# Bidtab IV Estimating & Research


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# Introduction to Bidtab IV Estimating

The Engineer's Estimate documents the amount that a contracting agency considers fair and reasonable and is willing to pay for a project. It is an essential element in the project development process. Early in the planning stages, the estimate is used to establish an appropriate range of funding and to schedule a project's construction. During Design, it is used in numerous reviews for budgetary purposes and to identify alternative solutions to engineering challenges. When a project proceeds to construction, the estimate serves as the benchmark for analyzing bids and is used as a framework to document progress and payments during construction.

Bidtab IV uses the estimate as the foundation for a series of supplemental reports such as the DBE Worksheet, Bid Schedule, Project Agreement Estimate & Coding Backup and the Certified Bid Tabulation.

Bidtab IV provides a convenient means to rapidly construct an Engineer's Estimate using Standard Books of Items and a means to describe the general characteristics of the project. Contracting agencies generally use three basic approaches to estimating: actual cost, historic data, and a combination of historic data and actual cost. Bidtab IV conveniently provides historical data that can be used by an experienced estimator to develop a credible project cost estimate.

Bidtab IV estimating procedures use three Forms:

- The Project Description Form
- The Engineer's Estimate Form
- The Research Historical Bid Prices Form

## *What you should learn in this module*

By the completion of this module you should be able to answer the following questions:

1. Which Form do you use to make a copy of an estimate and it's descriptive elements?
2. Which keystroke will give you additional help on any form?
3. Why must you accurately describe an Estimate?
4. Who can add or modify the Title of a Mode, Region, District or facility?
5. Which Form is used to select the type of Units to develop an Estimate?
6. What is a Standard Pay Item?
7. How is an Estimate Item created from a Standard Pay Item?
8. Why are Standard Pay Items are an important and integral part of Bidtab IV.
9. What is the preferred method to add a Non-Standard Pay Item?
10. How many Sections can you have in an estimate?
11. What is a Formulated Cost?
12. How you change the Construction Engineering, or Indirect Cost Allocation Plan Amount for an estimate section?

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13. What is an Added Cost?
14. In an estimate with multiple sections, how do you reorder the Sections?
15. Explain Rational Equivalents.
16. Is it possible to merge Pay Items into an estimate?
17. How do you copy and Estimate to a spreadsheet?
18. Is it easy or difficult to Research Historical Bid Prices?
19. How do you issue a research query?
20. How is a Research Query constructed?
21. What is a Conformed Item Number And Description?
22. How does Bidtab IV maintain Conformance?
23. Who is responsible for maintaining conformance in the Bidtab IV database?
24. What is a Perspective? How many are there?
25. How do you use a Perspective?
26. What determines the content of a Cost Summary Report?

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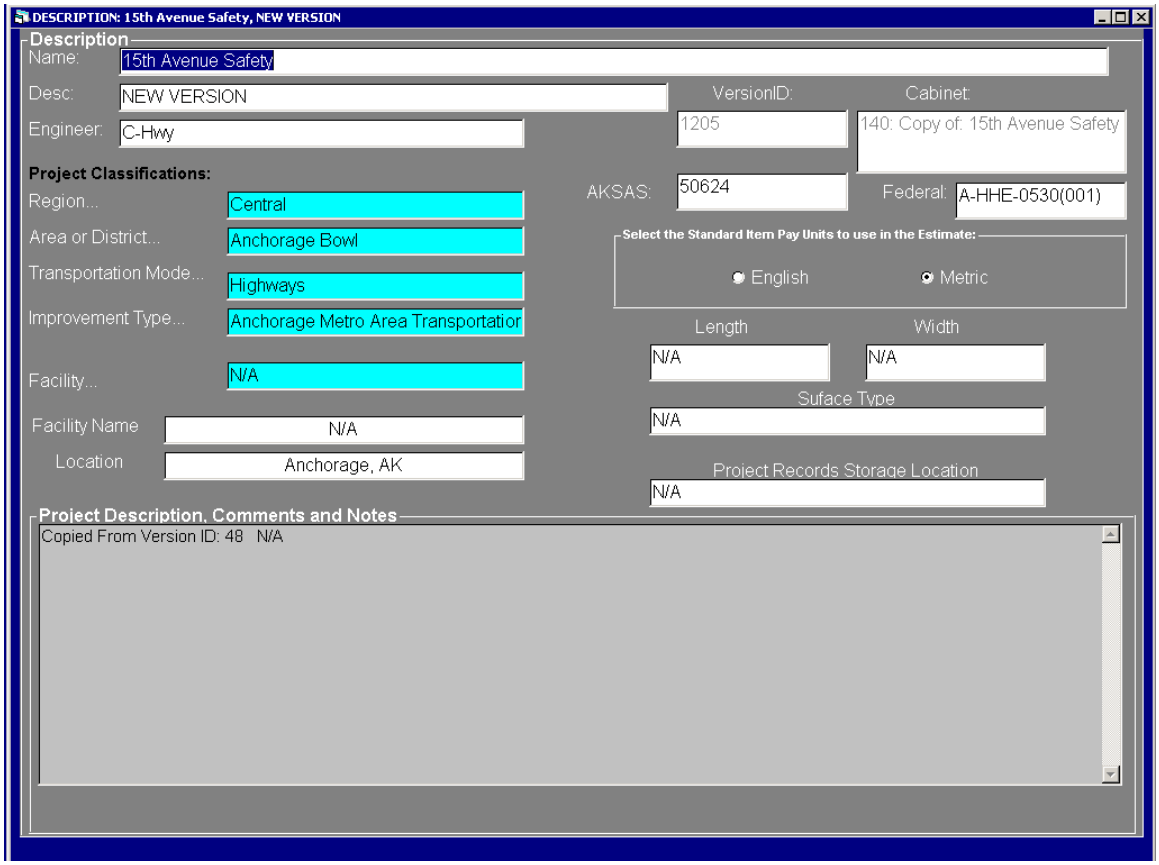
# Describing your Estimate

## *The Project Description Form*

The Project Description Form is used to describe your estimate. Is extremely important that your Project be properly described. The *Research Historical Bid Prices Form* uses the descriptors to filter the Bid tabulation data.




Using the White text boxes, you can type in the name of the project, the description for the Estimate such as “Review PS&E Estimate”, the Name of the design engineer or Estimator, the AKSAS Number, the Federal Number, the length, the width and the surface type and the Records Storage Location.

Clicking on one of the highlighted text boxes will display a dialog Form where you can select the Region, District, Mode, Program-Type or Facility. A User who has the *Change System permission* can edit all of these lists.

This form is also used to select the type of Pay units you want to use for your estimate. Options are provided for either English or Metric units.

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# Preparing an Engineer's Estimate

## *Estimate Features*

### Standard Pay Items (Good)

Bidtab IV provides a convenient means to rapidly construct an estimate using Pay-Items contained in Standard Books. Standard Pay Items are contained in Standard Chapters of Standard Books. The use of Standard Pay Items is encouraged because the bid results retrieved while researching unit prices or printing cost books is dependent on each pay item being associated with a Standard Pay Item. When you use a Standard Item, this association is automatically established and maintenance of the Bidtab IV database is greatly reduced. (More on this subject later)

### Non-Standard Pay Items (Not so Good)

The use of non-standard pay Items is discouraged because it creates items in the database that may not be found when researching historic bid prices or printing cost books. While this situation can be corrected, the use of non-Standard Items increases the amount of maintenance that must be done to the database to keep it operating efficiently.

If at all possible, use a Standard Pay Item that closely describes the actual pay item you want to create and then modify the pay item number and description to exactly what you want. For example, let's say that you want to create an item:

> 301 (2d), Lightly Crushed Base Course, Cubic Yard

Select: 301 (2), Crushed Aggregate Base Course, Cubic Yard, from a Standard Book because it is very similar to the actual items you want to use. Then modify the item number and description accordingly.

### Multiple Estimate Sections

Bidtab IV supports multiple Estimate sections. Each section may have formulated costs such as costs for Construction Engineering and costs for the Indirect Cost Allocation Plan that are independent of the other sections in the Estimate. In addition, each Section may contain its own unique Costs that are not part of the Contract, such as Design during Construction or Utilities during Construction.

Having independent Estimate Sections allows for the use of Additive Alternates or the inclusion of a section for items that do not follow the same rules for formulated costs as that of the *Basic Bid* estimate section. For example, a section might be used to set apart an item for stockpiled-material that will be paid for by Maintenance.

