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# ***PROBID — Evaluation Pack***

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This evaluation pack will assist you in assessing ***PROBID*** prior to purchasing a full user licence. (The cost of the pack will be credited against the cost of any ***PROCON*** software licence purchased within the following 90 days.)

Any commercial use of the evaluation system, or attempt to copy, transfer, adapt or reproduce the code, displays, or ideas contained within the program, contravenes the licence purchase agreement and will cause material damage to ***PROCON Construction Systems***.

The evaluation program has a number of restrictions and capacity limitations. These are:—

- It is useable for ***90 days*** only.
- Jobs you create may be accessed only ***EIGHT*** times.
- Markup ***method*** and ***rate*** is fixed.
- Report ***header*** cannot be changed.
- ***Capacity*** is limited to the tutorial size.
- ***Digitiser*** use can only be simulated.

Install the evaluation system on your hard disk by placing the program disk in drive A, then change to drive A by typing **A:** **Enter**. Then type **INSTALL** **Enter** and follow the directions.

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## Part B — Tutorial

### Preamble

If you have not yet installed **PROBID** on your computer, read **Getting Started** in *Appendix 1*. (If you have the **DIGITIZER** version of the program, you should also read the digitizer installation instructions in *Appendix 11*.)

If you have not viewed the **PROCON** “slide show” **DEMONSTRATION** program describing **PROBID**, you may wish to look at it *before* starting the tutorial.

### Running the Demo

When you install **PROBID**, the demonstration is automatically copied to your harddisk. To run it just type **CD \PROCON** and press  to change to the directory, type **DEMO** and press . If the demonstration has been removed—or you wish to install it on another machine—place the program or demonstration disk in **drive A**, type  to change to that drive. Then type **DEMO**, press , and follow the instructions.

### The Tutorial

The tutorial assumes that the program is installed on **drive C** and that you are using the directories created by the installation program. If this is not so, you must interpret the following instructions appropriately. The tutorial introduces **PROBID** and covers all the basic functions you will need to start *preparing estimates*.

It is assumed that you understand the terminology of *Estimating* and *Tendering*, and have at least some basic acquaintance with the computer and operating system. If you are not familiar with the terminology of *estimating* and *tendering*, contract *Bills of Quantities*, *Schedules of Rates*, etc., read *Appendix 3* before continuing.

If you have already used other **PROCON** software packages—such as the **PROBILL Contract Billing System** or the **PROPLAN Project Scheduling System**—you should be able to run quickly through the early material, as the user’s interaction with all **PROCON** programs is similar.

To illustrate basic *principles*, the **PROBID** tutorial uses simple examples from *general construction* and *building*. This ensures the material is easily understood by a wide variety of users—regardless of whether they are pricing **civil**, **mechanical**, **electrical**, **electronic**, **fabrication**, **building**, or **manufacturing** work. (In fact, **PROBID** has unique capabilities—and data capacities—that make it particularly valuable on some of this more complex and specialised work.)

## Starting PROBID

Type `CD \PROBID\SYS` and press `[Enter]` to change to the **System** directory. Type `PROBID` and press `[Enter]`. A logo appears with some system information and then...

## Menu System

The **PROBID** header line and menu system appear. The **Master menu** is currently active. It looks like this:–

PROBID - ESTIMATING & TENDERING SYSTEM				System date: Fri, 28NOV97			
MASTER	UTILITY	EXPORT	ITEM	SUPPLIER	RESOURCE	SET	HELP
<div style="border: 1px solid black; padding: 5px;">           New Estimate            Bid Preparation            Print Reports            List Estimates            Edit Estimate            Remove Estimate            Data Directory  <b>Customisation</b> </div>							

**PROBID** is menu driven. The menus are “intelligent” and try to suggest the most appropriate continuation to you at all times. Currently this is the **Customisation** option—which allows you to *choose a printer, define cost types, set currency and date formats*, and change other program parameters to suit your preferences.

## Selecting from Menus

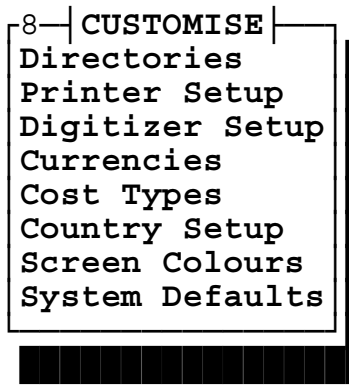
You do not have to accept a suggested menu option. An alternative choice may be made from the same menu in several different ways:–

- by keying the **highlighted letter** shown for the **desired choice**, or...
- by keying the **number** of the **desired choice**, or...
- by **moving the highlight** to the **choice** and pressing `[Enter]`.

`[Spacebar]` or `[↓]` move the highlight *down*. (If the keyboard does not have a separate cursor keypad, make sure `[Num Lock]` is off.) `[↑]` moves the highlight up. (The highlight “rolls around” if you go beyond the *top* or *bottom* selections.) `[PgUp]` and `[PgDn]` move directly to the *first* or *last* choice.

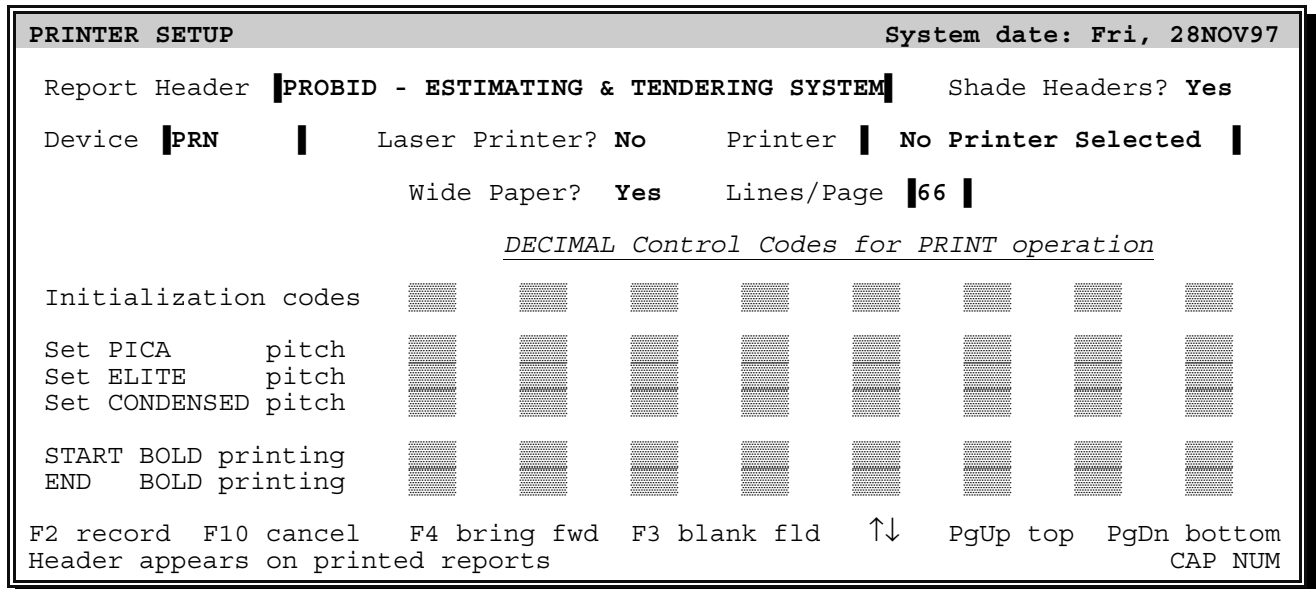
## Customising PROBID

Hit `[C]` for **Customisation** and this selection list (“picklist”) appears:–



(Choice appears only in DIGITIZER version.)  
 (Choice appears only in Multi-Currency edition.)

PROBID is essentially “ready to run” as installed, so the **Customisation** options will not be examined in great depth in the tutorial. (*Appendix 8* in *Part D* of the manual covers **Customisation** in detail.) However, you should *at least* provide PROBID with some *printer details* and define your own *cost types*. Use the  and  arrow keys to move the highlight to **Printer Setup**. Press  to select it. The following screen appears:—



The first *box* (called a “field”) is for the standard **Report Header**. Other fields allow you to specify the **type of printer** and **size of paper** you are using. While you may not *have* to change most of these values, we will practice *moving through the fields, requesting help and editing field contents*.

**Moving from Field to Field**

Move around the screen—as you did with the menu—using , ,  and . The —or —key moves the cursor to the *next field*. Fields are originally solid white but open up and show “sidebars” once accessed. To catch your attention, the active field (the one containing the cursor) has highlighted sidebars.

## Field Information Messages

As you move from field to field, you will notice that specific information appears on the bottom line. Press **[PgUp]** to return to the first field—the **Report Header**.

## Help System—**[F1]**

**[F1]** is always the **HELP** key. Press it to obtain help with the current field. A window of information on the **Report Header** field appears in the centre of the screen. The *help system* explains that the **Report Header** appears on all printed reports and suggests that—in all commercial versions of the program—you might use your organisation or department name here.

The *help system* allows you to **list** *key assignments* and *help topics*, **find** *help topics*, or **follow** a *hypertext chain* through the screens, etc. For more details hit **[F5]** while still within *help* and enter the keyword “**HELP**”—or see **Getting Help** on *page C-2*.

The **[Esc]**ape key **CANCELS** a function, so press it to remove the help window and return to the **Report Header** field.

## Field Editing

Spend a minute to familiarise yourself with text entry. To make editing as easy as possible, input is in a special “word processor” mode. **[←]** and **[→]** move the cursor *one character* left or right.

**[End]** moves to the *end of any text in the field*. If the cursor is already at the end of the text—or the field is blank—it moves to the *right edge of the field*. If pressed again, it moves to the *last field*. **[Home]** returns the cursor to the *left margin*. If pressed a second time, it moves to the *first field* on the screen. **[F3]** completely *blanks* a field.

**[Del]**ete *removes* the character under the cursor and moves text back to close the gap. **[Bksp]**—usually marked with a large left arrow—moves the *cursor and text to the left*—overwriting any character there. **[Ins]**ert toggles between *overstrike* and *insert* mode. The cursor is a full block—like this **█**—in insert mode.

**[Caps Lock]** can be toggled, enabling *upper case* characters to be typed without using the **[Shift]** keys. While it is engaged, a small **CAP** is shown in the bottom right corner of the screen and the cursor changes to a half block—like this **▣**.

Experiment with the edit keys. If you change a field, hit **[Esc]**ape to *restore its original contents*. Newly entered—or changed—text is “*highlighted*” (bright yellow on a colour monitor) to draw your attention to amendments. If you change several fields, you can use **[F10]**—the **CANCEL** key—to restore the complete screen.

## Single Character Fields

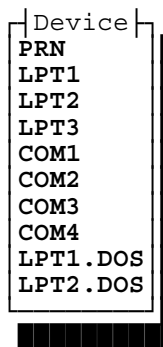
Press **[Enter]** to move to the **Shade Headers?** field. (This field setting determines whether the title line on reports is *background shaded*. Shading can improve the appearance of reports but not all printers do it effectively. More on this later...)

When a *single character field* offers several alternatives, use the **[Spacebar]** to roll through the choices and hit **[Enter]**—or just the *first letter* of your choice. (Upper or lower case responses are accepted so don't worry about **[Shift]** or **[Caps Lock]**.) Your selection *expands* to “**Yes**” or “**No**” and the cursor moves on to the next field.

## Selection Lists—**[F6]**

The **Device** field allows you to change the *print destination*. You **could** change this setting by typing in the new value. However, typing is *tedious* and *error prone*. As there are only a limited number of valid entries it is better to get **PROBID** to list them.

To do this hit **[F6]**—the **SELECT** key (or the *left* mouse button). A small *picklist* opens near the field and lists all valid choices for this field. It looks like this:—



Hit **[Esc]** to *remove* the list *without* changing the field's contents. (The setting should always be left at **PRN** if your printer is connected to the standard parallel port—or if a serial port has been configured to emulate the parallel port.)

Don't know what a device is? It doesn't really matter. **PROBID** can direct reports to printers on different “devices” or “ports”. **PRN** almost always works and is usually the *best* setting...

Press **[Enter]** (or the *right* mouse button) to move on to the **Laser Printer?** field.

## Laser Printers

Hit **[F6]** to pop up a *picklist*.

A *trivial* list when there are only *two* choices! But it illustrates the point that a picklist is *always* available from fields offering a limited range of choices...

You may choose from these simple lists in several ways. The *first letter* of a choice—from the highlight down—selects it. (So you can still select **yes** by pressing **[Y]**.) The

highlight can be moved with  and . ( and ) reposition the window itself.) Pressing —or the *right* mouse button—transfers your choice into the field and removes the window. ape—or pressing the *left* and *right* mouse buttons together—cancels the function.

If you are using an **HP Laserjet** compatible printer, select es. Fields appear for the printer's **Paper Size**—usually the same as the **tray size**—and to indicate whether it supports **Scalable Fonts**.

If you have to change the paper tray size, hit  to list the various paper size options and choose a paper size. Leave the **Scalable Fonts?** field set to es unless you have an older laser printer. Then skip forward to **Recording a Screen** on page **B-6**. **PROBID** directly manages laser printers to relieve you of printer control worries...

### Printer Selection Field

If you set the **Laser Printer?** field to “**no**” the cursor moves on to the **Printer** field. Press —the **SELECT** key—to pop up a *picklist* of pre-defined printers.

You *can* provide **PROBID** with all the page size and control code information for your printer by directly entering it in fields in the lower portion of this screen. However, selecting from a list is much easier. (If you *do* wish to provide these details yourself—perhaps because you have an unusual printer, or wish to add some special enhancements to reports, see **Printer Setup**, page **D-2**).

The list is too long to *show* all printers—even in 50 line video mode. This is shown by an arrow at the *top* and *bottom* of the *right side* of the “frame”. Scroll through the list with the cursor keys. (The rectangular “scroll bar” shows the relative position of the current choice in the list by its position between the top and bottom of the frame. The figure at the *top left* of the window is the total number of choices in the selection list.) If you type the first few characters of a printer's name, the list sorts alphabetically and the highlight advances to the first choice matching the characters entered.

This list is actually “user definable”. You could change it or even delete it and create your own list covering just the printers your organisation uses. The list of *devices* mentioned earlier is another example. **User Defined lists** are discussed in more detail later...

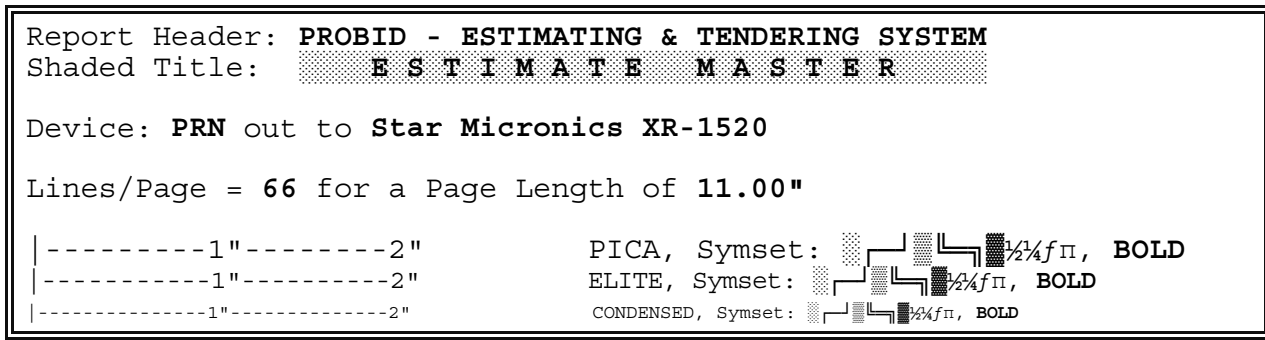
*Select* a printer. (If your printer is not included in the list, choose one of the **EPSON** printers. Most dot matrix printers can emulate the **EPSON FX** or **LQ** printer.) Lower fields are filled with the correct information for the printer you have chosen.

### Recording a Screen—

Press —the **RECORD** key—to save the changes made to this screen.

**IMPORTANT!** Screen changes are *not* saved until you hit  to **RECORD** them!

A prompt appears:– “Print a Test Sheet? (Y/N)”. Switch your printer *on* and respond es. The printer will print a *test page* that should look like this:–



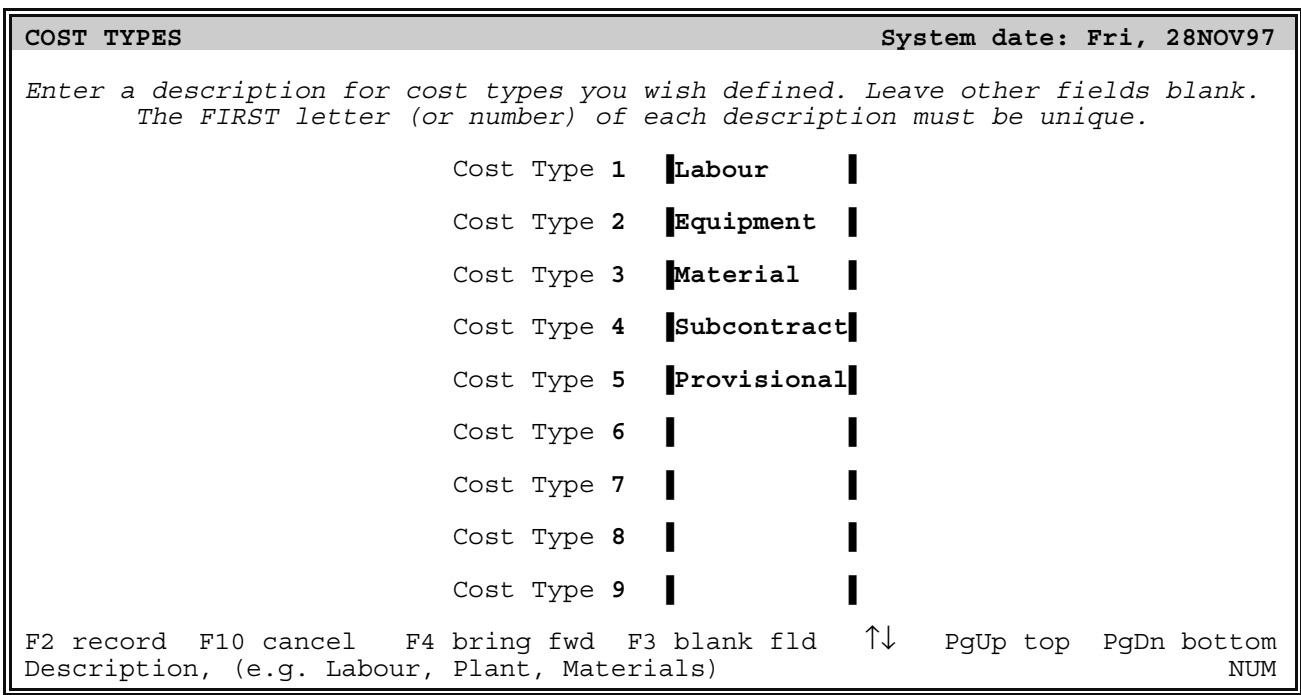
(Laser printer output is slightly different.) Check that the pitch setting commands are producing approximately the correct pitch, the characters in the symbol set match those shown, and that the shaded header is legible. Confirm the settings are correct by answering es to the prompt. (If the printout shows the codes are *not* correct, select o to return to the screen. See *Printer Setup, page D-2* for more information.)

