
General	Set All to None Single-Line User-Lens Delete	Flashings
Cancel	I Show View List Chg. LineType C	эк

By selecting the **Allowances** button the following dialog box will appear.

Flashing Allow		NAPLOCK-I	MPERIAL.A	L2> ×
	Run Allowance	Lap Allowance	Internal Corner Allowance	External Corner Allowance
Ridge	1' 3"	3"		
Нір	1' 3"	3"		
Valley	2'	3"		
Barge	10''	3''		
Fascia as Barge	10''	3''		
Batten 1	1' 3''	4''		
Batten 2	1'	4''		
Apron	1'8"	3"		
Box Gutter	1' 3''	3''		
Step	1'	3''		
User1	0'	0'		
User2	0'	0'		
User3	0'	0'		
User4	0'	0'		
Custom	2'	4''		
Gutter	1'	3''	8"	9"
Fascia	1'	3''	6''	7"
Combine Similar Le	ength Flashings	:	0'	
Minimum Run Len	gth		2'	
Round-off Flashing	gs to Next (Inch	nes)	0.17	
Flashing Annotatic	n - Text Size		2.50	
Load	t	Delete	Save-As	
Canc	el Si	ngle-Allow	ОК	?

**Allowances** are the values that determine the amount that is added to the measured length for each piece of material up to the stock length.

For example, when flashing lengths are calculated, the maximum length for the flashing is now taken into account. The way it works is to divide the given length into a series of equal length pieces. If the length of a run was 35', and the maximum stock length is 14', the original length is broken into  $3 \times 14'$ . The allowance is then added to each of these pieces.

With your allowances now set click **[OK]**. This will take you back to the Flashing dialog box. From here select **Generate** and your flashings will be generated, bringing up a dialog box similar to the following. This is the complete list of flashing materials required for the current job, total length of coil plus each individual piece length.

Flashings				
 Ridge Steeline,Ridge 8/10'8''5/9'10'' Total : 246'4''	Roll Top -Heavy 11/8'10'' 1/7'	, Ga,Cb,RR, 10'' 1/6' 10	/0.55/C ''	
Valley Steeline,Valley 3/8'10''6/7'8'' Total : 72'6''	,СЬ,VI/0.55/С			
Fascia Steeline,Fasci 27/9' 1'' 2/6' 1'' Total : 280' 9''		HT/0.42/C		
Gutter Steeline,Gutte 27/9' 10'' 2/6' 10 Total : 302' 6'' Accessories		.55/Za		
Name Fascia Bracket Spring Clips Over Straps External Corner		Qty 85 85 7 3 3 23 9 3 7 7		

Note that the **Accessories** as previously defined for each flashing category will be listed below the trim list. The list depends entirely on what was previously defined and care must be used to ensure that the accessories have been correctly associated. Review the notes in the Set-up Guide and the Reference Manual for more details.

### **The Cover Command - Tile Roofs**



#### Introduction

#### Quantity by Coursing or Unit Area - Tiles and Tiles+ Database

Before going ahead and select your tiles for the roof, you have to decide the best method of determining the tile quantities. You have the choice of generating tile quantities by unit area (ie tiles per square) or the more precise method of coursing which lays the tiles course by course and applies a more flexible waste calculation.

**In addition** you have two tile database structures that you can work with – what AppliCad calls Tiles database and the Tiles+ database.

The Tiles+ database is a comprehensive database of tiles and accessories plus components, that is most suited to the UK and European markets, where as the Tiles database is a much simplified tile database generally suitable for the Australian and USA markets.

Once you have decided which database structure best suits you (call AppliCad if you're not sure), you set the database type using **Set-Up > Preference Settings > System Preferences.** Now you are ready to quantify your tiles. Later in this Manual explains the differences in more detail.

The **Cover** command lets you select new tiles, shingles or shakes for this job. You can also apply sarking and generate tile courses.

Cover Reporting View	Select the Tile
Select Tile Select Shingle Select Shake Select Metal - Select One Plane - Select One Panel - Reset Material - Estimate Panels > Wall Materials >	Forticrete,Interlocking,Gemini,Concrete Marley,Interlocking,Ashmore,Concrete Marley,Interlocking,Edgemere,Concrete Marley,Interlocking,Mendip,Concrete Sandtoft,Interlocking,20/20,Clay Sandtoft,Interlocking,20/20,Clay Sandtoft,Interlocking,Bold Roll,Concrete Sandtoft,Interlocking,Calderdale,Concrete Sandtoft,Interlocking,Double Pantile,Concrete Sandtoft,Interlocking,Double Pantile,Concrete Sandtoft,Interlocking,Double Roman,Concrete Sandtoft,Interlocking,Double Roman,Concrete Sandtoft,Interlocking,Double Roman,Concrete Sandtoft,Interlocking,Double Roman,Concrete Stock,Interlocking,1 Default1,Concrete Stock,Plain,2 Default,Concrete
	Cancel

#### Tile Roofs - TILES Database

9			D	
	-		7	
	100	1		
	=	=		

**Note:** This section is only for those who are using the standard **Tiles** database. If you are using the **Tiles+**, please skip this section.



This exercise deals with selecting the tiles (or shingles/shakes) to cover the roof. If you don't use tiles, you can skip this section.

To choose a tile select **Cover** followed by **Select-Tile**. This will bring up the following dialog box asking you to select a tile. When you have selected your tile the following dialog box will appear showing the details of the tile you have just selected.

		Current Tile		×
Supplier	Pioneer	Profile	Yeoman	
Name	Yeoman Shingle	Material	Concrete	
Colour	TBA	Product Code	Yeoman Shingle	
Coverage	0.68 pieces per sq ft	Tile width	14.00 in	
Max. Coverage Length	16.00 in	Min. Coverage Length	15.00 in	
Hip Format	Bed and Point (Normal)	Purlin	None	Apply to
Ridge Format	Bed and Point (Normal)	Purlin Len per Unit Area	0.00	
Gable Format	Dry (Normal)	Fastener		
Valley Format	Dry (Normal)	Num. Fasteners per Tile	0.00	
Flexible Pointing	No	Counter Batten	None	
Pay Rate Schedule	None	Underlay	None	
Tile Waste File		Fall Protection	None	
		Fall Prot. Height	3000.00	
The Estimation Method	is the AREA method			
Cancel	Change	Coursing	Accessories OK	7
				?

So that the system will automatically cost the correct battens, the operator must select a particular batten size. After the tile is selected and the colour selected, click in the batten prompt box and a list of batten options is displayed. Select the batten to be used and then **[OK]**.

From this tile dialog box you also set the rate of pay that you would like to use by clicking on the selection arrow at the end of the **Pay Rate Schedule** field. If you have not set any pay rates this will be explained later in Exercise 45.

Select the [Acessories] button and the accessory items for the selected tile profile are displayed.

Accessory Name	Product Code	Finish	ltems per Box	Cost per Box	Number or Dist.	Estimation Method
Ridge Tile	Concrete Tile-RT	Concrete	1	0.00	350.00	Spaced Along Ridge
Hip Tile	Concrete Tile-HT	Concrete	1	0.00	350.00	Spaced Along Hip M X
Gable Tile	Concrete Tile-BT	Concrete	1	0.00	350.00	Spaced Along Gable 🗾 M 🗴
			0	0.00	1.00	Not Estimated  MX
			0	0.00	1.00	Not Estimated 💌 M 🗴
			0	0.00	1.00	Not Estimated
			0	0.00	1.00	Not Estimated M
			0	0.00	1.00	Not Estimated 🗾 M
			0	0.00	1.00	Not Estimated M
			0	0.00	1.00	Not Estimated  MX

By clicking **[OK]** now, your roof will be estimated using the area method. If however you would like to estimate using the coursing method, select the **Coursing** button and the following dialog box will appear.

When you have set the allowances click **Apply** and coursing lines will be applied which determines the exact number of tiles required. Essentially, the course lines are the tile batten lines and these are divided by the tile width to determine the number of tiles.

Note that the quantity displayed does **not** include waste. Waste is applied when you go to the Reporting > Supply screen.

Tile Cour	rsing	Tile Coursing Tally	x
Supplier Profile Name Material Max Gauge Min Gauge Required Gauge Gauge Calculation Coverage Width Gutter Overhang Max Ridge-Gap Tolerance for Extra Course Tolerance for Extra Tile/Course Add tile per Hip Intersection	Pioneer Yeoman Yeoman Shingle Concrete 16.00 15.00 in Use Best Fit Gauge 14.00 in 2.00 in 4.00 in 0.20 0.50	Coursing Tally There are 1777 Tiles 1108 Ridge Tile 5732 Hip Tile 9 Shell End 6 Apex Tile Total Batten Length: 1915' 2'' lit Total Counter-Batten Length: 0' lit Perimeter Batten Length: 0' lit Total No. Course Lines: 96 No. Hip Intersections: 131 No. Valley Intersections: 57	
Subtract tile per valley Intersection Extra Tiles to Add per Course	0.20	Cancel	?
Cancel Apply	Delete OK ?		

The results of applying the tiles by coursing are displayed as shown above:



If you want to add fall protection you must first create a new flashing under Set-Up > Flashing called Fall Protection. An example of how to set it up follows.

When you have entered all the details select ADD.

	Define flashing (rec =	197 of 504)
		<< < >>>>
	Type of flashing	User defined
Go back into the tile selection box and click on the arrow at the end of the Fall	Manufacturer	Steeline
Protection field.	Finish	Fall Protection
A drop down box will appear and the fall protection that you just created will be there. Select it and you will have fall	Fastener Code	
there. Select it, and you will have fall protection added to your job on all eaves that are above the FP Pitch Break.	Description	Hand Rail
	Product Code	ZZZFP
	Fasteners per lft	0.00
	Maximum Length	10.00 lft
	Gauge	
	Costing Method	per foot
	Cost per Unit	0.00
	Estimation Method	Split each run into stock length pieces 💌
	Pay Rate Schedule	Default
	Select Cancel	Delete Add Update Accessories Stock-Lengths OK

•		,	_
🔻 Un	derlay	None	•
Fal	protection	None	-
•	FP Pitch break	None Edge Protection	<u>~</u>
	TBA	Scaffold per Face Sqmtr Scaffold Highset Flat G	
	TBA	Fall Protection - LDWP Edge Protection	
	TBA	Edge Protection	~
	TRA	-	



**Underlay/Sarking -** (also known variously as vapour barrier, underlayment or insulation)

To select a sarking you need to first setup a sarking or insulation material. Select **Set-Up > Insulation** to create your sarking. Select **ADD** when you have entered the details.



**NOTE:** You need to have the **Name** of your sarking set to **Sarking** so that it may be selected under the sarking option. Otherwise it is considered a regular insulation material and can be selected under the Insulation option.

Below is an example of how to set it up.

Define Insulation (rec	= 8 of 8)			×
			<<	< > >>
Manufacturer	Grace			
Name	Sarking			
Code	30liyt			
Description	30# felt			
Large roll size	56.00	sqft		
Small roll size	0.00	sqft		
Cost of large roll	34.00			
Cost of small roll	0.00			
Select	Delete		Add	
	Update			
Cancel			OK	?

From here we can go back into out **Select-Tile** dialog box and change Sarking from **None** to the Sarking we just created, in this case Sarking1. Sarking will now be applied to the entire roof.

Underlay	None
Fall protection	None Sample Sarking
FP Pitch break	30# felt 🗠

#### Tile Roofs - TILES+ database



The coverage command lets you select plain tiles, profile tiles and slate for this job. You can also apply sarking and generate tile quantities by unit area (ie tiles per square) or the more precise method of coursing which lays the tiles course by course and applies a more flexible waste calculation.