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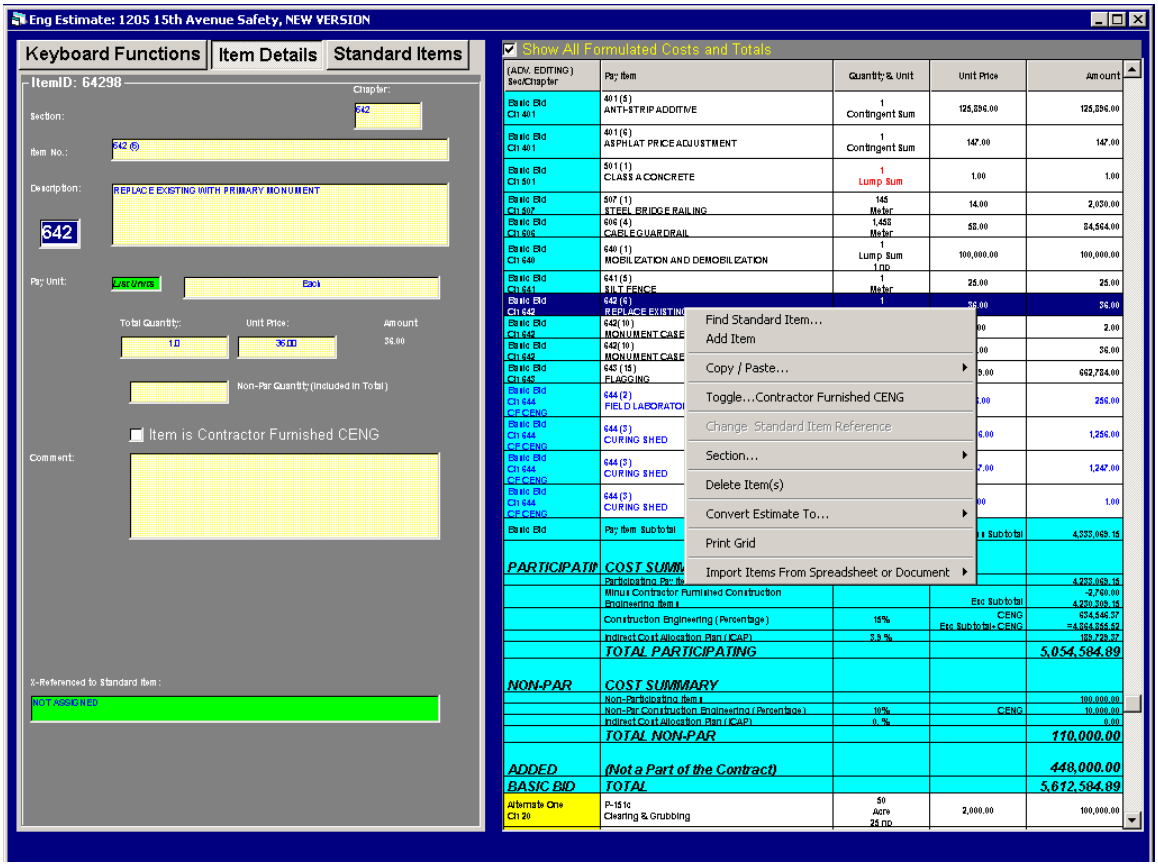
## Lump-Sum Items

Lump-sum Items convey very little information about an item. Bidtab IV seeks to correct this deficiency by providing fields where you can input an alternative pay unit and quantity for all lump sum Items. When researching historical bid prices, the Unit Price for these alternative Pay units and quantities is calculated and displayed, right along with the actual bids for the lump-sum item.

## *The Engineer's Estimate Form*




The Engineer's Estimate Form consists of the estimate grid, located on the right side, and three separate Frames on the left side of the Form that are accessed by clicking one of the tabs at the top; *Keyboard Functions, Item Details or Standard Items*. The Estimate grid has a popup menu that is displayed by Right-Clicking on the grid. The main menu includes a selection under *File* to *Print The Estimate.*

## Item Details Frame

The Item Details Frame, shown above, is used to change the pay item descriptors such as the item number, description, quantity and unit price. A text box is also available to provide the nonparticipating quantity for an item, which is used to prepare the Federal Aid Project Agreement Estimate. If the item you are working on is *Lump Sum then text*

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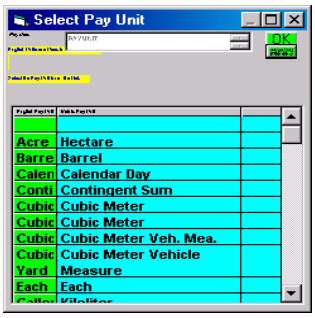
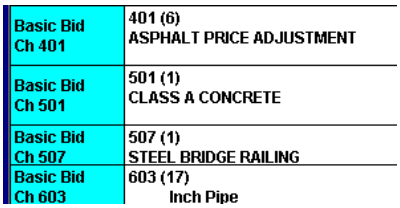
*boxes are provided for you to supply an alternative pay unit and quantity for the item.* The bottom text box on the Frame shows the Standard Item Cross Reference for this particular pay item.



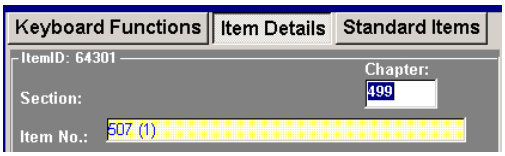

If you click on the "*List Units "* buttons a dialog form will open where you can select Standard Units from a list

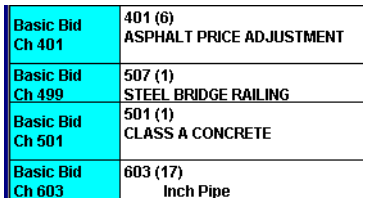
## The Order of Estimate Items (How they are Sorted)

Pay-Items are automatically sorted by ***Chapter and then Pay-Item Number***. The Chapters are determined by the order of the Chapters in the Standard Book you are using. The first item in this example's Chapter Number is displayed on the Estimate Grid as Ch 401 for item 401(6).




So, using this example, if you wanted to have item 507 (1) appear before Item 501 (1), just change the Chapter Number on the Item Details Frame for Item 507 (1) to something less than the Chapter Number for Item 501 (1). Here I changed the Chapter Number to 499. Now 507 (1) appears before 501 (1).

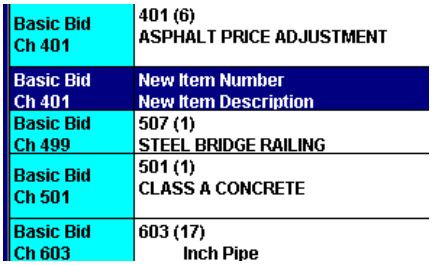



Usually you don't have to concern yourself with this trivia. Using the Standard Book of Items will take care of the sorting for you.

## Inserting a Non-Standard Item

One point worth mentioning is ***how to Place A Non-Standard Item where you Want It.*** Using the example above, let's say you want to add a Non-Standard Item Numbered 507 (2) right ABOVE item 507 (1). The way to do this is first Click on 401 (6) that is in Chapter 401. This "***Sets***" the Chapter number in memory. Then Right click on item 401 (6) and select ***Add Item*** from the ***popup menu***. The new Item you create will be in chapter 401.

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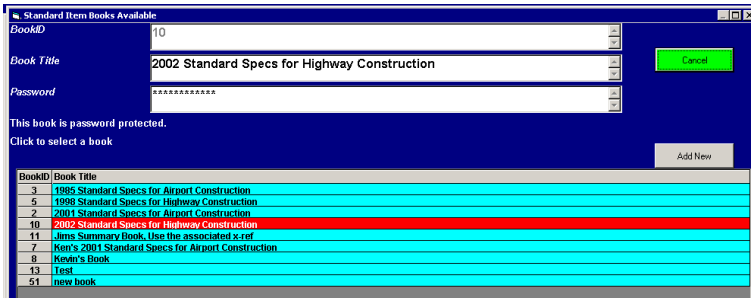
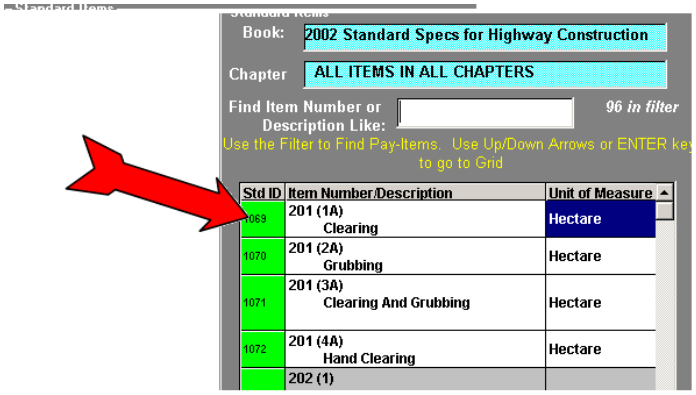
## Standard Items Frame

To change which Standard Book or Standard Chapter is listed, Click on the Blue box highlighting the title.

A Dialog Form will appear where you can make a selection.




Add an item to your estimate by ***Left-clicking (just once) on the Standard Item ID*** in the first column. The Item will be copied to your estimate.

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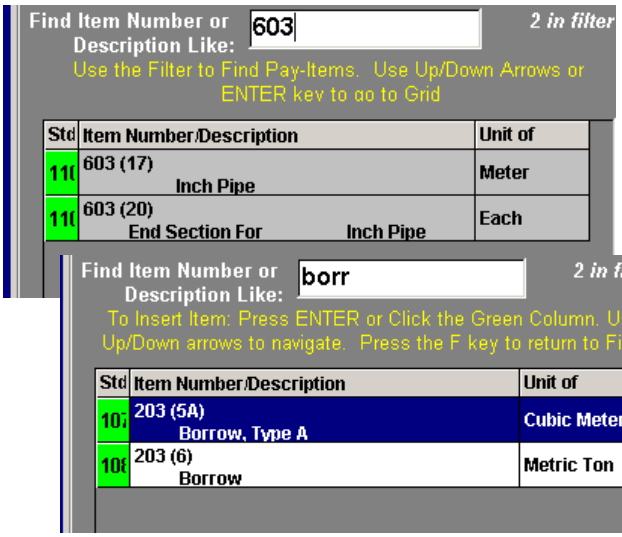
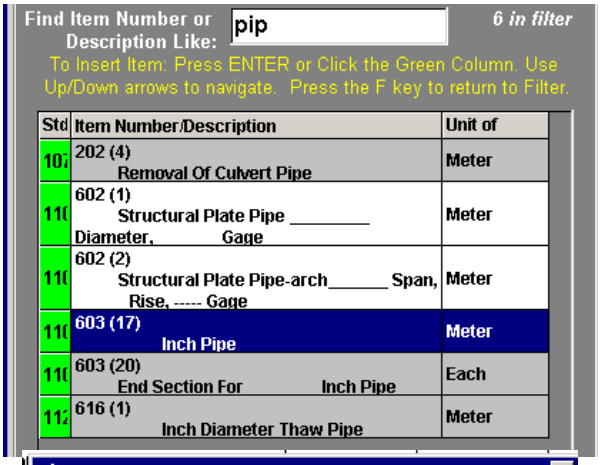
## Rapid Entry of Standard Items

The fastest way to create an estimate is to select ***ALL ITEM IN ALL CHAPTERS*** and use the ***FILTER:***