**PROBID** returns to the **Master menu**. Now select **Customisation** and then **Cost Types** from the picklist that appears.

**PROBID** returns to the **Master menu**. Select **Customisation** and then **Cost Types**.

**Defining Cost Types**

The **Cost Types** definition screen appears.



The screen has *nine* identical fields. (Each field may contain a “**cost type**” description, *Labour, Materials, Transport, Plant, Subcontracts, Shop Labour, Consumables*, etc.)



The descriptions can reflect industry or job specific cost breakdowns—perhaps into separate classes of labour or foreign currency components.)

Each description must start with a *different* character—or digit—which becomes a “*shorthand*” way of referring to that cost type. Default descriptions are provided for five cost types, but you can define your own. Let’s do so now...

### Cut & Paste—AltD—AltI

In the tutorial we will be using different cost types for *internal* (company owned) and *external* (rented) plant—and we will *not* be using the *Provisional* cost type.

The required changes are:–

<u>Existing:</u>	<u>Required:</u>
Labour	Labour
Equipment	Own eqpt
Material	Rented eqpt
Subcontract	Material
Provisional	Subcontract

Amend the second field to read **Own eqpt**. You could retype *all* changed fields. However, this is a good time to introduce some additional edit functions. Sets of *identical fields*—such as these cost types—can be **inserted** and **deleted**. “**Cut and paste**” techniques can be used to move and rearrange the fields. The third field will be similar to the second, so key AltD to delete the field you have just typed!

AltD means hold down the Alt key and then press D. The Alt and Ctrl keys are used like the Shift key to change the meaning of standard keys. Lower fields move up to close the gap. The deleted field is saved in a hidden “cut buffer” and can be recalled.

Key AltI *twice* to insert the cut buffer into *two* fields. Move to the third field and change it to **Rented eqpt**. Then delete the last field (**Provisional**), and press F2 to **RECORD** the screen.

**PROBID** returns to the **Master menu**. Now select **Customisation** and then **System Defaults**.

### Changing System Defaults

The **System Defaults** screen looks like this:–

<b>SYSTEM DEFAULTS</b>			System date: Fri, 28NOV97		
Colour ON? (Y/N)	<b>Yes</b>	Sound ON? (Y/N)	<b>Yes</b>		
Password facility ON? (Y/N)	<b>Yes</b>	Archive facility ON? (Y/N)	<b>Yes</b>		
Gestalt matching ON? (Y/N)	<b>Yes</b>	Standard VIDEO lines? (Y/N)	<b>Yes</b>		
Switch MOUSE Buttons? (Y/N)	<b>No</b>	MOUSE Sensitivity Level		<b>4</b>	
TENDER ROUNDING: TOTAL to <b>Five</b>		UNIT RATES to <b>Smart</b>		AMOUNTS to <b>Cent</b>	
Prefix ID character for: SETS @		SUBCONTRACTORS \$			
Department/Project Name:		██			
Estimator's Name:		████████████████████████████████████			
F2 record	F10 cancel	F4 bring fwd	F3 blank fld	↑↓	PgUp top PgDn bottom
No if text is unclear					NUM

(System defaults, page D-2 explains all these fields in detail. In the tutorial, we will leave most at their default values.) Press **PgDn** to move to the last field—the Estimator's Name field.

**Primary Estimator's Name**

Type the Chief Estimator's name, John Wilkes Booth, and hit **↑** to move back up to the previous field...

**Department or Project Name**

Sensible defaults avoid the need to key the same information into every new contract. For instance, assume all users belong to just one section—Building & Civil. Enter:—

**Building & Civil Division.**

(A “beep” warns you that the cursor is at the end of the field.) Press **F2** to RECORD the changed screen. The Master menu returns.

**Creating an Estimate**

Hit **N** to select New Estimate. A prompt will appear for the “New Estimate Name”. Page A/1 of Appendix A—in Part D of the Manual—contains a tender item list for a Schedule of Rates contract. (An artificial example, but it does illustrate some of the various item numbering schemes found in practice.) Please refer to that now.

**Estimate Name & Password**

Type in the estimate name:—  
 “ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2”

and press **[Enter]**. (As it heads the *Tender Submission*, the full name should be given.)  
 The **Password** option in **System defaults** was left *on* so you will be prompted to enter a *password*. Leave the field *blank* and press **[Enter]**.

A password restricts access to the estimate. Any word or phrase *could* be used. You would then be required to provide the password each time you accessed the job. Passwords should only be used if they are properly secured and there is no danger of forgetting them!

**Estimate Details Screen**

A screen then appears for entry of some *general estimate* and *tender details*. Some fields already have defaults. All entries are *optional*—the fields may be left blank.

ESTIMATE DETAILS		System date: Fri, 28NOV97	
Department or Project Code	<b>BU</b>	Department	<b>Building &amp; Civil</b>
Estimate Number	██████████	Approximate Contract Value	\$ ██████████
Primary Estimator's Name	██		
Owner	██ ██ ██		
Tender Submittal time is	00:00pm	on	██████████
Start date	██████████	Duration	██████ days Finish date ██████████
Estimate Name	<b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>		Password ██████████
ADD Mode Alt Notepad Alt Jotter Alt = PROCALC Alt - Calendar F2 record F10 cancel F4 bring fwd F3 blank fld ↑↓ PgUp top PgDn bottom Identify overall department OR project responsible NUM			

Change the **Department code** to **BC**—for **Building & Civil**—and move down to the **Estimate Number** field and enter **T97/12345**. Then enter a figure of **3 000 000.00** in the **Approximate Contract Value** field.

**Numeric Fields**

The **Approximate Contract Value** field only accepts *numeric* input. Other characters just produce beeps. Entry is “free form” and whole dollars may be entered without cents. Values may be *left* or *right justified* with spaces used to “set off” the thousands.

### Owner's Name & Address

Move down to the **Owner's name** and **address** fields. The name and address is given on *page A/1* of *Appendix A* so you *could* just type it in. However, let's assume you have priced jobs for this Client before. *Surely* we can avoid having to retype this detail on each new job...

### User Defined Lists—**F6** and **Shift F6**

Hit **F6** in the **Owner's name** field. A picklist appears containing several names. Use the mouse—or **PgDn** and **Enter**—to select the:—

ETTAMOGAH CULTURAL TRUST & BREWING CO.

The name *and* address is transferred into the respective fields and the cursor moves on to the next field.

New names and addresses may be added to the list with **Shift F6**. This is just *one* example of *one* type of **User Defined List** you can create and manage yourself. (The **Device** and **Printer** lists used earlier are others.) *Many* **PROBID** fields can have **User Defined Lists** associated with them. *Appendix 12* in *Part D* of the manual describes this feature in more detail.

### More Field Editing

You may want to amend some of this detail. To help you get around screen fields and make changes, let's try out a few more edit commands:—

**Ctrl** with **←** or **→** jumps to the *previous* or *next* “word” in the field.

**Shift F7** converts a character to *lower case* while **Shift F8** makes it *UPPER case*. **Shift F9** *switches* the case of the character. In each instance, the cursor moves on to the next character, so *holding down one of these key combinations* quickly changes the case of *complete words or phrases*.

**Ctrl End**—or **Ctrl Enter**—*deletes all text* from the cursor *to the end of the field*.

### NOTEPAD—**Alt N** or **F11**

There are some general *tender conditions* to be recorded, and the **NOTEPAD** provides a convenient way to do this. It allows you to attach “*free form*” notes to any record. Press **Alt N** and an edit window appears. Text is entered in much the same way as in single line fields. Hit **F1** for **HELP** on the extended editing and formatting functions. (The sixteen line “viewport” is only a small portion of the available notepad.) **Esc**ape from **HELP** and enter the following notes:—

Bid deposit \$25,000 bank draft.  
 Liquidated damages \$350 per day.  
 Retention 10% to maximum of \$100,000.  
 5 year guarantee and performance bond required on sealants.  
 Dame Kiri to be co-opted for the official opening.

Press  to save the **NOTEPAD** and close the window.

### Tender Submittal Time & Date

Enter a tender closing time of 3:00pm on 15DEC97. (Time may be in *any* format, but dates must be in the “international” ddMMMy style—or one of the numeric formats set through **Customisation, Country Setup**.)

### Project Start, Duration, & Finish

The project is due to start on 3FEB98 and must be complete by 24NOV98. Enter the **Start date**, *bypass* the **Duration**, and *enter* the **Finish date**. An implied **duration** of 295 days is shown.

When *two* of the fields are completed, the *third* is calculated and shown. You *can* provide a **Start date** and **Duration**, and leave the **Finish date** to be calculated. But why bother providing *timing* information in an estimate? There are several reasons. It may be convenient to have this information “at hand” during estimating. Also, you will be able to use it—with another **PROCON** program—to produce **Bar Charts** for the project. But more on that later...

Press  to **RECORD** the **Estimate Details** screen. (If you pressed  in the *last field*, the prompt “Proceed? (Y/N)” will have appeared. Replying  **RECORDs** the screen just as  does). **PROBID** now shows the **Item menu**, **Add mode** as the default—implying that this might be the next logical step. For the purposes of the tutorial, we will ignore this suggestion and instead add some *resources* first. Press  twice to move to the **Resource menu**. Press  to select **Add Resources**.

You do *not* have to follow any particular order in entering *items*, *resources*, *suppliers*, etc. Once you are more familiar with **PROBID** you can *automate* much of the data entry by creating libraries and special “batch” files to read the libraries into new estimates. However, if you already knew all that, you would not be doing this tutorial, so let’s continue...

## Data Entry

### Add Resources mode

The **Resource entry** screen looks like this:–

Estimate: ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2		System date: Fri, 28NOV97	
#1	ADD RESOURCES SCREEN		
Resource Code	<b>L</b>	Description	
Supplier Code		Supplier	
Measure Unit		Unit Cost \$	/ Is Cost Final? <b>No</b>
Estimator ID	<b>JWB</b>	Cost Type	<b>Labour</b> Record Changed 28NOV97

Enter the *code* and *description* for the first resource:—

**LH10      LABOUR, Unskilled Class II**

making sure that the code **LH10** is entered into the *first four positions* in the **resource code** field, i.e., it is “left-justified”.

See *Appendix A, page A/3*. Resources are of various cost types—**Labour**, **Materials**, etc. The *resource code* must be **unique** but can contain *any alphanumeric characters*. Codes should be assigned in a *systematic*—and *standard*—way. The tutorial illustrates one coding scheme. The first letter indicates the cost type (“**L**” for **Labour**, “**M**” for **Materials**, etc.) with subsequent characters defining the *class* or “*size*” of the resource. “**E**” is used in the tutorial for both company and rented equipment. We will see later why this is probably not the best choice...

### Mandatory fields

Bypass the **Supplier Code** and go to the **Measure Unit** field. Leave it blank and press **Enter**. Flashes and beeps warn you that this is a “*must enter*” field—it *cannot* remain blank. Enter a measure unit of **MH** (**Manhours**) and a **Unit Cost** of **17.80**.

When a record lacks some *essential* information, **PROBID** will *insist* that you provide it. (Some mandatory fields—such as the **Unit Cost**—will still accept **ZERO** as a valid entry.)

### Flagging Plug Costs

The **Is Cost Final?** field asks if you consider this unit cost to be acceptable, or whether it should be reviewed *before* the tender submittal. Hit **F8** to toggle it to **Yes**. (Otherwise **PROBID** will remind you it is incomplete when you print the *Tender Submission* report.)

### Estimator ID

The **Estimator ID** field is used to “tag” a record with the initials—or perhaps some other identification—of the person who last modified it. (This field is particularly

useful on multi-estimator jobs where parts of a tender are prepared by different estimators. The default initials are taken from the estimator's name entered in the "master" screen.)

### Assigning Cost Types

A resource must be classified as one of the **Cost Types** you defined earlier. Here the default of **Labour** is correct.

### Record Date Stamping

The **Record Changed** field is maintained by **PROBID**. It "date stamps" *all* records as they are created or modified.

An *incorrect* system date would show as "Invalid". "**Date stamping**" helps you keep track of changes—a good reason to be sure your machine always has the correct date set!

Press **[F2]** to **RECORD** the screen. The record is saved—with a distinctive sound—and most fields blanked for entry of the next resource. Many fields for the *second* resource are similar to the *first*, so you should be able to "short cut" the typing...

### The Bringforward Command—**[F4]**

Press **[F4]**. In **Add mode**, this copies data entered in the *previous* record to the *current* record. (If pressed in the first field, *all* fields are "**brought forward**". In subsequent fields, only the current field is copied.)

**BRINGFORWARD** is particularly handy when entering *repetitive resources* or **items**. Editing a "template" is both *quicker*, and *less error prone*, than re-keying data. If you are interrupted, it also serves as a "bookmark" of your position in a list of records.

Amend the brought forward details to:—

**LH20      LABOUR, Skilled Class IV**

with a unit cost of **20.40** per **MH**. Key **[Alt][N]** to attach a note to the resource record. Type in "**Site Enterprise Agreement Standard Rate**" and *hit* **[F2]** to **RECORD** the note.

**Record Number & NOTEPAD Indicator**

The record number—“#2 N”—appears at the *top left* corner of the screen. The “N” indicates that the resource has a **NOTEPAD** entry. (If your display is in 50 line mode, the text remains visible in the bottom half of the screen.) Hit **[F2]** to **RECORD** this resource.

We could go on and add *all* the **resources**—but, at this stage, that would be less instructive than looking at other functions. In any case, real estimates don’t “come together” in such a methodical and mechanical way!

Press **[Esc]**. The menus reappear. Move to the **Item menu**. **PROBID** shows **Add Items** as the default. Press **[Enter]** to accept it.

**Add Items Mode**

The **Item entry** screen looks like this:—

Estimate: ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2				System date: Fri, 28NOV97	
#1	CODE	DESCRIPTION	ESTIMATE DATA		
Group			0	Groups	
Section			0	Sections	
Item	<b>L</b>	<b>I</b>	0	Items	
Measure Unit		Contract Qty		Actual Qty	
Item Type	<b>Normal</b>	Estimator ID	<b>JWB</b>	Is Final?	<b>No</b>
				Date	<b>28NOV97</b>

**Sections & Groups**

**Item entry** is similar, *in principle*, to **resource entry**. However, you have the option of organising *items* into **sections** and, in turn, *sections* into **groups**. The item listing on *page A/1* of *Appendix A* suggests that this estimate has only a single subtotalling level—so a section breakdown should be sufficient.

Follow the *Client’s* structuring of the contract—if one is given or implied. When there are only a few items, you can skip *both* the **section** and **group** divisions. If—as in this case—only one summary level is used, this can be at *either* the **group** or **section** level. Only the reports are affected. **Groups** form natural “*page breaks*”—**sections** do not.

**Item Codes**

Key in the **Item Code** **A100** and press **[↑]** to move up to the **Section Code** field.

*Group*, *section*, and *item* codes may use any **alphanumeric** character. *Case* and *position* are both significant. Be sure the item code is “left justified” in the five character field like this:—



**A100** rather than **A100**, and has not been entered as **a100**. (If the item code is *not* left justified return to the code field and hit **[Shift][F3]**—the **LEFT JUSTIFY** command.)

Characters such as **0** and **O** and **1**, **I** and **l** are easily confused, so, where practical, avoid using numbers and letters in the *same* field position.

Type **1000** and press **[Enter]**. Key in the **Section Description** of **CIVIL ENGINEERING** and press **[↓]** to drop down to the **Item Description**. Enter **Tree clearing and disposal**. Then enter a **Measure Unit** of **Ha (Hectares)** and a **Contract Quantity** of **45.5** (just ignore the other fields for the moment). Hit **[F2]** to **RECORD** the item.

**PROBID** now assumes you will proceed with *pricing*, so the **pricing (operation entry)** screen appears. You may price the item directly, or break it down into any number of simpler “operations” (sub-items).

You do not have to follow any fixed “estimating” sequence. Sometimes it is easier to enter the items and return later to price them. That is the approach we will follow in this tutorial...

Hit **[Esc]** in the **Operation Description** field to return to the **Item entry** screen. (As you previously defined a *Section*, the cursor moves automatically to the **Section Code** field.) Press **[F4]** to “bring forward” the last item. Change the code to **A200**. Enter its **description** and **quantity** (see *page A/1* of *Appendix A*). Press **[F2]** to **RECORD** the screen. (**PROBID** knows that you did *not* proceed to price the first item, so it naturally assumes you will now continue in the same way and does not move to the **pricing screen**.)

Enter and **RECORD** item **B100a**, then enter the **code** and **description** of **B100b**. This item has a **Contract Quantity** of **245,000 m<sup>3</sup> (cubic metres)**. However, the quantity is *wrong!* Your own takeoff found the *correct* figure to be **274,350 m<sup>3</sup>**.

### **Contract vs. Actual Quantity**

This estimate happens to be for a *Schedule of Rates (Unit Price)* contract so you *will* be paid for the *actual quantity* of excavation performed. The error is therefore *not* as dangerous as it would be in a *Lump Sum* contract. Nevertheless, if you fail to allow for this difference, your tender is “incorrect”—and *less competitive* than it should be.

**PROBID** initially assumes that **Actual** and **Contract Quantities** are the same. (Notice that the **Actual Quantity** field *defaults* to the entered **Contract Quantity**.) Change the **Actual Quantity** to **274350**.

Actual quantities are used in all cost calculations to ensure markup percentages and overhead recovery are *correctly* calculated. This protects you from some of the subtle hazards of wrongly “billed” quantities in “*remeasurable*” contracts...

*All* these items are in the *same* section, so you have not had to re-enter the **section code** or **description**. But what if the description were wrong? How would we change

it? Press **[↑]** until the cursor returns to the **Section Description** field and **[End]** to go to the end of **CIVIL ENGINEERING**. Add “**WORK**” to the text and press **[F2]** to **RECORD** the item.

### Changing Group & Section Descriptions

The **section description** has been changed *throughout*. If you amend a *section* or *group description*, it is changed wherever it appears.

Rather than complete the entry of *all* items, we will first look at some alternative ways of *examining* and *amending* records...

### Switching Modes—**[F9]**

Press **[F9]**—the mode **SWITCH** key. A one line “menu” appears at the bottom of the screen. It offers choices of **Add**, **Change**, **Delete** or **Browse**. A choice is made in the same way as with any other menu. Press **[Enter]** for the default—**Browse**. The last item appears. (The “**H**” after the record number at the top left of the screen indicates that the item is still only a “**Header**” record—it has *no* operations or pricing detail.)

Switching “modes” is an alternative to exiting and making a choice from the main menu system. Regardless of the route followed, the destination is the same!

### Browse Mode

**Browse mode** is a convenient *passive* way of viewing records—whether it be **Items**, **Operations**, **Resources**, **Suppliers**, or **Sets**. **[Home]** and **[End]** move to the *first* and *last* record respectively, while the arrow keys (and **[F7]**–**[F8]**) move *backwards* and *forwards* through the records. If you go past the first or last record, the record number “wraps around”.

