State of New Jersey
Department of Transportation

Construction Cost Estimating Guidelines

Superseded

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Prepared by

Trns•port Support Group

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1. Introduction

The Trns•port Cost Estimation System (CES®) is part of AASHTO's Trns•port suite of applications and is NJDOT's primary tool for construction cost estimation. CES provides a full range of cost estimating capabilities at any given engineering phase from conceptual estimation to the final engineer's estimate required for award approval. It may be used to produce long-range and detailed estimates, using cost-based and bid-based pricing methods. The long-range estimate includes the estimate prepared for the Division of Project Planning and Development (DPPD), as well as the Preliminary Design Submission. The detailed estimate begins at the point where item level information is added to the estimate. It is also referred to as the Engineer's Estimate or the Final Design Submission. Use of CES is part of an agency initiative to produce more accurate and consistent cost estimates earlier in the engineering phase.

For Use by the Designer's Cost Estimators in developing Construction Cost Estimates for NJDOT Capital Program Projects at Preliminary Engineering (PD). PD estimates are based on the project's type, length, pavement type, and types of bridges, and are used for the 5-year Program which involve the Metropolitan Planning Organizations, and the Transportation Improvement Program. The Cost Estimating Unit has been placed outside of the rest of the production units in order to provide independent estimates used in the financial programming.

This guide details the functionality of CES and how to use the application for creating long-range estimates and detailed estimates according to NJDOT policy.

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1.1 Support

For issues or questions related to CES, please call NJDOT's Trns•port helpdesk at 609-530-3582 or email trnsport.support@dot.state.nj.us

1.2 Submittal

The PD submission shall include preliminary plans, a preliminary design cost estimate, and a transmittal letter with a date for review completion.

1.3 PD Preparation

A. Determine which of the thirteen classifications (see Appendix C) most nearly represents the type of work to be performed.

B. Use the forms for that classification to estimate construction costs.

C. For projects that do not fit into any of the seven classifications, the best results are usually obtained by searching out a previously completed project of a similar nature and adjusting it's cost to reflect scope difference and price escalation.

1.4 Documents Generated

- Preliminary Design Engineer's Estimate
- Appendix C cost preparation sheets
- Non-Standard Item List and Calculations
- Standard Item List
- Attachment List
- Bid Tabulations
- Final Engineer's Estimate
- Fuel and Asphalt Price Indices
- Lump Sum Bid History Charts/Calculations
- Summary Sheet

1.5 Security

The Engineer's Estimate is a confidential document and is only to be given out to Department personnel on a need to know basis. The file drawers containing the Engineer's Estimates are locked.

1.6 Authority

- FHWA Technical Advisory T 5080.4
- FHWA Technical Advisory T 5080.6

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2. Trns•port CES Basics

This chapter describes basic functionality of CES including basic navigation and how to access and log on to the application.

2.1 Logging On to the NJDOT Network

The CES application may be accessed by logging on to NJDOT's network via the internet. Access to the CES application will be via a Citrix server. This section outlines the hardware requirements and procedures for accessing the NJDOT network.

2.1.1 System Requirements

The minimum system requirements that a user will need to use Trns•port through Citrix are:

- Pentium 3, 1GHz Processor
- 256 Mb RAM
- 10 Mb hard disk space
- Microsoft Windows 2000 or XP
- Internet Explorer 5.0 through 6.0, Service Pack 1 or Netscape 6.2 through 7.1 (Mozilla's Firefox browser is not currently supported for use with Citrix)
- High-speed connection to the internet (DSL, Broadband, T1, etc.)

2.1.2 Login Procedure

In order to access the NJDOT network, a user needs a Citrix account and a CES account. These will be provided to you by NJDOT. For further assistance with obtaining the necessary user accounts, please contact the Trns•port helpdesk at 609-530-3582 or email trnsport.support@dot.state.nj.us.

The steps for logging in are:

1. Access the Citrix Connection
   - NJDOT staff accessing the network via an internal connection should use the link http://dotfarm.njes.state.nj.us/Citrix/MetaFrame.
   - Consultants and other parties external to the DOT should use the link https://oitmsac.state.nj.us/LogonAgent/Login.asp.
2. Login to Citrix

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3. The Citrix login window will open as shown in Figure 2-1. Enter the username and password that was provided for you by NJDOT. The domain is "njdot." Note: The username field is not case-sensitive but the password field is.

Note: the first time you log in to Citrix from any PC you will be prompted to install the Metaframe Presentation Web Client. You must install this in order to use Citrix and access the NJDOT network.

Figure 2-1. Citrix Login Window

Once logged in you should be able to see the Citrix desktop as shown in Figure 2-2.

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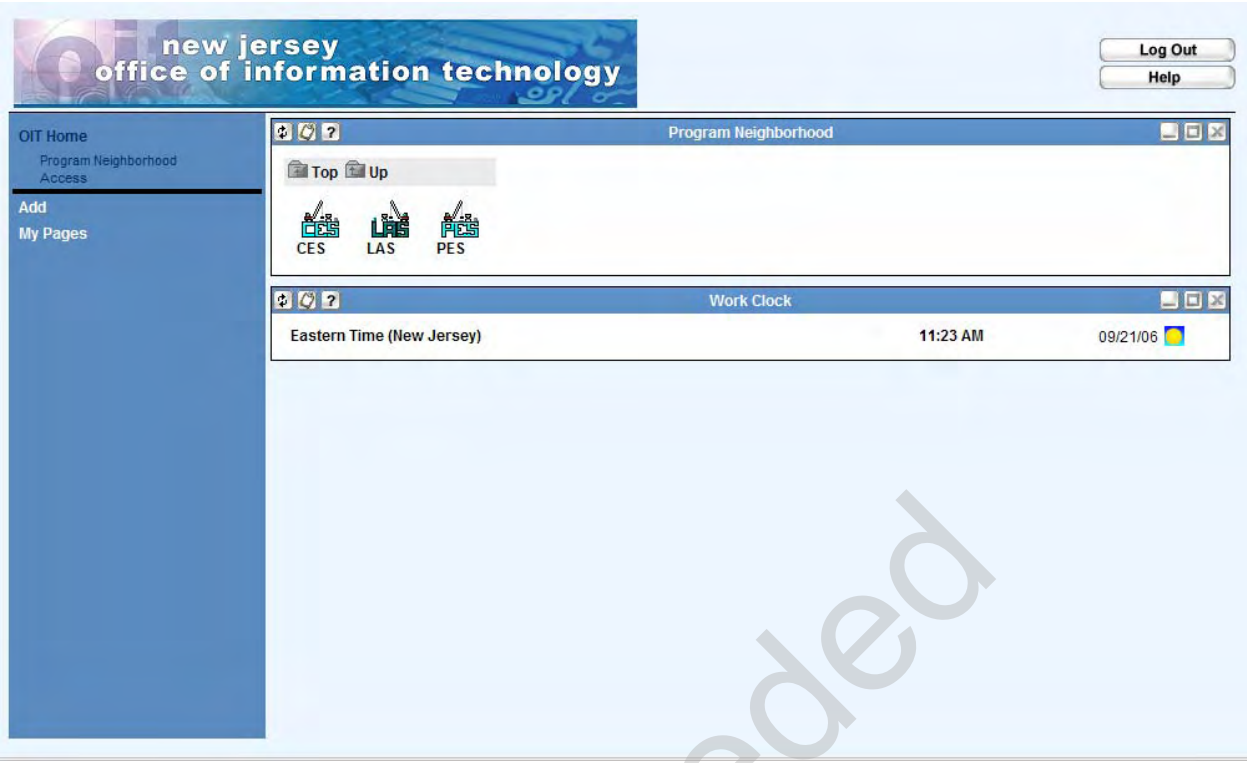