1. Start by typing in part of an item Number or Description.
2. The list of Items shrinks as the filter is applied.

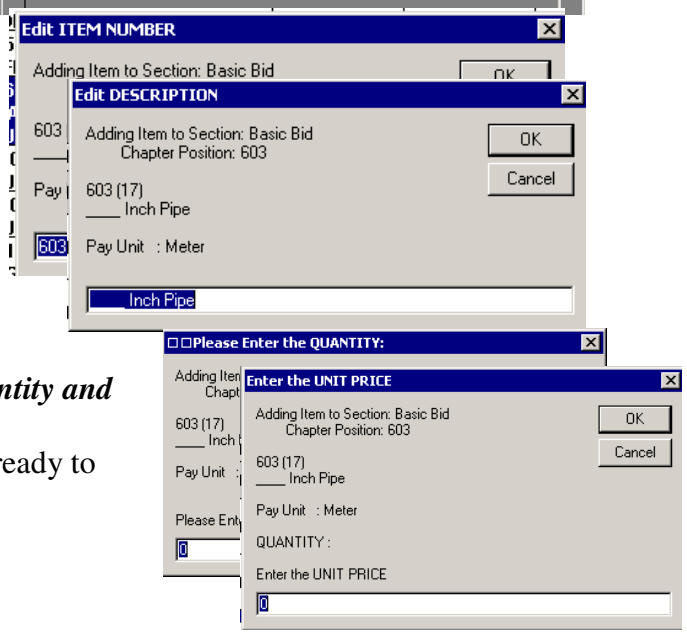



3. When the Item you are looking for appears, press the ENTER KEY or the DOWN-ARROW key to go to the grid.




4. Use the UP/DOWN_ARROW keys to navigate to the Item you want.

5. Now you have a Choice:
   - Press the ***E*** key to open a dialog so you can Modify the ***Item Number and Description*** before entering the ***Quantity and Unit Price.***
   - Or, Press the ***Enter*** key to just enter the ***Quantity and Unit Price.***




When you are done, the cursor is back in the Filter, ready to start again at step (1).

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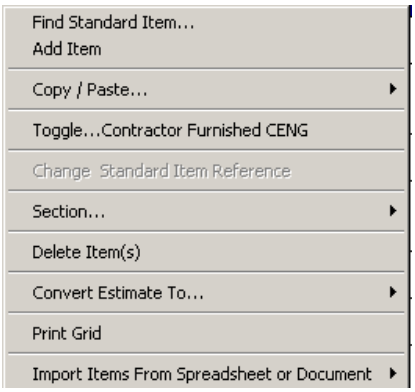
## Estimate Grid Pop-Up Menu Functions




The ***estimate grid popup menu*** is displayed when you Right click anywhere on the grid.

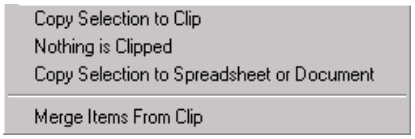
## Add Standard Item ...

This function simply displays the Standard Items Frame.

## Add Item (Non-Standard)

This function will add a non standard item to the Estimate. Please refer to a previous sections titled: *Non-Standard Pay Items (Bad)* and *Inserting a Non-Standard* for further information.

## Copy / Paste...




The Copy/Paste function allows you to:

- Copy Items from one Section into a different Section
- Copy Items from one project estimate to a different project estimate.
- Copy Items to the Windows Clipboard so that you can insert them into a document or spreadsheet.
- Merge items from one section or estimate to another section or different estimate.

To use the Copy/Paste function:

- **Highlight the items** you want to copy on the Estimate by Left-Clicking on an Item and (while holding the Left mouse button down) drag down to the last item you want to copy. (We'll call these the **Source Items**)
- **Right-click inside the area you just highlighted** to bring up the Menu.
- Asher coincident Your Items are now on the Bidtab Clipboard. To verify this, bring up the ***Copy/Paste*** again and you should see something like ***Paste XX Clipped Pay Items to :Some Section***
- To Paste the items into a different Section, First ***Left-Click anywhere in the Target Section*** then bring up the ***Copy/Paste menu*** and Select ***Paste XX Clipped Pay Items to :(Target Section name)***

- ***Merging Pay Items*** follows basically the same routine. But, rather than just copying the Items to the Estimate, an attempt is made to find an item in the Target Section that has ***exactly the*** same Item Number, Description and Pay Unit. If found, the Quantity for the existing pay item is increased by the amount being merged. If the Source Item cannot be found in the Target Section then a New Item is created and added to the Target Section. A message box is displayed to tell you what happened.

- After you have *Clipped* some items, you can transfer them to a spreadsheet or document by selecting ***Copy Selection to Spreadsheet or Document.*** A message will appear that informs you the Items are on your Windows Clipboard. To paste

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then into a spreadsheet or document, open the application, Right-Click on the document and select Paste from its menu. The Fields on the clipboard are tab-delimited.

This is an example copied to MS-Word. (I then added a grid around the items with a couple of menu selections in Word)

| Section Title | Item Number | Item Description | Pay Unit | Quantity |
|---|---|---|---|---|
| Basic Bid | 202 (3) | Removal of Sidewalk | Square Meter | 2,195.3 |
| Basic Bid | 203 (20) | Pole Shoring with Line Truck | Each | 2,000 |
| Basic Bid | 203 (28) | Fuel Contaminated Soil Special Handling | Contingent Sum | All Required |
| Basic Bid | 301 (1) | Crushed Aggregate Base Course | Megagram | 3,285 |
| Basic Bid | 301 (1) | Surface Preparation | Ton | |

And into MS-Excel:

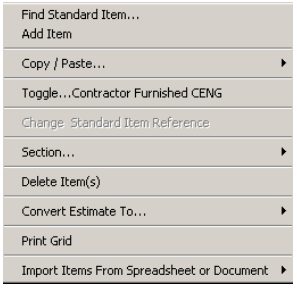
Microsoft Excel - Book1

File Edit View Insert Format Tools Data Quote.com Window Help Acrobat

J22

| | A | B | C | D | E |
|---|---|---|---|---|---|
| 1 | Section Title | Item Numb | Item Description | Pay Unit | Quantity |
| 2 | Basic Bid | 120 (1) | DBE Adjustment | Contingent Sum | All Required |
| 3 | Basic Bid | 202 13) | Removal of Fence | Linear Foot | 1,968.50 |
| 4 | Basic Bid | 201 (3B) | Clearing and Grubbing | Lump Sum | All Required |
| 5 | Basic Bid | 202 (1) | Removal of Structures and Obstructions | Lump Sum | All Required |
| 6 | Basic Bid | 202 (2) | Removal of Pavement | Square Yard | 5.98 |
| 7 | Basic Bid | 202 (3) | Removal of Sidewalk | Square Yard | 2,625.56 |
| 8 | Basic Bid | 203 (20) | Pole Shoring with Line Truck | Each | 2,000 |
| 9 | Basic Bid | 203 (28) | Fuel Contaminated Soil Special Handling | Contingent Sum | All Required |
| 10 | Basic Bid | 301 (1) | Crushed Aggregate Base Course | Ton | 3,621.03 |
| 11 | Basic Bid | 301 (1) | Surface Preparation | Ton | |
| 12 | | | | | |

## Toggle…Contractor Furnished CENG




This Menu selection Toggles the *Item is Contractor Furnish CENG check-box* on the Item Details Frame. If the check box is checked before you select this function, it will be unchecked when you execute the function. (The Reverse is also true)

You can select more than one item at a time to perform this operation:

- Highlight the items you want to copy on the Estimate by Left-Clicking on an Item and (while holding the Left mouse button down) drag down to the last item you want to Toggle.
- Right-click inside the area you just highlighted to bring up the Menu.
- Select *Toggle...Contractor Furnished CENG* from the Menu.

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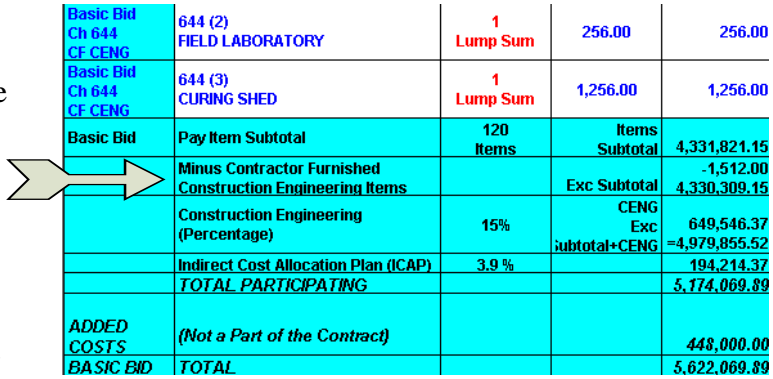
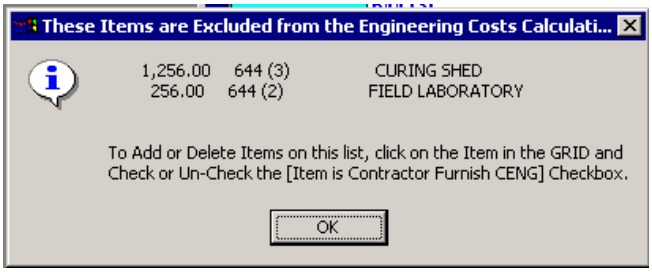
Contractor Furnished CENG items are subtracted out of the Pay Item Total before the Construction Engineering cost is calculated. They are highlighted in Blue on the Estimate Grid and a note is placed in the first column of the grid to indicate the item is In CENG.



| | | | | |
|---|---|---|---|---|
| Basic Bid Ch 644 CF CENG | 644 (2) FIELD LABORATORY | 1 Lump Sum | 256.00 | 256.00 |
| Basic Bid Ch 644 CF CENG | 644 (3) CURING SHED | 1 Lump Sum | 1,256.00 | 1,256.00 |
| Basic Bid | Pay Item Subtotal | 120 Items | Items Subtotal | 4,331,821.15 |
| | Minus Contractor Furnished Construction Engineering Items | | Exc Subtotal | -1,512.00 4,330,309.15 |
| | Construction Engineering (Percentage) | 15% | CENG Exc ubtotal+CENG | 649,546.37 =4,979,855.52 |
| | Indirect Cost Allocation Plan (ICAP) | 3.9 % | | 194,214.37 |
| | *TOTAL PARTICIPATING* | | | *5,174,069.89* |
| *ADDED COSTS* | *(Not a Part of the Contract)* | | | *448,000.00* |
| *BASIC BID* | *TOTAL* | | | *5,622,069.89* |

Also, to see a list of all Items designated as Contractor Furnished CENG you can click on the row that says *Minus Contractor Furnished Construction Engineering Items* (the fifth row down in this example). A message box will display the results for the Section.