Press **[F5]**, key in **A200** and **[Enter]** to search for that item—it becomes the new point for browsing. Repeat the search but key in **V100b**.

This is *not* the quickest way to **find** a particular item. **[F6]** is actually more convenient. Also, if you were in **Change mode**, you could *edit* the record. But more on that later...

### Gestalt Pattern Matching

Item **V100b** doesn’t exist, so **PROBID** has moved to **B100b**! It searched for the item but couldn’t find it. Knowing you thought it *did* exist, (after all, you are in **Browse mode** *not* **Add mode**) **PROBID** assumed you probably mistyped the code. It decided that—most likely—you meant to type **B100b** but hit **[V]** instead of **[B]**.

This “Gestalt” matching capability is used throughout **PROBID** (unless turned *off* in the **Customisation, System Defaults** screen) and makes finding *codes, keywords, etc.*, easier. For example, key **[F1]** for **HELP** and **[F5]** to find a keyword. Enter “**GSTTT**”. **PROBID** guesses you meant “**GESTALT MATCHING**” and provides help on that topic.

Suppose you want to *amend* an item? Perhaps change the **contract quantity**—or the **item description**? **[Esc]**ape from **HELP** and hit **[F9]**—the mode **SWITCH** key. Then hit **[C]** for **Change items** mode.

### Change Mode

The displayed item is the one last viewed in **Browse mode**. Move the cursor to the **item description**, edit it in some way, and press **[F2]** to **RECORD** the change. Amendments are as simple as that!

### Changing Codes

To change the **Item code** itself—or its **Group** or **Section code**—just amend the code and press **[F2]** to **RECORD** the item.

If the code change would cause duplication, **PROBID** vetoes it. Every record’s code must be unique—although the same *item code* may be used in different **sections**—just as the same *section code* may be used in more than one **group**. It requires a *full Group-Section-Item code* to *uniquely* identify each item.

### Paging through records—**[F7]**—**[F8]**

Reverse any experimental changes you have made. In **Change mode**, you can still move through the records. Move the cursor to the **group, section, or item code** field. (**[PgUp]** returns the cursor to the first field.) **[F7]** and **[F8]** then “page” through the items.

### Selecting Records—**[F6]**

Pressing **[F6]** (or the **LEFT** mouse button) in the **item code** field will popup a picklist. This is quicker than “paging” when you have to jump around in the item list...

### Delete mode

**Delete mode** is like **Change mode** but, before deleting a record, you must confirm.





received, so key in **950** and press **Enter**. The cursor returns to the **element code** field.

**IMPORTANT:** When the cursor is in one of the ten **element code** fields, **Enter** and **↓** behave differently. If the field contains a *code*, then **Enter** drops to the lower “production” line while **↓** just moves down through the codes—displaying the pricing detail for each element. When the cursor is in one of the five fields on the *production line*, **Enter** will cycle through the fields, until you change a value. It then returns to the **code** field. (To exit from the production line, *without changing a field*, press **Esc** or **↑**.) Practice moving to and from the production line, and through the code fields.

That’s all there is to placing a *subcontract quote* against an item, so press **F2** to **RECORD** the **pricing screen**. The **item screen** returns and the costs are now shown. Hit **F8** to move to the next item—**A200**. Key **Alt O** for **operations** and **Enter** again to bypass the **operation description**. (**Grubbing**—like the first item—is also too simple to warrant dividing into operations.)

### Bringforward Pricing Detail—**F4**

The same subcontractor priced *this item* and the cursor is in the *first code field*, so hit **F4** to **BRINGFORWARD** all fields from the *last item*. Press **Enter** and key in the quoted price of **\$4700/Ha**. Press **Enter** to return to the **code field**. It is time to provide some detail on this “**undefined**” subcontractor. You could exit from both the **operation and item screens** and choose **Add Subs/Suppliers** from the menus, but this would disrupt the “rhythm” of the pricing...

### Defining Subcontractors “on the fly”—**Alt S**

Key **Alt S** from the operation **element code** field to jump directly “*thru the field*” to the **Supplier/Subcontractor screen**. As the source field contained a code for an *undefined* subcontractor, **PROBID** assumes you want to define that subcontractor and so switches to **Add mode**. Conversely, if you had “arrived” from a source field containing a *defined* subcontractor, it would switch to **Change mode**—regardless of the “departure” mode. (Of course, if the field had been *blank*, or contained a **resource** or **set**, **PROBID** would have remained in the *same mode*. If these assumptions are wrong you can always use **F9** to switch modes.)

If you like exercising your typing and memory skills, you can key in the **subcontractor code**. Otherwise, just hit **F4** for **BRINGFORWARD**. Fill in the balance of the fields as shown on the following screen:—

## Supplier/Subcontractor Screen

```

Estimate: ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2      System date: Fri, 28NOV97

#1                ADD SUPPLIERS/SUBCONTRACTORS SCREEN

Supplier Code  $CL&GB                Name  GREENTREE LANDSCAPING PTY LTD
                                           97 Willowtree Boulevard
                                           GREENHILLS ESTATE SA 5700

Contact  Mr John Birch, Owner        Quotation Reference  Phone Quote 3/12
Telephone No  (08).2345.7890         FAX No  (08).2345.9870
Mobile No  0412 458 909              Email  johnb@greentree.com.au

Estimator ID  JWB                    Select Codes
Cost Type  Subcontract                Record Changed  28NOV97

ADD Mode  Alt Notepad  Alt Jotter  Alt = PROCALC  Alt - Calendar
F2 record  F10 cancel  F4 bring fwd  F3 blank fld  ↑↓  PgUp top  PgDn bottom
Key Alt N to attach a note.

```

Most fields are for optional—but very useful—information about the subcontractor. (The **Cost Type**—which initially had **Material** as the default—switched to **Subcontract** when you entered the **subcontractor ID prefix** [§].)

Before saving this subcontract record, access the **NOTEPAD** and add this comment about the subcontractor’s quotation:–

Quotation EXCLUDES flagmen but INCLUDES all dump charges.

[Alt][N] (or, if you prefer, [F11]) accesses the **NOTEPAD**. [F2] saves the notes and exits to the **subcontract screen**. [F2] *saves* or *accepts* a screen. So would [Alt][N] here. **PROBID** accepts the same command to *access*—and make a *positive* (i.e., data preserving) exit from a function.

Press [F2] to **RECORD** the **subcontractor** and [Esc]ape to return to the *code field* in the **pricing screen**. (As the **subcontractor** is now defined, his name appears beside the code.)

The subcontractor qualified his quotation by *excluding* the cost of flagmen. About 200 manhours will be required, while debris is being removed from site, so you must allow for this cost as *directly employed* labour...

## Entering Resource Usage

Use [↓] to move the cursor down to a *blank code field*. (Not [Enter], as this returns to the lower “production” line.) Having an *excellent* memory, you no doubt recall which

resources were defined. One of those *might* cover the flagmen. You *could* type in the **resource code** but even your memory would be taxed if there were *many* resources.

### Gestalt Matching—F5

“**Gestalt**” matching *can* help us here. If we key in part of the code—even if it is only a fragment like **1h**—we can then hit F5 to *force* **PROBID** to find the record best matching that code fragment. Of course, this only works if we remember at least *something* about the resource codes...

**Gestalt** matching is *case insensitive*—and can even recognise *transposed* characters!

Of course, just pressing Enter here does *not* activate **Gestalt** matching. **PROBID** doesn’t know if you are looking for an *existing* resource or if you are entering a *new* resource code—which you intend to define later! F5 *forces* a search for an *existing* match...

### Paging thru Resources—F7—F8

The *paging* keys—F7 and F8—may be more convenient. They move backwards and forwards through the resource list in the normal way. This is an improvement on having to remember the code—but it still has some limitations. It does *not* allow you to see a *list of resources* and would be tedious if there were hundreds of them.

### Selecting Elements—F6

The **SELECT** function is a better answer! Hit F6. A resource *picklist* appears. Choose:–

LH10      LABOUR, Unskilled Class II

Perhaps you want **Sets** or **Subcontractors** rather than **Resources**? Then set the *first character* in the code field to the **Set** or **Subcontract ID** character. The picklist changes appropriately. So, you can produce a **subcontract** picklist by keying “\$” in the code field and pressing F6. What if the list is *so large* it is still unwieldy—even with a picklist’s *sort* facility? Then the content can be restricted by “**masking**”. But more on that later...

### Fixing Resource Consumption

Press Enter in the code field. The cursor drops down to the production line:–



Code	Resource/Set/Subcontractor	Type	Quantity	Unit Cost	Cost
\$CL&GB	GREENTREE LANDSCAPING PTY LTD	S		4700.00	181890
LH10	LABOUR, Unskilled Class II	L	0 MH	17.80	0
			TOTAL	\$/Ha 4700.00	181890
Production Rate	Usage Rate	Rsc or Set	Qty	Cost/Ha	Cost
L	Ha/MH		MH	\$	\$

The fields offer *alternative* ways of specifying **resource consumption**. You want to *directly fix* the **Manhours** so press **[Enter]** twice—to move to the **quantity field**—and type **200**. Press **[Enter]** again and the other four fields are updated as the cursor returns to the **code field**.

Does it matter which way you set the quantity? Would a **production rate** of **0.1935 Ha/MH**, or a **total cost** of **\$3560**, achieve the same effect? In a *static* sense—yes. The *same* quantity and cost would result. However, **PROBID** uses a *dynamic* cost model—remembering the way in which relationships were specified—not just the result. If the item quantity *changes*, and a **production rate** had been used, **PROBID** would have recalculated the **resource quantity**. Here you want the **resource quantity** to be *independent* of the **item quantity**. Setting the manhours *directly* achieves this result. The **controlling** field—in this case the quantity field—“*blinks*”, and remains left justified, to indicate its *primary* status!

**RECORD** the **pricing screen** to return to the **item screen**. Move to the *next item* and jump into the **operation screen**. (At this stage, you should be able to remember the keys for these commands—**[F2]**, **[F8]**, **[Alt][O]**.) The **Topsoil Stripping** item is *measured* and *paid* in “m2” (**square metres**)—but this type of earthmoving operation is usually *priced* in “m3” (**cubic metres**).

### Changing the Measure Unit

You must *not* modify the **item measure unit**—it is part of the formal *tender submission*. But you *can* very easily change the unit in which it is *priced* by defining an **operation measured** in **m3**.

The more common reason for defining **operations**—or **sub-items**—is to break an **item** down into *more easily priced tasks*. Each **operation** might then have a *different* **measure unit**.

Type in the **operation description** shown below, and change the **measure unit** to **m3**. (Note that the **Measure unit** and **quantity** fields initially *defaulted* to the item values.) The top portion of the screen will look like this:–

Estimate: ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2		System date: Fri, 28NOV97	
Item	-1000-B100a Topsoil Stripping	Quantity	168500 m2
Operation 1/1	Strip to Stockpile (150mm deep)	Measure Unit	m3 28NOV97
Op units/Item unit	Item units/Op unit	Quantity	Costcode
1	m3/m2	1	m2/m3
		168500 m3	
			Act No

### Setting the Operation Quantity

The **Op units/Item unit** field—and the next two fields—provide three *alternative ways* of relating the **operation** and **item quantities**.

These three alternative ways of arriving at an **operation quantity** are analogous to the five alternative ways of specifying **resource** or **set consumption**. Again, if we want our cost model to respond *logically* to changes, the “correct” relationship must be chosen.

The topsoil is stripped to 150 mm so the ratio is simply 0.150 m3/m2—**op units per item unit**. Enter 0.150 in the field and press **Enter**. The two dependent fields are skipped. (While we can see that this results in a quantity of 25275 m3, it would be both “wrong” and less convenient to directly enter this value. That would suggest that the **operation quantity** is *independent* of the **item quantity**.) Use **↓** to bypass the **Costcode** and **Activity Number** fields and move down to the first *element code field*.

You *can* assign an alphanumeric **Costcode** to an operation and also define the operation as a **Scheduling Activity (Task)**. But more on that later...

### Defining Resources “on the fly”—**Alt R**

Type in the **resource code**, ES10. Hit **Alt R** to “*jump through*” to the **resource entry** screen and **F4** to *bringforward* the code so the resource can be defined. (*Page A/3 of Appendix A* shows the detail for this **ELEVATING SCRAPER**.)

### Defining Suppliers “on the fly”—**Alt S**

While entering this **Resource**, also specify its **Supplier** as ACME. Hit **Alt S** to “*jump through*” to the **Supplier entry screen**. Enter the details from *page A/2 of Appendix A* for **ACME EQUIPMENT RENTALS**. The **Cost Type** default is **Material**. Use **F6** in the **Cost Type** field to “popup” a list and change this to **Rented eqpt**. **RECORD** the supplier.

You are now *two* “levels” deep into element definition (**Resources**, **Sets**, or **Suppliers**) from fields in other screens. Press **Esc** to “back out” one level to the **Supplier Code** field in the **Resource entry screen**. The supplier *name* is now shown and the

*resource cost type* has changed to **Rented eqpt**—matching the *supplier cost type*. Complete the resource details and **RECORD** the resource. Hit **[Esc]**ape to return to the first level—the *code field* in the **operations screen**.

You may define *any* element—**Resource, Set, Supplier** or **Subcontractor**—“*as you go*” and the process may “nest” many layers deep. This “natural” way of estimating can be paired with a pre-planned approach. Most elements can be defined first or, more commonly, brought in from standard “libraries”, while others are defined as you need them. **Speed and Flexibility!**

### Setting a Production Rate

Hit **[Enter]** to move to the “*production line*”. Enter a **Production Rate** of 125 m<sup>3</sup>/HR. **RECORD** the **operation** with **[F2]** and hit **[Esc]**ape to return to the **item entry screen**.

If you have come this far, *without at least one interruption*, you must work in a very quiet office! Usually *telephone calls, visits*, and other distractions will disturb your concentration. If these relate to the current record, the **NOTEPAD** provides a logical and convenient way to save them. However...

### JOTTER—**[Alt][J]** or **[Shift][F11]**

**PROBID** also has a similar facility for non-record specific “notes”. **[Alt][J]** will “popup” a **JOTTER** which is specific to the *current estimate* (or just the **PROBID** installation, if no estimate is being worked on).

Save paper and time by using the **JOTTER** during the tutorial! Record your *telephone messages*, use it as an “*aide-memoire*”, etc.

### Timestamping Notes—**[Alt][T]**

**[Alt][T]** inserts the *time and date* in the **JOTTER** or **NOTEPAD** text so you may “timestamp” quotations and telephone messages.

### CALENDAR—**[Alt][-]** or **[Shift][F10]**

While exploring these “system-wide” facilities, also take a look at the built-in **CALENDAR**. **[Alt][-]** will popup a calendar for the *current month*. (This is accessible even from inside the **JOTTER**—all **PROCON** tools can be overlaid one on another.) The arrow keys allow you to move through the *months* and *years*.

Clearing your desk of calendars and other myriad scraps of paper makes it easier to find that other ubiquitous desktop tool—the *calculator*. Discarding it for something *more flexible and powerful* would be even better...

**PROCALC** — **Alt**= or **Shift**F12

**PROBID** has a built-in *arithmetic expression evaluator*—**PROCALC**—with capabilities far surpassing any desktop calculator—and more flexibility and convenience than any spreadsheet. **Alt**= produces an input field into which *arithmetic formulae* may be entered. Formulae can include *parentheses, trigonometric, logarithmic*, and other expressions, as well as many specific “takeoff” functions. (As usual, **F6** lists all the functions and will transfer your selection into the calculation field.) As an example, let’s calculate the *tonnage of ballast in a conical stockpile*. Height is **13.500 m**, angle of repose **35** degrees and the loose density is **1600 Kgs/m<sup>3</sup>**. Type in:–

**H=13.5:A=35:D=1600/1000:D × H × ACIRC(2 \* H/TAN(RAD(A)))/3**

and press **Enter** to switch to full screen mode and show the result of **8408.07** tonnes.

Let’s quickly look at a few examples of the types of calculations that can be performed—and documented—in **PROCALC**. Hit **Alt**R restore. A picklist of previously saved, multi-line **PROCALC** “template sheets” appears. (The installation program copied these sample files into the **system** directory.) Select **EXAMPLE.PCL**. Page through the screens and then key **Alt**P to print the full file. If **PROCALC** is called from a *numeric* field with **Alt**C, the result can be transferred into the field and the associated formula saved “behind” the field. **PROCALC** is also your “conduit” into the time saving world of automated quantity takeoff! The **DIGITIZER** version allows you to use **Alt**Q from the **PROCALC** field to select a drawing scale and takeoff *counts, lengths, areas, and volumes* directly from plans. (The **EVALUATION** pack allows you to “simulate” using a digitizer. Hit **Alt**Q and follow the instructions displayed on the screen. Hit **Esc**ape to return to **PROCALC**.) More on these refinements later...

After these diversions, return to the **item screen**. It is time to cover program *exit* and *entry* procedures.

**Exit to DOS**—**Esc** and **Y** or just **Ctrl**End

Press **Esc**ape to return to the **menu system**. A second **Esc**ape produces a prompt asking you to confirm that you *do* wish to exit. Hit **Y**es. The **DOS** prompt reappears.

Queries of this type may be answered *positively* with **Y**, **y** or **1** or *negatively* with **N**, **n**, **0** or **Esc**. The default reply may also be “toggled” with the arrow keys, the **Spacebar** or

the mouse. (You may also exit directly to DOS with **Ctrl****End** or **Alt****F4**. Confirmation is not then required.)

Re-run the program by typing **PROBID** and pressing **Enter**. (**PROBID** automatically reloads any estimate you were working on when you exited and returns to the same default menu selection.) Select **Change Items** from the **Item menu**.

**TIP:** Go there quickly when you know where you are going! **Alt****I** moves *directly* to the **Item menu** and **C** selects **Change**.

The **Item screen** shows the *last* item you were working on—the **Topsoil Stripping**. Press **F8** to move forward to the next item—the **Earth Excavation**.

**PROBID** “remembers” the records you were working on when you exited from the estimate. By using these as “defaults” it can save you time in resuming interrupted work. (*Forgotten* which items have been entered? Press **F6** for a picklist of all items, then **End** and **Enter** to select the last one.)

**Items with Multiple Operations**

This **Earth Excavation** item is much more *complex* than the **Topsoil stripping** item. It involves two *different* **load and haul operations** as well as the **spreading and compacting** of all fill material. To price this work *intelligently* it must be broken down into:–

1. Load & Haul – scraper work	190,000 m3	
2. Load & Haul – truck & loader	<u>84,350 m3</u>	
TOTAL LOAD & HAUL		274,350 m3
3. Spread & Compact fill		274,350 m3

Go to the **operations screen** and enter the first operation—**Load & Haul – scraper work**. (See *Appendix A, page A/5*.) Enter **190000** *directly* in the **quantity field**—this quantity was determined by *calculation* and is *not* dependent upon the **item quantity**. Move down to the first **element code** field. This is work for a scraper “*spread*”, i.e., a bulldozer “push” loading *three* motorised scrapers. The *four* pieces of equipment will be working together as a *team*—or “**Set**”, in **PROBID** terminology.