Figure 2-2. Citrix Desktop

2.2 Logging On to Trns•port CES

Once connected to the NJDOT network through Citrix you may open the CES application by double-clicking on the CES icon. After a few moments, CES will display the Enter User Information window (see Figure 2-3).

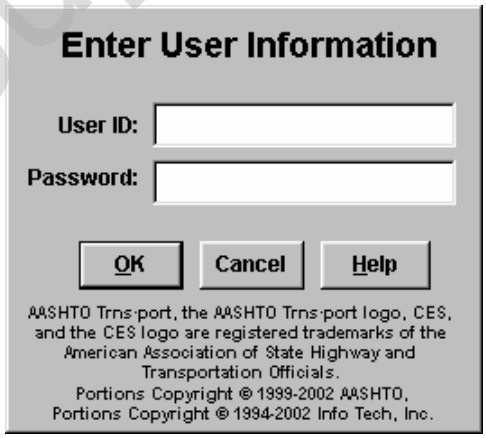

Figure 2-3. Enter User Information Window

Enter the User ID and the initial Password provided for you by NJDOT. The User ID and Password fields are not case-sensitive as the application will automatically force

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the values you enter to upper-case. Once you enter your user ID and password correctly, Trns•port CES runs.

2.3 Changing Your Password

NJDOT will provide you with your initial password to access CES. You should change it the first time you login to the application. To change your password, choose **Change Password** from the **Utilities** menu (see Figure 2-4).

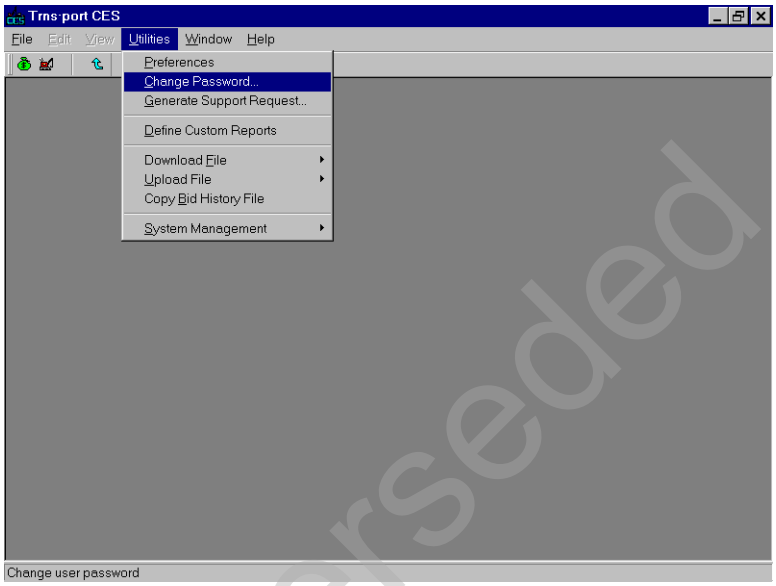

Figure 2-4. Utilities Menu

As shown in Figure 2-5, CES displays the Change Password window.

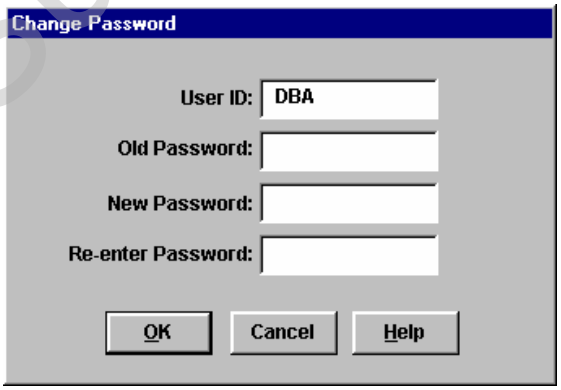

Figure 2-5. Change Password Window

Enter your old password, press TAB, enter your new password, press TAB, and enter your new password again for verification. Your password must be between 6 and 13

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characters. Click OK to change your password or CANCEL to close the window without changing your password.

If you click OK, your password changes. If you exit the software and attempt to log on using your old password, you receive an error message.

If you forget your password or exceed the maximum number of login attempts allowed, please contact NJDOT CES Support at trnsport.support@dot.state.nj.us to reset your password.

2.4 Using Buttons, Menus, and Shortcut Keys to Invoke Commands

Trns•port CES windows have title bars, menu bars, and toolbars so you can easily activate commands (see Figure 2-6).