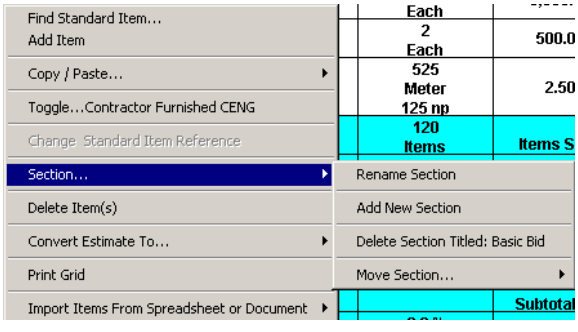

## Change Standard Item Reference

This Function is restricted to only folks who are authorized to *Conform Pay-Items*. Properly cross referenced pay items are an important part of your ability to retrieve unit bid prices while doing research or printing cost-books.

When executed, the Mouse Cursor will change to a hand with a finger pointing. Next, the *Standard Items Frame* will be displayed over the estimate grid. *Y*ou can then select a Standard Item to Cross-Reference. You are allowed to navigate through the Books and Chapters as needed to find the right item. ***You must select an item to exit this function***.

## Section... (Rename, Add New, Delete and Move)

***Be sure to click anywhere in the Section (like Basic Bid, or Alternate One) you are manipulating before using these functions.*** This notifies Bidtab IV which Section you are working in.




These functions allow you to rename a Section, add a new section, delete a section or move a section, up or down, in your estimate. ***Please note that when you delete a section you are also deleting all of the items in that section.***

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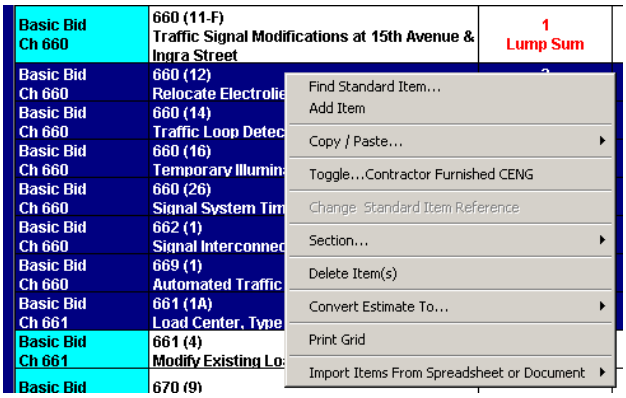
## Delete Item(s)




This menu selection deletes the selected items from the estimate.
To use the Delete Items function:

- Select the items you want to Delete on the Estimate by Left-Clicking on an Item and (while holding the Left mouse button down) drag down to the last item you want to Delete.
- Right-click inside the area you just highlighted to bring up the Menu.
- Select Delete Items from the Menu.

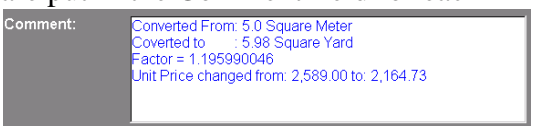
***Deleted Items are not recoverable.***

## Convert Estimate To...(English Units, Metric Units)

This function will attempt to convert your estimate from English to Metric Units or from Metric to English. If you have used a lot of Non-Standard Items, Bidtab has no idea what to Convert-to so don't even attempt it! Also, Bidtab IV does not convert Item Descriptions. Consequently an item named 12 in. Pipe will still be described as 12 in. Pipe when converted to metric units.

*Rational Equivalents*
Do you know the difference between a "soft" metric conversion and "hard" metric conversion? According to the *American Society of Civil Engineers Committee on Metrication*: "Soft" metric conversion is an exact conversion. "Hard" metric conversion is "soft" conversion taken to the next level, that is converted values are rounded, rational equivalents. For example, a "soft" conversion of 6" is 152.4 mm. A "hard" conversion of 6" is 150 mm.

Bidtab IV attempts to provide the "Soft Conversion", you must supply the "Hard Conversion" later. All calculations Bidtab Performs are put in the Comment field for each Item converted. Conversions are permanent, so make a copy of your Project first, just in case you don't like the results. You can always delete the duplicate later if it turns out you do like the results. Converting an estimate Back-and-Forth between Standards can produce some weird results.




## Print Grid

This simply prints the Estimate Grid. Nothing fancy, but useable.

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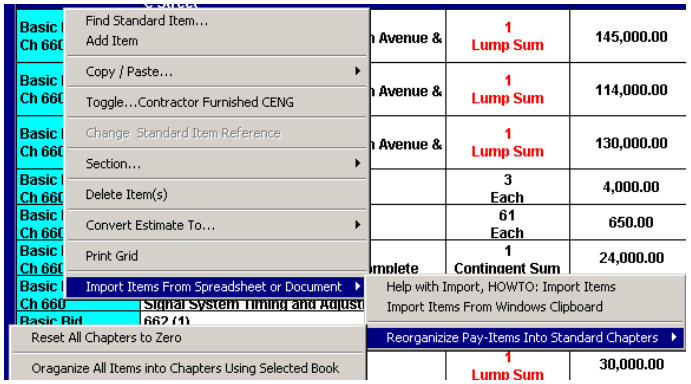
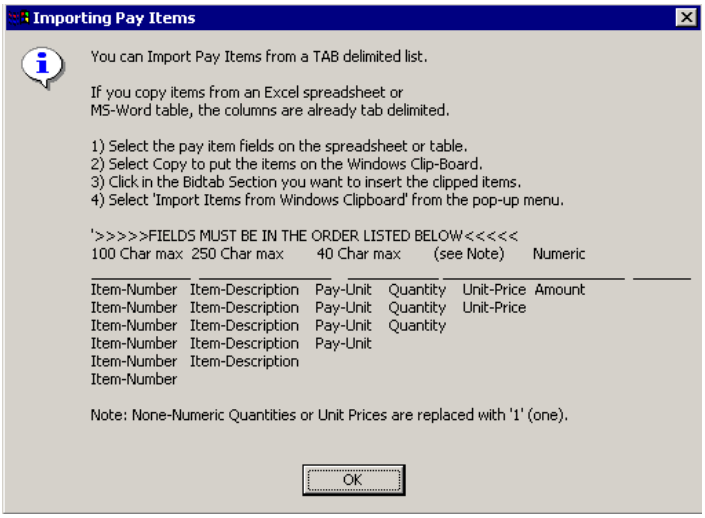
# Import Items from Spreadsheet or Document

This menu selection provides support for Importing Items into your Estimate from a Spreadsheet or other Tab-Delimited Document.

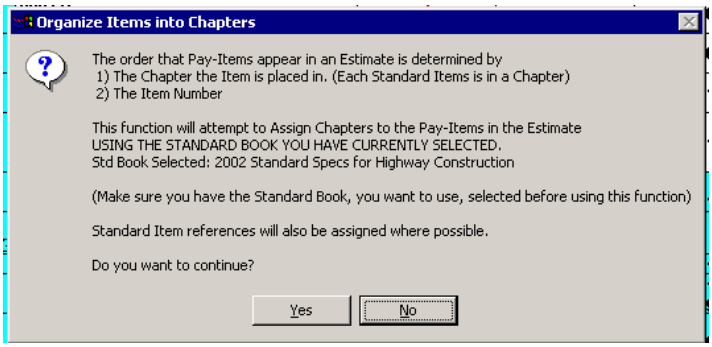



Click on ***Help With Import*** to read up on how to import items.




***Organize All Items into Chapters Using Selected Book.***
When Items are Imported from a Spreadsheet, they do not have Chapter Numbers.

In earlier sections (on page 8) *The Order of Estimate Items (How they are Sorted)* and *Inserting a Non-Standard Item* we discussed how Items are sorted by Chapter and then Item Number. This menu Selection will put your newly imported items into Chapters for you, if it can.

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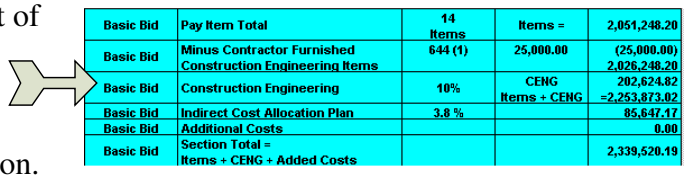
## Formulated Costs and Added Costs

As discussed earlier, Bidtab IV supports multiple Estimate sections. Each section may have *formulated costs* such as costs for Construction Engineering and costs for the Indirect Cost Allocation Plan that are independent of the other sections in the Estimate. In addition, each Section may contain its own unique *Costs that are not part of the Contract*, such as Design during Construction or Utilities during Construction.