**Note:** This section is only for those who are using the **Tiles+** database. If you are not using the Tiles+ database, please skip this section. The Tiles+ database is a comprehensive database of tiles, accessories and components that are most suited to the UK and European markets. Certain North American markets will also benefit from the extra details available with the Tiles+ database.



The main difference between the Tiles and Tiles+ databases is the number of accessories available. Within Tiles+ you can define many different types of Ridge, Hip, Valley tiles etc, as well as ridge and eave vent systems and other accessories and components plus material and labour costing. Indeed, every permutation and combination of tiles and accessories may be defined as required for a job.

Another important feature about Tiles+ is the fact that we can apply a Tile and a Half or Double Tile (or slate) to the roof and the software will quantify these automatically for us.



This exercise deals with selecting tiles to cover the roof. If you don't use tiles, you can skip this section.

To choose a tile, select **Cover** followed by **Select-Tile**. This will bring up the following dialog box asking you to select a tile.



Note: you will have indicated in the Set-Up > Preference Settings > System Preferences section, which Tiles database you wish to use, either Tiles or Tiles+. Upon selecting Cover > Select-Tile, the relevant database will open up. In this section we are dealing with Tiles+.

In this instance we will use a Redland Heathland tile as it allows us to look at the Tile and a Half usage.

Remember that we refer to Tiles but the same rules apply to Slate. When you have selected the tile, click **[OK]** and the following box will appear.

Select the Tile Forticrete,Interlocking,Gemir Marley,Interlocking,Ashmore Marley,Interlocking,Edgemer Marley,Interlocking,Mendip,( Marley,Interlocking,Modern,I Sandtoft,Interlocking,Double Sandtoft,Interlocking,Calderr Sandtoft,Interlocking,Double Sandtoft,Interlocking,Double Sandtoft,Interlocking,Double Sandtoft,Interlocking,Double Sandtoft,Interlocking,Double	,Concrete re,Concrete Concrete Clay oll,Concrete dale,Concrete Pantile,Concrete Roman,Concrete
Stock,Plain,2 Default,Concre	OK

Current Tile						×
Manufacturer Name Colour Coverage Max Gauge	Sandtoft Calderdale Slate TBA 144.00 pieces per square 17.00 in	•	Profile Material Code Tile width Min Gauge	Interlockin Concrete 515 9.00 in 15.00 in	g	
		Change Tile				
Labour Options			Additional Roof Options	;		
Pay Rate Schedule	None	•	Purlin	Batten Tir	mber 40x50 6000 (	B 💌
			Counter Batten	None		
Flexible Pointing	No		Counter Batten Fastene	er		
			CBatt Fastener S	opacing	0.00	in
Estimation Method	COURSING METHOD		Underlay	None		•
No. of Field tiles	3911		Fall Protection	None		•
			Fall Protection P	itch Break	0.00	in 12
	Calc Coursing Cancel	Special Tiles		ccessories OK	]	?

As you can see, we are reminded of the size of the tile, as per how it was defined. We can select a colour for the tile if you like, and you can also nominate a particular type of finish that you wish to apply to your hips, ridges, etc. This is important from a labour point of view as we could have set a different labour rate for finishing our gables with a bed & point, as opposed to a dry finish. You will also select a particular Labour Rate for this job (remember we defined these in the Set-Up Guide).

Special Tile Option	ns							x
Position	Special Tile	Frequency		Qty	Second Special Tile	Frequency	Qty	
At Left Verge	Half Tile 💌	Alternate Course	-	17.0	None	None	0.0	
At Right Verge	Half Tile 💌	Alternate Course	-	18.0	None 💌	None	0.0	
At Left Step	Half Tile 🗨	Alternate Course	-	0.0	None	None	0.0	
At Right Step	Half Tile 💌	None	-	0.0	None	None	0.0	
At Hips	None	None	-	0.0	None 💌	None	0.0	
At Valleys	None	None	-	0.0	None 💌	None	0.0	
Total Field Tiles	- Reduce by Special Tiles?	Yes			Reduced Field Tiles By: 10	533.33 Tiles		
			Set	as Default	1			
		_						
	Cancel		F	le-Calc		ОК		
								?

In the middle of the tile dialogue box, we can see a section called **Special Tiles.** This is where we nominate the frequency of application for the various Special Tiles such as Tiles and a Half or Double Tiles, verge tiles step tiles etc. This "rule of Thumb" varies from roofer to roofer. Select from the "drop-down" boxes to chose your own frequency. You can also nominate if you wish to **reduce field tiles by** 

**tile + half pieces?** This means that you can either quantify for the tile and a halves in addition to the field tiles on the roof (as if there were no tile and a halves), or reduce the field tiles by the correct amount for a more accurate quotation. You may set the definition as a default so it is available for the next job.

On the bottom left of the Tiles page, we have the **Coursing** section. Here is where we can change the coursing values for that tile if required, as well as specify a *Gutter Overhang* and *Ridge Gap*. Normally the software will **Use best fit gauge** to quantify the courses up each slope, but if you needed to, you can "force" the gauge by entering a value in the **Required Gauge** field (as long as it is between the max and min gauge range). If you wished to do this, you would change the **Gauge Calculation** to read *Use Required Gauge*.

If you use a **Required Gauge** the software mathematically works out the number of courses and number of tile widths by dividing the gauge into slope length and eave length. There may be times when the software will round up to the next number of courses or next tile width, which may cause you to over-quantify the number of tiles. To alleviate this problem, we have included the ability to set a **Tolerance** for both "Courses" and "width" so that if you specify a tolerance of say "0.2" and the software calculates that there are 45.18 courses on a slope, it will round it down to 45 courses, rather than round it up.

When you have input the required settings, click on **Apply Coursing** and you will see that there are a series of lines applied to the roof – these are the actual coursing lines. A value will appear next to the *Field Tiles from area* field. This is the quantity of tiles required before waste is applied.



**Note:** if you have elected to use the area method to calculate the tiles – select **Calculate Using Area** but this will not quantify the tile and a halves or some other accessories. You set the starting preference (Coursing or by Area in the **Set-Up > Preference Settings > Systems Preferences** option).

Tile Coursing Calculations	<b>X</b>
Gauge Range : 17.0 - 15.0	
Required Gauge	17.00 in Tolerance 0.50
Gauge Calculation	Use Best-Fit Gauge
Coverage Width	9.00 in Tolerance 0.30
Gutter Overhang	0.00 in
Max Ridge Gap	0.00 in
Add Tile Amount per Hip Intersection	1.00
Subtract Tile Amount per Valley Inter	st 1.50
Apply All Coursing Match	Coursing Delete All Coursing
Change Plane	e Plane Delete Plane
Coursing Length: 2525.93 ft * Field tiles From Coursing: 3327 Field tiles From Area: 5008	
Cancel Re	Calc OK ?

When you defined the tile, you may have already defined a size of batten that you would normally use, in which case, that would be indicated here. You can also change that selection on a job-by-job basis. You will also select your material for your Sarking (insulation or underlay). When you have made this selection, select **Accessories** to nominate the accessories to accompany the tile. When you click **Accessories** the following box will appear:

Select Accessories a	and Components	
Field Tiles	Accessories None <mark>AlumPingShankNail50x3.35 kg<stock> [}</stock></mark> TileClip [ClipSanCalTClip]	Accessories and Components for Category : FIELD TILES 1. Qty(2103.0) x None Colour(TBA)
Hip Valley	_Add Asser	bly >>
Eave Course	Components	
Top Course		
Left Verge	Add Compo	nentss
Right Verge		
Left Step	Colour	
Right Step	TBA	
Hip Apex	Quantity << Delete	Line
Ridge End	2103.00 Add Extr	
Shell End	Extra	
Apron		
с	Cancel Show All Fields Reset Category	Save Template DK
		?

As you can see, once you have selected the field tile, you can select the accessory type (such as type of Ridge Tile, Hip Tile etc.) available for that profile of tile and what you need for this job. It is important to remember that you can change the accessory items to any one of the options you have previously defined and then add the required components required to install those accessories. The same applies to items like cloaked verge and dry-verge systems.

As you can see from the previous page, you can select the appropriate components such as fasteners and clips for the different accessories on the roof. The components are defined as a subset of accessories and may include fasteners. The fasteners were defined within **Set-Up > Fasteners**. Refer to the **Set-Up Guide** for more information on this.

When you have made your selection, click **[Continue]** and click **Close** on the **Tile Accessories** box. Then click **[OK]** on the **Current Tile** box.

This essentially completes the selection and application of tiles to the roof and now you go to the costing command to fully quote the job.

## **The Cover Command - Metal Roofs**



Selecting **Cover** from the **Main** menu, brings up the menu at the right.

To specify the roof covering for our model, select **Select-Metal** from the menu. The Select Roof Material dialog is displayed with the default settings in the sort criteria of All. As each option is selected, the data filter displays the remaining material options that fit that criteria, often resulting in just the oine option that meets your needs.

Select Roof Materia	ıl 🗮	×
Manufacturer	All	
Profile	All	
Gauge	All	
Finish	All	
Coverage	All	
Martins Metal Kingspan KS1 Kingspan KS1 Kingspan KS1 Kingspan KS1 Kingspan KS1 Kingspan KS1 Kingspan KS1 Kingspan KS1 Martins Metal Bluescope Steel Copper Roofing Copper Roofing RoofMan Corr		
Bluescope Steel	Corrugated 0.42Imp 36.00" Painted C	
, Substrate	Not Defined	
System	Not Defined	
Assembly File	Corrugated 0.42Imp_36.CSV	
Cance	el OK	?

The dialog box below will appear listing all available sheeting materials defined during Set-Up, however new materials may be added at any time. This is done through the Materials menu option on the Main menu if you wish to add a profile description of your own making. For more details refer to Section 5.

The dialog box below will appear listing all available sheeting materials. The material list is created during setup, however new materials may be added at any time. This is done through the **Set-Up** menu option on the Main menu. For more details refer to Section 5.

The products listed may be filtered by selecting either Supplier, Profile, Gauge, Finish and Coverage so that by elimination, only those options that fit the specification are displayed.

Select Roof Materia	I (	x
Manufacturer	All	·
Profile	All	·
Gauge	All	·
Finish	Za	
Coverage	All	·
Steeline Corru Steeline Curve Steeline Steel Steeline Steel Steeline Steel Steeline Steel Steeline Locka Steeline Locka Steeline Steel Steeline Steel	Clad         762.00mm         Za         0.48           Span         700.00mm         Za         0.42           Span         700.00mm         Za         0.48           Rib         500.00mm         Za         0.48           dek         680.00mm         Za         0.42           dek         680.00mm         Za         0.42           dek         680.00mm         Za         0.42           Parel         850.00mm         Za         0.42           V         800.00mm         Za         0.42           ngline         305.00mm         Za         0.42	
Hebel Panel	600.00mm Cb 0.42	
Substrate	Not Defined	
System	Not Defined	
Assembly File	Panel_600.CSV	
Cance	OK OK	?

In this case products are filtered so tat only Zincalume options are displayed. Select the desired sheet, then select **[OK]**, and the summary dialog box is displayed.

Roof Metal Panel Material				x
Straight Metal pay rate	Use Metal-rates 💌	Curving Metal Pay Rate	Use Metal-rates 💌	
Allowances in Use	Corrugated762			
Straight Metal		Curving Metal		-
Supplier	USMetal	Supplier	Not set	
Profile	Corrugated	Profile		
Product code	USM36	Product Code		
Finish	Сь	Finish		
Gauge	0.420000	Fastener		
Fastener	MS/10/16/C	Fasteners per sqft	0.00	
Fasteners per sqft	6.00	Clip		
Coverage Width	36.00 in	Clips per lft	0.00	
Underlay	None	Coverage Width	0.00 in	
Fall Protection	Hand Rail Special 📃 💌	Change Curved Metal		
FP Height	3000.00			
Change Metal	Accessories			
C	Cancel		ок	
				?