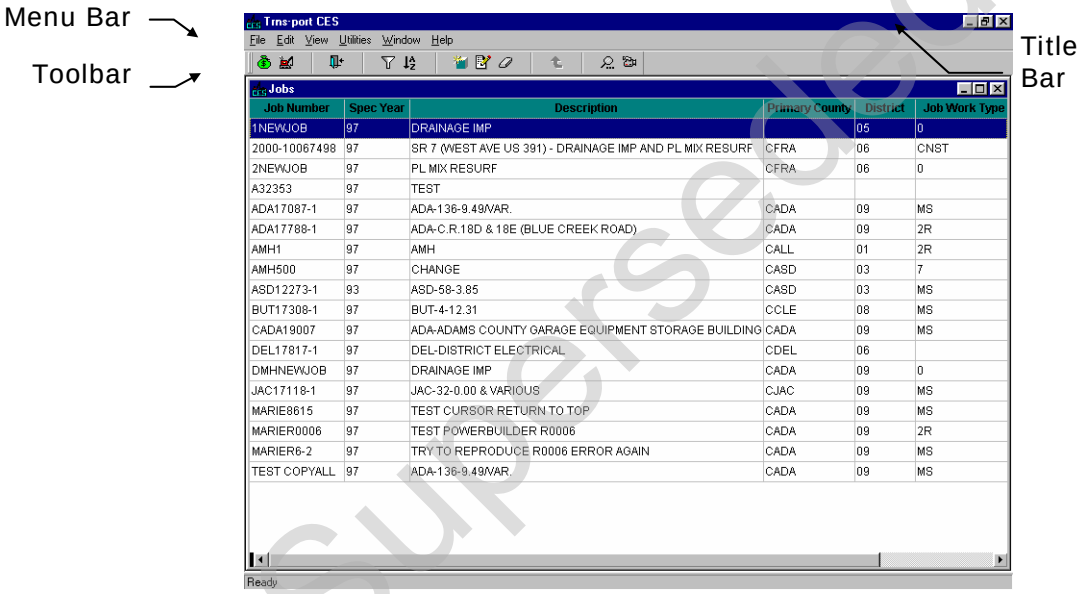

Figure 2-6. Typical Trns•port CES Title, Menu, and Button Bars

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To display text that identifies the CES button bar functions, rest the mouse pointer on the button bar and click the right mouse button. This displays a *right mouse button menu*, a feature of CES you will use frequently to complete your work (see Figure 2-7).

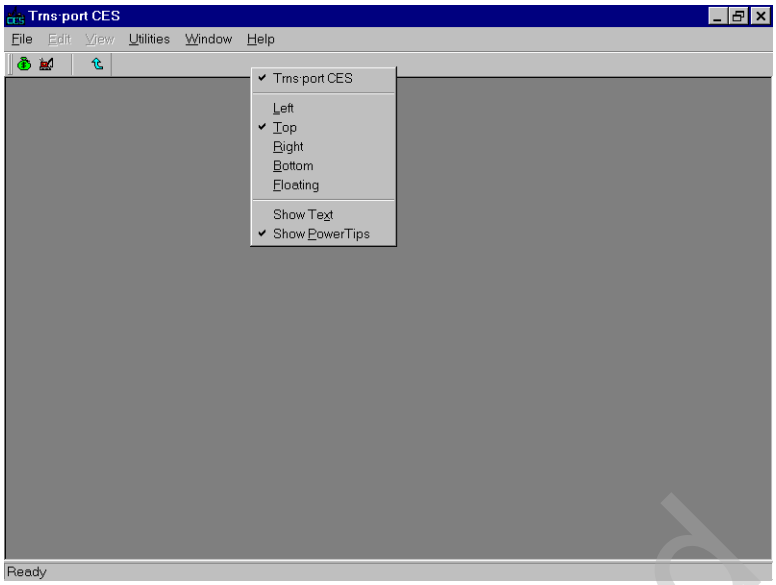

Figure 2-7. Right Mouse Button Menu

Select **Show Text** from the menu to display identifying text on the button bar.

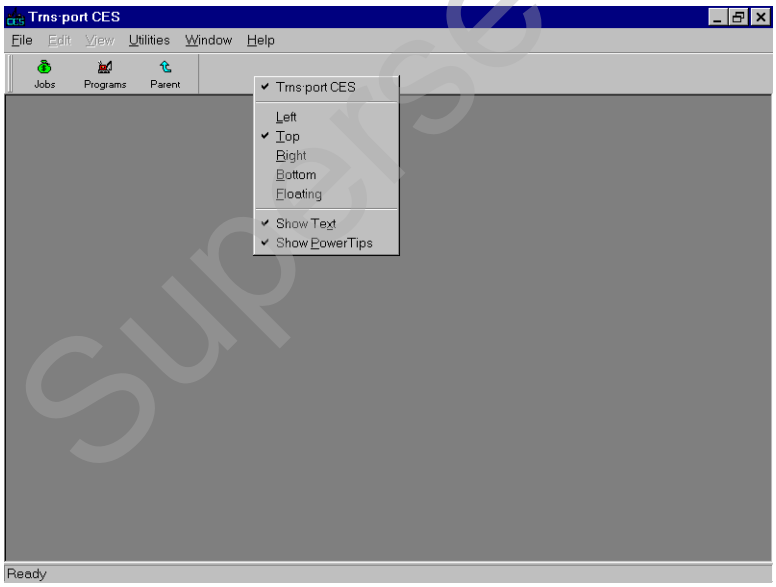

Figure 2-8. Icons With Text

To move the button bar to a different location in the window, right click on the button bar and select one of the options listed: left, right, bottom, or floating.

2.4.1 Title Bar

The title bar contains the name of the application or window and buttons you can click to size, move, and close the window. In Windows, you can access the Control

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menu by clicking an icon in the upper-left corner of the window that represents the application in which you are working. In CES this icon looks like a small crane on top of the three-letter acronym for the CES module.

An easier way to manipulate the window is to use the three buttons in the upper-right corner of the window. The '**x**' button closes the application completely, the middle button either reduces the size of the window to its intermediate size or maximizes the window from its intermediate size, and the '**_**' button minimizes the application and displays it on the Windows taskbar.

2.4.2 Menu Bar and Toolbar

The menu bar (which includes the File, Edit, View, Utilities, Window, and Help menus) contains the names of menus of commands. Dimmed (grayed) menus are not available for the active window. You can click on a menu name to display all available commands for that menu and then click on the command to activate it.

Below the menu bar is the toolbar, which contains buttons for some of the most useful commands from the menus. The buttons available on the toolbar depend on the window that is open. In other words, the toolbar is context specific.

Select CES commands in one of these ways:

- Click on the menu name to display the menu items available from that menu. From there, select the command you want to run. For example, you could select **Open Job List** from the **File** menu,

- Click on one of the buttons on the toolbar to begin working with one of the major groups of data. For example, you could click on the JOBS button and CES would display the Jobs list window.

2.4.3 Understanding How Menus and Buttons Are Related

CES can often invoke a function in multiple ways. For example, the right mouse button menu offers many of the same commands as the menu bar and button bar buttons. List window right mouse button menus usually have three groups of commands (see Figure 2-9). The top group contains Add, Change, and Delete commands that are identical to those commands found on the Edit menu. The middle group of commands lists functions that are available only for the active window. These commands correspond to button bar buttons that also change depending on the active window. The last group usually contains only the Run Process command, which is the same as the Run Process command on the File menu.