**Using a Set**

Every time the equipment “spread” is used, you *could* individually assign the **dozer** and **scrapers** as **resources**. However, it is more efficient—and *natural*—to define the complete “spread” as one “**Set**”.



Two equipment resources—**ES30** and **ED09**—have, as a supplier, the company’s own *internal plant department*. Why bother? You are unlikely to issue a formal purchase order to your *own* plant department! The advantage will appear later...

Why define one **set** in terms of other **sets**? Why not define a **push loaded** scraper *directly* as a **resource**—as we did with the **self-loading** scraper? It is because these scrapers are *company owned*, whereas the self-loader was an “*all in*” rental (*operated, fuelled, and maintained*). You will *want to know*—and may *need to change*—the **fuel consumption rates, operator’s servicing times, internal equipment charges**, etc. Breaking the equipment “spread” down into its components makes this information available. Disguising the “makeup” (by pre-calculating “all in” rates for company plant), would be doing manually what **PROBID** does better—and reduce flexibility! (In practice, the list of company owned plant would probably be copied in from a previously saved *resource library*. **Resources** are just copied—either selectively or “in-toto”—for each new estimate. But we haven’t yet covered libraries, and doing things the *hard* way is often the *best* way to learn...)

After *recording* the **sets** and **resources**, press **[Esc]**ape until you return to the *code field* in the **operations screen**. The set—and its constituents—are now defined so the unit cost is shown to the right. Hit **[Enter]** to drop down to the *production line*.

At the haul distance of **600 m**, assume each of the three scrapers can move **18.2 m<sup>3</sup>/Load** and **7.9 Loads/Hour**. You could key **[Alt][=]** and use the general **PROCALC** facility to get the *total production*. However, in this situation, there is a *better* way to access it:–

**PROCALC field version—[Alt][C] or [F12]**

When the cursor is in a *numeric* field—**production rate, usage rate, quantity, unit cost, total cost, markup rate, spread rate**, or whatever—you can call a “*field specific*” version of **PROCALC** with **[Alt][C]** or **[F12]**. Key **[Alt][C]** and type in:–

**3 [Scrapers] @ 18.2 [m<sup>3</sup>/Load] @ 7.9 [Loads/Hour - haul 600m]**

**Comments within PROCALC**

**[ ] or { }**

Text within square brackets (or braces) is treated as a *comment* and is ignored in calculations. However, it is *invaluable* in documenting the **rationale** and **assumptions** behind a formula.

**PROCALC Formula Flag****f**

Use **[Alt][C]** to close the window. The calculated haulage rate of **431.34 m<sup>3</sup>/HR** appears in the **Production Rate** field. A small ‘*formula flag*’—**f**—appears to the *left* of the field—indicating a formula is “*tied*” to it.

Just as there is a *general* **NOTEPAD** facility (the **JOTTER**) as well as a *record specific* version, there is also a *general* **PROCALC** facility (accessed with **[Alt][=]**) and a *field specific* version (accessed with **[Alt][C]**).

Sensible use of “*tied*” **PROCALC** formulae help in documenting an estimate and avoiding transcription errors. They also make it easier to amend calculations by changing just one parameter. Saving the calculation field updates the production rate field.

**RECORD** the operation with **[F2]**. The **record number** increments and the screen clears. Now enter the *second* and *third* operation for this item.

**Finding Operations—[F6] or [F7]–[F8]**

Operations—*unlike* other records—do *not* have an alphanumeric code, or their own menu. They are the “children” of a parent item—always accessed through that item. You can use **[F6]**, in the **operation description** field, to popup a picklist of the item’s operations. Alternatively, you can use **[F7]** and **[F8]** to “page” backwards and forwards through the item’s operations. As usual, **[F9]** switches **modes**. Practice changing modes and moving through the operations.

The *indirect* access to operations is an advantage, as having to assign unique codes would be cumbersome. An item usually has only a handful of operations, so selecting or paging is much more efficient. **[F5]** can also be used to *force* a **Gestalt** match for a partial description...

The balance of the tutorial *data entry* is reasonably straightforward. You *can* enter the information in any order. However, one logical sequence is:—

- **Subcontractors/Suppliers** (*Page A/2 of Appendix A*)
- **Resources** (*Page A/3*)
- **Sets** (*Page A/4*)
- **Items, Operations and pricing detail** (*Page A/5-6*).

Enter the **Supplier**, **Resource**, and **Set** data—but *stop* before entering the rest of the items as there are a few points still to be covered...

If all this typing doesn’t appeal to you—and you are confident you fully understand the principles involved—you can take a shortcut by copying the tutorial files over from the **PROBID** distribution disk. Exit to **DOS**, place the disk in drive **A** and type:—

```
COPY A:\DATA\*.* \PROBID\DATA
```

Be sure to read the sections on *linking items* and *auto-incrementing* item codes. Then skim through the other material before resuming the tutorial at the sub-heading **OVERHEAD Items...**



When pricing item **CX01**—the **Structural Concrete** work—you can use **PROCALC** to calculate and *explain* the **usage rate** for both the *plywood* and *framing timbers* used in the **Formwork operation**. Calculate the **usage rate** for the plywood sheeting as:—

$$1 / (1.2 \times 2.4 \text{ {Sheet size}}) / 4 \text{ {reuses}} @ 120\% \text{ {wastage}}$$

Make sure you *understand* this formula—or derive your own if you prefer. Include some comments to *clarify* and *document* the figures you use. Remember to call **PROCALC** from the **usage field** with **[Alt][C]** and to *save* the formula with **[F2]**. Also *save* the **operation** with **[F2]**. Derive your own formula for the usage of framing timber.

### Including Arbitrary Allowances

The **Concrete placing** operation contains an allowance of \$2.00/m<sup>3</sup> for **miscellaneous small equipment**. In the **operations screen**, enter a **subcontract code** of **\$ALLOW**. (It is just an “allowance”—there is no such subcontractor.) Hit **[Enter]** to go to the *production line* (you are confined to the two cost fields). Key **2.00** and **RECORD** the screen.

This is the easiest way to enter **arbitrary cost allowances**. If—at a later stage—you wish to extract a list of all operations and items *containing* these allowances, you can define the “**subcontractor**” **\$ALLOW**, and print out a subcontract order!

Finish pricing the *two* items in **Block X**. The **Structural Concrete** and **Reinforcing Steel** items in **Block Y** are *essentially* the same as those in **Block X**. The *Client* split the items by block, for his own purposes. You must *submit* separate prices for each item, but it would be tedious to have to individually *price* them...

### Linking Items—**[Alt][L]**

Enter the *code* for the **Structural Concrete** in **Block Y**. Key **[Alt][L]** and fields will appear so you can specify a target item to which you wish to link the current item. Enter the **Group-Section-Item code** of the *equivalent* item in **Block X** (item **CX01**) and **RECORD** the connection.

**CX01** is already the *default*—because of *code similarity*. (When **PROBID**'s “guess” is *not* correct, you can use **[F6]** to list the items—or **[F7]**–**[F8]** to page through them.) If the current item's **description**, **unit**, or **quantity** fields are *blank*, **PROBID** will copy in the corresponding information from the target item.

**CX01** and **CY01** now *share* the **same** operations. Pricing changes may be made through *either* item—they flow through the pair of linked items. *Quantity differences* between linked items are handled *automatically*. If some operations have **fixed costs**, then, *despite sharing operations*, item **unit costs** must vary. (Linked items are normally created by “cloning” from

the **Utility menu**—to avoid retyping item details. “L” is appended to the listed record number of *linked* items.)

**RECORD** the concrete item. Then enter the reinforcement item **CY02** and link it to **CX02**.

Start a new section—**2000 BUILDING WORK**—and enter *and* price the **Brickwork** item and the *first* of the **Electrical** items.

### Auto-increment Codes—**F5**

The electrical items have sequential codes with a *uniform numeric increment*—going from **A200** to **A210**, **A220**, etc. You can speed up the entry of items with sequential codes like these. Once you have entered the *second* item code in the sequence—item **A210**—hit **F5** to toggle on an “*auto-increment*” mode.

An increment—equal to the *difference* between the numeric portions of the *current* and *previous* item codes—is shown. The item code is *automatically incremented* for each new item—and the field skipped. (Codes are **left justified** if you entered the first that way—and vice versa.)

The increment value may be *fractional*, e.g. item codes **1.00**, **1.20**, **1.40**. *Auto-incrementing* works with **item**, **resource**, **supplier**, and **set codes**, but *not* with **section** or **group** codes. (Of course, **F8** acts as a *single increment key* in *all* code fields—including **groups** and **sections**.)

Complete the electrical items and toggle auto-increment mode *off* with **F5**. Enter the details for the **NOMINATED SUBCONTRACT** item but skip the pricing for the moment.

### Token Items

The next item is a **CONTINGENCY ALLOWANCE** with a “*write in*” amount of **\$100,000**. The contract payment provisions give the contractor *no* control over this item. It is just an *awkward*—but unfortunately *typical*—way of listing the amount *budgeted* for **Contract Variations**. (Variations are individually assessed and paid for as they arise.)

This item is not *truly* part of the work to be priced—and the contractor will see none of the money. Nevertheless, a price must be included in the *submitted tender*—without confusing the “true” cost base for purposes of markup. Enter the item details and move the cursor down to the **Item Type** field. Press **F6** for a picklist of choices. The list of **Item Types** looks like this:–

Normal
Hidden
Token
Fixed
Marked

Items may be defined as any one of these **FIVE** types.

*Hidden* items are used for *overheads*, “*prelims*”, etc.

*Token* items are used for *Provisional* or *arbitrary allowances*.

*Fixed* items have had their *submitted rates* fixed.

*Marked* items are similar to *Fixed* items but they have usually been “fixed” through the Utility menu.

To date, all the items we have worked with have been **NORMAL** types. **TOKEN** items are treated as if they were not part of the “real” estimate—their cost is not considered when percentage markups are determined. They always have submitted rates and amounts *exactly* equal to their **direct costs**. This is *precisely* the way you want to treat the “**Contingency**” item, so set its type to **Token**.

This item has *no* **Bill Number** in the *Contract document*—but the Client obviously expects it to appear *last*. If you leave the section code blank, it will appear *first* in sorted reports! Overcome this problem by giving it a **Section Code** of **CONT**. This will sort *after* blank and numeric section codes. (Common characters sort in the order **blank**, **0–9**, **A–Z** and **a–z**.)

Go to the **operations screen**, *skip* the **description** and enter an arbitrary **subcontract code** \$**CONTG**. Hit  to drop to the *production line*. Enter **100000** and **RECORD** the screen.

This is a “**Lump Sum**” item, with a quantity of **one**, so it does *not* matter whether you enter the contingency allowance of \$**100,000** as a **unit** or **total cost**. (When you enter an item or operation measure unit of **LS** or **It** (for “**Item**”)—in upper or lower case—**PROBID** will assist you by entering a default quantity of *one*.)

## Nominated Subcontracts

If your contracts do *not* involve **Nominated Subcontracts**, you can skip this section.

Switch to **Item Change mode** and move back to the **NOMINATED SUBCONTRACT** item.

Hitting  twice is the quickest way to do this. *Decrementing* the code makes no sense in **Add mode**, so **PROBID** treats the first  as a request to switch to **Change mode** and go back to the last record entered...

This item is similar to the **Contingency Allowance** discussed above. It has a specified *submitted amount* of \$**400,000**. Hence, you *could* classify it as a “**Token**” item. However, there is a good case for treating this item differently. The \$**400,000** *includes* a specified markup of **5%** for the *Prime Contractor*. Recovery of this markup is reasonably certain—*unlike* the **Contingency** item.

### Fixed Items

You *should* allow for this markup in your estimate but you must “**fix**” the item’s *submitted rate*. Change the **Item Type** to **Fixed**. Additional fields now appear on the line below the **item type** field. You can “fix” in *three different ways* the way in which the **submitted rate** and **amount** is determined, depending upon the field you choose. Move the cursor to the **Amount field** and enter 400000—fixing the **submitted amount**. Hit **F2** to **RECORD** the change in **item type** and **Alt** **O** to jump into the **pricing screen**.

Move down to the code fields and enter a subcontract code **\$ACSTC**. Press **Enter** *twice* to move to the **total cost** field. This time you must *not* enter the **full amount** as a cost—as it *includes* a 5% markup! Access **PROCALC** with **Alt** **C** and key in 400000/105% (this is the “**unmarked cost**”). Use **Alt** **C** to save the formula behind the cost field. (This fixes the cost at 100/105 of the **submitted amount**—so allowing for the markup on the item.) **RECORD** the change.

### Overhead Items

At this stage you have finished pricing the *direct cost* items. However, the estimate is still missing “**Site Overheads**”—the **supervision**, **site accommodation**, **permits**, **surveys**, **insurance**, and **design costs**, that must be “priced in”. These costs *must* be included in the estimate—but the items *cannot* appear in the *submitted tender* document.

Terminology varies. **Site Overheads** may be called “*Preliminaries*” or “*Indirects*”; some may be classified as “*Mobilisation*”; “*Global Plant*” may be a separate category; “*Head Office Overheads*” may cover some site costs, and so on.

### Hidden Items

**Hidden** items will *not* appear in the *tender submission*. Their cost is “spread” over the **Normal** items. **Hidden** items are the natural way to handle **Site Overhead** and similar **indirect** costs.

Site overhead items are usually similar for each estimate. You *should* be able to copy in a standard company list—to both *save entry time* and *serve as a checklist*. **PROBID** allows you to do just that...

### Using Libraries

If you are using the **STANDARD** version of **PROBID**—which does *not* support libraries—enter the overhead items manually and skip forward to **Requesting Reports** on *page B-39*. (But do read the section on **masking**, as the technique is used throughout the program.)

The installation program copied some short sample library files, **OVERHEAD.ITM**, etc., into the directory **\PROBID\LIB**. (**Alt D**), from the menus, displays the **DATA** and **LIBRARY** directories.)

**Esc**ape from the **Item screen** and go to the **Utility menu**. Select **Library access**. A list of “record types” (**items**, **resources**, **sets**, etc.) appears. Select **Items**. This screen appears:—

Copy ITEMS FROM Library		System date: Fri, 28NOV97
Library Path & Filename	.. \LIB\_	
Add to/Extract from library	Extract	
Include NOTEPAD text?	Yes	
Include PROCALC lines?	Yes	
Selection Mask:	Group-Sec - Item No ?? ???? ??????	

Hit **F6** for a picklist of item *library files*. (There might only be one item file in the directory.) Select **OVERHEAD.ITM**. Leave the other fields as they are (you are **Extracting** records *from* the library, *not Adding* to the library). Let’s just examine the **Mask fields**.

### Masking

A library may contain *many* records—only a few of which are needed in the current estimate. Masking is a powerful way to choose (or “filter”) just those records required. The mask is a field—or set of fields—usually containing some “wild” characters.

**PROBID** uses wild characters in a similar way to **MS-DOS**. The question mark **[?]** matches *any* character in *that* position and the asterisk **[\*]** matches *all* characters *from that position on*. Hence, a **resource code mask** of **E?????** (or **E\***) selects *all* resources whose code starts with **E**. An **item mask** of **?? M200 A????5** selects *all* items in **M200** sections with item codes *starting* with **A** and *ending* in **5**.

Masking is used in *many* situations—controlling **report content**, **cloning**, **changing**, or **exporting** records, and **filtering picklists**. If you are pricing an **operation**, and wish to assign a particular **set** to it, entering **@PL\*** and **F6** will popup a list of all sets starting with **@PL**. To list all **sections** in group **EX**, enter the group code **EX** in the **item entry screen**, move to the section code field, key **[\*]** and hit **F6** (or the *left* mouse button).

When selecting records to be copied to—and from—libraries, you can combine masking with a special type of selection facility called a **Tag List**. This provides *maximum* flexibility in selecting records and allows you to see the records that will be transferred, before committing yourself to the transfer! But that would take us beyond the scope of this introductory tutorial...

Here, it is preferable to bring in *all* overhead items and then—if you wish—delete those *not* needed for this estimate. (An overhead checklist ensures nothing is missed!) The default masks are fully “wild” so just press **[F2]** to accept the screen. Reply **[Y]**es to confirm you do wish to proceed.

Repeat the library extraction procedure for **resources**. (**Operations** are automatically included with their parent items and there are no **sets**, **subcontractors**, or **suppliers** in this small overhead library.) Then bring in the overhead **groups** and **sections**. You will be warned that you are overwriting *existing* **Groups** and **Sections**. (When we imported the items, **PROBID** automatically created any referenced groups and sections.)

### Group-Section-Item Structure

Use **Browse mode** to view the items extracted from the library. (Hit **[F6]** for a picklist of *all* items. Select the first of the imported overhead items and browse from there.) A **Group** is defined, as well as **Sections**, so the **items** are organised into a *three level hierarchy*. All are **Hidden** items having *unit* quantity. Operations—if any—and pricing details are included with the extracted items.

In practice, overhead libraries should be *standardised* so you only have to amend the quantities once they are copied into an estimate. If you do *not* need a particular overhead cost in the estimate it is probably better to just remove—or *zero*—the *pricing detail* from the item—rather than *delete the item* itself. This makes it obvious during the tender review that *all* overhead items have been *considered*—even if some carry no costs in this particular job. In the tutorial we will ignore this good advice so we have an excuse to *delete* some items and—later on—will even change the coding structure of the remaining overhead items...

### Deleting Records

Hit **[F9]** and then **[D]** to switch to **Delete mode**. Use **[F7]** and **[F8]** to find the item *not* required (see *page A/6, Appendix A*). Press **[Enter]** in the **item code** field and **[Y]**es to confirm that you *do* wish to delete the item. The record disappears and the focus moves on to the next item. Repeat the procedure to remove the other unused item.

Switch to **Change mode** and revise the **Contract Quantity** of the remaining overhead items. (Note that the **Actual Quantity** is adjusted *automatically*—you do not have to change both.) Change the **Establish Offices & Sheds** item cost allowance to \$8500.

We decided earlier that this estimate would *not* be divided into **Groups**. However, the imported overhead items introduced a group structure. *As an exercise* we will now remove the group codes from the overhead items and place them in an overhead *section* instead. You could simply change the group and section code of *each* overhead item—removing the group code and amending the section code to **soh**—but the **Utility** functions are there to handle this pedestrian work...

**Mass Code Changes by Mask**

First change the **item code** of the **Establish Offices & Sheds** item to **40**, so it will *not* conflict with the **Project Manager** item.

Of course, in practice, overhead coding would be standardised and you would accept the codes without any of this bother. But then we would have to find *a different excuse* to try out some of the **Utility menu** functions...

Select **Find and replace** from the **Utility menu**. A **record type** picklist appears. Select **Groups**. We want to “*blank*” the **group code** of all items in the **SITE OVERHEADS** group.

Let’s also *change item descriptions* like:–

**Site** Engineer, **Site** Administrator, *etc...*

to:–

**Project** Engineer, **Project** Administrator, *etc...*

so that the terminology is consistent with **Project Manager**. To make *all* these changes *simultaneously*, fill in the fields as shown in the following screen:–

```

CHANGE GROUPS - SECTIONS - ITEMS BY MASKING          System date: Fri, 28NOV97

Specify masks for Group, Section and Item Codes

      Group-Sec - Item No      Group-Sec - Item No
Source Mask: |SO| |????| |?????|  Destination Mask: | | |????| |?????|

Enter any CHANGES to be made to ITEM Descriptions

FIND this TEXT          REPLACE with this TEXT
|site|                  |project|
    
```

Press **[F2]** to make the change. Once you confirm that you *do* wish to proceed, all items in group **so** will have their group code “*blanked*”. If the word “**site**” appears in those **item descriptions**, it will be replaced with “**project**”.