The next dialog to appear will prompt you to select a colour for the particular metal sheeting that you have nominated, if it is specified to be a painted product.

Select any colour at this time.

Your selection will now appear at the bottom of the dialog box.

#### Select [OK].

After the colour has been selected, the roof cover material dialog box will come up, detailing the sheeting you have selected, its colour, product code, and associated fastener (which was set when the sheet was defined under Materials).

Select New Color	×
Gull Grey	
Woodland Grey	
Gull Grey	
Cancel	ОК

Roof Metal Panel Material			×
Straight Metal pay rate	Use Metal-rates 📃 💌	Curving Metal Pay Rate	Use Metal-rates 🔹
Allowances in Use	Corrugated762		
Straight Metal		Curving Metal	
Supplier	USMetal	Supplier	Not set
Profile	Corrugated	Profile	
Product code	USM36	Product Code	
Finish	Сь	Finish	
Gauge	0.420000	Fastener	
Fastener	MS/10/16/C	Fasteners per sqft	0.00
Fasteners per sqft	6.00	Clip	
Coverage Width	36.00 in	Clips per lft	0.00
Underlay	None	Coverage Width	0.00 in
Fall Protection	Hand Rail Special 📃 💌	Change Curved Metal	
FP Height	3000.00		
Change Metal	Accessories		
	Cancel		ОК ?

At this point, you can also amend your selection by clicking on the **change** button for either straight or curved roofing. Bullnose verandahs will automatically adopt the curved material you have selected.

If a job has more than one type of sheeting, the option **Cover > Select Metal > One-Plane** is selected. This allows you to change the profile and/or colour for a specific area of individual roof planes. You can also set the properties of a single roof sheet/panel using the option **Cover > Select Metal > One-Panel**, and this will be covered later.

To specify the material for a bullnose verandah select **Change** from the right hand side, or Curving Side of the previous dialog box. Select the required Curving Quality panel and click **[OK]**. The attributes for the selected panel will appear on the previous dialog box on the right hand side.

# The Estimate Command - Metal Roofs

Selecting **Estimate** from the main menu displays the Estimate menu as displayed to the left. This menu option only applies to metal roofing.

It is here you generate the sheet cutting list. The process involves

- setting allowances
- using the appropriate sheet estimation method (blocks, offcuts or sheets)

From there, you can insert lap direction arrows which will later appear on the roof drawing.

	Panel Allo	owances <default></default>	×
Offset-Roof Options		Generate-Offcuts Options	
Gutter Overhang	2"	Show Pitches Y	'es
Hip Clearance	3''	Show Panels	No
Ridge Clearance	3''	Annotation Format Star	ndard
Gable Clearance	4''	Generate-Panels Options	
Valley Clearance	5"	Panel-Side Underlap Distance 0'	
Apron Clearance	2''	Show Panel Direction Arrows Y	'es
Batten Thickness	2''	Panel Lay Direction Optimized	•
Blocking Options		Tally-Panels Options	
Show Pitch on Block Label	No	Combine Similar Length Panels 0'	
Round Panels in Each Block	No	Round-Off Panels to Next (inches) 2'1	
Reduce Width of Straight Blocks	No	Annotate Panels With	-
Holes in Roof Planes	nore All 🛛 🔻	Annotation Text Size 2.00	
Drawing Style of Block	ginal 💌	Apply the Minimum Panel Length?	No
Block-Cutting Text Size	3.50	Move Text for Panels Shorter than 24"	
		Add Square Brackets to Sheet Dimension	No
		Apply Offset Values without Offsetting Y	'es
Load Cancel		Delete Save-As OK	?

**Note:** Each method of determining the cut list and sheet placement has advantages and disadvantages, especially as regards waste optimization. The preferred method for your situation will be determined by the style of sheet, the experience of your estimator and the skills of your installers.

Call AppliCad if you wish to discuss the merits of each and which will best suit your company. We have observed, that very few metal roofing contractors in North America are inclined to use some of the material waste reduction techniques developed in Australia and New Zealand – this includes Blocking, Block-Cut, Gen-Offcuts. This is largely due to the style of metal panel used. If you do not attempt to reduce waste by re-using offcut material on your roof, skip these exercises and go straight to Exercise 36.



The first option in the estimate menu, **Allowances**, sets the allowances that the software uses for set-backs at ridges hips etc when creating the as built roof planes with the Estimate **Offset-Roof** command plus other options for the way the roof panels are annotated.

When you click **[OK]**, the allowances are saved for use with all subsequent jobs.

**Note:** If your jobs have different allowances, the operator **must** check and set these allowances for each job. Different allowance files may be created and saved for future use for specific roof systems.

	Panel Allo	owances <default></default>	×
Offset-Roof Options		Generate-Offcuts Options	
Gutter Overhang	2"	Show Pitches	Yes
Hip Clearance	3''	Show Panels	No
Ridge Clearance	3''	Annotation Format	Standard
Gable Clearance	4''	Generate-Panels Options	
Valley Clearance	5"	Panel-Side Underlap Distance	0'
Apron Clearance	2''	Show Panel Direction Arrows	Yes
Batten Thickness	2"	Panel Lay Direction	ptimized 🗨
Blocking Options		Tally-Panels Options	
Show Pitch on Block Label	No	Combine Similar Length Panels	0'
Round Panels in Each Block	No	Round-Off Panels to Next (inches)	2'1
Reduce Width of Straight Blocks	No	Annotate Panels With	•
Holes in Roof Planes	ore All 🔹	Annotation Text Size	2.00
Drawing Style of Block	ginal 💌	Apply the Minimum Panel Length?	No
Block-Cutting Text Size	3.50	Move Text for Panels Shorter than	24''
		Add Square Brackets to Sheet Dimension	No
		Apply Offset Values without Offsetting	Yes
Load Cancel		Delete Save-As OK	?

To load a previously defined Allowance file select Load and select the required file from the list.

Cover	Reporting	View	Zoom	Tools	Menu On	/Off	
Select	t Tile						1
Select	t Shingle						
Select	t Shake						
Select	t Metal						
- Se	elect One Plar	ne					
- Se	elect One Pan	nel					
-R	eset Material						
- Es	stimate Panel	s >	Allowa	nces			
Wall M	/aterials	>	Auto-B	locking		>	
			Genera	ate Offici	its Layout	>	
Zones	;		Genera	ate Pane	Layout	>	
Select	t Membrane						
<b>E</b> -11 <b>D</b>	otection	>	Tanara	d Panels		>	

# Exercise 33 - 🖾 Estimating the panels

There are various methods provided on the Estimate menu for you to estimate the roof sheets. Each method is unique and they are not interchangeable, that is you use one or the other, not both.



Draw up the house below at 6/12 slope with a 1' overhang. We won't be putting downpipes on this job, so the eave height is not critical. We will be using this plan for both the automatic and manual methods. Don't forget to specify the type of sheeting and flashings.



### \_\_\_\_\_\_

Select Estimate > Auto-Block from the Main menu.

You will be prompted for the option of reducing the width of straight blocks (where a block of straight sheets, with no cuts, overlaps) into an area of cut sheets at hips and valleys. The usual answer will be Yes, as this tends to help reduce waste material, but on some jobs can make the quantity very tight.

You are also prompted with the option of rounding the sheets in each block. This has the effect of rounding up each roof plane to whole numbers then the cutting list is determined. If you select No to this option, the rounding is done once all the roof sheets of a particular length have been determined. This has the effect of reducing the number of sheets in a job, thus reducing waste. It assumes that the installers are mindful of re-using off-cuts to reduce waste instead of throwing off-cuts into the scrap bin.

Select Sheet Estimate Options	<b>—</b>
Do you want to reduce the width of straight blocks ?	(No)
Do you want to round the sheets in each block ?	Yes
Cancel	
	?

The software will now automatically insert cross-hatched rectangles or 'blocks' over the entire roof area. Each block will contain the number of sheets in the block, the length of the sheets and also confirms the pitch. The fat orange line you see on screen indicates the bottom edge of the sheets.

Therefore, a block designated **8 x13'6" (6.00)** indicates 8 sheets at 13'6" long on a slope of 6 in 12. Your roof plan should now look like the one below.



It must be noted that the effective utilization of the sheets as determined by the blocking method is very much dependent upon the skill of the installers, especially on a more complex roof shape. The software does allow for modification of the blocks in the case where an experienced operator can see a more effective block layout than that produced by the software. This is covered in the Reference Manual.

The next step is to view the results of the automatic blocking in the form of the **Sheet cutting list** summary dialog box.

Select Tally-Blocks from the Estimate menu to create a sheet cutting list summary.

The dialog box below will appear. It provides the sheet cutting list and a summary of the Roof Area and the Sheet Area and Total Sheet or coil length.

This completes the section on the automatic blocking method. If you wish to make any changes on an automatically created block layout, there are commands available to make these modifications. These will be covered in the following section where we will look at inserting blocks manually.

Panel Cutting List Summary	×
Material: Bluescope Steel, BHP-1, Corrugated 0.42Imp, Gull Grey, 0.42, 36.0	
52 / 19' 10'', 18 / 15' 8'',	
Sheeting Accessories	
NameCodeQty 0.000000	
Total Panel Length : 1313' 4''	
Total Panel Area : 3940 sqft	
Total Roof Area : 3477 sqft	
Block Area : 3599 sqft	
Waste : 9.8 %	
0011.dab : m1	
Sheet Allowances Used: <default></default>	
Export Proface	
Export CSV OK	] _

Exercise 35 - Manual Blocking

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As mentioned previously, we will be using the same roof plan that we used for the automatic method. The aim of this exercise is to come up with exactly the same answer as the automatic method.



#### Select Auto-Blocking > Modify Block from the Estimate menu.

The menu at right will appear.

We will now go through the two methods used to insert a block onto a roof panel. These are **Insert-Rect** and **Insert-Line**. To describe these two methods we will insert the long rectangular block at the top of the plan. It is then up to you which method you use to complete the blocking. In some instances it may be easier to use a combination of both these methods. We'll look at the rectangle method first.

Select Insert-Rect from the Blocks menu.

You will then be asked to select the line which determines the direction of the block. For this case we will use **D3**. When you have selected the corresponding line, the dialog box below will appear asking you to select the storey for the roof. This is a single storey house, so select **[OK]**.



Insert-Rect
Plane-Rect
Insert-Line
Extend-Edge
Rotate
Change-Details
Change-Lengths
Add-to-Verandah
Change-Pitch
Show/Hide-Pitch
Show/Hide-Blocks
Delete-One
Delete-All
Verify
Merge-Blocks
Reduce-Runs
Mirror
Сору
Move
Cancel OK

Blocks

.....

This will then bring up the following dialog box asking you for the slope of the roof. Type in 6, as this is the slope of the roof we are using.

Enter the Slope	<u> </u>	×
Slope	in 12	
Cancel	OK	?

You will then be prompted to locate the "first corner of the rectangle". Using the middle mouse button select point d1.

Then drag the mouse and form the rectangle by "snapping" to p2.

You will then be prompted to "select the line which defines the length of the block" (the direction that the sheets will run). Select line d3.

The block will then be inserted. Your plan should now look like the one below.

We will now insert the same block using the line method.



Before we do, we must delete the block we have just created.

Select **Delete-All** from the **Blocks** menu. This command will automatically delete **all** blocks from a roof. If you want to delete only specific block(s), select **Delete-One** and locate the blocks to delete.