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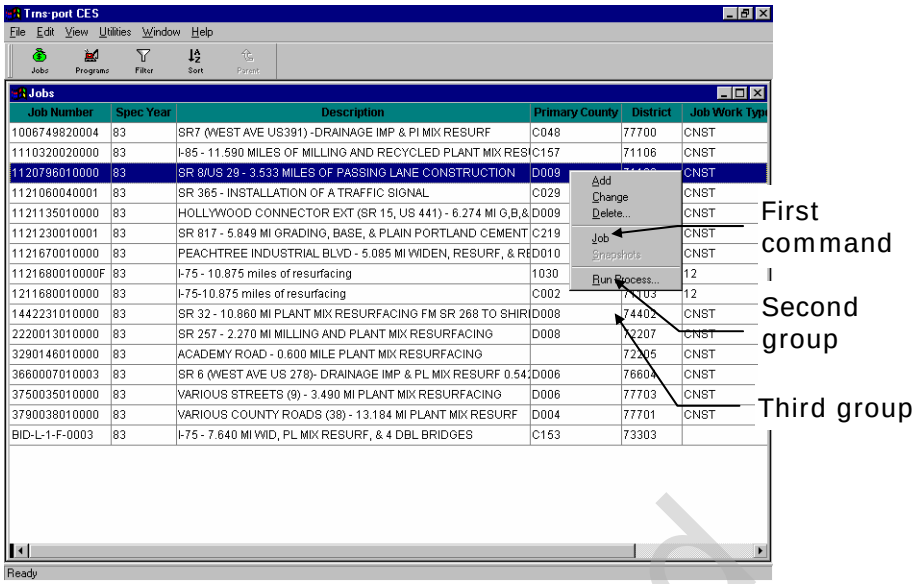

Figure 2-9. Right Mouse Button Menu Breakdown

2.4.4 Using Shortcut Keys

Many users find it helpful to access some of CES's commands via the keyboard. For instance, you can access the menus available from the menu bar and the button bar buttons through the keyboard. The proper combination of keys held down at the same time, called *shortcut keys*, allows this access.

To access the menu bar options with the keyboard, press and hold down the ALT key, and at the same time, press the underlined letter in the name of the menu you wish to activate. For example, you can open the Jobs list window (select **Open Job List** from the **File** menu), then access the Utilities menu by pressing and holding down the ALT key and typing the letter **U** (for Utilities).

To select a command from an activated menu, simply type the letter underlined in that command. For example, to choose the Job command from the View menu, press and hold down the ALT key and type the letter **V** (for View). Then, type the letter **J** (for Job).

The button bar button commands appear as menu bar options and can be accessed in the same way as described above. Some menu item and button bar button commands can be accessed by a sequence of keys without going through a menu. For example, to sort information from a table, you would simply press CTRL+S to display the Sort window.

Within the Edit menu is a listing of some additional shortcut keys. There are several other shortcut keys within the different menus, and with practice you can become quite facile at maneuvering around in CES.

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2.5 Adding, Changing, Deleting, and Viewing Information

There are different ways to access the commands to add, change, and delete records, as well as to perform other tasks. The right mouse button menu (Figure 2-10) is often the quickest way to access these functions. The right mouse button menu is context specific, meaning its menu items change as the information in the list window changes.

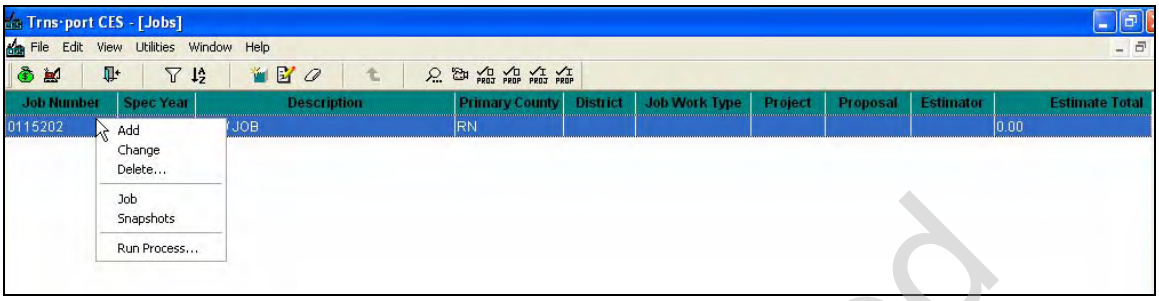

Figure 2-10. Right Mouse Button Menu

The Add command opens a window in which you can add information to create a new record. Unlike the other commands, you can invoke the Add command anywhere within the list window because you do not need to access information for a specified record. The Change command opens a window for the selected record, which you can modify. The Delete command deletes the selected record or records, but first warns you what other tables will be affected by the deletion. The View command opens a window for a record in a mode in which you can view but not modify information.

2.5.1 Adding Information

You can add information to list windows by choosing **Add** from the **Edit** menu, pressing the INSERT key, or selecting **Add** from the right mouse button menu. CES displays a tabbed folder window in which you add information to create a record.

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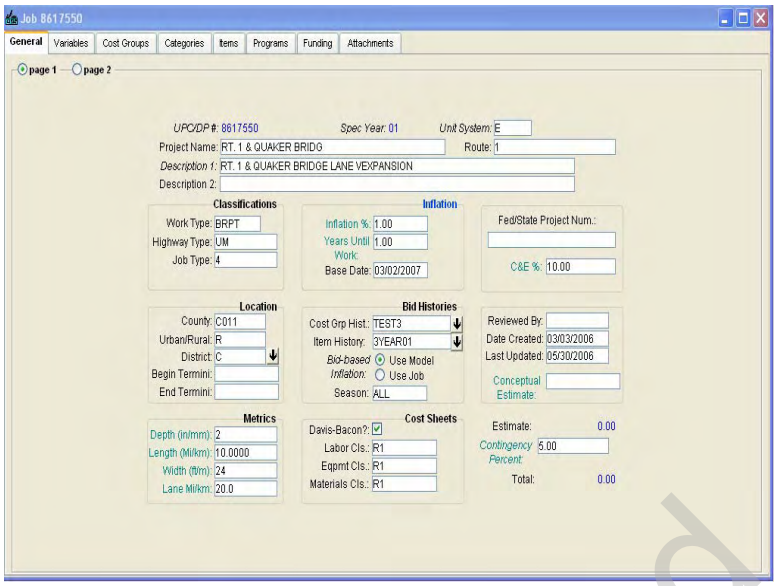

Figure 2-11. Typical CES Add Tabbed Folder Window

> **Note:** If you are adding a new job, CES displays a window in which to select a spec year for the new job before displaying the tabbed folder window.

You can type information directly in any field that displays a text box. Each field name that is italicized is a required field and must have data entered. Each field with a down arrow next to it has a list of reference or code table values from which to select an entry for that field. This type of field only accepts valid values. If you know the exact entry, you can type it in.

> **Note:** If you add or change information incorrectly in a field, you can press ESC while still in the field to erase the incorrect value and automatically replace it with the original value, if any.

To move from field to field, use the TAB key or click the mouse in the desired field. To move among tabs of a tabbed folder window, click on the appropriate tab name.