The **Utility menu** has other options that work in a similar way. **Find and replace**, **Delete by mask**, **Clone by mask**, **Sort/pack files**, and **Pricing changes**, all use *masking* to fix their **source** and—if appropriate—**destination** codes.

You should now be able to change the overhead **section codes** `soh1` and `soh3`, to a *single* section code `soh`, *without* detailed instructions. (Only *one* masking operation is required—think about it first!) Do this and then go to the **Item menu**, **Change Items** to amend the **section description** of `soh` to read “**SITE OVERHEADS**”.

Go to **Resource Browse mode** to view the imported overhead resources. (There is no need to delete *unused* resources—no costs are carried for them, as the items using them have been removed.)

Estimate “pricing” is **complete** so it is time to *print some reports*.

**Printing Reports**

Switch on the printer. Select **Print Reports** from the **Master menu**. A *report request screen* appears. The cursor drops to the **Report Name** field. (Ignore the fields on the line above this for the moment.) Hit **F6** to list the **PROBID standard reports**.

**Requesting Reports**

Picklists like this—involving just a few predefined choices—cannot have their content restricted by masking. It would be unnecessarily confusing.

Select **ITEM LISTING** and press **Enter** to move to the **More Reports?** field. Hit **Spacebar** to toggle it to **Yes**. Press **Enter**. The screen looks like this:—

```

Estimate: ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2      System date: Fri, 28NOV97
Printer: Okidata Microline 393+
Batchfile Name ██████████ Report No 1
Report Name  ITEM LISTING      More Reports? Yes
Selection Mask L ██████████ Sort the Report? Yes
Summary Only? No                Video, Printer or File? Print
Print Pitch? Pica                Number of Copies 1
Pause between Pages? No          Header each Page? Yes
Show NOTEPAD text? No           Show PROCALC lines? No
    
```

**Note:** This screen adjusts to suit the settings in **Customisation Printer Setup**. (For example, if you are using a *laser* printer, the **Print Pitch** and **Header each Page?** fields will not appear...)

Hit **F2** to **RECORD** the report request. (You could print one report and request more later, but it is more convenient to specify and print a *set of reports* as a “batch”.) Select



ESTIMATE MASTER, leave the **More Reports?** choice setting to  No, and press  F2 again. **PROBID** prints the two reports.

### Report Formatting Options

Select **Print Reports** again. Other fields in this screen are largely self explanatory—and are fully described in the *Reference section* of the manual (see *Printing Reports, page C-2*). Normally you would accept the defaults given on the screen.

Report content may be *restricted by masking* and the records may be *sorted*—or left in their original order. Item oriented reports sort by **Item code** within *Sections* and by **Section code** within *Groups*. Groups sort by **group code** and page breaks occur on each new group. (Some sample reports are shown in *Appendix B*.)

Print a selection of reports—*excluding* the **COSTCODE LISTING** and **TENDER SUBMISSION** at this stage. Check the printouts to be sure you understand the details. Test your understanding of the estimate and reports:—

- Manually calculate the total **BRICKLAYERS' hours** and compare *your* total with the figure given in the **RESOURCE USAGE** report.
- Do the same for the **quantity** of **DIESEL FUEL** required for the job.
- Check the **SUBCONTRACT ORDER** for **GREENTREE LANDSCAPING**.
- Manually build up the *total* and *unit cost* for the three **Earth Excavation** operations—and the item. Compare your results with the detail given in the **OPERATION ANALYSIS** report.
- The **Reinforcing Steel** has a *supply* cost of 810.00/tonne and a *placing* cost of 200.00/tonne—but the *total* is 1026.20/tonne! Why the extra \$16.20?
- The **RESOURCE USAGE** report lists *both* **CAT 623** and **631** model Scrapers. The **RESOURCE ALLOCATION** report shows *only* the **623** model. Why?

# Time Planning

## Scheduling the Project

If you do *not* prepare *Bar Charts* or *Network Schedules* with your estimates—or do not have access to *PROCON's Project Scheduling System, PROPLAN*—you can skip forward to *Bid Preparation* on page B-42.

## Activity Definition

Any *operation* may be defined as an *activity* for purposes of scheduling. Go to the first operation for item B100b—the **Earth Excavation – Scraper Work**. Move the cursor to the **ActNo** (*Activity Number*) field, enter a code **xx10** (see *page A/7 Appendix A*) and press **Enter**. Additional fields appear and the screen looks like this:–

```

Estimate: ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2      System date: Fri, 28NOV97
Item      -1000-B100b  Earth excavation                274350 m3

Operation 1/1 N  Load & Haul - scraper work          Measure Unit  m3  28NOV97

Op units/Item unit      Item units/Op unit      Quantity      Costcode      Act No
0.692546 m3/m3          1.4439474 m3/m3          190000 m3      |      |      |      |      |      |      |      |
Calendar S  Early Start  3FEB98      Duration  295 days      Late Finish  24NOV98
Code  Resource/Set/Subcontractor      Type      Quantity      Unit Cost      Cost
@SCSPR  SCRAPER SPREAD, D9 + 3xCAT631  @      440.49 HR      372.01      163866
  
```

Hit **F8** to roll the **Calendar Number** forward to **1** and then move to the **Early Start** field. Hold down **F8** to increment the date to **15FEB98**. Then enter a **Duration** of **48** days and a **Late Finish** of **27APR98**.

**Calendars** are defined in *PROPLAN*. The **Earliest Start Date** is a “Push” date and the **Latest Finish Date** is a “Plug” date. The **Duration** is in *working days*. (See your *PROPLAN* manual for an explanation of these terms.) The defaults are the corresponding figures from the **Estimate Details** screen for the Project. All activity *dates* must be within the time span of the Project.

## Export Tasks to PROPLAN

**RECORD** the changes. Then enter the timing information for the other activities shown on *page A/7* of *Appendix A*.

Note that the *last* two activities are associated with **items** rather than **operations**—and those items have no operations! But how do you designate an item without operations as a task? You can't—you must define an operation—at least temporarily. Even if the item has already been priced, this is easy to do. Move to the **operations screen** and press **↑** in the first element code field. The **operation description** field reappears so you can define the operation. Pricing detail remains on the screen but it is then associated with the operation rather than the item. Hit **F5** to copy the **Item description** into the **Operation description** field—or enter anything else you prefer. (You would normally want the task to have a *different* description from the item.) The operation is now a convenient intermediary. (Of course, if you insist on *not* having an explicit operation, there is a way around everything! Having defined the operation and activity, you may then blank the operation description and press **F2**. The operation detail disappears but the activity details remain associated with the item.)

After you enter all five activities, select export **Tasks to PROPLAN** from the **Export menu**. The defined activities and project details are used to set up project files for **PROPLAN**. You can then run **PROPLAN**, define the *calendars*, and immediately print *Bar Charts*. You may add additional **activities**, **hammocks**, **logic links**, and **constraint dates** and create a full **PERT/CPM** network plan. Analysis of that plan could highlight *inconsistencies* in your estimate—possibly requiring reassessment of *overheads*, *staffing levels* or *global plant* requirements.

The files are saved in the directory **\PROPLAN\DATA**—if it exists. Otherwise they will be in **PROBID**'s system directory. An **operation** shared by *linked items* translates into just *one* task. This is both logical and convenient. Linked items usually represent *identical work* carried out in different locations. As this work is often performed sequentially—with the same work force—it is common to depict it on a *Bar Chart* as one activity.

You have completed the project *Cost Estimate*. You must now turn this into a winning and profitable *Tender*...

## Preparing the Tender

### Bid Preparation

Select **Bid Preparation** from the **Master menu** and you will be presented with a two part screen. The top part of the screen looks like this:–

ROUNDING AND MARKUP		System date: Fri, 28NOV97	
TENDER ROUNDING:	TOTAL to <b>Five</b>	UNIT RATES to <b>Smart</b>	AMOUNTS to <b>Cent</b>

Monetary figures in a “real” tender should be properly “presented”—you don’t want your submission to look as if it had been prepared on a spreadsheet or by some mindless automaton! “Raw” unit rates and amounts are *tedious to “write up”, awkward to administer,* and *divulge* too much *confidential information* about costs and markup...

**Rounding Rates, Amounts & Totals**

PROBID allows you to *independently* set the rounding of *submitted unit rates, amounts* and the *tender total*. (Hit **F1** in each of the three fields in turn, for information on the options available.) Leave the first two fields and change the rounding of **AMOUNTS** to **Dollar**. Press **Enter** to move the cursor down to the lower portion of the screen.

**Set the Markup**

The **markup** section of the screen looks like this:–

Markup may be fixed by specifying a percentage (or amount) against EACH cost type OR by setting an overall TOTAL percentage (or amount).

Cost Type	Markable Cost	Markup Percent	Markup Amount	Total Amount
Unassigned	\$			\$
Labour	\$ 734927	%		\$
Own eqpt	\$ 81050	%		\$
Rented eqpt	\$ 551237	%		\$
Material	\$ 704141	%		\$
Subcontract	\$ 726521	%		\$
OVERALL	\$ 2797875	%		\$ 2797875
TOKEN Items				\$ 100000
TENDER TOTAL				\$ 2897875

Markup may be set in *three different ways*:–

- as an *overall PERCENTAGE*
- as an *overall DOLLAR AMOUNT*
- as *percentages and/or dollar amounts for each COST TYPE*.

**Token** items are *excluded* from the costs upon which the markup is calculated. Enter an *overall* markup of **8%** and press **F2**.

**Allocating the Spread**

The **spread allocation screen** appears, allowing you to vary the way any spread balance will be allocated between items. The screen is like this:—

SPREAD ALLOCATION		System date: Fri, 28NOV97		
SPREAD ANALYSIS	ITEM COSTS	Spread FROM	Spread TO	Percent
MARKUP		\$ 223830		
HIDDEN items	\$ 189769	\$ 189769		100.00%
FIXED & MARKED items	\$ 380952		\$ 19048	5.00%
NORMAL items	\$ 2227154		\$ 394552	17.72%
<i>Spread rates may be set for SOME cost types - and some must be left "unfixed"</i>				
Cost Type	NORMAL Items	Spread Percent	Spread Amount	
Unassigned	\$	%	\$	
Labour	\$ 553658	%	\$	
Own eqpt	\$ 81050	%	\$	
Rented eqpt	\$ 551237	%	\$	
Material	\$ 704141	%	\$	
Subcontract	\$ 337068	%	\$	
BALANCE	\$ 2227154	17.715551 %	\$ 394552	

The “spread” **balance** is the *total of Hidden items, plus markup, less amounts already spread over Fixed and Marked items*. By default, the spread rate is uniform over all **Normal** items. However, this screen allows you to fix special spread rates for each **cost type**. You cannot fix a rate for *all* cost types—at least one must be left “unfixed” to absorb the balance of any spread. (Of course, this does *not* override decisions you made on *fixing* individual items—or groups of items you specified as having a *fixed percentage spread* through the **Utility menu**. **PROBID** offers *three* levels of control over the way the spread is allocated—but we are going beyond the scope of the tutorial...)

In this case, we do not wish to load too much of the “spread” onto the *subcontracted* portion of items, so move down and enter **5%** against the **Subcontract** cost type. Press **[F2]** to **RECORD** the screen. You now have a *completed* tender!

**TENDER SUBMISSION**

Print a **TENDER SUBMISSION** report. The last page is a *Tender Analysis* sheet which you must detach before submitting the tender. When a tender has:—

- different *contract* and *actual quantities*
- some *token costs*
- some *items with fixed rates*
- a *user specified spread* on some cost types
- “*smart*” *unit rate rounding*, and
- *heavy tender total rounding*,

the setting of item unit rates and maintenance of the tender balance can be very complex. Fortunately **PROBID** does all this for you!

Nevertheless, this *is* a tutorial so you must ensure that you *understand* why particular unit rates have been used and the meaning of the information presented. For instance:—

- Why does item 2000–A900 have a *submitted amount* of \$400,000.00?
- Why has item CONT–100 a *submitted rate* of \$100,000.00?
- Why is the rate on the *brickwork* about 21% above cost, when the rate on the *electrical ducting* is only about 5.6% more than direct cost?
- Why is the *percentage markup* on a **Contract quantity** basis *less* than on an **Actual quantity** basis? How does this *benefit* (or penalise) the tenderer?
- Why are the **TOKEN** item costs *not* included in the *base costs* for markup calculation?
- What is a “*rounding loss*”? Why does it appear in this tender?
- What is the significance of the various *Warnings*?

### TENDER ANALYSIS *Warnings*

Whenever you print a **TENDER SUBMISSION** report, **PROBID** checks the estimate for possible “*inconsistencies*”—or evidence of *oversights* and *omissions*. If problems are found, warning messages will appear on the **Tender Analysis** sheet. Examine these messages and either correct the problem, or satisfy yourself that they are not significant. What do the particular warnings on your tender submittal mean?

- **... Items NOT final** indicates that you have not specifically “flagged” each item as complete. (You can do this conveniently in Browse mode.)
- **Rounding loss \$...** is a byproduct of the adjustment of the submitted total to conform to your request for rounding to five significant digits.
- **Some Subcontractors NOT defined** refers to the arbitrary amounts “plugged” into operations and sets. The “subcontractors” were never defined.
- **Some Resource Costs NOT final** is similar to the first warning.
- **Some Normal items have NEGATIVE spread** results from the low spread rate on the subcontract work and rate rounding. (One item has negative spread.)

## Tender Changes

Just prior to tendering, you decide to make the following changes to the estimate:–

- Increase the *diesel fuel cost* to \$0.49/Litre.
- Change the *reinforcement fixing subcontractor* to L Borgia Enterprises and reduce the quoted rate to \$198.00/Tonne.
- Include an employee “*site allowance*” by adding \$0.70/hour to all hourly paid labour rates.
- Reduce company *internal plant rental rates* by 5%.
- Increase *Carpenter productivity* from 2.1 to 2.0 MH/m2.
- Increase the *formwork re-uses* from 4 to 6.

### Changing Resource costs

The **Diesel fuel cost** change is straightforward. From the menus, hit **[Alt][R]** for the **Resource** menu and **[C]** for **Resource Change**. Overtyping the start of the code with **M\***—a mask for all resources beginning with **M**—and press **[F6]** to list matching resources. Select **DIESEL FUEL**, amend the **unit cost** to **0.49**, and **RECORD** the change. Done!

### Changing Subcontract details

Two changes must be made to subcontract pricing details. Amending the contractor’s name and details is similar to the resource change discussed above, so do that now. (**[Alt][S]** takes you straight through the **resource screen** to the **subcontractor screen**.) Hit **[F6]** to produce a list of suppliers and subcontractors.

When you request a selection list from a field *already* containing a code for an existing record, **PROBID** assumes you want to see *all* records. You could, of course, have provided the mask “\$ ” to list just subcontractors. **PROBID** accepts *blanks* as alternatives to **?** when evaluating this type of “*loose*” mask—it is more intuitive to non-technical users—and quicker to construct. Of course, there is some ambiguity—the *space* character is valid in a normal code. When the masking action directly results in data or output change (**cloning, deleting, library changes, reports**, etc.), **PROBID** recognises only “*explicit*” masks.

Change the **subcontract price** through the **operations screen**. **[Esc]**ape from the **supplier** and **resource screens** and find item **cy02** in **Item Change mode**. Go to the **operation screen** and move down to the **subcontract code**. Press **[Enter]** to edit the

**unit rate.** Hit **[F7]** twice to *decrement* the value to **198**, and press **[F2]** to **RECORD** the change.

What about the *other* steel fixing item? Surely the rate must be changed *everywhere*? Check item **cx02**. The rate has *already* been changed—the items are **Linked**. *Any* change to the operations through **one** item appears *immediately* in the **others**!

So far *all* changes have been made using standard editing functions. The increase in the labour rates *could* be made in the same way. But there are several hourly rates—and there might be *dozens* in a real estimate! The *time involved*—and *risk of error*—is too great. There must be a better way...

**Mass Price Changes**

Select **Pricing changes** from the **Utility menu**. The following screen appears:—

CHANGE ELEMENT PRICING or COSTS		System date: Sat, 13DEC97	
Element Mask: <b>[?????]</b> Blank MASK field to select by COST TYPE			
PRODUCTION, USAGE, or QUANTITY			
Percent Change	<input type="text"/>	% Actual	<input type="text"/>
RESOURCE SUPPLY COST			
Percent Change	<input type="text"/>	% Actual	\$ <input type="text"/> Increase \$ <input type="text"/>

To restrict the action to the *hourly paid labour resources*, enter the mask **LH????**. Hit **[F6]** to popup a “checklist” of matching resources so you can *confirm* that the mask really does capture *just* hourly paid labour. Hit **[Esc]**ape to remove the list.

A “checklist” is just a *picklist*. (We could use it to find and enter a particular resource code into the mask field.) By requesting—and then *cancelling*—a picklist we can “check” that a mask is correctly formed—and avoid making mass changes to the wrong records!

**[PgDn]** to the last field and enter the *increase* in the labour rate of **0.70**. Switch on the printer and press **[F2]**. Confirm that you *do* wish to proceed and elect to print the list of changed resources.

This **Utility menu** choice allows you to select **Resources**, **Sets**, or **Subcontractors** by masking (or by **Cost Type** for **Resources** or **Subs**), and change their consumption parameters—or the *supply unit costs* of **Resources**. Resource unit costs may be changed *by* a **percentage** or **amount** or *to* an **actual amount**. Consumption parameters (**Production**, **Usage**, **Quantity**, or **contributory Costs**) may be changed *by* a **percentage** or *to* an **actual amount**. (You could have used this option to change the **Subcontract** cost of reinforcement fixing without having to find the particular items affected.)

This is a powerful facility! *Before* making any change, make sure you understand what you are doing! *Most* changes are reversible—but remember that decreasing a value by 20% and



then increasing it by 20% does *not* restore the value! If you are in doubt about which elements will be captured by the mask, try it with a 0% change first—and print out the result.

Use this option to reduce the *internal plant rental rates*. You can't specify a *mask* that selects *only* company owned plant as *all* equipment resource codes in the tutorial start with "E". However, only the *company plant* has a **cost type** of **Own eqpt**. Return to the screen, *blank* the mask, press  and a **Cost Type** field appears. Select **Own eqpt**. Move to the lower line, set the **Percent Change** in the **Unitcost** to **-5** and blank the other two fields. *Proceed*.

Return to the screen, hit  and select **CARPENTERS**. Set an actual usage rate of **2.0**, blank all the fields on the lower line and make the change.

Item **CX01** is listed as changed—but *not* item **CY01**? When the **Pricing changes** option operates on **linked** items, only the *primary* item is captured by the mask. This avoids ambiguities that could arise when a mask covers only part of a linked family of items. (Of course, *changes* made to the primary will usually affect the linked items as well.)