Select **Insert-Line** from the **Blocks** menu. You will then be asked to select the line which determines the direction of the block. For this case we will use the line **D2**. When you have selected the

corresponding line the following dialog box will appear asking for the pitch of the roof. Enter 6 (as in 6/12 slope).

Enter the Slope				×		
s	lope	6		in 1	2	
	Cancel		O	<	?	

You will then be prompted to "locate a line to generate a block". Select line d1.



A hatched square will appear over the hip end. You will then be prompted to "select the line which defines the length of the block". Select line d2.

Your plan should now look like the one at right.

The next step is to "extend" the right hand edge of this block so it covers the same area as was created using the automatic method.

Select **Extend-Edge**. You will then be prompted to "locate a line to move". Select line d3. You will then be prompted to "locate its new position:". Snap to point d4. The block will now automatically extend to this point, and the text inside will be updated.



Your plan should now look the one below.



[Continue] inserting the remainder of the blocks using whatever method you prefer.



**Note:** The method of extending edges as described above, can be used to "push and pull" the edges of blocks that have been created using the automatic method.

This concludes the section on the blocking method.



Notice that the **Estimate > Generate Panel Layout > Set Plane Parameters** command has an option for inserting the lap direction of the sheets. This is particularly important in areas of high wind. Most suppliers also specify the lap direction with respect to prevailing winds and their warranty is only valid if the roof has been fixed with this in mind.

Note that when you select and insert a panel a lap direction is automatically inserted if you haven't specified it already.

To insert lap direction arrows, select **Lap-Ins-Dir-Auto**. If the lap direction that has been inserted is incorrect you can change then by selecting **Swap-Lap-Dir**. For example:



Exercise 37 - Gen-Panels Method

The second method of estimating is the **Panels Method**. To use this method select **Estimate > Generate Panel Layout > Generate Panels** from the **Estimate** menu. This method will automatically generate panels for the roof. The panels are generated with respect to the lap directions you have specified.



If you are using short panels, you would then use the **Split Panels** button and indicate the purlin or batten centre that you wish to divide the panels along. Note: You will need to have inserted your purlins at this point. You can also use the **Split Panels** command for insertion of translucent panels for skylights. (Refer to that section later in this manual for more info on this subject).

However, for this exercise, we will not be splitting sheets/panels. You have two choices of estimating the sheets. The first of these is the **Tally-Panels** option. Clicking on this will tally the panels, giving you the following dialog box.

Panel Cutting List Summary				
Material: Bluescope Steel, BHP-1, Corrugated 0.421mp, Gull Grey, 0.42, 36.0				
23 / 19' 10", 1 / 19' 8", 4 / 18' 10", 4 / 17' 10", 2 / 15' 10", 14 / 14' 10", 4 / 13' 10", 1 / 12' 10", 6 / 11' 10", 12 / 10' 10", 1 / 10' 8", 2 / 8' 10", 14 / 7' 10", 1 / 7' 8", 2 / 6' 10", 6 / 4' 10", 1 / 4' 8", 14 / 3' 10",				
Sheeting Accessories				
NameCodeQty 0.000000				
Total Panel Length : 1377' 8'' Total Panel Area : 4133 sqft				
Total Roof Area : 3477 sqft				
Waste : 13.0 %				
0011.dab : m1				
Sheet Allowances Used: <default></default>				
Export Proface Delete	1			
Export CSV Change Mat'l OK	?			

The cutting list is displayed with tiotal number of panels of each length required. Also reported is the total length of coil required for this job and the expected waste factor. This list is also used to create a cutting details report that matches the panel layout drawing. These are standard report oprions.

Note also that you can export the cutting list to a CSV text file and to a roll forming machine controller such as AMS Controls, Beck, Proface and others. This reduces errors caused by machine oerators keying incorrect cutting details into the machine controller.



The annotation of the panel layout is set under **Gen-Panels > Estimate > Allowances** where you can set to show panel length or panel ID or both.

A further option with the **Gen-Panels Method**, is to select **Linear Nesting**, at the bottom of the **Estimate** menu. This method has been devised to reduce waste on a complex hip and valley roof and to create a material parts list that may be sent directly to the roll forming machine. It was developed for a machine that will also pre-cut the sheets to the required angle for that roof shape. It will also tally the sheets.

This method is an advanced development of Gen-Panels where the software takes each sheet and compares it with with every other sheet on the roof to see if their ends can match up. It takes account of the seam side and produces a new cut list where one cut yields two sheets thus optimizing the sheet lengths giving the absolute minimum wastage. An output file is also produced, called a Piece Coordinate File (PCF) which may be used to program a sheet angle cut machine to pre-cut all the roof sheets.



Selecting **Linear Nesting** will bring up the following dialog box and then you are prompted for the nesting parameters:
Linear Nesting Defaults	
Maximum Panel Length	0.00 mm Max.
Nesting of Narrow Pieces	Add to end of sequence
Detailing of Narrow Pieces	As combined pieces 🔹
Create New Sheet for Square Cut Pieces	No 💌
Combine Lengths of Sheets	No 💌
No. of Planes to Process Together	0
Cancel	ОК
	?

Set the maximum sheet or panel length you typically use (to allow for easy delivery etc) and then click [OK]. When the sheets have been nested the following dialog box will appear listing all the combined sheet lengths and quantities, including a wastage factor.

Nesting provides for the most efficient method for creating the roof cutting list, but does require consideration of what the install team are likely to prefer as a cutting list output. The waste factor would tyically be reduced by 5 - 10%. It should be noted that for many situations, the linear nesting process is totally inappropriate. Use only if you have installers experienced with pre-cutting panels and re-using the offcut material.

More details of the complete process are described in Section 5 of the Manual.

## The Cover Command - Insulation and Downpipes

Exercise 38 - Selecting Insulation

Insulation	x
Select-Default	
Apply-to-Plane	
Remove	
Reset-Plane	
Negative-Plane	,
Verify	
Show	
Cancel OK	?

The next step in completing your quotation is to specify the type and placement of the insulation, if this is required for your job.

Select Insulation from the Cover menu.

The text menu at the left will appear. It is suggested that you have roof planes turned so that you can select individual planes if necessary.

Select the option **Select-Default** from the **Insulation** menu. This will bring up the following dialog box. The purpose of the dialogue box is to provide you with the opportunity to create a combination of insulation or underlay materials such as vapour barrier plus insulation blanket etc. Once the items are selected, and the appropriate fasteners, you may save the combination you have made as an insulation system so that you can use it again next time you use this combination of materials.

Insulation list			×
There is no insulation	selected		
Se	elect system	Save system	
Cancel	Add-Insul	Add-Fastener OK	?

Select Add-Insul and the following dialog box will appear.

Select the insulation	<b>—</b> ×-
Celotex Thermax Themax board 222 Grace Ice Water Shield Undrerlay icw123 Grace Sarking 30# felt 30liyt :56.00 0.00 Hilltop Slate Roofing felt Roofing felt for slate HS-RF JohnsManville 0.5 Perlite JM Perlite JM05P44 JohnsManville 1.5 ISO JM Insulation sheets JM15ISO48 Sample Supplier Aluminium foil Al foil AF-1 Sample Supplier Sarking Sample Sarking SA-01	; 45.00 0.00
Cancel	

Select the required insulation material and select [OK].

Insulation list		
Insulation 1	Celotex Thermax Themax board 222	··· +
Insulation 2	Grace Ice Water Shield Undrerlay icw123	:45.00 0.00 +
Insulation 3	Grace Sarking 30#felt 30liyt	:56.00 0.00 +
	Select system	Save system
_		
	Cancel Add-Insul Ad	dd-Fastener OK
-		?

The dialog box below will appear specifying the insulation you have selected.

The insulation is automatically applied to all roof planes when you select [OK].

Select Verify from the Insulation menu if you wish to check what type of insulation has been applied.

The Reference Manual provides a more detailed description of the function of the Insulation Command.

## Exercise 39 - Selecting Downpipes

The last step that remains to be done as far as your roof cover quotation is concerned, is to specify the position and type of down pipes.

Select Down pipes from the Coverage menu.

Select new Down	Pipe		<b>—</b>
BHP Round 5 Sample supplier	0.50 Colour DP8 Rectangular 4x2 0.40	Painted	DP1810050
Can	cel		ок

Downpipe 🛃	
Select	
Insert	
Change	
Delete	
Show	
Cancel OK ?	

Select the required downpipe select **[OK]**. The **Select new colour** dialog box will appear. Select any colour and select **[OK]**. Now that we have specified the type of down pipe we will be using, the next step is to position them around the house. Select **Insert** from the **Down pipe** menu. You will now be prompted to **Locate a line to insert the down pipe on**.

	DownPipe values	×
DownPipe Height of Gutter Offset to Wall	MidWestManufacturing 4x2 0.40 8:00 3:00	0 Colour T B A DS1810050xx
Optional Items	S	nclude Shoe Ibow
Dot Size	2.00	
Cance	I Change	OK ?

Using the left mouse button, locate an eave line, remembering that where you select the line will be the position of the down pipe and check the optional items that you need for this job.

Position the down pipes as per the drawing below:



After selecting an eave line, the following dialog box will appear.

The height of gutter is read from the eave height value that you specified when you first created the roof. If the eave height is different, in the case of a sloping building site, then you may change the value determined by the software.

You also have three options for the base of the down pipe - shoe, nothing and elbow.

Select nothing for this example and then [OK].

This finishes the definition of downpipes. Obviously, if you are not supplying downpipes on a job, you do not have to add them to your job. The costing process will not count them if they're not there.

Having finished defining the various roof cover materials, it would be useful to Save the job at this point. From the pulldown menu select **File Save**, and type in the project or customer name and add the job name, then select [OK]. Ensure that **Preview** is checked so that the preview picture is displayed next time you go looking for this job.

If you already have a job of similar shape and detail of the same name, you will have to select **File Save-As**. This allows the operator to use an existing job, make slight modifications and save as a different name for later recall.

## The Cover Command – BUR/Single Ply Roofing



The roof assembly we will be drawing, is a multi-layered structure made up of several discrete plies, with the following specifications:

1 layer of JM ISO 2" 1 layer of JM Perlite 0.5" Mechanically fastened with screws and plates – 2 every 1 sq Layer of ashphalt at 10 lbs per sq 1 layer of JM Glass 6 Layer of ashphalt at 10 lbs per sq 1 layer of JM Glass 6 Layer of ashphalt at 10 lbs per sq 1 layer of JM Glass 6 Layer of ashphalt at 10 lbs per sq 1 layer of JM Glass 6 Layer of JM Glass 6

Our roof structure for this exercise will be a concrete slab with a parapet wall around all sides 2' high.

The edge detail all around is:



## Exercise 40 - BUR Material Description

We have decided that the materials we will be using are as described below. We have not used these materials before so we must enter them into our database. Once entered they are then available for future use.

### Roof

Туре	Description	Size	<b>Cost</b> \$28/100sqft	
Insulation	JM 1.5" ISO	4x8 Sheet		
	JM 0.5" Perlite	4x4 Sheets	\$12/100sqft	
Roof membranes	JM Glass 6	500sqft/roll	\$22/roll	
	JM Glass Cap	100sqft/roll	\$13/roll	
Asphalt	JM Type III	100lbs/Carton	\$13/Carton	
Screws	JM 3.25" Ultra Grips	1000 / box	\$78/box	
Plates	LM Metal Plates	1000 / box	\$42/box	

### Flashing

	Description	Size	Cost
Metal lengths	Parapet Capping	IS	
	BHP Apron	IS	
	OFR Counter Flashing	IS	
Fastener	Drive pins		
Metal cant	4" Cant strip	IS	

# Exercise 41 - Define the Roof Outline

Draw up the following flat roof using the command **Construct-Roof > Track-Plane** from the main menu. The Track-Plane command (as distinct from Track-Outline) generates and outline without hips and valleys.



below, and allows you to input the perimeter dimensions and direction by clicking the direction buttons. You may also simply type **r225** for a line created to the right, 225 feet long.