When you finish adding information in a tabbed folder window, be sure to choose **Save** from the **File** menu to save your work.

2.5.2 Changing Information

To change the information for a record that already exists, select that record from the appropriate list window, and choose **Change** from the **Edit** or right mouse button menu. CES displays a Change tabbed folder window.

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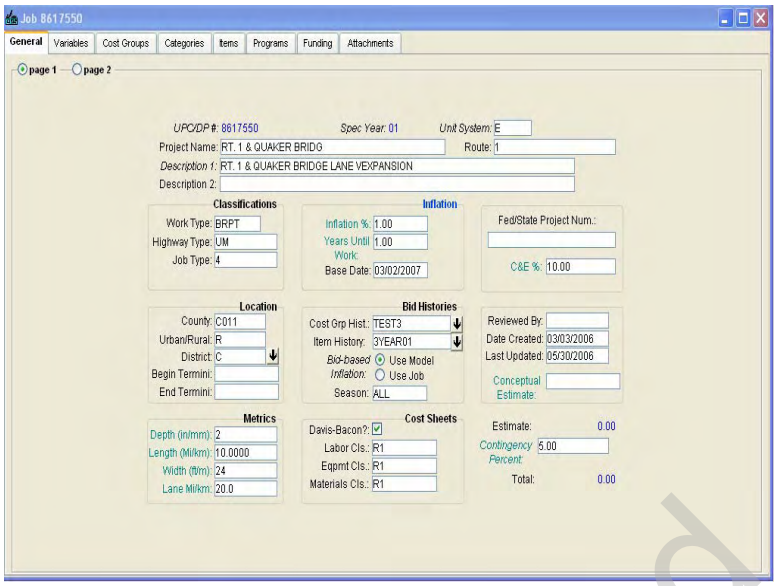

Figure 2-12. Typical CES Change Window

The window contains any information entered previously for the record. You can change the information in any field that has a text box. Fields with a background color that matches the window's background cannot be modified.

2.5.3 Deleting Information

Deleting CES information could have serious consequences. Make sure you know what you are deleting and what records you will affect before deleting anything. Your ability to delete records is based on how your security is defined within the application. In some instances, you will not be able to delete certain records like standard formulas and cost groups from the reference lists since these records are shared by all users.

You can delete information in list windows in one of several ways:

- By selecting a record in the list window and then choosing **Delete** from the **Edit** menu.
- By selecting a record and choosing **Delete** from the right mouse button menu.
- By selecting a record and pressing SHIFT+DELETE.

You can choose to delete more than one record at a time by holding down the CTRL key as you select the records. If the records you want to delete are adjacent to one another, you can select the first one, press and hold down the SHIFT key and select the last one. All the records in between are selected for deletion.

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CES displays a series of Delete Warning windows depending on how much data you are deleting at one time.

If you are deleting an entire job from the Jobs list window, a special Delete window will display in advance of the regular warning windows (see Figure 2-13).

Figure 2-13. Job Delete Window

If you select DELETE, CES erases the job, but retains any *snapshots* taken of the job, including an automatic snapshot taken during the deletion process. POWER DELETE is a more thorough deletion option that not only erases a job, but also deletes any traces of that job's existence including snapshots and other job information. Depending on your security privileges, you may not have to option for Power Delete.

Figure 2-14 shows an example of the first Delete Warning window that might appear if you attempted to delete a record. In this example, there are several tables of data that would be affected by the deletion. This means you would have to confirm the deletion several times before CES would delete the data from the database. The window title bar lists the number of deletes required.

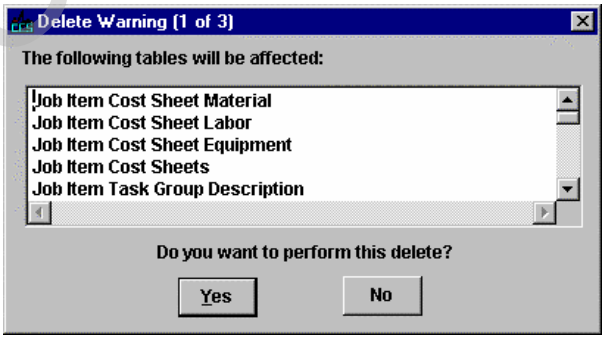

Figure 2-14. First Delete Warning Window

Notice that the Delete Warning window lists all the affected tables. If you click YES, CES displays a second Delete Warning window, unless the information you are

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deleting only affects one or two tables. In that case, there is only one Delete Warning window.

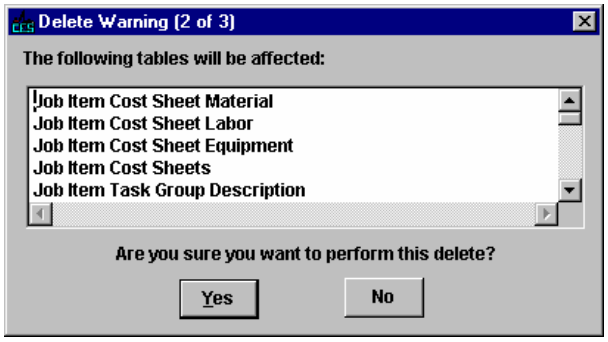


Figure 2-15. Second Delete Warning Window

If you click YES in the second Delete Warning window, CES displays a final Delete Warning window.

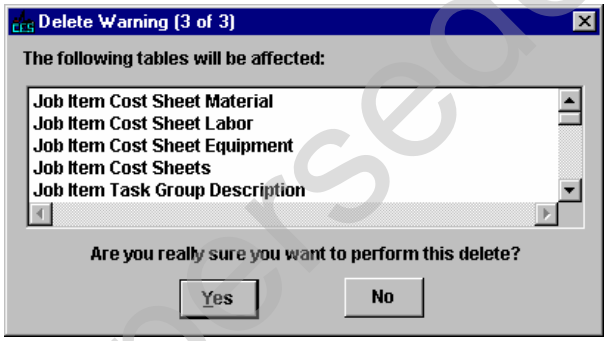


Figure 2-16. Third Delete Warning Window

If you click YES, CES displays one more deletion window to confirm the delete.

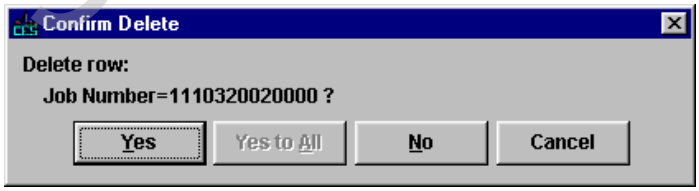


Figure 2-17. Final Delete Window

If you click YES, CES completes the deletion for a single record. If you are deleting more than one record, clicking YES TO ALL would also be an option, and it would allow you to delete all the selected records at once. If multiple records are selected and you click NO, the record currently listed will not be deleted, and you will move on to the Confirm Delete window for the next record. CANCEL returns you to the list

Superseded

window without altering any more records, but the ones for which you have already clicked YES are still deleted.