The *company plant rental* rate change highlights the vital importance of *intelligently coding Resources* and **Sets**. Masking power is limited only by the information content of the codes!

The increase in formwork reuses could also be handled by a **percentage change** in the **usage rate** for the materials involved. But what is the change? A *50% increase*—or a *33% reduction*? Is *consumption* expressed as a **production rate**, **usage rate**, or **quantity**? It could be confusing to make the change through the **Utility menu**. Better to go to the **operation screen** and amend the **PROCALC** records—as they were carefully annotated to clarify this calculation. Do this now. Both *plywood* and *framing timber* usage will change. Don't forget to **RECORD** the changed formula *and* the operation!

The estimate is now completely revised. Reprint the **OPERATION ANALYSIS** report and check the changes. Then print a new **TENDER SUBMISSION**.

You are now ready to *submit your tender*...

## After the Tender

### Defining Costcodes

If you are not involved in the preparation of cost control budgets, skip this section.

With such a competently prepared tender you deserve to be successful—and that is the case! The contract is *awarded* on **19JAN98**. You must now prepare for the *construction* and *administration* of the project. The first task is to set up a *budget* for costing and preparation of variance reports.

**Costcodes** are assigned to **operations**. They can be *manually assigned*—giving complete flexibility—or *automatically assigned* through an option in the **Utility menu**.

Examine the choices offered in the **Utility menu**'s **Assign Costcodes** option. If one of the assignment schemes suits *your* costing system, use it to set the **costcodes**. (Otherwise, you must access each operation and assign codes individually.) Make the assignments and print a **COSTCODE LISTING**.

You could have a **User Defined List** of costcodes—complete with descriptions. You could popup a picklist to enter the codes for each operation. Costcode descriptions would be taken from that list—rather than the *operation* description being used by default.

### Export Costs to PROCOST

Select **Costs to PROCOST** from the **Export menu**. A budget will be created and exported.

If you are *not* using **PROCOST**, A file—**BUDGET.PRN**—will be created in the system directory. This is a plain **ASCII** file that can be imported into other costing systems (See *Page D-2*.)

### Export Items to PROBILL

If you are not involved in the administration of contracts—or are not using **PROCON**'s *Contract Billing System*, **PROBILL**—you can skip this section.

Monthly *Progress Payment Certificates* are based on the quantity of work completed under each item in the contract document. Exporting the items *directly* to **PROBILL** avoids the need to re-enter this detail. Select **Items to PROBILL** from the **Export menu** to create the necessary files. You are now ready to prepare *Progress Payment Claims*, manage *Variations* and handle contract *Escalation Calculations*.

The files are saved in directory **\PROBILL\DATA**—if it exists. Otherwise, they will be saved in the **PROBID** system directory. See your **PROBILL** manual for more detail on preparing *Progress Payment Certificates* and automatic *“Rise & Fall”* calculation.

### The End

*Congratulations!* You have now completed the tutorial and should be using **PROBID** immediately to prepare better estimates and tenders.

While you will now be reasonably familiar with the mechanics of entering data into **PROBID**, it is also vital that you understand the *principles* **PROBID** uses in *evaluating* the information you provide. There should *not* be one figure produced in the tutorial that you are unable to check manually—even if the arithmetic might be somewhat tedious. *This is most important!*

**PROBID** is a very powerful system designed to cope with the complexity of *real* estimating and tendering—but you cannot use it to full effect unless you understand what it is doing!

The sample estimate files on the supplied distribution disk are *extensively* annotated. The **NOTEPAD**—and comments within various **PROCALC** screens—amplify points covered in the tutorial and provide many other hints. Copy these files into the data directory and browse through the records and notes. (This is most conveniently done if **PROBID** is set to display 50 lines on a **VGA** screen from **Customisation, System Defaults**.)

The **Reference Section (Part C)** and the **Appendices (Part D)** provide more detailed technical information, cover more advanced program capabilities, and offer practical hints to help you get the most out of **PROBID**.

As you use **PROBID** on your own estimates, you will discover many *ways to save time* and—perhaps more importantly—improve the *quality of the estimates* you prepare. At this stage, you may just wish to skim through the Manual's **Reference Section** and **Appendices**. After several more weeks—or months—of using **PROBID** you will find it well worthwhile to read those parts of the Manual more thoroughly.

# Schedule of Rates

Project: **ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2**  
 Principal: **Ettamogah Cultural Trust and Brewing Company**  
**P.O. Box 1792A, 123 Main Street**  
**ETTAMOGAH VIC 3888**  
 Contracts Officer: **Mr L D Bronstein.**

Tenders Close at **3pm** on **15 December 1997** at the above address.  
 Start: **3 February 1998**. Substantial Completion: **25 November 1998**.  
 Liquidated damages: **\$350 per calendar day**.

Item	Description of the work	Quantity	Unit	Extension	
<b>Bill 1000 - CIVIL ENGINEERING WORK</b>					
A100	Tree clearing and disposal	45.5	Ha		
A200	Grubbing to 300mm and disposal	38.7	Ha		
B100a	Topsoil stripping	168500	m2		
B100b	Earth excavation	245000	m3		
CX01	Block X - Struct Concrete 30MPa	782	m3		
CX02	Block X - Reinforcing Steel	47.83	Tn		
CY01	Block Y - Struct Concrete 30MPa	1654	m3		
CY02	Block Y - Reinforcing Steel	94.66	Tn		
Subtotal				\$	
<b>Bill 2000 - BUILDING WORK</b>					
A100a	Brickwork, Common	9450	m2		
A200	Elec power connection	1	LS		
A210	Elec ducting, 2 x 4 x 100mm diam	1645.2	lm		
A220	Elec transformers, 150KW	5	EA		
A900	NOMINATED SUBCONTRACT, Acoustics	1	LS	400000.00	
Subtotal				\$	
<b>Bill - CONTINGENCY ALLOWANCES</b>					
100	Owner's Contingency Allowance	1	LS	100000.00	
Subtotal				\$	100000.00
TENDER TOTAL				\$	

# Suppliers & Subcontractors

Code	Subcontractor or Supplier Name	Reference
\$CL&GB 3/12	GREENTREE LANDSCAPING PTY LTD 97 Willowtree Boulevard GREENHILLS ESTATE SA 5700 Tel: 2345.7890 Fax: 9870 Mr John Birch, Owner	Subcontractor Phone Quote
\$SELECT	SPARKS ELECTRICAL CONTRACTING P.O. Box 220 800a Main Street NEWCASTLE NSW 2488 (049).251.8112	Subcontractor George Brook - Supv #78-003 Letter
\$FIXRB	TYITALL BROS STEEL FIXERS P.O. Box 875 BAULKHAM HILLS NSW 2099 02 - 9957.0055 Fax: 0056 Jack Tyitall	Subcontractor Verbal 11/12/97
ACME eqpt	ACME EQUIPMENT RENTALS PTY LTD 45 Old Range Road HOPETOWN VIC 3777 (03).65.2244X230	Supplier Rented Plant Dispatcher List less 10%
BORAL	BORAL REINFORCEMENT PTY LTD 1321 Northbourne Avenue CANBERRA ACT 2601 (06).2987.4567	Supplier Material Shipping Department Written Quote
GENB&T Quotation	GENERAL BRICK & TILE PTY LTD 975 St Georges Terrace PERTH WA 6000 Fax: 07.2236.1837 Telex: A84321	Supplier Material Annual
INTPLT	COMPANY PLANT DEPARTMENT	Supplier Own eqpt

## Resources used in the Estimate

Code	Resource Description	Unit Cost	Cost Type
Supplier: None Specified			
LH10	LABOUR, Unskilled Class II	17.80/MH	Labour
LH20	LABOUR, Skilled Class IV	20.40/MH	Labour
LH30	EQUIPMENT OPERATORS	22.80/MH	Labour
LH40	CARPENTERS, Formwork	22.30/MH	Labour
LH60	BRICKLAYERS	23.20/MH	Labour
ET10	DUMP TRUCKS, 13 m3 boxes	37.00/HR	Rented eqpt
MTP020	FORM PLYWOOD, Sheet 1200x2400	135.00/Sh	Material
MTF032	FRAMING TIMBER, Oregon	540.00/m3	Material
MCS030	CONCRETE, Class D Cement, 30MPa	108.00/m3	Material
Supplier: ACME - ACME EQUIPMENT RENTALS PTY LTD			
ES10	ELEVATING SCRAPER, CAT 623	105.00/HR	Rented eqpt
EC60	ROLLER, Towed Sheepsfoot	250.00/WK	Rented eqpt
ED06	DOZER, CAT D6, Operated	97.00/HR	Rented eqpt
EL10	WHEELED LOADER, CAT 966	95.00/HR	Rented eqpt
Supplier: INTPLT - INTERNAL PLANT DEPARTMENT			
ED09	BULLDOZER, CAT D9, Weekly Rate	2000.00/WK	Own eqpt
ES30	SCRAPER, CAT 631, Weekly Rate	2400.00/WK	Own eqpt
MFD000	DIESEL FUEL, Supplied to Job	0.45/Li	Material
Supplier: BORAL - BORAL REINFORCEMENT PTY LTD			
MRB070	REINFORCING BAR, cut & bent	810.00/Tn	Material
Supplier: GENB&T - GENERAL BRICK & TILE PTY LTD			
MMBC00	BRICKS, Common, 230 x 100 x 76	325.00/MB	Material
RESOURCES IMPORTED FROM OVERHEAD LIBRARY			
Supplier: None Specified			
LS10	PROJECT MANAGER, Annual Cost	80000.00/Yr	Labour
LS20	PROJECT ENGINEER, Annual Cost	43000.00/Yr	Labour
LS30	SITE ADMINISTRATOR, Annual Cost	46000.00/Yr	Labour

## Sets used in the Estimate

Code	Set Description Element Code & Description	Set Meas Unit	Element Usage
@BLCRW	BRICKLAYING CREW, 2B/L + 1LAB	DY	
	LH60 BRICKLAYERS		17 MH
	LH10 LABOUR, Unskilled Class II		8.5 MH
@DOZD9	BULLDOZER, CAT D9, Operated	HR	
	ED09 BULLDOZER, CAT D9, Weekly Rate		0.02 WK
	LH30 EQUIPMENT OPERATORS		1.05 MH
	MFD000 DIESEL FUEL		55 Li
@SC631	SCRAPER, CAT 631, Operated	HR	
	ES30 SCRAPER, CAT 631, Weekly Rate		0.02 WK
	LH30 EQUIPMENT OPERATORS		1.05 MH
	MFD000 DIESEL FUEL		50 Li
@SCSPR	SCRAPER SPREAD, D9 + 3xCAT631	HR	
	@DOZD9 BULLDOZER, CAT D9, Operated		1 HR
	@SC631 SCRAPER, CAT 631, Operated		3 HR

# Item Breakdown and Pricing

Item	Description	Item Actual Qty	Operation Description	Operation Consumption	Consumption
	Resource/Set/Sub Code & Description				
<b>Section: 1000 CIVIL ENGINEERING WORK</b>					
A100	Tree clearing and disposal <i>(A simple item priced directly)</i>	45.5 Ha			
	\$CL&GB GREENTREE LANDSCAPING PTY LTD		(sub)		950.00/Ha
A200	Grubbing to 300mm and disposal <i>(Operation breakdown unnecessary - price directly to the item)</i>	38.7 Ha			
	\$CL&GB GREENTREE LANDSCAPING PTY LTD		(sub)		4700/Ha
	LH10 LABOUR, Unskilled Class II		(Flagmen)		200 MH
B100a	Topsoil stripping <i>(Define an operation to change measure unit to m3)</i>	168500 m2			
	1. Strip to Stockpile (150mm deep)		0.150 m3/m2		
	ES10 ELEVATING SCRAPER, CAT 623				125 m3/HR
B100b	Earth excavation <i>(Break the item down into these three operations)</i>	274350 m3	(Contract Qty 245000 m3)		
	1. Load & Haul - scraper work		190000 m3		
	@SCSPR SCRAPER SPREAD, D9 + 3 x CAT 631				
	Output = 3 Scrapers @ 18.2 m3/Load @ 7.9 Loads/hour				
	2. Load & Haul - truck & loader		84350 m3		
	EL10 WHEELED LOADER, CAT 966				90 m3/HR
	ET10 DUMP TRUCKS, 13 m3 boxes				24 m3/HR
	3. Spread and compact fill		1 m3/m3		
	ED06 DOZER, CAT D6, Operated				90 m3/HR
	EC60 ROLLER, Towed Sheepsfoot				4500 m3/WK
CX01	Block X - Struct Concrete 30MPa <i>(Break the item down into two operations)</i>	782 m3			
	1. Formwork to Structural Concrete		2.4 m2/m3		
	MTP020 FORM PLYWOOD, Sheet 1200x2400				20% wastage. 4 reuses
	MTF032 FRAMING TIMBER, Oregon				0.05 m3/m2 over 4 reuses
	LH40 CARPENTERS, FORMWORK				2.1 MH/m2
	2. Supply & Place Concrete		1 m3/m3		
	MCS030 CONCRETE, Class D Cement, 30MPa				4% wastage
	LH20 LABOUR, Skilled Class IV				0.8 MH/m3
	\$ALLOW Miscellaneous Equipment Allow.		(say)		\$2.00/m3
CX02	Block X - Reinforcing Steel <i>(Operation breakdown unnecessary - price directly to the item)</i>	47.83 Tn			
	MRB070 REINFORCING BAR, cut & bent				2% rolling margin
	\$FIXRB TYITALL BROS STEEL FIXERS		(sub)		200.00/Tn
CY01	Block Y - Struct Concrete 30MPa <i>(Item is similar to CX01 so price on same principles)</i>	1654 m3			
CY02	Block Y - Reinforcing Steel <i>(Item is similar to CX02 so price on same principles)</i>	94.66 Tn			



**Section: 2000 BUILDING WORK**

A100a	Brickwork, Common	9450 m2		
	<i>(An operation is used to change the measure unit to MB=1000 bricks)</i>			
	1. Supply & Lay Common Brickwork	49 bricks/m2	(0.049 MB/m2)	
	MMBC00 BRICKS, Common, 230 x 100 x 76		1 MB/MB	
	@BLCRW BRICKLAYING CREW, 2B/L + 1LAB		1.3 MB per day	
<hr/>				
A200	Elec power connection	1 LS		
	<i>(Electrical items have been quoted by a subcontractor)</i>			
	\$ELECT SPARKS ELECTRICAL CONTRACTING	(sub)	8000.00 LS	
<hr/>				
A210	Elec ducting, 2 x 4 x 100mm diam	1645.2 lm		
	\$ELECT SPARKS ELECTRICAL CONTRACTING	(sub)	23.68/lm	
<hr/>				
A220	Elec transformers, 150KW	5 EA		
	\$ELECT SPARKS ELECTRICAL CONTRACTING	(sub)	6325.00/EA	
<hr/>				
A900	NOMINATED SUBCONTRACT, Acoustics	1 LS		\$400000

**Section: CONT CONTINGENCY ALLOWANCES**

100	Owner's Contingency Allowance	1 LS		\$100000
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**Section: soh SITE OVERHEADS**

	<i>(Don't enter these items - they will be imported from a library)</i>			
10	Project Manager	45 Wk		
<hr/>				
20	Site Engineer	82 Wk		
<hr/>				
30	Site Administrator	50 Wk		
<hr/>				
40	Establish Offices & Sheds	Allow	LS	\$8500

# Project Scheduling Information

Item/Op	Item or Operation Description		Quantity		Finish Date
	Task No	Calendar No	Start Date	Duration	
Overall Project Timing		S	01FEB98	295 days	22NOV98
B100b/1	Load & Haul - scraper work			190000 m3	
	XX10	1	15FEB98	48 days	27APR98
B100b/2	Load & Haul - truck & loader			84350 m3	
	XX30	1	19MAR98	92 days	27JUL98
A100a/1	Supply & Lay Common Brickwork			463.05 MB	
	XB00	4	14MAY98	105 days	21SEP98
<i>(The following two items have NO operations. See the tutorial for help in defining these activities).</i>					
A210	Elec ducting, 2 x 4 x 100mm diam			1645.2 lm	
	XED4	4	25JUN98	17 days	28SEP98
A900	NOMINATED SUBCONTRACT, Acoustics			1 LS	
	XA00	S	16JUL98	65 days	09NOV98

# ITEM LISTING

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<b>*** ITEM LISTING ***</b>		
Estimate: <b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>		Sorted
<hr/>		
<b>Item Description</b>	<b>Actual Qty</b>	<b>Unit Cost</b>
<hr/>		
Section: <b>1000 CIVIL ENGINEERING WORK</b>		
A100 Tree clearing and disposal	45.5 Ha	950.00
A200 Grubbing to 300mm and disposal	38.7 Ha	4791.99
B100a Topsoil stripping	168500 m2	0.13
B100b Earth excavation	274350 m3	2.53
CX01 Block X - Struct Concrete 30MPa	782 m3	292.98
CX02 Block X - Reinforcing Steel	47.83 Tn	1026.20
CY01 Block Y - Struct Concrete 30MPa	1654 m3	292.98
CY02 Block Y - Reinforcing steel	94.66 Tn	1026.20
<hr/>		
Section: <b>1000</b>	<b>8 Items</b>	<b>\$ 1803705</b>
<hr/>		
Section: <b>2000 BUILDING WORK</b>		
A100a Brickwork, Common	9450 m2	36.49
A200 Elec power connection	1 LS	8000.00
A210 Elec ducting, 2 x 4 x 100mm diam	1645.2 lm	23.68
A220 Elec transformers, 150KW	5 EA	6325.00
A900 NOMINATED SUBCONTRACT, Acoustics	1 LS	380952.38
<hr/>		
Section: <b>2000</b>	<b>5 Items</b>	<b>\$ 804401</b>
<hr/>		
Section: <b>CONT CONTINGENCY ALLOWANCES</b>		
100 Owner's Contingency Allowance	1 LS	100000.00
<hr/>		
Section: <b>CONT</b>	<b>1 Item</b>	<b>\$ 100000</b>
<hr/>		
Section: <b>soh SITE OVERHEADS</b>		
10 Project Manager	45 Wk	1538.46
20 Project Engineer	82 Wk	826.92
30 Project Administrator	50 Wk	884.62
40 Establish Offices & Sheds	1 LS	8500.00
<hr/>		
Section: <b>soh</b>	<b>4 Items</b>	<b>\$ 189769</b>
<hr/>		
<b>JOB TOTALS - 18 Items</b>		<b>\$ 2897875</b>
<hr/>		