Once you get to the second last perimeter line, simply select C {enter} or **Close** and **Close Square**. The system will automatically compute the correct geometry to close the perimeter and draw the remaining outline. Check that the last two dimensions are correct. If they are, then you may proceed to the next step. At this stage the lines are construction lines only and don't really exist, until we select **F** {enter} or **Finish** on the dialog box.

Wall Direction and Distance			
Direction 0.00 Distance 0.00 Pitch v 0	mm Digitize 1 U / 0 R / D 1		
Enable Underlay Show	N Scale/Rotate		
Insert     Close     H/V     Finish       Step Back     Cancel     Options     Step Fwd     ?			

If they are not correct, then the information is incorrect or you made a mistake in setting the perimeter dimensions. In the event of a mistake, select **Stepback** until you delete the wrong line and re-insert it.

Once complete with cross-hatching to represent our roof surface, you are ready to get an immediate roof geometry summary.

Select **Tools > Tally-Quantities** from the main menu and the result is displayed.



We now need to select materials and apply them to our roof as a roof material system made up of various plies. Working up from the roof base, we will select each material in turn. While the order does not matter from a take-off point of view, it certainly helps in the interpretation to have the materials listed in the order they are to be laid. We will start with the underlay.

Insulation list				×
There is no insula	tion selected			
	Select system	Save system		
Cancel	Add-Insul	Add-Fastener	OK	?

Insulation list			<b>—</b>
Insulation 1	Hilltop Slate Roofing felt Roofing felt for slate HS-RF		E +
Insulation 2	Sample Supplier Aluminium foil Al foil AF-1 :1	18.00 18.00	• +
Insulation 3	Sample Supplier Sarking Sample Sarking SA-01		• +
	Select system Save system		
	Cancel Add-Insul Add-Fastener	OK	2
			2

Using the command from the main menu **Cover > Insulation > Select-Default**, select the types of insulation and the screws and plates with the **Add-Insul** and **Add-Fastener** buttons.

Since it is likely you will use this same order of material in the future, you may save it as a "system" so that you can recall it again pre-defined. To save it select the **Save System** button and type in a system name to describe it when prompted.

Notice on the right hand side of this dialog box three buttons. These are used to delete, change a line item relating to that material ply or add a ply before the line item.

## Exercise 43 - Apply the Roof Material.

When you have defined your insulation, select **[OK]**, to finish and go to the next step, which is to add the roof cover material – the Built-Up Roof system. Using **Cover > Select-Membrane > Select-Default**, select the plies and fasteners (asphalt) as you did for insulation. You may also save a set of plies as a

roof system. To do this, select **Save System** and give it a name so that it can be easily identified and used again.

Membrane list for conf	iguration : <>			<b>—</b> ×-				
There is no membrane selected								
Se	lect system	Save system	1					
Cancel	Add-Membrane	Add-Fastener	OK	?				

/

Membrane list fo	or conf	iguration : <jm-4gig></jm-4gig>	
Membrane 1	JM	JM GlasPly Premier 🛛 JM Glass Ply Premier 🖉 JM-GPP 🖾 🛨	
Membrane 2	JM	JM GlasPly Premier JM Glass Ply Premier JM-GPP 🔄 +	
Membrane 3	JM	JM GlasPly Premier JM Glass Ply Premier JM-GPP 🔄 📖 +	
Membrane 4	JM	JM Glass Cap JM Glass roll Cap JM-G-Cap +	
Membrane 5	JM	Gravel Gravel JM-GVL +	
Fastener 1		50.0 per m2 · +	
Fastener 2		50.0 per m2	
Fastener 3		50.0 per m2 · +	
Fastener 4		50.0 per m2 +	
Ca	ancel	Select system     Save system       Add-Membrane     Add-Fastener     OK	?

When you have defined your membranes, select **[OK]**, to finish and go to the next step. At this point we can check costs for the supply and installation of our base materials.

This is done from the menu – **Reporting > Supply and Install**.

## Exercise 44 - Flashing Assembly Details

In our example we are assuming that the flashing runs around the entire perimeter of the roof, and the edge should be finished as recommended by the supplier. Now apply the edge assembly to each line of the flat roof. In this example there is a graphic which gets inserted as supplied by the supplier.

Refer to the Set Up Guide and the Reference Manual for more details on defining and using the Flashings Assembly Details.



### Select Cover > Flashing Assembly Details > Set from the main menu.

Indicate the perimeter lines that will have the edge treatment you specified when prompted. Finish your selections by clicking with the right mouse button and confirm them with the left mouse button. You are then prompted for the parapet wall height. (This is for information only as the software doesn't do anything with it at this time.)

Enter the height of the parapet wall		<b>—</b> ×		
3				
Cancel	OK			
			]	
				Wall OFR Flashby Faceboor OFR Convertableg Dynadlass Carsting Reef

The edge or Flashing Assembly Detail is automatically drawn where you indicate and will be added to all subsequent reports when they are printed.

If all your materials have been correctly specified, when you select **Cover > Flashing details > Tally** you will get a dialog similar to the following. It is a summary of all the trim that is required to waterproof the Flashing Assembly.

Flashings
Barge Steeline,Barge Capping,Za,FL/0.55/200/3/Za 16/10'8'' 30/9'10'' 3/8'10'' Total : 492'2''
Batten Bradford,Foam 1200mm,Foam,B105 50/10' Total : 500'
Box Gutter Steeline,Box Gutter,Stainless Steel,FSS/0.55/1000/2 16/10' 8'' 30/9' 10'' 3/9' 8'' Total : 494' 8''
User len Steeline,2 Plank Walkway,Fall Protection,ZZZFP 48/10' Total : 480'
Accessories

## The Reporting/Costing Command



Once you have defined the roof cover and extracted the sheet cutting details, all that remains is to report costs for the job. The costs are based on two things - the geometry of the roof already defined and the material data files. The material data files contain the information about the types of material available to be used, the stock lengths, the fixing required and the sheet coverage.

Reporting	View	Zoom
Multi-GRIM	1 Out	>
Supply On	ly	
Supply an	d Install	
Nett Only		
Fascia Gut	tter	
Print Draw	ings	

The data files must be checked and modified to suit the materials and costs etc that are used by your company. They must also be maintained as prices may change from time to time. Editing these files is dealt with in a later section of the manual. There are two types of labour pricing files for each roof category of tile or metal – Metal pay or Metal Rates (Tile pay or Tile Rates).

The Metal Rates pricing file is a relatively simple rate table based on fixed rates per square or linear feet regardless of finish, pitch or storey. The Metal-Pay pricing file is the comprehensive labour pay scale that takes account of all the variables of pitch, storey and finish.

You may have as many Metal Pay rates as you need for your business, but you can have only one Metal Rates file.

With Metal Pay, you can have a different pay rate for different clients, for different crews or different sub-contractors. You may also have a different rate for different roof systems. Remember that however many pay rates you set up, they all have to be maintained and kept up to date with the latest pay rates.

You must carefully consider which gives your business the desired result on the client quotation you will subsequently submit.

## Exercise 45 - Pay Rates For Metal Roofs

For the exercise we will review the Metal Pay labour pricing file.

Select **Reporting** from the **pulldown** menu, followed by **Set Up Costing Rates > Metal pay Rates -Variable**.

This will bring up the following dialog box where you can see the level of detail that is available for you to use. Don't forget that you need to set a rate for each increment of pitch and for each storey, represented by each page of the dialogue displayed.

Set-Up Job Info CAL	O Construct Roof Modify Roof
Set up Pay Rates >	Tilers' pay rates - fixed
Preference Settings >	Tilers' pay rates - variable
Tiles	Tile waste factors
Shingles	
Shakes	Metal pay rates - fixed
Metal Panels	Metal pay rates - variable
Flashing	Curved metal pay rates
Fasteners	
Insulation	Nett pay rates
Tile Colours	Quote Groups
Metal Colours	
Tiles+	Wall cladding pay rates
More >	

Name WillsRoofing				
Storey 1	Note : Th	e pitch interva	al INCLUDES th	ne higher range val
Slope in 12	0.0 -> 6.0	6.1 -> 12	.0 12.1 -> 15	5.0 > 15.0
Straight roof / sqft	12.00	14.40	18.00	24.00
Ridge lft	2.00	2.40	3.00	4.00
Hip / lft	3.00	3.60	4.50	6.00
Valley / lft	4.00	4.80	6.00	8.00
Fascia-only / lft	5.00	6.00	7.50	10.00
Gutter only / lft	6.00	7.20	9.00	12.00
Fascia-barge / lft	7.00	8.40	10.50	14.00
Fascia and gutter / lft	8.00	9.60	12.00	16.00
Barge / lft	9.00	10.80	13.50	18.00
Apron and Step / lft	10.00	12.00	15.00	20.00
Batten / lft	11.00	13.20	16.50	22.00
Box gutter / lft	12.00	14.40	18.00	24.00
User lengths / lft	13.00	15.60	19.50	26.00
per downpipe	14.00	16.80	21.00	28.00
Roof removal / sqft	15.00	18.00	22.50	30.00
	Auto-Fill Interval	Auto-Fill St	torey	
Select	Delete	Add	L	Jpdate
Add-User	Del-User		Nex	t Page >>

From here you can enter your pay rates for different pitches and stories. Name your pay sheet and select **Add**. This pay rate will now be added to the database structure.

## This does not mean you have selected a pay rate for your job. You select the required pay rate for your job when you select the material to be applied on the Cover > Select-Metal dialog box.

For a detailed description of setup and use of these options, refer to the Reference Manual.

## Exercise 46 - Pay Rates for Tile Roofs

Select **Reporting > Setup Costing Rates > Tiler's pay rates - variable** from the **Main** menu. The Installer pay rates dialog box will appear.

staller Pay Rates for Tiles(rec = 1	of 1) Page 1 of 2			
Name SCM's Tile Rates		Roof unit	by Area 🔹	•
Storey 1 🕢 N	ote : The pitch inte	erval INCLUDES (	he higher ran	ge value
Slope in 12	0.0 -> 7	7.1 -> 8.5	8.6 -> 1	0.0 > 10.0
Roof / sqft	1.00	1.20	1.25	1.30
Normal Hip / Ift	1.52	1.82	1.90	1.98
Seal / lft	0.00	0.00	0.00	0.00
Butt / lft	0.00	0.00	0.00	0.00
Normal Valley / Ift	0.00	0.00	0.00	0.00
Bed and Point / Ift	0.00	0.00	0.00	0.00
Seal / lft	0.00	0.00	0.00	0.00
Normal Ridge / Ift	0.00	0.00	0.00	0.00
Seal / lft	0.00	0.00	0.00	0.00
Butt / lft	0.00	0.00	0.00	0.00
Normal Gable / Ift	0.00	0.00	0.00	0.00
Bed and Point / lft	0.00	0.00	0.00	0.00
Seal / lft	0.00	0.00	0.00	0.00
Rake Ridge/lft	0.00	0.00	0.00	0.00
Underlay and Insulation / sqft	0.00	0.00	0.00	0.00
۵	uto-Fill Interval	Auto-Fill Storey	đ	
Select	Delete	Add	_	pdate
Add-User	Del-User			Page >>
	2010001			
Cancel	Interv	vals	OK	

It contains all of the installer labour rates for the individual roofing components in either squares or lineal feet, depending on the item, and a different value is possible for each range of roof pitch. You can change the number of intervals and their spacing by clicking **Intervals**.