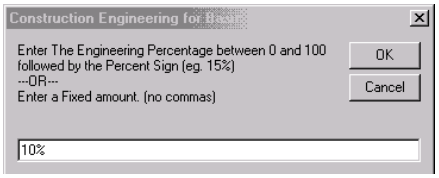


| | | | | |
|---|---|---|---|---|
| Basic Bid | Pay Item Total | 14 Items | Items = | 2,051,248.20 |
| Basic Bid | Minus Contractor Furnished Construction Engineering Items | 644 (1) | 25,000.00 | (25,000.00) 2,026,248.20 |
| Basic Bid | Construction Engineering | 10% | CENG Items + CENG | 202,624.82 =2,253,873.02 |
| Basic Bid | Indirect Cost Allocation Plan | 3.8 % | | 85,647.17 |
| Basic Bid | Additional Costs | | | 0.00 |
| Basic Bid | Section Total = Items + CENG + Added Costs | | | 2,339,520.19 |

***To designate these costs click on the appropriate Section Summary row.***

## Construction Engineering (CENG)

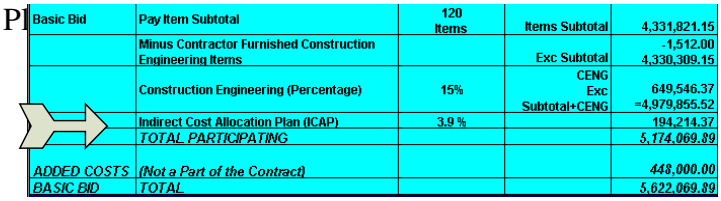
You can assign a Percent-of-Items Engineering Calculation or a Fixed CENG amount. If you choose to calculate CENG based upon a percentage, be sure to put a (%) after the number.




*Contractor Furnished CENG items* are subtracted out of the Pay Item Total before the amount for Construction Engineering is calculated.

## Indirect Cost Allocation Plan (ICAP)

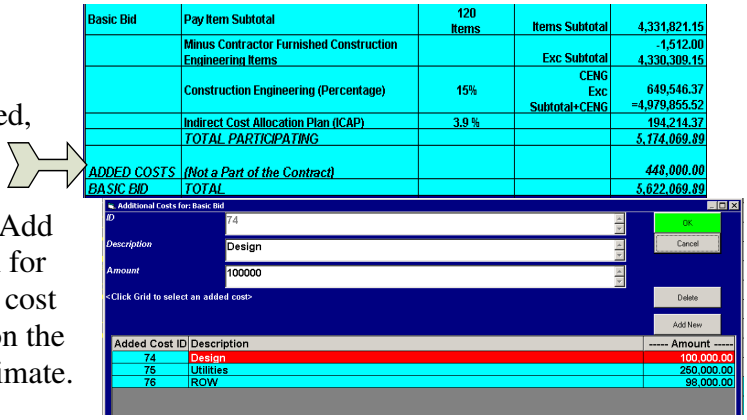
The amount for the Indirect Cost Allocation Pl



| | | | | |
|---|---|---|---|---|
| Basic Bid | Pay Item Subtotal | 120 Items | Items Subtotal | 4,331,821.15 |
| | Minus Contractor Furnished Construction Engineering Items | | Exc Subtotal | -1,512.00 4,330,309.15 |
| | Construction Engineering (Percentage) | 15% | CENG Exc Subtotal+CENG | 649,546.37 =4,979,855.52 |
| | Indirect Cost Allocation Plan (ICAP) | 3.9 % | | 194,214.37 |
| | *TOTAL PARTICIPATING* | | | *5,174,069.89* |
| *ADDED COSTS* | *(Not a Part of the Contract)* | | | *448,000.00* |
| *BASIC BID* | *TOTAL* | | | *5,622,069.89* |

## Additional Costs (not part of the Contract)

When this Section Summary row is selected,



| | | | | |
|---|---|---|---|---|
| Basic Bid | Pay Item Subtotal | 120 Items | Items Subtotal | 4,331,821.15 |
| | Minus Contractor Furnished Construction Engineering Items | | Exc Subtotal | -1,512.00 4,330,309.15 |
| | Construction Engineering (Percentage) | 15% | CENG Exc Subtotal+CENG | 649,546.37 =4,979,855.52 |
| | Indirect Cost Allocation Plan (ICAP) | 3.9 % | | 194,214.37 |
| | *TOTAL PARTICIPATING* | | | *5,174,069.89* |
| *ADDED COSTS* | *(Not a Part of the Contract)* | | | *448,000.00* |
| *BASIC BID* | *TOTAL* | | | *5,622,069.89* |

a dialog form will be displayed. Click the Add New command button. Enter a description for the added cost and the amount. The added cost will then be inserted into the list of costs on the dialog form. Click OK to return to the Estimate.

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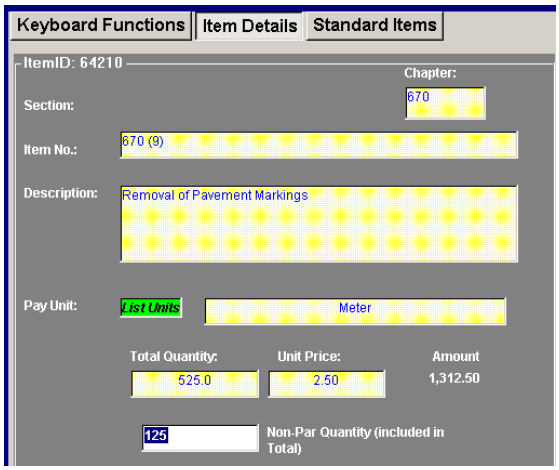
## Non-Participating Items

Non-Participating Items, or parts thereof, are entered in the Item-Details Frame in the text box titled: ***Non-Par Quantity (Included in Total).***




In this example, I have an Item that has a
***Total Quantity = 525*** and a
***Non-Par Quantity = 125***
This means that the
Participating Quantity = ***525-125 = 400***

In other words, The ***Non-par Quantity*** is a part of the ***Total Quantity***. So to designate an Item as being 100% Non-par, simply make the ***Non-Par Quantity = Total Quantity.***

Non- participating Items are displayed On the Estimate Grid as shown here:

| | | | | |
|---|---|---|---|---|
| **Basic Bid Ch 670** | **670 (9) Removal of Pavement Markings** | **525 Meter 125 np** | **2.50** | **1,312.50** |

When a Non-Participating Item is entered into an Estimate, a ***Non-Par Cost Summary*** is automatically added into the Section Summary. It functions the same as the Participating Cost summary, above it. Clicking on one of the rows will initiate a dialog so that you can designate CENG and a separate ICAP for just the Non-Par Items.

Non-Par Sum.

| | | | | |
|---|---|---|---|---|
| Basic Bid | Pay Item Subtotal | 120 Items | Items Subtotal | 4,331,821.15 |
| PARTICIP | COST SUMMARY | | | |
| | Participating Pay Items | | | 4,331,508.65 |
| | Minus Contractor Furnished Construction Engineering Items | | Exc Subtotal | -1,512.00 4,329,996.65 |
| | Construction Engineering (Percentage) | 15% | CENG Exc Subtotal+CENG | 649,499.50 =4,979,496.15 |
| | Indirect Cost Allocation Plan (ICAP) | 3.9 % | | 194,200.35 |
| | TOTAL PARTICIPATING | | | 5,173,696.50 |
| NON-PAR | COST SUMMARY | | | |
| | Non-Participating Items | | | 312.50 |
| | Non-Par Construction Engineering (Percentage) | 10% | CENG | 31.25 |
| | Indirect Cost Allocation Plan (ICAP) | 0. % | | 0.00 |
| | TOTAL NON-PAR | | | 343.75 |
| ADDED COSTS | (Not a Part of the Contract) | | | 448,000.00 |
| BASIC BID | TOTAL | | | 5,622,040.25 |

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# Researching Bid Prices

The ability to actively Research Historical Bid tabulation data is the principle feature of Bidtab IV. Once a project Engineer's Estimate has proceeded through advertisement and award, each bid received for each pay item in the Estimate is permanently stored and archived in the database. Using this data, estimators can refine the next generation of Engineer's Estimates. (The Prime Directive for Bidtab IV, remember?)

Accessing this bid-data using Bidtab IV is very simple. You simply click on an item in your estimate. A query is issued to the database and the results are shown in a list.

Before we move on and discuss the mechanics of the *Research Historical Bid Prices Form* and how simple it is to operate, it is important that you have an understanding of how Queries are constructed and why *Standard Pay Items* are an integral component in every query.

## *Evolution of a Research Query*

Bidtab IV uses Structured Query Language (SQL) to access the Bid tabulation data. SQL is a specialized programming language for sending queries to databases. Most industrial-strength and many smaller database applications can be addressed using SQL. This allows Bidtab IV to communicate with a Microsoft Access database as well as an Oracle database because both use SQL.

Even though SQL is quite clever, it has its limitations, not the least of which is that it cannot read your mind. Yes, its true, *SQL has no psychic powers*. It is only able to fetch records that you explicitly define in a query. For example, you can issue a Query to get all the records where the word *Subbase* is part of the description. Or you could issue a Query to fetch all the records where the item number is *304 (1)*. In each case a number of records would be returned.

If you were to combine the Querys such that you are looking for a description with the word *Subbase* **AND** where the item number is *304 (1)* you may be surprised to find out that only a subset of the records returned from the previous examples are fetched. This is because you're query is far too explicit. Performing the same query with the **OR** operator would actually combine the two lists. As you will see, this little issue is only the tip of the iceberg in figuring out how to query the database to get the items you *Think* you should see.

## Using Conformed Item Numbers and Descriptions

The dBASE program developed by the Northern Region in the 1980's, uses SQL queries to fetch the data to print the extremely popular *Cost Summary Books* that list all of the bid results for particular Pay-Item and Description combinations.

What most people don't know is that ***a lot of time and effort was expended to keep the database cleaned up***. Completely separate fields were inserted into the database to

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provide a place to store *conformed* Pay Item Numbers and Pay Item Descriptions. This was necessary because minor variations in either the pay item number or the description would scatter bid results throughout the book and make it impossible to effectively Query the database with any certainty that you could find the information you were looking for. *Conforming* the items solved this problem, but at great expense.
For example, say an estimator used item

401 (2) AC-5, Asphalt Cement

Which is not exactly the same as:

401 (2) AC-5 Asphalt Cement (No comma)

In order to have this item printout in the same section as the second item shown, somebody would have to change the *conformed description* to *AC-5 Asphalt Cement* (without the non-conforming comma).