2.6 Filtering Information

You can use CES's filter to find all the records that meet certain criteria. You can filter data in a list window or in a reference table window for a tabbed folder window field. You can also save a filter to use again later.

There are three ways to display a Filter window: clicking the FILTER button, choosing **Filter** from the **Edit** menu, or pressing CTRL+F.

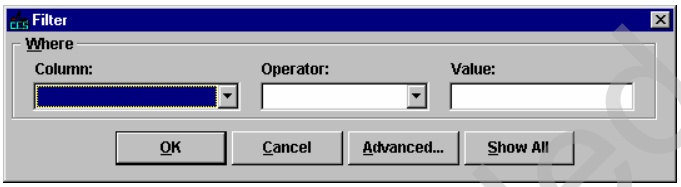


Figure 2-18. Filter Window

Enter information in the Column, Operator, and Value fields to define a simple filter.

Column Click on the down arrow beside this field to display a list of columns. From this list, you can select the column on which to base your filter.

Operator Click on the down arrow beside this field to display the options from which to choose to narrow your filter: equal to (=), greater than (>), less than (<), greater than or equal to (>=), less than or equal to (<=), not equal to (<>), Contains, Does not Contain, Like, and Not Like, which are for pattern matching, and Null and Not Null (mostly used for numeric fields).

Value Type information in this field to specify the filter criterion you are trying to match. You can use % (percent) as a wild card to represent any number of characters, or _ (underscore) to represent a single character with the Contains, Does not Contain, Like, and Not Like operators. The CES filter is case sensitive, so be sure to type in exactly what you are trying to match.

Once you have entered a filter's information, click OK to apply the filter to the active window, or CANCEL to cancel the filter.

Superseded

To return a window to its original unfiltered state, access the Filter window and click the SHOW ALL button.

2.6.1 Using the Advanced Filter

To filter information using a more complex set of criteria, while in the Filter window, click the ADVANCED button and CES displays the Advanced Filter window.

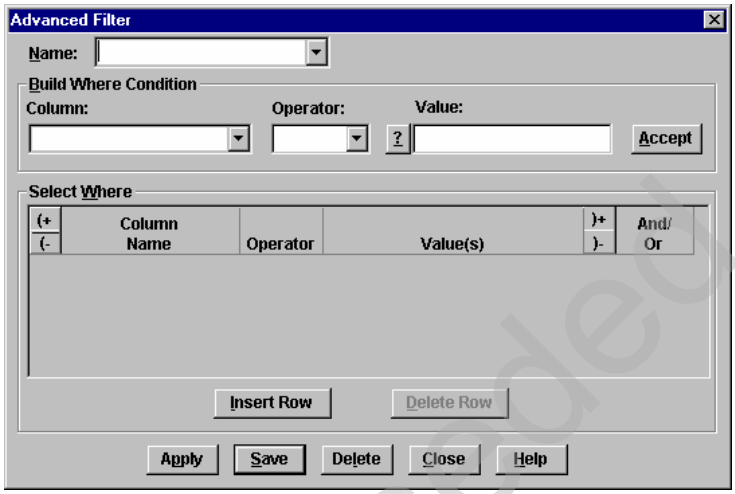


Figure 2-19. Advanced Filter Window

Use the Advanced Filter window to build a set of conditions you want CES to use in filtering information by entering values in these fields:

Name — You can assign the filter a name and save it so it can be used again later. If you want to use a filter you created previously and saved, click on the down arrow to display a list of saved filter names. Click on the one you want to use. The filtering information loads automatically in the Advanced Filter window fields. To remove a saved filter from the list, select it and click DELETE.

Build Where Condition — In this box, you set the values for the Column, Operator, and Value fields just as you do for a simple filter (see Section 2.6). Click ACCEPT to accept the conditions of the filter. CES displays the values you entered as a row in the Select Where box.

Select Where — To add additional rows of filter information, click the INSERT ROW button at the bottom of the window. Highlight the row you just inserted, enter values in the Build Where Condition box and click ACCEPT. Each time

Superseded

you click the INSERT ROW button, CES inserts a row above the currently selected row in the Select Where box. To insert a row at the bottom of the list, click the ADD ROW button. To delete a row, select the row and click the DELETE ROW button.

Once you have several rows to work with, you may want to organize them so that the filter finds information that contains all or only some of the filter criteria. To do this, include an AND or OR operator between rows. AND finds records that meet both criteria and OR finds records that meet one or the other criteria. You can select AND or OR from a drop-down list attached to the field. To delete an AND or OR operator, click on the blank area at the bottom of the drop-down list.

There may also be times when you want to combine rows of criteria. You can use parentheses marks to group rows in a filter. To group two rows of criteria, highlight the first row of criteria and click on the (+ button to insert a parenthesis before the criteria. On the same row, select the AND or OR operator that associates the two rows of criteria. Then, select the second row and click the **)+** button to close the parenthesis. To remove a parenthesis, select the row where the parenthesis is and click the **(-** or **)-** buttons.

Once you have entered all the filter information, click SAVE to save the filter, DELETE to delete an existing filter, CLOSE to close the filter without applying it to the window, or APPLY to apply the filter to the window.

Superseded

2.7 Sorting Information

To sort information in a list window, choose **Sort** from the **Edit** menu, press CTRL+S, or click the SORT button. CES displays the Sort window.

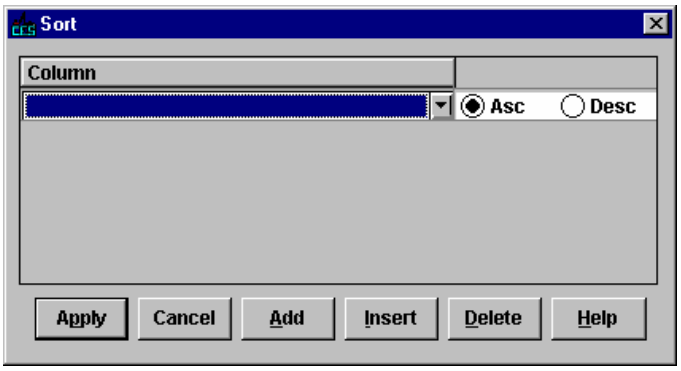


Figure 2-20. Sort Window

The Column field contains the names of all the columns in the list window. When you click on the down arrow in the Column field, the list of columns to choose from appears.