For the exercise, type in a name, change a few of the values to suit the rates that your company uses and select **Add**. These rates are saved as soon as you select **Add**. If you want to you can save a number of different installer rates. When you have chosen the rate that you would like to use click on **[OK]**.



**Note:** This does not mean you have selected a pay rate for your job. You select the required pay rate for your job when you select the material to be applied on the Cover > Select-Metal dialog box. For a detailed description of setup and use of these options, refer to Section 3.



There are two options available under the **Reporting** menu for the calculation of materials, pricing and labour. These are **Supply-Only** and **Supply-Install.** 

The **Supply-Only** option will give us a breakdown of all material quantities and pricing for the particular job **excluding** any labour component.

Roof Cover											-
Manufacturer Easyroof Kingspan		ap Lock, Woodland 10 SF- Steel, Galva		Qty 9.71 10.21	Rate 14.00 18.50	SubTotal Di 135.94 188.85	scount % -20.00 0.00	135.94	Category Straight Siding		E
Flashings											
Manufacturer BlueScope Steeline Steeline Steeline Steeline	RR/0.55/C, VI/0.55/C,V FHT/0.42/C FHT/0.42/C	,Fascia, Cb @ 307 ,Fascia, Cb @ 330	3	Qty 0.00 15.49 78.08 20.12 44.00 4.00	Rate 0.12 0.00 0.00 0.00 0.00 0.00 0.00	SubTotal Di 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.	0.00 0.00 0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00 0.00	Category Cartage Cartage Custom Ridge Valley Fascia Fascia		
Steeline Steeline Milform Steeline	FL/0.55/200 TH/75MM/0	,Gutter Quad, Za )/3/Za,Barge Capp .75BMT,Batten Me )/3/C,B/Gutter Fla	tal 8.000mm, Za @ 3048	105.56 7.72 177.00 13.77	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00	0.00	Gutter Barge Batten User len		
			Labour Items			Material Items Material Sub Material Marl Material Totz	Total KUp	646.35 0.00 646.35	R	als ob Total (ex GST) ebate/Extra ST (0.00%)	646.35 0.00 0.00
Quote Groups								,	T	otal (incl GST)	646.35
Notes	Save	Set Suppliers	Add Item								
Export GRIM	Load	Set Discounts	Add Other								
Export CSV	Delete	Set Finishes	Tile Waste						Car	cel Print	OK

After selecting **Supply-Only** from the **Reporting** menu, the following dialog box will appear. As can be seen from the dialog box, all of the materials for the job have been itemised, listing the quantity for each item and their respective rates. A subtotal for each item is then produced and an allowance is made for the operator to apply a discount to any or all of these items.

If you wish to make a change to any of the values in the table, double-click in the field you wish to alter and select **Re-Calc.** All of the values in the table that are affected by this change will automatically be updated. In the above example, there are actually 3 pages of materials that have been quantified. To see the other two pages, select the **Next-Page** button. If you wish to insert any notes onto the client quotation form, select the **Notes** button. The following dialog box will appear.

From here select the form that you would like to add notes to, bringing up the following dialog box.

Available Printing Templates Quotation Letter Quotation Acceptance Installer Pay Summary Quotation Details Installer Pay Summary - QG RonsReporThing User Form 2 User Form 3 User Form 4 Order Forms		o Be Printed Quotation Form Material Cutting List	
Tax Invoice 1 Tax Invoice 2 Bill of Quantities Roof Quantities AppliCad Full Report - Solar	Ţ		



Selecting the **Add-Predef-Note** allows you to select from a list of pre-defined notes:

Select Report Notes	<b>—</b> ×
No CleanUp Included	Select
GST Included GST Excluded	
No CleanUp Included CleanUp Included	
Standard Inclusions New Note	
	Cancel
	?

Selecting **Check/Add Notes** allows you to modify or add to the selected notes that will be inserted on the quotation or proposal.

Enter note for the Quotation Form report			
Rubbish removal and general site cleanup are not included in this quotation. For a separate quotation on site cleanup, or to have this included on the quotation, please cont Installers will need owner to secure big dog seen on site during first inspection.	act us.		
Clear	Cancel	OK	

#### Finishing and Saving Proposal

Once you are happy with all of the values, and you've given yourself a hefty profit, the next step is to save the particular quote under an easily recognizable name, as our client may want us to quote on more than one profile for the same job.	Select a quick quote or enter a new name 🛛 🕰
Select <b>Save</b> . The dialogue box at right will appear.	
Type in the desired quote name and select <b>[OK]</b> . Use this to keep track of the proposal. You might be asked to prepare an alternate proposal for different materials or different finish. The <b>Supply-Only Quote</b> dialog box will now reappear. The Quote name appears in the title bar at the top of the dialog box.	Robbo's House - Re-roof 21 Nov 2010 Cancel OK

Roof Cover											-
Manufacturer	Description		Qty	Rate	SubTotal D	iscount %	Total	Categor	у		
Flashings											
Manufacturer	Description		Qty				Total	Categor			=
	Cartage Cartage			0.00 1.00	0.12 0.00	0.00 0.00	0.00	0.00	Cartage Cartage		
Accessories											
Manufacturer		C,Pop Rivets (100) C,Pop Rivets (500)		5.57	SubTotal D 0.00 0.00	iscount % 0.00 0.00	Total 0.00 0.00	Categor Extra Extra	у		
	,Retention A X/C,Silicone US/C,Touch	llowance Clear Up Paint ficult Allowance	0.00	0.00 3.52 7.29 100.00	0.00 152.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00	0.00 0.00 0.00 0.00 0.00 0.00	0.00 Extra Extra Extra Extra Extra	Extra		
	2220Hychice	K Meddare	-Labour Item		0.00		ial Items	LXUU		Totals	
						Mate	erial SubTotal		0.00	Job Total (ex TVA)	0.00
							erial MarkUp		0.00	Rebate/Extra	0.00
							erial Total	Ľ	0.00	TVA (19.60%)	0.00
Quote Groups								1		Total (incl TVA)	0.00
Notes	Save	Set Suppliers	Add Item								
Export GRIM	Load	Set Discounts	Add Other	1							

To print out this particular quote, select **Print** and the customer quotation and all of the details in the **Supply-Only Quote** table will be automatically printed.



The **Supply+Install** option will give us a breakdown of all material quantities and pricing for the particular job including any labour component.

After selecting **Supply+Install** from the **Reporting** menu, the following dialog box will appear.

Supply and install	Quote : <n< th=""><th>o-Name&gt;</th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th><b>X</b></th></n<>	o-Name>								<b>X</b>
Roof Cover										*
Manufacturer Steeline	Description I/0.42/762/0	C,Steel Clad, Cb		Qty 374.07	Rate 45.00	SubTotal Di 16833.15	scount % 7.50	Total Category 16833.15 Straight		E
Flashings										
Manufacturer Steeline Steeline Steeline Steeline Steeline Steeline Steeline Steeline	VI/0.55/Za, FHT/0.42/C, SHRG/150/C FL/0.55/300 DSR/0.45/10 ,100 x 50 x DSC/100/50 DP/100/50/2	,Fascia (Bx/Ww), ( 28,Gutter Half Rou )/3/C,Window Edg 00/50/2400/C,100 1800, C/B /C,100 x 50, C/B Za,100 x 50, C/B	Cb nd, CB e, Cb	Qty 0.00 1.00 39.02 5.09 63.10 57.32 7.34 1.00 1.00 3.00 1.00	Rate 0.12 0.00 12.00 14.00 14.00 0.00 0.00 0.00 0.00 1.12 2.12	SubTotal Di 0.00 468.24 71.26 883.40 0.00 0.00 0.00 0.00 0.00 3.36 2.12	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	Total Category 0.00 Cartage 0.00 Cartage 468.24 Ridge 71.26 Valley 83.40 Fascia 0.00 Gutter 0.00 Vindow Edge 0.00 D Pipe 0.00 D Pipe 3.36 D Access 2.12D Access		
Steeline	Up 10 600m	m, 100 x 50, C/B		1.00	3.12	3.12	0.00	3.12D Access		•
			Labour Items Labour SubTot Labour MarkUp Labour Total		545.6 12.0 611.0	0 Ma 0 Ma	erial Items terial SubTotal terial MarkUp terial Total	18264.65 0.00 18264.65	Totals Job Total (ex TVA) Rebate/Extra TVA (19.60%)	18875.73 0.00 3699.64
Quote Groups			(						Total (ind TVA)	22575.37
Notes	Save	Set Suppliers	Add Item							
Export GRIM	Load	Set Discounts	Add Other							
Export CSV	Delete	Set Finishes	Tile Waste						Cancel Print	ОК

As you can see, the dialog box is very similar to the one that appears for **Supply-Only**.

The difference is that there is now a button marked **Labour subtotal**. Underneath this button, there is a field to add a labour markup, and then a labour total. Click on the **Labour subtotal** button. The following dialog box will appear.

Roofing Labour charges Page 1 of 1								×
Description	Qty	Rate	Total	Description		Qty	Rate	Total
Straight roofing [1/0.42/762/C] sqm	374.07	1.00	374.07	Ridges m		39.02	1.00	39.02
Valley m	5.09	1.00	5.09	Fascia only m		63.10	1.00	63.10
Gutter only m	57.32	1.00	57.32	Downpipes ea		1.00	7.00	7.00
Window edge m	7.34	0.00	0.00					
				LABOUR SUB-TOTAL				545.60
Misc-il	em		Add li	neltem	Re-C	alc		
Cancel						ок	7	
							_	?

The **Quantity**, **Rate and Total** for each individual roofing item are listed. Experiment with some of the labour costings and notice the effects to the totals when you change them. The procedure for recalculating, saving and printing a quote is identical to that for **Supply-Only** as described above.



To print your quotes. Select print from the **Supply + Install** dialog box and the following dialog box will appear.

Print Reports			×
Available Printing Templates Quotation Letter Quotation Acceptance Installer Pay Summary Material Cutting List User Form 1 User Form 2 User Form 3 User Form 3 User Form 4 Order Forms Tax Invoice 1 Tax Invoice 2 Bill of Quantities	> <	o Be Printed Quotation Form Quotation Details Installer Pay Summary - QG	
✓ Print Zero Quantity Line Items?		Cancel	

The buttons next to each of the eleven drawings toggle between **Print** and **Do not print**. Select quotation letter as the report to print, and then select **[OK]**.

At this point the software will retrieve the drawing of the roof and insert the relevant information in accordance with the information set up in **Job Info** e.g. site address etc. and any other information that you may have specified to appear on the drawing by way of key text strings. This process will be visible on the screen.

🖶 Print	×
General	
Select Printer	
➡ Fax ➡ FX92C614 ₩ HP LaserJet 4250 PCL 5 on FERRARI	Hicrosoft XPS Documen Send To OneNote 2007
٠	•
Status: Ready	Print to file Preferences
Location: Comment:	Fin <u>d</u> Printer
Page Range	Number of <u>c</u> opies: 1
C Pages:	
	Print Cancel

The Windows **Print** dialog box will then appear. If we had a printer connected, we would select **[OK]**, and the **Roof Drawing** would automatically be printed.

After the drawing has been printed, the roof model will be redrawn on the screen.

## The Reporting/Drawings command

The final step in the quotation process is the printing of the drawings.

Exercise 50 - Printing Drawings

To print your drawings, select **Reporting > Drawings** from the main menu, and the following dialog box will appear. Select the drawings that you would like to print, and then select **[OK]**.

Print Drawings		×
Available Printing Templates Batten Layout Block Layout Offcut Layout Panel Sequence Panel Cutting Details Flashing Drawing Flashing Profiles	To Be Printed Roof Plan Panel Layout	×
Single-Ply Layout Wall Plan Wall Elevation 3D Drawing Arc Roof Drawing Scaled Ruler Roof Sketch Pad [L] Roof Sketch Pad [A4]	Cancel	

## **Wall Creation and Modification**

The purpose of the following tutorial is to familiarize you with the process of creating a wall in 3D from an Architectural drawing. The Walls option may not be available if you have not purchased the Walls module.