OK, about now you're thinking, *"What's the big deal, if we ignored this problem they would still be very close in the Book*?"

Before we hastily pass judgment, let's at least look at a few more real-life examples taken right out of the Bidtab IV database:

| ItemNumber | Description |
|---|---|
| 1000d | Runway Marker Light, L-862 |
| 1000d | Runway Marker Light, L-862 |
| 1000d | New High Intensity Runway Marker Light, L-862 |
| 1000d | New Highway Intensity Runway Marker Light, L-862 |
| 1000d | New HIgh Intensity Runway Marker Light, L-862 |
| 1000d | New High Intensity Runway Marker Light L-862 |
| 1000d | NEW HIGH INTENSITY RUNWAY MARKER LIGHT, L-862 |
| 1000d | INSET RUNWAY THRESHOLD |
| 1000d | New Hi, Int, Runway, Marker Lt. L-862 |
| 1000d | New High Intensity Runway Marker Light, L-862 |
| 1000d | New High Intensity Runway Marker Light, L-862 |
| 1000d | MEDIUM INTENSITY THRESHOLD LIGHT, L-861SE |
| 1000d | NEW HIGH INTENSITY RUNWAY EDGE LIGHT, L-862 |

Each of these descriptions for item 1000d is unique in some way. Although some descriptions appear to be exactly the same, there are trailing spaces that you cannot see that the database knows all about.

In any event it appears that item 1000d describes some kind of a light so somebody can go into the database and type in the *conformed Description* to get them to all show up together in the report. *"Hey there's only 26 instances of item 1000d, No big Deal! You type 15 words a minute. Just fix it!"*

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Now let's take a look at a great example using item 203 (11):

| ItemNumber | Description |
|---|---|
| 203 (11) | Benching In Bedrock |
| 203 (11) | Borrow , Type A |
| 203 (11) | Borrow,  Type A |
| 203 (11) | Borrow, Type D (Approx. 97,000 cu.yds.) |
| 203 (11) | Borrow, Type E |
| 203 (11) | Controlled Blasting |
| 203 (11) | Ditch  Excavation |
| 203 (11) | Ditch  Reconditioning |
| 203 (11) | DITCH CLEANOUT |
| 203 (11) | EMBANKMENT |
| 203 (11) | Excavation and Embankment |
| 203 (11) | Fluff Blasting |
| 203 (11) | Footer Excavation |
| 203 (11) | Foundation Course |
| 203 (11) | GLENN HIGHWAY PIPE LINE CROSSING, REPAIRS |
| 203 (11) | Linear Ditching |
| 203 (11) | Linear Grading |
| 203 (11) | OBLITERATION OF ROADWAY |
| 203 (11) | Rock Bolts |
| 203 (11) | Rock Excavation |
| 203 (11) | Rock Stabilization |
| 203 (11) | Rock Stablization |
| 203 (11) | Shot Rock |
| 203 (11) | SHOT ROCK BORROW |
| 203 (11) | Shot Rock Embankment |
| 203 (11) | Shoulder Excavation |
| 203 (11) | Shoulder Reconstruction |
| 203 (11) | SLOPE GRADING |
| 203 (11) | SMALL CREEK CLEANING |
| 203 (11) | SPREAD EXISTING ROADWAY |
| 203 (11) | SURFACE COURSE |
| 203 (11) | SURFACE MATERIAL |
| 203 (11) | TEMPORARY BUTTRESS ACCESS |
| 203 (11) | UNCLASSIFIED EXCAVATION |
| 203 (11) | Unclassified Excavation (Approx. 5,100 C.Y.) |
| 203 (11) | Unclassified Excavation (Approx.3075 C.Y.) |
| 203 (11) | Waterfall Reconstruction |

*Conforming* this list may take awhile!
It's pretty obvious that the occurrence of a particular Item-Number with a particular Item-Description may be a *completely random event*!

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## Overcoming Conformance Issues

To overcome the limitations and the enormous task of maintaining conformance, Bidtab IV uses numeric References to Standard Pay Items. This seems like a natural thing to do because the word *conformance* itself implies an adherence to a Standard of some sort.

In Bidtab IV each Pay Item is cross-referenced to a unique Standard Pay Item *Identification-Number*.

> *If a **Standard Pay Item** is inserted into an estimate this relationship is automatically established. On the other hand, when a Non-Standard Pay Item is inserted, its relationship to a Standard Pay Item will have to be established later by your Unassigned Items maintenance person.*
> *The Moral to this Story**: USE STANDARD PAY-ITEMS***

***Neither the item number nor Description must match those of the Standard Pay Item***. So, referring to the example for Pay-item 203 (11), your *maintenance person* [1]may choose to Cross Reference all of the Pay-Items with descriptions that are similar to:

- *Borrow, Type X* to Standard Pay Item *203 (5), BORROW, Type A*
- *Shoulder Excavation to* Standard Pay Item *203 (3), Unclassified Excavation*
- *Unclassified Excavation etc.* to Standard Pay Item *203 (3), Unclassified Excavation*

In this manner, each pay item in each estimate is *conformed to a Standard Pay Item*.

When you execute a Research Query for an item in your estimate, (let's call it the Source Item), the query will fetch bid results for all items in the database that have the same reference ID as the Source Item. The query will not even attempt[2] to find words that match the description or matching item-numbers. So, following along with our example, let's say that you insert a new item into your estimate as follows:

Pay Item: *987(2.4.3abc), Big Hole*
That is referenced to Standard Item *203(3), Unclassified Excavation*

When you issue a research query for this item you should expect to see all bid results for all items that have been cross-referenced to Standard Item 203(3) which will include any bids for the 203(11) items we cross-referenced earlier:

| | |
|---|---|
| 203 (3) | Unclassified Excavation in the road |
| 203 (11) | Shoulder Excavation |
| 203 (11) | UNCLASSIFIED EXCAVATION |
| 203 (11) | Unclassified Excavation (Approx. 5,100 C.Y.) |
| 203 (11) | Unclassified Excavation (Approx.3075 C.Y.) |

***As you can see, using Standard Item Cross-references allows the queries to return much better results. In fact it's almost as if have an intelligence of their own!***

---

[1] Only Users who are authorized to *Cross Reference Unassigned Items* can do this work. Bidtab IV has several automated tools to efficiently do this work but they are not discussed in this module.

[2] Unless of course the Pay-item has not been cross-referenced. Then Query will attempt to find exact matches for the Item-Number AND Description, which can get very frustrating.

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## Perspectives

A Pay-Item can only be referenced to one Standard Pay Item. This would not present a problem if there were only one Book of Standard Items. Unfortunately there are many Standard Books with pay-items that describe very similar work. To overcome this situation Bidtab IV provides a means to link Standard Pay Items together using what is referred to as a *Perspective*[3].

*According to the dictionary, a Perspective is the relationship of aspects of a subject to each other and to a whole: a perspective of history; a need to view the problem in the proper perspective. b. Subjective evaluation of relative significance; a point of view: the perspective of the displaced homemaker. c. The ability to perceive things in their actual interrelations or comparative importance: tried to keep my perspective throughout the crisis.*

In Bidtab a Perspective defines a relationship between Standard Items. The need for a Perspective is brought about by the fact that each Pay-Item in each estimate can only be associated with a single Standard Item even though there may be many Standard Items in other books that describe similar work. To overcome this limitation and broaden your Research Query Results you can define a Perspective that will link similar Standard Items together.

To further your understanding, consider the following simple example:

- We have three similar Standard Items in three different Standard Books: One, Two and Three. Their Descriptions are "*Base Course*", "*Aggregate Base Course*" and "*Surfacing, Base Course*"

- A *Perspective* has been created that Links these Standard Items together.

Say we insert a Pay Item that is cross-referenced to Standard Item "*Base Course*" in Book One. When we issue a research Query we can expect the following results:

- *Without Using the Perspective*: Only bids from Projects 11, 12 and 13 are displayed.

- *Using The Perspective*: Bids from all listed projects are displayed because the Perspective ties them together.

| **Book One** | **Book Two** | **Book Three** |
|---|---|---|
| *Base Course* | *Aggregate Base Course* | *Surfacing, Base Course* |
| Project 11 | Project 21 | Project 33 |
| Project 12 | Project 22 | Project 34 |
| Project 13 | | Project 35 |
| | | Project 36 |
| | | Project 36 |
| | | Project 37 |

[3] Users who have the *Cross-Reference Standard Items* permission can create perspectives. Everyone may use them. Bidtab IV has several automated tools to efficiently create a *Perspective* but they are not discussed in this module.

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So, what happens if we decide to use a *Non-Standard Item* named "*Base Course*" in our estimate?
When we execute the Research Query:

- The database tries to find exact matches to the item-number and item Description. If you're lucky, you will get the results for Projects 11, 12 and 13.
- If you put an extra space in between the words "Base" and "Course", or have an extra space after "Course", which is really hard to detect, then nothing will be found.

***The Moral to this story: USE STANDARD ITEMS!***

Perspectives are of very powerful feature in Bidtab IV. There is no practical limitation on how many Perspectives you create. Here are a few ideas:

- Create a *Perspective* that links only Airport pay-items. The pay items in the New Standard Specifications For Airport Construction are radically different from the old Standard Specifications Book yet you still manage to get them built using the same old stuff you always used. Using a Perspective will allow you to retain the valuable bid information from the old book while using the new spec book.

- Create another that is for only Highways items.
- Create a broad perspective that links all similar Items in all books together.
- Create a really handy Cost Summary Book
  1. First, create a Summary Book that contains Items with really broad descriptions like: *Asphalt Products, Crushed Aggregates, Culvert.*
  2. Then create a *Perspective* that links standard-items from all of your real books to the Summary Books Items.