Click ASC or DESC to select an ascending (A-Z) or descending (Z-A) sort order for the selected column. When values containing both numbers and letters are listed in ascending order, numbers precede letters, and vice-versa for descending order.

If you want to sort by additional fields, click ADD and CES adds another row for sort criteria. If you want an additional row inserted before the currently selected row, click INSERT. To delete the currently selected row of sort criteria, click DELETE. Click APPLY to sort the list window or CANCEL to return to the list window without sorting the list window. If you click HELP, CES displays a help window with information about sorting a list window.

2.8 Using Online Help

To get online Help for CES commands, tasks, or options, you can use the Help menu.

Superseded

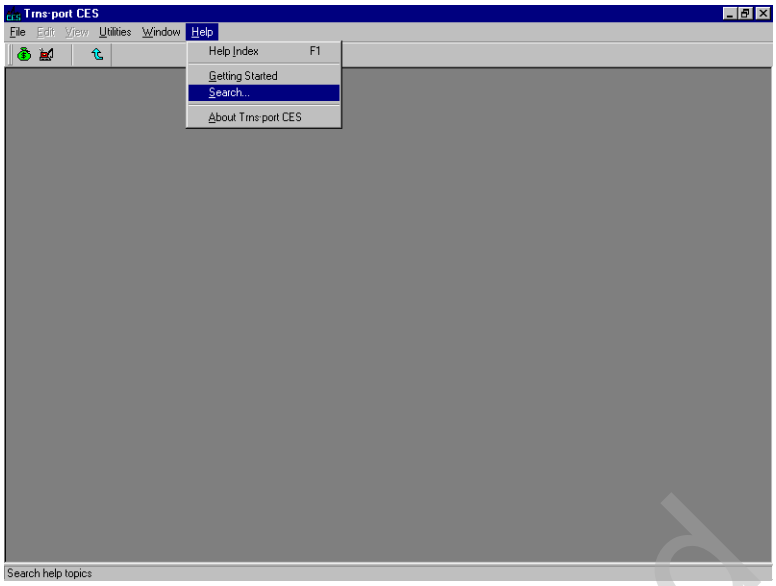


Figure 2-21. Help Menu

If you choose **Help Index** from the **Help** menu or press F1, you see an index of available topics. You can double-click on any of the topics to get more information.

If you choose **Getting Started** from the **Help** menu, you see introductory information about CES.

If you choose **Search**, CES displays a Search window in which to search for a specific CES topic.

If you choose **About Trns•port CES**, a window appears with general information about the application, including the version number

2.9 Closing Windows

You can close CES windows in one of these ways:

- Select **Close** from the **File** menu.
- Click the **x** button in the upper-right corner of the active window.
- Press CTRL+F4.

2.10 Exiting CES

You can exit CES in one of these ways:

Superseded

- Choose **Exit** from the **File** menu.
- Click the **x** button in the upper-right corner of the CES application window.
- Click on the icon in the upper-left corner of the window and select **Close** from the menu.
- Press ALT+F4.

CES displays the Close dialog box.

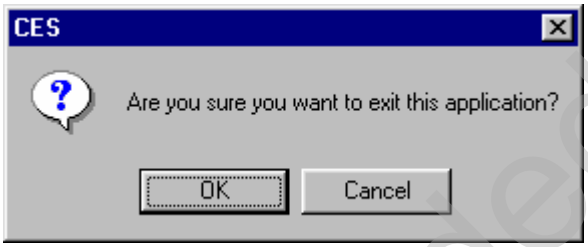


Figure 2-22. Close Dialog Box

Click OK or press ENTER

2.11 Logging Off the NJDOT Network

To log-off of the NJDOT network press the LOG OUT button in the upper right-hand corner of the browser window as shown in Figure 2-23.

Superseded

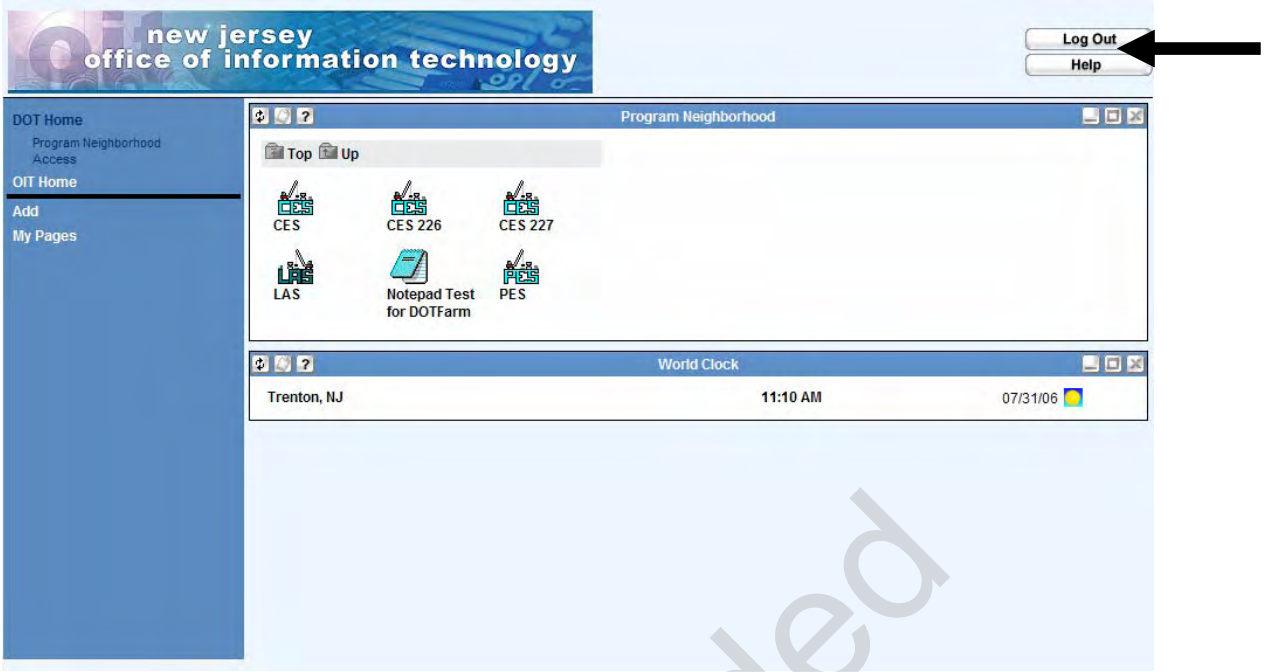


Figure 2-23. Citrix Desktop Log Out Button

Superseded

3. Creating a New Job Estimate

In Trns•port CES, a *job* is the combination of all the factors that comprise the work to be estimated. The cost of a job equals the sum of the costs for the active cost groups plus the cost of the items separately included in the job, plus inflation factor and contingency percent. CES can use various means to arrive at estimates including cost-based estimation, bid-based estimation, user-defined formulas, and reference prices.