The modelling tutorials will be divided into two sections. The first section will explain how to use the Track-Walls command, and the second will explain about Projecting Walls from either the outline we have drawn, or from a Roofing job already completed.

This will be followed by tutorials on coverage and costing.



Before we start we make sure that your **Preferences** are set to **Feet/Inches**, **Slope** and **American**. This is set under the **Set-Up** > **Preference Settings** > **Systems Preferences** menu.



## Exercise 1 - Track-Outline

First select the **Walls** option from the **Main** menu We will use **Track-Walls** to input a wall outline as this will be the <u>most</u> <u>usual method</u> of outline definition. Imagine we have received a job to cost via the fax. The drawing is fully dimensioned.

Select **Track-Walls**. A horizontal and vertical line will appear on the screen forming a cross. The intersection of these two lines is the point used for plotting or locating various points. At the bottom of the screen in the prompt area, it will ask you to **Locate start point. This works in the same way as when using our roofing software.** 

Using the left mouse button, locate a point anywhere on the screen. The **Wall Direction and distance** dialog box will now appear. (see below) :

Track	Lines
Direction 0.00 Distance 0.00 Pitch 🗸 0	mm / U / / / R
Enable Underlay Sho	w Scale Model
Insert Close Step Back Cancel	H/V Finish Options Step Fwd ?

The buttons marked Left, Right, Up and Down, allow you to navigate around the plan as you put in the external brickwork measurements. The angled lines are for walls that are at 45 degrees.

The **Hor-Ver** button is to allow the operator to insert wall lines that are not square with the balance of the structure for example, 12' along and 35' up.

After selecting the direction of the wall that you want to draw in, or by typing in the angle in the direction field, the **Distance** field will be highlighted. Type in the length of the wall and select **Insert**. You are now ready to put in the next wall.

Starting at the bottom left hand corner of the house, select **Up**, and then type in 24' for the length of the wall. Select **Insert**.

Now select **Right** and type in 24, then **Insert**. You could also type R24 in the direction field for the same result.

If you make a mistake, select Stepback and redo the wall.

Following is a simple "L" shaped house that we will use in this example.



[Continue] around the plan until you reach the bottom right hand corner. At this point, type **C {enter}** or select **Close** from the dialog box. The **Select the close method** dialog box will appear.

#### Select Close Straight.

This will automatically close the plan to its start point as described above. Following this you must type **F {enter}** or press **Finish**. If you wanted, you could now continue and create another outline, or if you have finished, click the right mouse button to cancel out of that command.

The wall outline is now complete. It is represented by a solid line. These are construction lines only, no wall geometry exists until we project these walls up to a specified height.

Now that we have the "footprint" of the wall, we now need to **Project** the walls, by selecting Project Walls to Height on the Pulldown menu. You will be asked to **Enter** the height of the walls.

Project Wall Defaults		×
Project Wall Lines	All	
Project by Amount	12'6''	m
Cancel	OK	?



Enter 12'6" and click **[OK]**. At this point, your wall lines may disappear from view. Don't be too alarmed at this point. It is simply that the software has drawn lines over lines and this causes them to be invisible.

To make them re-appear, we may need to **Repaint** the screen, using the Paintbrush icon, located on the left of the screen.



#### Viewing your Walls

At the moment, you are looking at a top view of the building, and you may want to take a look from a different angle. To do this, select **View** from the Top menu, and then selecting the appropriate view. In this case I have used **ISO**.



After changing the view, you may not be able to see any or all of the building. If this is the case, we need to "Fit" the view to the screen by clicking on the **Fit** button found on the left menu.



Your view should now look something like the one above. This completes the first exercise using **Track-Outline.** It is advisable that you save this job as you will need to re-open it later.

### **Exercise 2 - Track- Outline**

Now, for the practice, and using the process described above, do the following roof using the **Walls-Track Outline** command and using the dimensions shown.



## **Getting Quantities**

To get geometric quantities, select **Walls** > **Show Quantities**. Select this and a dialog box is displayed with a summary of the geometric areas and lengths of the current wall.

#### You must project your walls first!

Notice you can export this information to a .csv format ascii file so that the information may be used in an external third party program such as Microsoft Excel.

Wall Quantities			×
Total wall area	2689.8 sqft	Number of walls	6
Total wall length	215.2 lft		
External corner length	62.5 lft	Number of ext corners	
Internal corner length	12.5 lft	Number of int corners	1
Window edge length	0.0 lft	Number of edges	0
Window sill length	0.0 lft	Number of sills	0
Window head length	0.0 lft	Number of heads	0
Door edge length	0.0 lft	Number of edges	0
Door head length	0.0 lft	Number of heads	0
Wall top length	215.2 lft	Number of wall tops	6
Wall base length	215.2 lft	Number of wall bases	6
Export-CSV		Continue	
			?

### **Exercise 3 - Track-Outline**

Now that you have input these relatively simple wall designs, try the next one. Remember, if you make a mistake keying in the wall length, select **Step Back** and re-insert the correct value.



To To begin the next exercise, select **File** from the pulldown menu at the top of the screen and select **New.** This will automatically clear the screen of the current job. As before, select **Walls** from the main menu, then **Track-Walls**. Start at the point indicated and work in a clockwise direction around the wall line.

To achieve this drawing, follow the outline above and project the walls to a height of 12'. Select **View-ISO**, and you should have a result like the one shown.

Inserting Gable Ends

If there are Vertical Planes on the building you must tell the software where they are. To do this select **Walls > Gable**. This will bring up the following dialog box.



Enter the pitch of the roof and then click [OK].

<b>—</b>
in 12
OK 2

Select the end(s) that you want gable end(s) on by clicking on the top wall line, then right click the mouse button, and the siding for the Vertical Planes will be inserted.

If you want the same material and orientation of panels as the base walls for your gable ends, you must select the command **Walls > Merge-Gable** and the wall and gable plane will be merged as one plane.



Select **File > Save As**, then save this as Training 2 with a model name of Job 2.

#### Using an Existing Wall Plan

So far, we have explored the merits of "tracking" the wall outline using the Track-Walls command. However, there are times when you may have drawn up the building already whilst calculating a roof material take-off using one of our Roofing products. In this case, there is no need to re-enter the wall values again. If you recall from the previous learning guide, you go through a similar process to enter the wall outline, prior to adding the roof, so we can now use that wall outline as if we had generated it using "Track-Walls".

In this example, I am going to use the following Outline as if we had generated it through the **Construct-Roof** >**Track-Outline** command from the main menu (as described in detail earlier in this manual).



Add a metal or tile roof to it with a slope of 5/12 and an eave overhang of 1'6". Say **No** to Change in Overhangs, Vertical Planes and Barge Lines, so that you will end up with a roof looking like this:



Now that the software already knows the wall outline to generate the roof, we can use that same wall outline to generate the walls.



To generate the walls for the previous outline, select **Walls** from the main menu, and then select **Project**. The software already knows what the height of the walls should be, based on the eave height that you used and the eave overhang, but you can change it at this point if you wish.

Project W	all Options	x
Project Wall Lines Project Walls Up to Roof (def Hgt fo	ⓒ All ◯ Locat	e m
Project Walls Down by Amount	• 12	m
	? Cancel OK	

After clicking [OK], you will notice that the walls are generated automatically. And you will end up with a view like this;



Finally, as there may be too much information appearing on the screen, we may want to "turn-off" the roof temporarily, so that we can concentrate on the walls. You do this by selecting **Tools** from the pulldown menu then **Set Display**. You can now select which part of the view you wish to turn off.

	Display Settings	1		<b>X</b>
	1 3 5 7 9	]		
	First	Set All Off	Second>	Set All Off
	Walls	Yes	Walls	Yes
Set to No	Roof	No	Roof	Yes
	Sheet layout	Yes	Sheet layout	Yes
	Purlins	Yes	Purlins	Yes
	DownPipes	Yes	DownPipes	Yes
	Dimensions	Yes	Dimensions	Yes
	Coursing lines	Yes	Coursing lines	Yes
	Blocks	Yes	Blocks	Yes
	Flashing details	Yes	Flashing details	Yes
	Cancel	On-All	Off-All	ОК ?

*Note:* Remember to turn them back on when you have finished!



There may be times when the edge of the wall has an extension or cut into it for some other feature. This can be achieved by using the Track-Edge command. In this example, I want you to open up L Shaped roof from Exercise 1. You should have the following drawing on your screen.



Now select **Track-Wall-Edge** and you will be prompted which method to use to re-create the wall edge.

Wall-Lines
Re-Track Wall Line by Digitising
Re-Track Wall Line by Track-Outline
Re-Track Wall Line by Auto-Tracking
Cancel OK ?

Select the desired option (in this example use Re-Track ... by Track-Outline) then the wall line at the point (Point A) indicated on the previous page. You will then see the following box appear;

Track Wall-Line Boun	idary	×
Distance	).00 1.00 Ift ).00 in 12	\U/ L0R /D\
Insert C Stepback	Close Bay Hor-	Vert Finish Stepforward ?

You will recognize this box from our Track-Outline or Track-Walls command. This time we will be entering the modification to the top line of the wall, using the Up/Down/Left/Right and Angle buttons.

For this exercise, use these values – Firstly go Up 6, then Right 6, Then Down 3, then Right 8, then Up 5, then Right 9, then Down 3, then Right 7, then Down 5. Now select Close and Finish. You should now see a view looking like the one following:





This command is used to change the orientation of the panels on the wall, to be either horizontal or vertical. When you select this command, you will be prompted to select the plane that you want to change the orientation on, and the orientation will be changed. The default initial direction is set under Wall Cladding Allowances.



To insert an opening, for example a door or window, select the command **Walls > Openings**. This will bring up crosshairs on the screen. You are prompted to locate a wall line to measure from. We will select the long line down to bottom (see Ref B above). When the line has been selected a point will start flashing at the end of the line you just selected. This point is taken in respect to where you selected on the line. Click on the left end of the line to get the right end.

When the line has been selected the following dialog box will appear.

Define O	pening		x
Saved Opening Definition	Door	•	×
Opening Type	4		
Width	7		<u>n</u>
Height	1	<i>c</i> "	<u>n</u>
Distance Along Wall (from Flashing Point)	4		<u>n</u>
Height of Window Sill	1		n
Create Hole in Wall	(•	Yes 🔿 No	
? Cancel Save Opening Ins	ert Dyn Insert Mu	ılti Insert	

Fill in the details as above and select **Insert**. This will insert the door at the bottom of our drawing. You may define a library of doors and windows – refer to the Reference Manual for more details on how to do this.

To draw in the windows on this bottom wall, keep the opening dialog box open and change the opening type to **Window** by clicking on the selection box at the end of the field.

Define C	pening
Saved Opening Definition Opening Type	Vindow
Width	4 m
Height Distance Along Wall (from Flashing Point)	4' m 6'6" m
Height of Window Sill	4' m
Create Hole in Wall	
? Cancel Save Opening Ins	ert Dyn Insert Multi Insert

Fill in the details as above and click **Insert**. This will now insert the first of the three windows on the bottom wall.

Keeping the **Height of window sill**, **Width of window** and **Height of window**, fields the same. Change the **Distance along the wall** to **2**', and select **Insert**. This will insert the second window along the bottom wall. Finally change the Distance field again to **7**' and again click **Insert**,

Followed by Finish as you have finished inserting openings along this wall. Click your right mouse button once to cancel out of this command.