**How you view the data all depends on *your perspective*[4]!**

[4] Users who have the *Cross-Reference Standard Items* permission can create perspectives. Everyone may use them. Bidtab IV has several automated tools to efficiently create a *Perspective* but they are not discussed in this module

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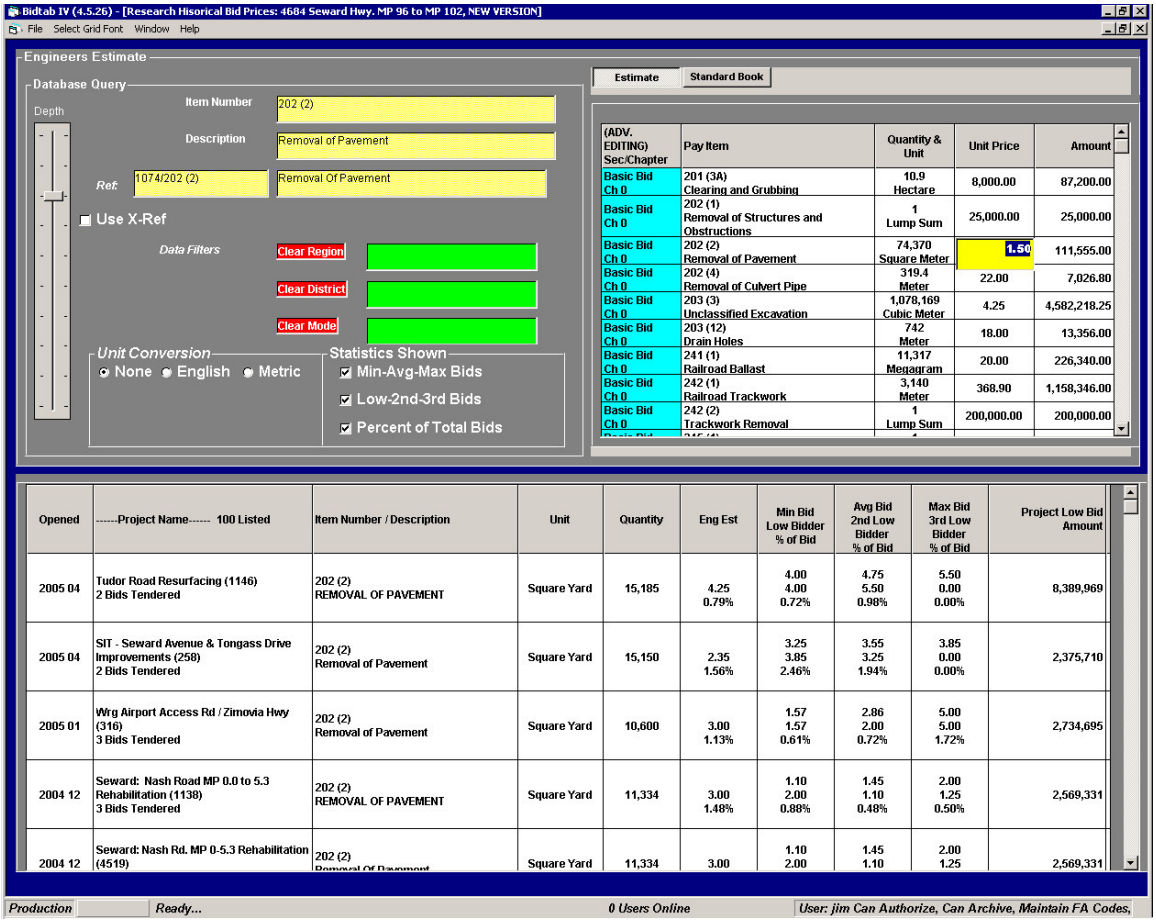
## *Research Historical Bid Prices Form*




The Research Historical Bid Prices Form consists of three primary Frames. The *Database Query Frame* where filters are set, the *Estimate/Standard Book Frame* where Items are selected to Research, and the *Query Results Frame* that displays the results.

The typical routine for doing research is really easy to use:

- Set the Query Filters using The Database Query Frame.
- Left-Click on an Item either in the Estimate Frame or the Standard Items Frame.
- Review or Print the Results displayed or Display and Print the underlying Bid tabulation for a specific project.

- While using the Estimate Frame you can Modify the Pay Item's unit price using the Yellow Text box displayed in the Unit Price Cell.
- While using the Standard Book Frame you can also Print A Bid Item Summary Report for either the Whole Book or Individual Chapters in a Book.
- Authorized Users will also have the ability to access the MAINTAIN: Unassigned Pay Items Form or the MAINTAIN: Standard Item Cross References Form from the Cross-Reference menu selection on the Main Menu.

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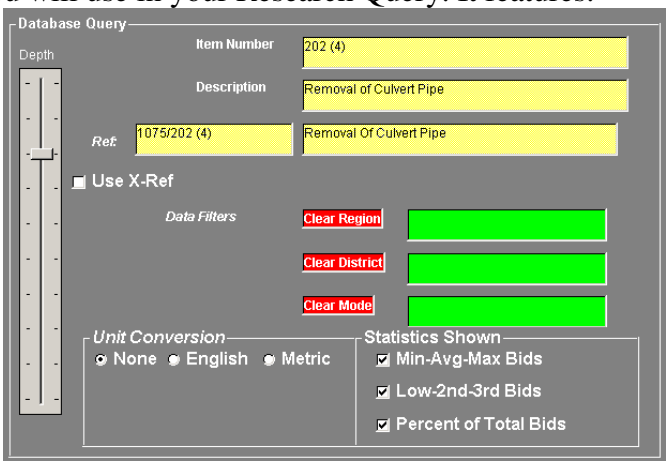
## Database Query Frame

This frame is used to set filters that you will use in your Research Query. It features:




- A ***Slider*** that controls how deep to go into the archived bids to find items matching the query. If the Slider is moved to the Top, results will be displayed for the last two years bid openings. If moved to the Bottom you will see results back to the earliest bid opening.
- ***Yellow Text Fields***, which describe the pay item, you are researching. These are labeled Item Number, Description and Ref. ***You cannot type anything into these fields***. They are used to display the Item Information you selected from the Estimate Frame or the Standard Items Frame.

- ***A Use X-Ref Checkbox*** (this means you want to use a pre-defined Perspective) that is used to display the Red text Field next to it where you can select a ***Perspective*** to broaden the search query. Once the Perspective is selected you can turn it on or off using the checkbox.
- ***Data Filters (highlighted in Green***) that allow you to limit the Results to a specific Region, District or Mode. Clicking on the Red label next to these fields will reset the filter element and broaden the query results.
- ***Unit Conversion Options*** which will convert the Results to all English or Metric, if you prefer. All conversions are *Soft* (see page 14).
- ***Statistics Shown Options*** where you can select what is shown on the Results Grid

## Query Results Grid

This frame displays the results of your Research query. When a query is first executed the results are sorted by Bid Opening date in descending order, with a latest bid results

| Opened | ------Project Name------ 123 Listed | Item Number / Description | Unit | Quantity | Eng Est | Min Bid Low Bidder % of Bid | Avg Bid 2nd Low Bidder % of Bid | Max Bid 3rd Low Bidder % of Bid | Low Bid Amount |
|---|---|---|---|---|---|---|---|---|---|
| 2002 09 | 111-Seward Hwy. MP 96 to MP 102<br>3 Bids Tendered | 203(3)<br>Unclassified Excavation | Cubic Yard (Cubic Meter) | ,410,191.73 | 3.25<br>33.00% | 6.12<br>6.12<br>45.55% | 6.91<br>6.58<br>46.91% | 8.03<br>8.03<br>50.26% | 18,937,482.50 |
| 2002 08 | 110-Chuathbaluk Airport<br>3 Bids Tendered | P-152a X-Ref<br>Unclassified Excavation | Cubic Yard | 20,000 | 6.00<br>1.93% | 6.00<br>8.00<br>3.50% | 8.00<br>10.00<br>4.21% | 10.00<br>6.00<br>2.51% | 4,577,100.00 |

shown first. You can sort each column by clicking on a column heading.
Right click on any row in the grid to display a popup menu. you can immediately open up the Bid tabulation for the selected project using The *Show Bid Tabulation For This Project* menu selection. You can also *Print The Grid* or the Bid tabulation.

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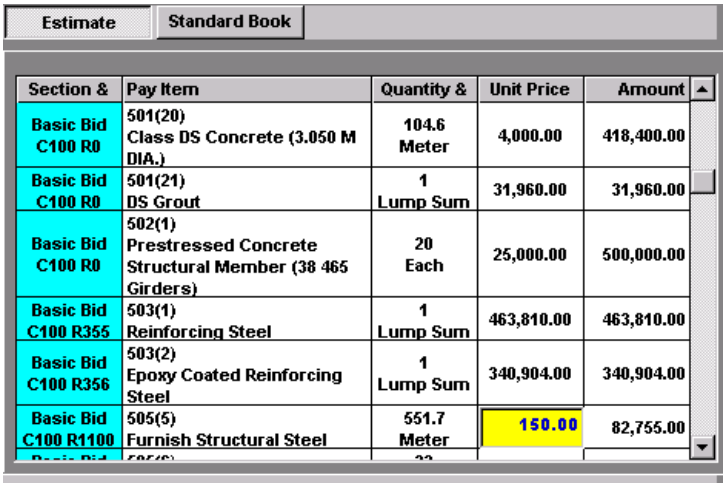
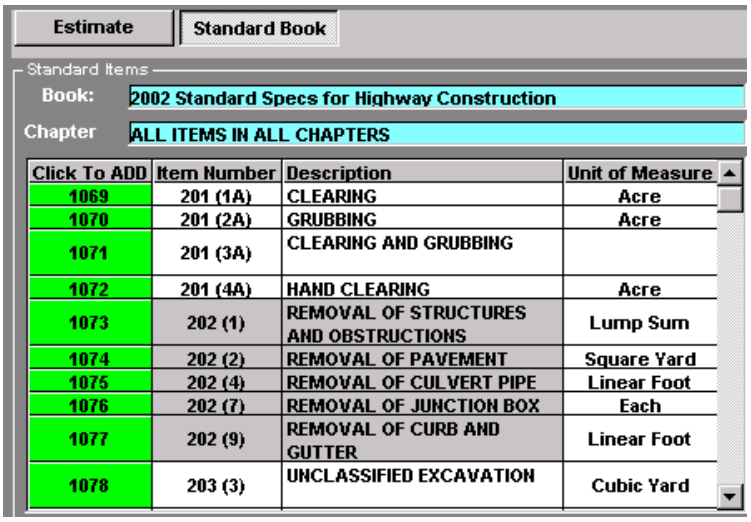
## *Estimate/Standard Book Frame*

Using your Engineer' Estimate:

- Select an Item to Research by Clicking on any Pay Item in the list. The Query is Immediately Executed and the Results are displayed
- Change the Unit Price for a Pay Item Using the Yellow Text Box.