### ITEM UNITCOSTS - Civil Work

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*** ITEM UNITCOSTS ***											
Estimate: <b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>										Selected on ?? 1000 ?????	
Item No	Description	Actual Qty	Total	Unassigned	Labour	Own eqpt	Rented eqpt	Material	Subcontract		
No	Est Comp Item Type	Changed Contract Qty	Rate/Amt	Rate/Amt	Rate/Amt	Rate/Amt	Rate/Amt	Rate/Amt	Rate/Amt	Rate/Amt	Rate/Amt
<b>Section: 1000 CIVIL ENGINEERING WORK</b>											
A100	Tree clearing and disposal	45.5 Ha	950.00								950.00
	JWB Yes Normal 28NOV97		43225								43225
A200	Grubbing to 300mm and disposal	38.7 Ha	4791.99		91.99						4700.00
	JWB Yes Normal 28NOV97		185450		3560						181890
B100a	Topsoil stripping	168500 m2	0.13				0.13				
	JWB Yes Normal 28NOV97		21231				21231				
B100b	Earth excavation	274350 m3	2.53		0.15	0.30	1.93	0.15			
	JWB Yes Normal 28NOV97	245000 m3	693872		42181	81050	530006	40635			
CX01	Block X - Struct Concrete 30MPa	782 m3	292.98		128.71			162.27			2.00
	JWB No Normal 28NOV97		229112		100653			126895			1564
CX02	Block X - Reinforcing Steel	47.83 Tn	1026.20					826.20			200.00
	JWB No Normal 28NOV97		49083					39517			9566
CY01	Block Y - Struct Concrete 30MPa	1654 m3	292.98		128.71			162.27			2.00
	JWB No Normal 28NOV97		484592		212889			268395			3308
CY02	Block Y - Reinforcing steel	94.66 Tn	1026.20					826.20			200.00
	JWB No Normal 28NOV97		97140					78208			18932
<b>Section: 1000 8 Items</b>			<b>1803705</b>		<b>359284</b>	<b>81050</b>	<b>551237</b>	<b>553650</b>			<b>258485</b>

### OPERATION UNITCOSTS - Civil Work

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*** OPERATION UNITCOSTS ***											
Estimate: <b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>										Selected on ?? 1000 ?????	
Item	Description	Item Actual Qty	Total	Unassigned	Labour	Own eqpt	Rented eqpt	Material	Subcontract		
Operation Description	Operation Usage Rate	Opersn Qty	Unit Rate	Unit Rate	Unit Rate	Unit Rate	Unit Rate	Unit Rate	Unit Rate	Unit Rate	Unit Rate
<b>Section: 1000 CIVIL ENGINEERING WORK</b>											
A100	Tree clearing and disposal	45.5 Ha	950.00								950.00
			ITEM AMOUNTS \$	43225							43225
A200	Grubbing to 300mm and disposal	38.7 Ha	4791.99		91.99						4700.00
			ITEM AMOUNTS \$	185450		3560					181890
B100a	Topsoil stripping	168500 m2	0.13				0.13				
	Strip to Stockpile (150mm deep)	0.15 m3/m2	25275 m3	0.84				0.84			
			ITEM AMOUNTS \$	21231				21231			
B100b	Earth excavation	274350 m3	2.53								
	Load & Haul - scraper work		190000 m3	0.86		0.22	0.43	0.21			
	Load & Haul - truck & loader		84350 m3	2.60				2.60			
	Spread & compact fill	1 m3/m3	274350 m3	1.13				1.13			
			ITEM AMOUNTS \$	693872		42181	81050	530006	40635		
CX01	Block X - Struct Concrete 30MPa	782 m3	292.98		128.71			162.27			2.00
	Formwork to Structural Concrete	2.4 m2/m3	1876.8 m2	67.64		46.83		20.81			
	Supply & Place Concrete	1 m3/m3	782 m3	130.64		16.32		112.32			
			ITEM AMOUNTS \$	229112		100653		126895			1564
CX02	Block X - Reinforcing Steel	47.83 Tn	1026.20					826.20			200.00
			ITEM AMOUNTS \$	49083				39517			9566
CY01	Block Y - Struct Concrete 30MPa	1654 m3	292.98		128.71			162.27			2.00
	Formwork to Structural Concrete	2.4 m2/m3	3969.6 m2	67.64		46.83		20.81			
	Supply & Place Concrete	1 m3/m3	1654 m3	130.64		16.32		112.32			
			ITEM AMOUNTS \$	484592		212889		268395			3308
CY02	Block Y - Reinforcing steel	94.66 Tn	1026.20					826.20			200.00
			ITEM AMOUNTS \$	97140				78208			18932
<b>Section: 1000 8 Items</b>			<b>1803705</b>		<b>359284</b>	<b>81050</b>	<b>551237</b>	<b>553650</b>			<b>258485</b>

# OPERATION LISTING

Printed 2:37pm 28NOV97		PROBID - ESTIMATING & TENDERING SYSTEM						Page 1		
*** OPERATION LISTING ***										
Estimate: <b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>								Sorted		
Item	Description	Item Actual Qty	Operation Usage Rate	Operns Qty	Costcode	Act No	Changed	Op Unit Cost	Total Cost	
<b>Section: 1000 CIVIL ENGINEERING WORK</b>										
A100	Tree clearing and disposal	45.5 Ha						950.00/Ha	43225	
A200	Grubbing to 300mm and disposal	38.7 Ha						4791.99/Ha	185450	
B100a	Topsoil stripping	168500 m2								
	Strip to Stockpile (150mm deep)	0.15 m3/m2	25275 m3		CX0040		28NOV97	0.84/m3	21231	
								ITEM COST	0.13/m2	21231
B100b	Earth excavation	274350 m3								
	Load & Haul - scraper work		190000 m3		CX0050	XX10	28NOV97	0.86/m3	163866	
	Load & Haul - truck & loader		84350 m3		CX0052	XX30	28NOV97	2.60/m3	219076	
	Spread & compact fill	1 m3/m3	274350 m3		CX0058		28NOV97	1.13/m3	310930	
								ITEM COST	2.53/m3	693872
CX01	Block X - Struct Concrete 30MPa	782 m3								
	Formwork to Structural Concrete	2.4 m2/m3	1876.8 m2		CS0410		28NOV97	67.64/m2	126951	
	Supply & Place Concrete	1 m3/m3	782 m3		CS0504		28NOV97	130.64/m3	102160	
								ITEM COST	292.98/m3	229112
CX02	Block X - Reinforcing Steel	47.83 Tn						1026.20/Tn	49083	
CY01	Block Y - Struct Concrete 30MPa	1654 m3								
	Formwork to Structural Concrete	2.4 m2/m3	3969.6 m2		CS0410		28NOV97	67.64/m2	268514	
	Supply & Place Concrete	1 m3/m3	1654 m3		CS0504		28NOV97	130.64/m3	216079	
								ITEM COST	292.98/m3	484592
CY02	Block Y - Reinforcing steel	94.66 Tn						1026.20/Tn	97140	
<b>Section: 1000 8 Items</b>								<b>1083705</b>		
*****										
<b>Section: 2000 BUILDING WORK</b>										
A100a	Brickwork, Common	9450 m2								
	Supply & Lay Common Brickwork	0.049 MB/m2	463.05 MB		BM1030	XB00	28NOV97	744.77/MB	344865	
								ITEM COST	36.49/m2	344865
A200	Elec power connection	1 LS						8000.00/LS	8000	
A210	Elec ducting, 2 x 4 x 100mm diam	1645.2 Lm						23.68/Lm	38958	
A220	Elec transformers, 150KW	5 EA						6325.00/EA	31625	
A900	NOMINATED SUBCONTRACT, Acoustics	1 LS						380952.00/LS	380952	
<b>Section: 2000 5 Items</b>								<b>804400</b>		
*****										
<b>Section: CONT CONTINGENCY ALLOWANCES</b>										
100	Owner's Contingency Allowance	1 LS						100000.00/LS	100000	
<b>Section: CONT 1 Item</b>								<b>100000</b>		
*****										
<b>Section: soh SITE OVERHEADS</b>										
10	Project Manager	45 Wk						1538.47/Wk	69231	
20	Project Engineer	82 Wk						826.93/Wk	67808	
30	Project Administrator	50 Wk						884.62/Wk	44231	
40	Establish Offices & Sheds	1 LS						8500.00/LS	8500	
<b>Section: soh 4 Items</b>								<b>189770</b>		
<b>JOB TOTALS - 10 Items</b>								<b>2097875</b>		

## OPERATION ANALYSIS - Civil Work

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+++ OPERATION ANALYSIS +++		
Estimate: <b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>		Selected on ?? 1000 ?????
Section: 1000 CIVIL ENGINEERING WORK		
A100 Tree clearing and disposal	45.5 Ha	
\$CL&GB GREENTREE LANDSCAPING PTY LTD Subcontract		
		950.00/Ha 43225
ITEM COST		
A200 Grubbing to 300mm and disposal	38.7 Ha	
\$CL&GB GREENTREE LANDSCAPING PTY LTD Subcontract		
		4700.00/Ha 181890
LH10 LABOUR, Unskilled Class II Labour		200 MH 17.80/MH 3560
ITEM COST		
B100a Topsoil stripping	168500 m2	
Strip to Stockpile (150mm deep)		
[Assume uniform strip of 6" over complete ROW] 150/1000 = 0.15		
ES10 ELEVATING SCRAPER, CAT 623 Rented eqpt		0.15 m3/m2 25275 m3 CX0040 125 m3/HR 202.2 HR 105.00/HR 21231
OPERATION COST		
		0.84/m3 21231
ITEM COST		
B100b Earth excavation	274350 m3	
Load & Haul - scraper work		
@SCSPR SCRAPER SPREAD, D9 + 3xCAT631		190000 m3 CX0050 XX10 1 15FEB98 48 27APR98 431.34 m3/HR 440.49 HR 372.01/HR 163866
3 [Scrapers] @ 18.2' [m3/Load] @ 7.9 [Loads/Hour - haul 600m] = 431.34		
OPERATION COST		
		0.86/m3 163866
Load & Haul - truck & loader		
274350 - 190000 {ALL non-scraper dirt handled by trucks} = 84350		84350 m3 CX0052 XX30 1 19MAR98 92 27JUL98
EL10 WHEELED LOADER, CAT 966 Rented eqpt		90 m3/HR 937.22 HR 95.00/HR 89036
ET10 DUMP TRUCKS, 13 m3 boxes Rented eqpt		24 m3/HR 3514.58 HR 37.00/HR 130040
OPERATION COST		
		2.60/m3 219076
Spread & compact fill		
ED06 DOZER, CAT D6, Operated Rented eqpt		1 m3/m3 274350 m3 CX0058 90 m3/HR 3048.33 HR 97.00/HR 295688
EC60 ROLLER, Towed Sheepsfoot Rented eqpt		4500 m3/WK 60.966666 WK 250.01/WK 15242
OPERATION COST		
		1.13/m3 310930
ITEM COST		
CX01 Block X - Struct Concrete 30MPa	782 m3	
Formwork to Structural Concrete		2.4 m2/m3 1876.8 m2 CS0410
[Typical strip footing cross section is like this		
<div style="display: flex; align-items: center; gap: 20px;"> <div style="border: 1px solid black; width: 100px; height: 100px; position: relative;"> <div style="position: absolute; top: 0; left: 0; width: 100%; height: 100%; border: 1px dashed black;"></div> </div> <div style="text-align: center;"> <p>600</p> <p>833</p> <p>2 x 0.600 / (0.833 x 0.600) [m2/m3] = 2.40</p> </div> <div style="text-align: left;"> <p>Assume just side forms are required.</p> </div> </div>		
MTP020 FORM PLYWOOD, Sheet 1200x2400	Material	0.1041667 Sh/m2 195.5 Sh 135.00/Sh 26393
1 / (1.2 x 2.4 {Sheet size}) / 4 {reuses} @ 120% {wastage} = 0.104166667		
MTF032 FRAMING TIMBER, Oregon	Material	0.0125 m3/m2 23.46 m3 539.98/m3 12668
0.05 {m3/m2} / 4 {reuses} = 0.0125		
LH40 CARPENTERS, Formwork	Labour	2.1 MH/m2 3941.28 MH 22.30/MH 87891
OPERATION COST		
		67.64/m2 126951
Supply & Place Concrete	1 m3/m3	
MCS030 CONCRETE, Class D Cement, 30MPa Material		1.04 m3/m3 813.28 m3 108.00/m3 87834
104% [Wastage allowance for losses during pouring] = 1.04		
LH20 LABOUR, Skilled Class IV	Labour	0.8 MH/m3 625.6 MH 20.40/MH 12762
\$ALLOW \$\$ Undefined SUB/SUPPLIER \$\$ Subcontract		2.00/m3 1564
2.00 [Company standard allowance for small tools, etc.] = 2		
OPERATION COST		
		130.64/m3 102160
ITEM COST		
CX02 Block X - Reinforcing Steel	47.83 Tn	
MAB070 REINFORCING BAR, cut & bent Material		1.02 Tn/Tn 48.7866 Tn 810.00/Tn 39517
102% [Add 2% that must be paid for "rolling margin"] = 1.02		
\$FIXRB TYTALL BROS STEEL FIXERS Subcontract		200.00/Tn 9566
ITEM COST		
		1026.20/Tn 49083

## SUPPLIER LISTING

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*** SUPPLIER LISTING ***								
Estimate: <b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>							Sorted	
Code	Supplier Name	Telephone/Fax	Contact	Quotation Ref	Estimator	Cost Type	Changed	
\$CL&GB	GREENTREE LANDSCAPING PTY LTD 97 Willowtree Boulevard GREENHILLS ESTATE SA 5700	(08).2345.7890 (08).2345.9870	Mr John Birch, Owner	Phone Quote 3/12	JWB	Subcontract	28NOV97	
\$ELECT	SPARKS ELECTRICAL CONTRACTING P.O. Box 220 800a Main Street NEWCASTLE NSW 2488	(049).251.8112	George Brook - Supv	#78-003 Letter	JWB	Subcontract	28NOV97	
Price covers all electrical work. Includes all necessary permits, inspections and final certificates.								
\$FIXRB	TYTALL BROS STEEL FIXERS P.O. Box 875 BAULKHAM HILLS NSW 2099	(02).9957.0055 (02).9957.0056	Jack Tytall	Verbal 11/12/97	JWB	Subcontract	28NOV97	
ACME	ACME EQUIPMENT RENTALS PTY LTD 45 Old Range Road HOPETOWN VIC 3777	(03).65.2244X230	Plant Dispatcher	List less 10%	JWB	Rented eqpt	28NOV97	
Prices are "all-in", i.e., they include Operator, fuel and maintenance. Rates are ACME's list rates at 1 June 1997 less our 10% discount.								
BORAL	BORAL REINFORCEMENT PTY LTD 1321 Northbourne Avenue CANBERRA ACT 2601	(061).987.4567	Shipping Department	Written Quote	JWB	Material	28NOV97	
GENB&T	GENERAL BRICK & TILE PTY LTD 975 St Georges Terrace PERTH WA 6000	Telex: 084321 (07).236.1837		Annual Quotation	JWB	Material	28NOV97	
INTPLT	COMPANY PLANT DEPARTMENT			Internal List	JWB	Own eqpt	1JUN97	
7 Suppliers/Subcontractors								

## RESOURCE LISTING

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*** RESOURCE LISTING ***								
Estimate: <b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>							Sorted	
Code	Resource Description	Unit Cost	Final	Supplier Code and Name		Est	Cost Type	Changed
EC60	ROLLER, Towed Sheepsfoot	250.00/WK	Yes	ACME	ACME EQUIPMENT RENTALS PTY LTD	JWB	Rented eqpt	28NOV97
ED06	DOZER, CAT D6, Operated	97.00/HR	Yes	ACME	ACME EQUIPMENT RENTALS PTY LTD	JWB	Rented eqpt	28NOV97
ED09	BULLDOZER, CAT D9, Weekly Rate	2000.00/WK	Yes	INTPLT	COMPANY PLANT DEPARTMENT	JWB	Own eqpt	28NOV97
EL10	WHEELED LOADER, CAT 966	95.00/HR	Yes	ACME	ACME EQUIPMENT RENTALS PTY LTD	JWB	Rented eqpt	28NOV97
ES10	ELEVATING SCRAPER, CAT 623	105.00/HR	Yes	ACME	ACME EQUIPMENT RENTALS PTY LTD	JWB	Rented eqpt	28NOV97
ES30	SCRAPER, CAT 631, Weekly Rate	2400.00/WK	Yes	INTPLT	COMPANY PLANT DEPARTMENT	JWB	Own eqpt	28NOV97
ET10	DUMP TRUCKS, 13 m3 boxes	37.00/HR	No			JWB	Rented eqpt	28NOV97
LH10	LABOUR, Unskilled Class II	17.80/MH	Yes			JWB	Labour	28NOV97
LH20	LABOUR, Skilled Class IV	20.40/MH	Yes			JWB	Labour	28NOV97
LH30	EQUIPMENT OPERATORS	22.80/MH	Yes			JWB	Labour	28NOV97
LH40	CARPENTERS, Formwork	22.30/MH	Yes			JWB	Labour	28NOV97
LH60	BRICKLAYERS	23.20/MH	Yes			JWB	Labour	28NOV97
MCS030	CONCRETE, Class D Cement, 30MPa	108.00/m3	No			JWB	Material	28NOV97
MFD000	DIESEL FUEL, Supplied to Job	0.45/Li	Yes	INTPLT	COMPANY PLANT DEPARTMENT	JWB	Material	28NOV97
MMBC00	BRICKS, Common, 230 x 100 x 76	325.00/MB	Yes	GENB&T	GENERAL BRICK & TILE PTY LTD	JWB	Material	28NOV97
MRB070	REINFORCING BAR, cut & bent	810.00/Tn	Yes	BORAL	BORAL REINFORCEMENT PTY LTD	JWB	Material	28NOV97
MTF032	FRAMING TIMBER, Oregon	540.00/m3	No			JWB	Material	28NOV97
MTP020	FORM PLYWOOD, Sheet 1200x2400	135.00/Sh	No			JWB	Material	28NOV97
18 Resources								

## SET LISTING

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*** SET LISTING ***								
Estimate: <b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>							Sorted	
Code	Set Description	Elem Usage	Elem Unit Cost	Elem Total Cost	Set Unit Cost	Est	Changed	
@BLCRW	BRICKLAYING CREW, 2B/L + 1LAB							
	LH60 BRICKLAYERS	17 MH @	23.20/MH = \$	394.40				
	LH10 LABOUR, Unskilled Class II	8.5 MH @	17.80/MH = \$	151.30				
					545.70/DY	JWB	28NOV97	
@DOZD9	BULLDOZER, CAT D9, Operated							
	ED09 BULLDOZER, CAT D9, Weekly Rate	0.02 WK @	2000.00/WK = \$	40.00				
	LH30 EQUIPMENT OPERATORS	1.05 MH @	22.80/MH = \$	23.94				
	MFD000 DIESEL FUEL, Supplied to Job	55 Li @	0.45/Li = \$	24.75				
					88.69/HR	JWB	28NOV97	
@SCG31	SCRAPER, CAT 631, Operated							
	ES30 SCRAPER, CAT 631, Weekly Rate	0.02 WK @	2400.00/WK = \$	48.00				
	LH30 EQUIPMENT OPERATORS	1.05 MH @	22.80/MH = \$	23.94				
	MFD000 DIESEL FUEL, Supplied to Job	50 Li @	0.45/Li = \$	22.50				
					94.44/HR	JWB	28NOV97	
@SCSPR	SCRAPER SPREAD, D9 + 3xCAT631							
	@DOZD9 BULLDOZER, CAT D9, Operated	1 HR @	88.69/HR = \$	88.69				
	@SCG31 SCRAPER, CAT 631, Operated	3 HR @	94.44/HR = \$	283.32				
					372.01/HR	JWB	28NOV97	
<b>4 Sets</b>								