To insert the long window along the right hand wall, select **Walls > Openings** again, and select the right hand side wall that the window is on. Make sure you select near the end where the long wall connects. From here fill in the fields as shown.

With the fields filled in select **Insert**, to insert the window and then **Finish**. Then Right Click the mouse. You should now be presented with a view looking something like the following;



This completes the insertion of all of our openings in our wall outline.

#### Estimating the Siding/Cladding



To estimate our siding we must first put material on it. To do this select **Walls > Select Wall Cladding** and a dialog box will appear showing the materials available to be put on the walls. This database of materials is the same as the one containing your roof panels. Refer back to the Set-Up Guide to see how that process takes place. S

For this exercise, select the BHP material shown, and click **[OK]**. If the material you selected has a color, you will be asked to select a color as well. This will bring up the following dialog box.

elect Roof Materia	al	×
Manufacturer	All	•
Profile	All	•
Gauge	All	•
Finish	All	•
Coverage	All	•
		_
Kingspan KS1 Kingspan KS1 Kingspan KS1 Kingspan KS1 Kingspan Cur Kingspan KS1 Kingspan KS1 Martins Metal Bluescope Steel Copper Roofing Copper Roofing RoofMan Cor RoofMan Cor RoofMan Cor BHP Corruga	Snap Lock 21.00'' Copper 0.50 Shingle & Tile 18.00'' Copper 0.50 rugate 15.00'' Painted 0.40 rugate 15.00'' Galvanised 0.40 rugate 15.00'' Galvanised Painted 1 ted 0.42 Met 38.00'' Painted 0.42	te te 4
Substrate	Not Defined	
System	Not Defined	
Assembly File	Corrugated 0.42 Met_38.CSV	?

**Note:** You define your labour rate for applying the walls within **Set-Up > Set up Pay Rates > Wall cladding pay rates**. If you have not already defined a new labour rate, this section will not appear.

In time you will define a number of different labour rates for applying your different materials and it is at this point that you select which labour rate you will use for this job.

Notice also that an allowance file may be selected here.

If you want to add fasteners and/or clips to the material that you are using, click on the selection box at the end of the field, and select the required fasteners and/or clips.

Siding	g Material 🛛 🗙
Straight Metal Pay Rate	Use Metal-rates
Allowances in Use	DEFAULT
Straight Metal	
Supplier	MBCI
Profile	Designer Fluted
Product Code	DSGRFLUTED16/22 SIG200
Finish	Sig 200
Gauge	22.000000
Fastener	
Fasteners per sqft	3
Coverage Width	16.00 in
Insulation	Al foil 💌
Change Metal	Accessories
Cancel	OK ?

When this is done click [OK].

The next step is to estimate the siding. This is done by clicking on the **Generate** command. This will generate the sheets on our wall, using the specifications of the material we previously specified.

If you wish to nominate an Identifying Name to each wall plane, you can use the Set-Identifier command. You will be asked be firstly locate a Wall Panel you wish to identify, and then you will be asked to give each wall plane a name. This name will appear on any reports that are generated later. Right click with your mouse when you have finished.

ē	

When this is done, click on the **Walls > Apply Wall Materials > Create Panel Cut List** command and all of the sheets are tallied up and put into a cutting list, similar to the following.

Panel Cutting List Summary	×
Material: Kingspan, 4325, KS1000 SF- Steel, Galvanised - Painted, 60.00, 12.0	
26 / 45', 22 / 32' 10'', 26 / 30', 4 / 22' 10'', 4 / 6' 10'',	
Sheeting Accessories	
Total Panel Length : 2791'	
Total Panel Area : 2791 sqft	
Wall Area : 2673.8 sqft	
0011.dab : m8	
Sheet Allowances Used: <default></default>	
Export Proface Delete	
Export CSV Change Mat'l OK	
	?

Click **[OK]** to exit this box. This now completes the estimation process. If you want to delete the panels you have created, select the **Walls > Delete** command.



## Wall Flashings and Trim

To put flashings on our wall, select the **Walls > Flashing** command and a dialog box similar to the following will appear. You can define your own flashings in the same way as you did with the previous Learning Guide, i.e. through Materials-Flashings and then change the Type of Flashing to apply to Walls.

Select/Gene	erate Wall Batte	en & Tri	m <default></default>	>						<b>-</b> ×
Wall Batt	en									
Batten 1		None					•	Acce:	ssories	
Wall Trim	i									
External (	Corner	Steeline	Corner Ext	Ga (	FL/0.55/300/5/G]		-	Acce:	ssories	
Internal C	Corner	Steeline	Corner Int	Cb (F	FL/0.55/300/5/C]		•	Acce:	ssories	
Wall Top		Steeline	DoorStile (	Cb (F	FL/0.55/100/3/C]		•	Acce:	ssories	
Wall Bott	om	Steeline	Apron Ga	[FL/0	).55/200/3/G]		•	Acce	ssories	
	Allowances		Load		Delete	Sav	e-As		Colour Set	
	Generate		Set All to Non	e	Single-Line				Delete Flashings	
	Cancel				View List				ОК	
										?

From this dialog box we can enter all of the different types of flashing used on a wall. To set a material for a flashing simply click on the corresponding selection box for the required flashing. By clicking on a flashing, the material selection box will appear, and you can choose the type of material for the selected flashing. The following dialog box is an example of what the selection box will look like.

lect/Generate Wall Batte	en & Trim <default></default>
Wall Batten	
Batten 1	None Accessories
Wall Trim	
External Corner	Steeline Corner Ext Ga [FL/0.55/300/5/G]
Internal Corner	Steeline Corner Int Cb [FL/0.55/300/5/C]
Wall Top	Steeline Door Stile Cb [FL/0.55/100/3/C]
Wall Bottom	None Custom Assembly
	Steeline Door Stile Cb (FL/0.55/100/3/C)
Allowances	Steeline Edge Flashing Cb [FT/0.55/200/3/C] Steeline Edge Flashing Cb [FT/0.55/300/3/C] Load Delete Save-As Colour Set
Allowances	Load Delete Save-As Colour Set
Generate	Set All to None Single-Line Delete Flashings
Cancel	View List OK

To select your flashing, simply highlight the required flashing and click **[OK]**. This will now be changed on the flashing dialog box.

Wall Flashing Allowances		×
	Run Allowance	Lap Allowance
Wall Top	0.49	0.25
Wall Base	0.49	0.25
External Corner	0.49	0.25
Internal Corner	0.49	0.25
Window Sill	0.49	0.25
Window Edge	0.49	0.25
Window Head	0.49	0.25
Door Edge	0.49	0.25
Door Head	0.49	0.25
Wall Battens (same as roof)	0.49	0.25
Custom	0.66	0.39
Combine Similar Length flashings	0.16	
Cancel Sir	ngle-Allow	OK ?

From the flashing dialog box you also set your allowances for your flashing overlaps, underlaps etc. This is done by clicking on the **Allowances** button. This brings up the following dialog box.

As you can see there are a number of allowances that need to be set. Run Allowance is the

allowance for the end of a run (end corners). Lap Allowance is the allowance for overlapping before the end of a run. **Single-Allow** allows you to set a different allowance for a single run. When your allowances are set click **[OK]**, and you will return to the flashings dialog box. From here you can now generate your cutting list for your flashings. This is done by clicking on **Generate**.

Your flashings will now be generated using what you specified earlier. When the process is done a dialog box similar to the following will appear.

Flashing Cutting List Summary		×
Flashings		_
External Corner Steeline,Corner Int,Ga,FL/0.55/300/5/G 10/6'10'' Total : 68' 4''		
Internal Corner Stramit,Internal corner,Zincalume,INTCNR-1235 1/13' 8'' Total : 13' 8''		
Window Sill Stramit,Sill Flashing,Zincalume,SILL-111 1/4'10'' Total : 4'10''		
Window Edge Stramit,Edge Flashing,Zincalume,EDGE-666 2/4'10'' Total : 9'8''		
Window Head Stramit,Head Flashing,Zincalume,Head-1234 1/4'10'' Total : 4'10''		
Accessories		
ExportCSV	Continue	?

From here you can see all the flashing that is required for this job. Click **[Continue]** to exit and the Flashings dialog box will appear again. If you wish to see this list again, click on the **View-List** command in the Flashings dialog box.

If you wish to delete the flashings for the job click **Delete** and they will be deleted. If you wish to add a flashing to a particular line, use the **Single-Line** command.

To exit the flashings dialog box, click [OK].

## **Reporting/Costing**

The costing command is where the cost of the materials and labour is calculated. Click on **Reporting** > **Supply-Only or Supply-Install button** – the same as you would have used in the Roof section, and the following dialog box will appear:

Roof Cover										-
Manufacturer Steeline	Description HR/0.48/500/ZA,Steel Rib, Za		Qty 209.16	Rate 56.00	SubTotal Di 11712.96	count %	Total Category 11712.96 Siding			
Steeline	HK/U.46/50	JU/ZA,Steel Rib, Za		209.16	56.00	11/12.96	0.00	11/12.96 Siding		=
Flashings										
Manufacturer	Description			Qty	Rate	SubTotal Di		Total Category		-
	Cartage			0.00	0.12	0.00	0.00	0.00 Cartage		
	Cartage		-1	1.00	0.00	0.00	0.00	0.00 Cartage		
steeline		Ridge Corrugated,	Cb	45.65	25.00	1141.25	0.00	1141.25 Ridge		
Steeline	VI/0.55/Za		-	5.09	0.00	0.00	0.00	0.00 Valley		
Steeline		,Fascia (Bx/Ww),		62.32	0.00	0.00	0.00	0.00 Fascia		
Steeline Stramit		CB,Gutter Half Rou		65.06	0.00	0.00	0.00	0.00 Gutter 124.80 External Corne	_	
Stramit		4,External corner, 35,Internal corner		19.50 6.50	1.00	124.80 6.50	0.00	6.50 Internal Corner		
Stramit		ll Flashing, Zincalur		2.60	1.00	2.60	0.00	2.60 Window Sill		
Stramit		Edge Flashing, Zincalur		3.80	1.00	3.80	0.00	3.80 Window Edge		
Stramit		Head Flashing, Zin		2.60	1.00	2.60	0.00	2.60 Window Head		
Stramit		Door Edge Flashing		3.70	1.00	3.70	0.00	3.70 Door Edge		
		ooon Logu naannig						children Loge		
	-Labour Items -				Material Items			Totals		
			Labour SubT	Total	178.1	2 Ma	terial SubTotal	13000.36	Job Total (ex TVA)	13199.85
			Labour Mark		12.0	0 Ma	terial MarkUp	0.00	Rebate/Extra	0.00
			Labour Tota	í É	199.4	9 Ma	terial Total	13000.36	TVA (19.60%)	2587.17
Quote Groups				,					Total (incl TVA)	15787.03
Notes	Save	Set Suppliers	Add Item							
Export GRIM	Load	Set Discounts	Add Other							
Export CSV	Delete	Set Finishes	Tile Waste						Cancel Print	ОК

From this dialog box you can see all of the relevant information about pricing the job, quantity of material, price of material, etc.

The labour component is taken from the Cladding-Pay button (refer above), located in the Costing menu. Here you set a labour rate for each of the different features of the wall. You can modify the results by clicking on Labour Sub-Total and then hitting the Re-Calc button.

From here you can print all of your quotation drawings by clicking on the **Print** button. You can also change some of the prices from this dialog box and save the quote using the **Save** button.

The complete set of job pricing information is then saved into the model database and writes the name of the quote to a file saved in the \User folder called *QuoteRegister.csv* so that the job may be recalled by quote number from the File menu.

At this point you can also print out elevation drawings for the walls by selecting Drawings from the main menu and then select either Wall Plan or Wall Elevation.