Switch to the *Standard Book Frame* and select a Standard Book. Once again you can select any item on the list by clicking on it. A Query is immediately executed and the results are displayed.

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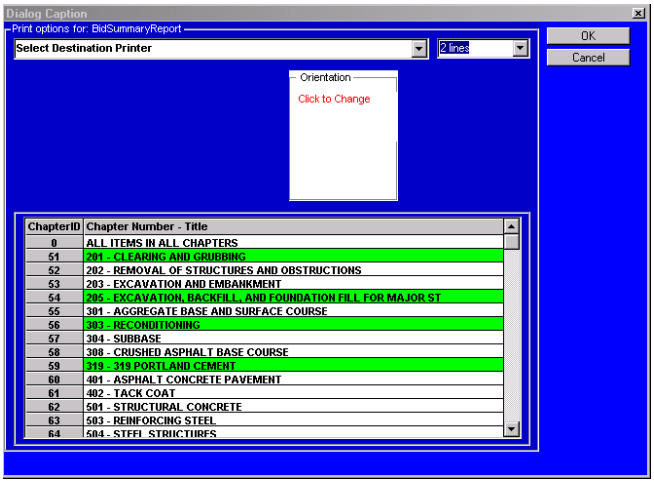
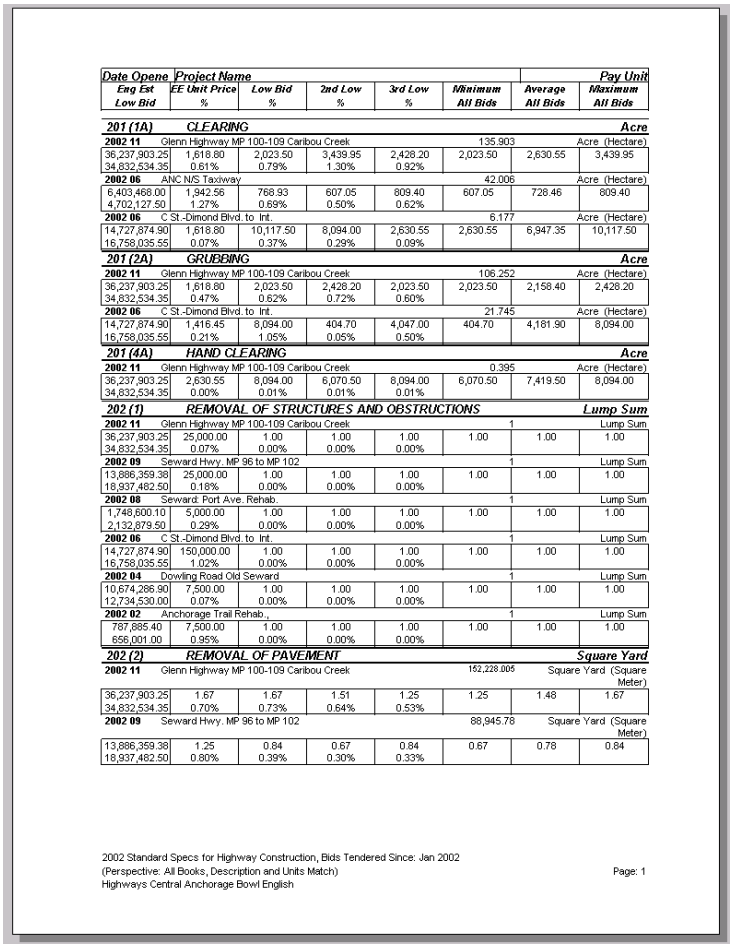
# Print a Cost Summary Report

You can also *Print A Cost Summary Report* for either the whole Book or Individual Chapters. From the Main Menu, Select *File-Print Bid Item Summary Report for: (your book)* and a dialog form will be displayed. Select which Chapters you want to print by clicking on them. Click OK to produce the report.

*The report generated uses all of the Filters or Perspective you may have set. They are identified in the Page-footer.*



| Date Opene | Project Name | | | | | | Pay Unit |
|---|---|---|---|---|---|---|---|
| Eng Est Low Bid | EE Unit Price % | Low Bid % | 2nd Low % | 3rd Low % | Minimum All Bids | Average All Bids | Maximum All Bids |
| **201 (1A)** | **CLEARING** | | | | | | **Acre** |
| **2002 11** | Glenn Highway MP 100-109 Caribou Creek | | | | 135.903 | | Acre (Hectare) |
| 36,237,903.25 | 1,618.80 | 2,023.50 | 3,439.95 | 2,428.20 | 2,023.50 | 2,630.55 | 3,439.95 |
| 34,832,534.35 | 0.61% | 0.79% | 1.30% | 0.92% | | | |
| **2002 06** | ANC N/S Taxiway | | | | 42.006 | | Acre (Hectare) |
| 6,403,468.00 | 1,942.56 | 768.93 | 607.05 | 809.40 | 607.05 | 728.46 | 809.40 |
| 4,702,127.50 | 1.27% | 0.69% | 0.50% | 0.62% | | | |
| **2002 06** | C St.-Dimond Blvd. to Int. | | | | 6.177 | | Acre (Hectare) |
| 14,727,874.90 | 1,618.80 | 10,117.50 | 8,094.00 | 2,630.55 | 2,630.55 | 6,947.35 | 10,117.50 |
| 16,758,035.55 | 0.07% | 0.37% | 0.29% | 0.09% | | | |
| **201 (2A)** | **GRUBBING** | | | | | | **Acre** |
| **2002 11** | Glenn Highway MP 100-109 Caribou Creek | | | | 106.252 | | Acre (Hectare) |
| 36,237,903.25 | 1,618.80 | 2,023.50 | 2,428.20 | 2,023.50 | 2,023.50 | 2,158.40 | 2,428.20 |
| 34,832,534.35 | 0.47% | 0.62% | 0.72% | 0.60% | | | |
| **2002 06** | C St.-Dimond Blvd. to Int. | | | | 21.745 | | Acre (Hectare) |
| 14,727,874.90 | 1,416.45 | 8,094.00 | 404.70 | 4,047.00 | 404.70 | 4,181.90 | 8,094.00 |
| 16,758,035.55 | 0.21% | 1.05% | 0.05% | 0.50% | | | |
| **201 (4A)** | **HAND CLEARING** | | | | | | **Acre** |
| **2002 11** | Glenn Highway MP 100-109 Caribou Creek | | | | 0.395 | | Acre (Hectare) |
| 36,237,903.25 | 2,630.55 | 8,094.00 | 6,070.50 | 8,094.00 | 6,070.50 | 7,419.50 | 8,094.00 |
| 34,832,534.35 | 0.00% | 0.01% | 0.01% | 0.01% | | | |
| **202 (1)** | **REMOVAL OF STRUCTURES AND OBSTRUCTIONS** | | | | | | **Lump Sum** |
| **2002 11** | Glenn Highway MP 100-109 Caribou Creek | | | | 1 | | Lump Sum |
| 36,237,903.25 | 25,000.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 34,832,534.35 | 0.07% | 0.00% | 0.00% | 0.00% | | | |
| **2002 09** | Seward Hwy. MP 96 to MP 102 | | | | 1 | | Lump Sum |
| 13,886,359.38 | 25,000.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 18,937,482.50 | 0.18% | 0.00% | 0.00% | 0.00% | | | |
| **2002 08** | Seward: Port Ave. Rehab. | | | | 1 | | Lump Sum |
| 1,748,600.10 | 5,000.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 2,132,879.50 | 0.29% | 0.00% | 0.00% | 0.00% | | | |
| **2002 06** | C St.-Dimond Blvd. to Int. | | | | 1 | | Lump Sum |
| 14,727,874.90 | 150,000.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 16,758,035.55 | 1.02% | 0.00% | 0.00% | 0.00% | | | |
| **2002 04** | Dowling Road Old Seward | | | | 1 | | Lump Sum |
| 10,674,286.90 | 7,500.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 12,734,530.00 | 0.07% | 0.00% | 0.00% | 0.00% | | | |
| **2002 02** | Anchorage Trail Rehab., | | | | 1 | | Lump Sum |
| 767,885.40 | 7,500.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| 656,001.00 | 0.95% | 0.00% | 0.00% | 0.00% | | | |
| **202 (2)** | **REMOVAL OF PAVEMENT** | | | | | | **Square Yard** |
| **2002 11** | Glenn Highway MP 100-109 Caribou Creek | | | | 152,228.005 | | Square Yard (Square Meter) |
| 36,237,903.25 | 1.67 | 1.67 | 1.51 | 1.25 | 1.25 | 1.48 | 1.67 |
| 34,832,534.35 | 0.70% | 0.73% | 0.64% | 0.53% | | | |
| **2002 09** | Seward Hwy. MP 96 to MP 102 | | | | 88,945.78 | | Square Yard (Square Meter) |
| 13,886,359.38 | 1.25 | 0.84 | 0.67 | 0.84 | 0.67 | 0.78 | 0.84 |
| 18,937,482.50 | 0.80% | 0.39% | 0.30% | 0.33% | | | |

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