## RESOURCE USAGE

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*** RESOURCE USAGE ***								
Estimate: <b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>							Sorted	
Code	Resource Description	Supplier Code	Cost Type	Unit Cost	Final	Total Usage	Total Cost	
EA10	OFFICE, Demountable, 8m	INTPLT	Own eqpt	240.00/Wk	No			
EC60	ROLLER, Towed Sheepsfoot	ACME	Rented eqpt	250.00/WK	Yes	60.966666 WK	15242	
ED06	DOZER, CAT D6, Operated	ACME	Rented eqpt	97.00/HR	Yes	3048.33 HR	295688	
ED09	BULLDOZER, CAT D9, Weekly Rate	INTPLT	Own eqpt	2000.00/WK	Yes	8.8097556 WK	17620	
EL10	WHEELED LOADER, CAT 966	ACME	Rented eqpt	95.00/HR	Yes	937.22 HR	89036	
ES10	ELEVATING SCRAPER, CAT 623	ACME	Rented eqpt	105.00/HR	Yes	202.2 HR	21231	
ES30	SCRAPER, CAT 631, Weekly Rate	INTPLT	Own eqpt	2400.00/WK	Yes	26.429266 WK	63430	
ET10	DUMP TRUCKS, 13 m3 boxes		Rented eqpt	37.00/HR	No	3514.58 HR	130040	
LH10	LABOUR, Unskilled Class II		Labour	17.80/MH	Yes	3227.63 MH	57452	
LH20	LABOUR, Skilled Class IV		Labour	20.40/MH	Yes	1948.8 MH	39756	
LH30	EQUIPMENT OPERATORS		Labour	22.80/MH	Yes	1850.05 MH	42181	
LH40	CARPENTERS, Formwork		Labour	22.30/MH	Yes	12277.44 MH	273787	
LH60	BRICKLAYERS		Labour	23.20/MH	Yes	6055.27 MH	140482	
LS10	PROJECT MANAGER, Annual Cost		Labour	80000.00/Yr	No	0.8653846 Yr	69231	
LS20	PROJECT ENGINEER, Annual Cost		Labour	43000.00/Yr	No	1.5769231 Yr	67800	
LS30	SITE ADMINISTRATOR, Annual Cos		Labour	46000.00/Yr	No	0.9615385 Yr	44231	
LS40	FOREMAN, Annual Cost		Labour	38500.00/Yr	No			
MCS030	CONCRETE, Class D Cement, 30MPa		Material	108.00/m3	No	2533.44 m3	273612	
MFD000	DIESEL FUEL, Supplied to Job	INTPLT	Material	0.45/Li	Yes	90300 Li	40635	
MMBC00	BRICKS, Common, 230 x 100 x 76	GENB&T	Material	325.00/MB	Yes	463.05 MB	150491	
MRB070	REINFORCING BAR, cut & bent	BORAL	Material	810.00/Tn	Yes	145.34 Tn	117725	
MTF032	FRAMING TIMBER, Oregon		Material	540.00/m3	No	73.08 m3	39463	
MTP020	FORM PLYWOOD, Sheet 1200x2400		Material	135.00/Sh	No	609 Sh	82215	
<b>23 Resources Defined</b>						<b>TOTALS</b>	<b>\$ 2071356</b>	



## SET USAGE

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<b>*** SET USAGE ***</b>				
Estimate: <b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>		Sorted		
Code	Set Description	Unit Cost	Total Usage	Total Cost
@BLCRW	BRICKLAYING CREW, 2B/L + 1LAB	545.70/DY	356.19 DY	194374
@DOZD9	BULLDOZER, CAT D9, Operated	88.69/HR	440.49 HR	39067
@SC631	SCRAPER, CAT 631, Operated	94.44/HR	1321.46 HR	124799
@SCSPR	SCRAPER SPREAD, D9 + 3xCAT631	372.01/HR	440.49 HR	163866
<b>4 Sets Defined</b>		<b>TOTALS</b>	<b>\$</b>	<b>522106</b>

# TENDER SUBMISSION

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<b>*** TENDER SUBMISSION ***</b>			
Estimate: <b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>			
=====			
Item Description	Quantity	Unit Rate	Amount
=====			
<b>Section: 1000 CIVIL ENGINEERING WORK</b>			
A100 Tree clearing and disposal	45.5 Ha	1000.00	45500
A200 Grubbing to 300mm and disposal	38.7 Ha	5000.00	193500
B100a Topsoil stripping	168500 m2	0.15	25275
B100b Earth excavation	245000 m3	2.98	730100
CX01 Block X - Struct Concrete 30MPa	782 m3	350.00	273700
CX02 Block X - Reinforcing Steel	47.83 Tn	1200.00	57396
CY01 Block Y - Struct Concrete 30MPa	1654 m3	359.90	595275
CY02 Block Y - Reinforcing steel	94.66 Tn	1200.00	113592
-----			
<b>Section: 1000</b>	<b>8 Items</b>	<b>\$</b>	<b>2034338</b>
*****			
<b>Section: 2000 BUILDING WORK</b>			
A100a Brickwork, Common	9450 m2	44.00	415800
A200 Elec power connection	1 LS	7932.00	7932
A210 Elec ducting, 2 x 4 x 100mm diam	1645.2 lm	25.00	41130
A220 Elec transformers, 150KW	5 EA	7000.00	35000
A900 NOMINATED SUBCONTRACT, Acoustics	1 LS	400000.00	400000
-----			
<b>Section: 2000</b>	<b>5 Items</b>	<b>\$</b>	<b>899862</b>
*****			
<b>Section: CONT CONTINGENCY ALLOWANCES</b>			
100 Owner's Contingency Allowance	1 LS	100000.00	100000
-----			
<b>Section: CONT</b>	<b>1 Item</b>	<b>\$</b>	<b>100000</b>
-----			
<b>JOB TOTALS - 14 Items</b>		<b>\$</b>	<b>3034200</b>
=====			

# TENDER ANALYSIS

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## TENDER ANALYSIS

Estimate: **ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2**

### ANALYSIS BY COST TYPE

Cost Type	Markable Cost	Percent
Labour	\$ 734927	26.27%
Own eqpt	\$ 81050	2.90%
Rented eqpt	\$ 551237	19.70%
Material	\$ 704141	25.17%
Subcontract	\$ 726521	25.97%

**TOTAL COST      \$      2797875      100.00%**

### USER REQUESTED ROUNDING

Round TENDER TOTAL to **Five** significant digits  
 Round UNIT RATES to **Smart** values  
 Round ITEM AMOUNTS to **Dollar**

### MARKUP CALCULATION

Cost Type	Markable Cost	Markup Percent	Markup Amount	Total Amount
OVERALL	\$ 2797875	8 %	\$ 223787	\$ 3021663
TOKEN Items				\$ 100000

**TENDER TOTAL      \$      2797875                      \$      223787      \$      3121663**

### ANALYSIS OF CONTRACT & ACTUAL MARKUP

	Contract Quantities	Actual Quantities	Difference
TOTAL COST	\$ 2823645	\$ 2897875	\$ 74230
TOKEN Items	\$ 100000	\$ 100000	
Markable Cost	\$ 2723645	\$ 2797875	\$ 74230
MARKUP Amount	\$ 210555	\$ 223787	\$ 13232
Percent Markup	7.73%	8.00%	17.83%

**TENDER TOTAL                      \$      3034200                      \$      3121663                      \$      87463**

### SPREAD ANALYSIS BY ITEM TYPE

SPREAD Type	ITEM COSTS	Spread FROM	Spread TO	Percent
MARKUP	\$	\$ 223787		
HIDDEN items	\$ 189769	\$ 189769		100.00%
FIXED spread items	\$ 380952		\$ 19048	5.00%
NORMAL items	\$ 2227154		\$ 394509	17.71%

**TOTALS                                      \$      2797875                                      \$      413557      14.78%**

### WARNING:

- 4 Items NOT final
- Rounding loss \$43
- Some Subcontractors NOT defined
- Some Resource Costs NOT final
- Some NORMAL Items have NEGATIVE spread

### SUPPLIER ORDER - Boral

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<b>*** SUPPLIER ORDERS ***</b>		
Estimate: <b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>		Selected on <b>BORAL</b>
-----		
Purchase Order No: <b>BC/T97/12345/0001</b>		
-----		
BORAL	BORAL REINFORCEMENT PTY LTD 1321 Northbourne Avenue CANBERRA ACT 2601	Telephone Number: (061).987.4567  Contact: Shipping Department
PLEASE SUPPLY:		
Quantity	Description	Unit Cost    Total Cost
-----		
145.34 Tn	REINFORCING BAR, cut & bent	810.00/Tn    117725.40
-----		
<b>TOTAL \$</b>		<b>117725.40</b>
Prepared by: ..S.McAdam..19/1/98..... Approved by: .Alex Smith, 20 Jan 98..		

### SUBCONTRACT ORDER - Sparks Electrical

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<b>*** SUBCONTRACT ORDERS ***</b>		
Estimate: <b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>		Selected on <b>\$ELECT</b>
-----		
Subcontract Order No: <b>BC/T97/12345/0001/SUB</b>		
-----		
\$ELECT	SPARKS ELECTRICAL CONTRACTING P.O. Box 220 800a Main Street NEWCASTLE NSW 2488	Telephone Number: (049).251.8112  Contact: George Brook - Supv Quotation Ref: #78-003 Letter
Gp- Sec -Item	Item Description	Quantity    Unit Rate    Extension
-----		
2000 A200	Elec power connection	1 LS    8000.00/LS    8000.00
2000 A210	Elec ducting, 2 x 4 x 100mm diam	1645.2 Lm    23.68/Lm    38958.34
2000 A220	Elec transformers, 150KW	5 EA    6325.00/EA    31625.00
-----		
<b>SUBCONTRACT TOTAL \$</b>		<b>78583.34</b>
Prepared by: ..S.McAdam..17/1/98..... Approved by: .Alex Smith, 20 Jan 98..		

# ESTIMATE MASTER

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*** ESTIMATE MASTER ***		
Estimate: <b>ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2</b>		
=====		
Department or Project Code: <b>BC</b>	Department: <b>Building &amp; Civil Division</b>	
Estimate number: <b>T97/12345</b>	Approximate Contract Value: \$ <b>3000000.00</b>	
Primary Estimator's Name: <b>John Wilkes Booth</b>		
Owner:	<b>ETTAMOGAH CULTURAL TRUST &amp; BREWING CO</b>	
	P.O. Box 1792A	
	123 Main Street	
	ETTAMOGAH VIC 3888	
	Attention: Mr L D Bronstein	
Tender Submittal time is <b>3:00pm</b> on Mon <b>15DEC97</b>		
Start date Tue <b>3FEB98</b>	Duration <b>295</b> days	Finish date Tue <b>24NOV98</b>
<b>18</b> Items	<b>7</b> Suppliers/Subcontractors	<b>23</b> Resources
		<b>4</b> Sets
Bid deposit \$25,000 bank draft. Liquidated damages \$350 per day. Retention 10% to maximum of \$100,000. 5 year guarantee and performance bond required on sealants. Dame Kiri to be co-opted for the official opening.		

# COSTCODE LISTING

Printed 2:38pm 28NOV97	PROBID - ESTIMATING & TENDERING SYSTEM							Page 1				
*** COSTCODE LISTING ***												
Estimate: ETTAMOGAH OPERA HOUSE EXTENSION, Phase 2							Sorted					
=====												
Code	Cp	Sec	Item	Operation or Item Description	Quantity	Total	Unassigned	Labour	Own eqpt	Rented eqpt	Material	Subcontract
BA0200		2000	A900	BUILDING, Nominated Subcontracts	1 LS	380952						380952
BE0200		2000	A200	BUILDING, Electrical Subcontract	1651.2 ??	78583						78583
BM1030		2000	A100a	BUILDING, Masonry, Brickwork	463.05 MB	344865		194374			158491	
CD0100		1000	A100	CIVIL, Site Clearance	84.2 Ha	228675		3560				225115
CS0100		1000	CX02	CIVIL, Structural, Reinf Steel	142.49 Tn	146223					117725	28498
CS0410		1000	CX01	CIVIL, Structural, Formwork	5846.4 m2	395466		273787			121679	
CS0504		1000	CX01	CIVIL, Structural, Concrete	2436 m3	318238		39755			273611	4872
CX0040		1000	B100a	CIVIL, Excavation, Stripping	25275 m3	21231				21231		
CX0050		1000	B100b	CIVIL, Excavation, Scraper	190000 m3	163866		42181	81050		40635	
CX0052		1000	B100b	CIVIL, Excavation, Loader & Truck	84350 m3	219076				219076		
CX0058		1000	B100b	CIVIL, Spread & compact fill	274350 m3	310930				310930		
ZC0000			CONT 100	CONTINGENCIES, Owner write in	1 LS	100000						100000
soh010	soh		10	SOH, Staff Costs	177 Wk	181270		181270				
soh040	soh		40	SOH, Accommodation Costs	1 LS	8500						8500
JOB TOTALS - 14 Costcodes						2897875		734927	81050	551237	704141	826520
=====												

## Multi-Currency ESTIMATE MASTER

9:12am 28NOV97	PROBID - ESTIMATING & TENDERING SYSTEM	Page 1
<b>*** ESTIMATE MASTER ***</b>		
Estimate: <b>E9823 Kowloon to Tsunwan Pipeline</b>		
=====		
Department or Project Code: <b>ME</b>	Department: <b>Mechanical Engineering</b>	
Base Currency: <b>A\$</b>	Decimal Places: <b>2</b>	
Bid Currency: <b>HK</b>	Decimal Places: <b>1</b>	
Exchange Rate: <b>0.1778157 A\$/HK</b>	Inverse Rate: <b>5.6238 HK/A\$</b>	<b>19NOV97</b>
Estimate Number: <b>017-A0039</b>	Approximate Contract Value: <b>A\$ 21000000.00</b>	
Primary Estimator's Name: <b>Ian John Dunross</b>		
Owner:	<b>Hong Kong Regional Gas Supply Authority</b> <b>23/D Devon House, Taikoo Place</b> <b>979 King's Road, Quarry Bay</b> <b>HONG KONG</b> <b>Contact: Xue Zhi-heng</b>	
Tender Submittal time is <b>4:30pm</b> on Fri <b>27MAR98</b>		
Start Date Mon <b>4MAY98</b>	Duration <b>320</b> days	Finish Date Fri <b>19MAR99</b>
-----		
<b>14</b> Items	<b>8</b> Suppliers/Subcontractors	<b>28</b> Resources <b>1</b> Set
Liquidated damages HK\$5000 per day.		
Retention 10% to maximum of HK\$1,000,000.		

## Multi-Currency CURRENCIES LIST

9:12am 28NOV97	PROBID - ESTIMATING & TENDERING SYSTEM	Page 2			
<b>C U R R E N C I E S</b>					
Estimate: <b>E9823 Kowloon to Tsunwan Pipeline</b>					
=====					
Currency	Symbol	Dec Plcs	Exchange Rate	Inverse Rate	Changed
Japanese Yen	¥	0	0.0116009 A\$/¥	86.2 ¥/A\$	19NOV97
Thai Baht	Bt	1	0.0374392 A\$/Bt	26.71 Bt/A\$	19NOV97
Hong Kong \$	HK	1	0.1851852 A\$/HK	5.40 HK/A\$	16OCT97
Malaysian Rg	Rg	2	0.443 A\$/Rg	2.2573363 Rg/A\$	19NOV97
Indonesian R	Rp	0	0.0004175 A\$/Rp	2395 Rp/A\$	19NOV97
Singapore DL	S\$	2	0.91 A\$/S\$	1.0989011 S\$/A\$	19NOV97
-----					

## Multi-Currency ITEM CURRENCIES

Printed 9:12am 28NOV97		PROBID - ESTIMATING & TENDERING SYSTEM						
		*** ITEM CURRENCIES ***						
Estimate: E9823 Kowloon to Tsunwan Pipeline								
Group: 01 ESTABLISHMENT								
Item Description	Actual Qty	TOTAL COST	EST CURRENCY	Japanese Yen	Thai Baht	Hong Kong \$	Indonesian R	
101 Contractor's Site Facilities	1 It							
102 Engineer's Site Facilities	1 It	30,320	30,320					
107 Provisional Sum - Owner's Signs	1 LS	30,000	30,000					
3 Items		A\$	60,320	60,320				
Group: 01 3 Items		A\$	60,320	60,320				

Printed 9:12am 28NOV97		PROBID - ESTIMATING & TENDERING SYSTEM						
		*** ITEM CURRENCIES ***						
Estimate: E9823 Kowloon to Tsunwan Pipeline								
Group: 02 STRUCTURAL WORK								
Item Description	Actual Qty	TOTAL COST	EST CURRENCY	Japanese Yen	Thai Baht	Hong Kong \$	Indonesian R	
Section: U-12 Nantsai Viaduct								
700 Reinforcing Bar - Grade 410Y	38.6 Tn	50,489		34,942		15,547		
710 Structural Concrete - 30MPa	139.2 m3	102,578	3,000		68,414	31,164		
800 Steel Deck Beams, Type A19	64 ea	615,425						35,915
Section: U-12 3 Items		A\$	768,491	3,000 A\$	34,942 A\$	68,414 A\$	46,711 A\$	35,915
Group: 02 3 Items		A\$	768,491	3,000 A\$	34,942 A\$	68,414 A\$	46,711 A\$	35,915

Printed 9:12am 28NOV97		PROBID - ESTIMATING & TENDERING SYSTEM						
		*** ITEM CURRENCIES ***						
Estimate: E9823 Kowloon to Tsunwan Pipeline								
Group: 04 CAST IRON MJ PRESSURE PIPE								
Item Description	Actual Qty	TOTAL COST	EST CURRENCY	Japanese Yen	Thai Baht	Hong Kong \$	Indonesian R	
Section: A10 Area A10 - Chuen Cheng Street								
1a Supply & Install 150mm Pipe	4,740 LM	260,126	193,713			66,413		
1b Supply & Install 200mm Pipe	2,970 LM	233,943	185,926			48,017		
1c Supply & Install 300mm Pipe	2,265 LM	297,603	244,559			53,044		
2a Supply & Install 300mm PR Valves	17 ea	40,555	29,827			10,729		
Section: A10 4 Items		A\$	832,227	654,024		A\$	178,203	
Group: 04 4 Items		A\$	832,227	654,024		A\$	178,203	

Printed 9:12am 28NOV97		PROBID - ESTIMATING & TENDERING SYSTEM						
		*** ITEM CURRENCIES ***						
Estimate: E9823 Kowloon to Tsunwan Pipeline								
Group: 00 SITE OVERHEADS								
Item Description	Actual Qty	TOTAL COST	EST CURRENCY	Japanese Yen	Thai Baht	Hong Kong \$	Indonesian R	
JOB TOTALS - 14 Items		A\$	2,012,373	1,068,679 A\$	34,942 A\$	68,414 A\$	224,914 A\$	35,915
Exchange Rate		A\$		0.0116009/N	0.0374392/Bt	0.1851852/HK	0.0004175/Rp	
Local Currency				N 3,011,958	Bt 1,827,344	HK 1,214,534	Rp 86,016,000	