In some cases the initial information needed to create a new job estimate will be entered by the NJDOT lead engineer assigned to the project before it is assigned to a consulting firm for estimation. If the estimate has already been created, you should refer to *Chapter 4 – Building a Long Range Estimate* or *Chapter 5 – Adding Job Estimate Details for Detailed Estimates*.

This chapter details how to create a new job estimate.

3.1 Creating a New Job Estimate

Most of the work you perform in Trns•port CES will probably be initiated via the Jobs list window. This window lists all the existing jobs in CES that match your user ID's control group (i.e. security access), and through it you can change, delete, and view those jobs as well as add new ones. You can also view and create new job snapshots from the Jobs list window.

To access the Jobs list window, click the JOBS button on the toolbar, or select **Open Job List** from the **File** menu. The Jobs list window will display.

Superseded

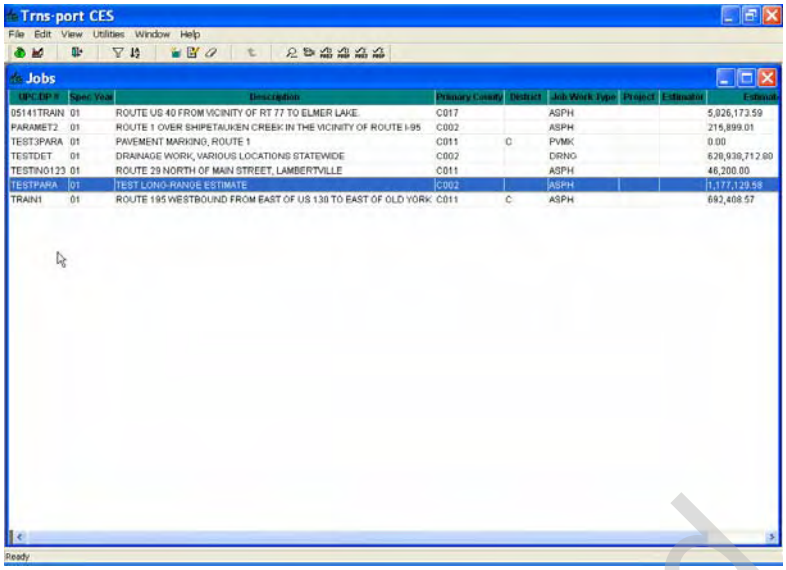


Figure 3-1. Jobs List Window

There are two ways to add a job from the Jobs list window.

1. Open the Add Job tabbed folder window and enter all the necessary job header information, or

2. Use one of CES's Copy Special options

Both of these options are discussed in detail below.

3.1.1 Adding a Job via the Add Command

To add a job "from scratch" using the Add command, select **Add** from the **Edit** drop-down menu or the right mouse button menu, or press the INSERT key on the keyboard. A window will display in which to select the spec year for the new job (see Figure 3-2).

Superseded

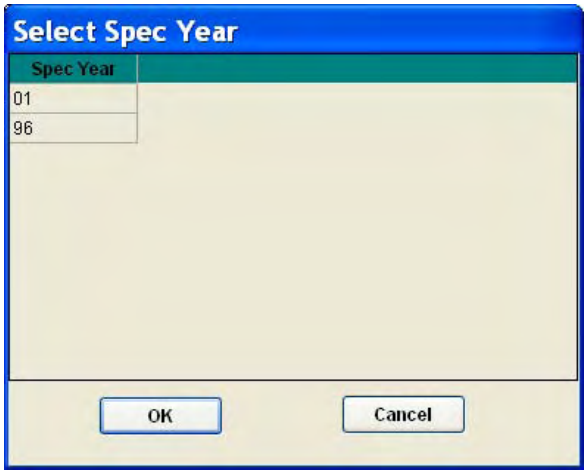


Figure 3-2. Select Spec Year for New Object Window

Select the appropriate spec year for the job and click OK, or click CANCEL to cancel the action. The list of spec years represents all valid spec years contained in the master list of items.

If you click OK, CES displays Page 1 of the GENERAL tab of the Add Job tabbed folder window.

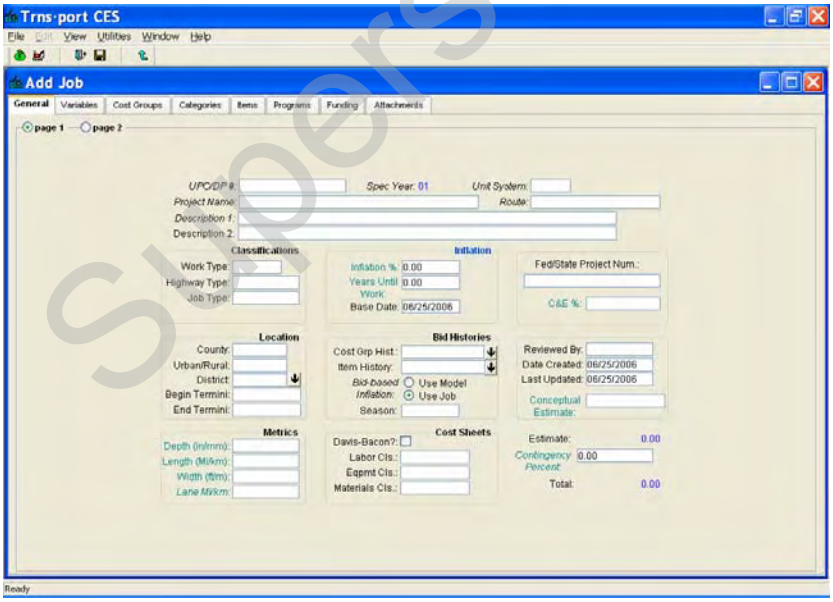


Figure 3-3. Add Job Tabbed Folder Window

To create a new job estimate, the fields outlined in the table below are required to be entered in order to initiate the project and save the record. In the Job window the labels for fields required by the system are in *Italics.* The other fields in the window will be addressed in a later chapter as details are added to the estimate.

Superseded

Add Job - Page 1

UPC/DP#

The primary identifier for the estimate. For CPM jobs enter the UPC#. For Operations jobs enter the DP#.

Most long range estimates will have several alternatives. The initial alternative projects will be named using the UPC with an alternate # appended, for example:

048061ALT1

048061ALT2

Etc.

When the decision has been made on which alternative to use, make a copy of that Job (Edit menu | Copy Special | All), assigning the UPC number alone as the Job/Project number, for example, 048061.

As a time-saving resource, users may wish to create template jobs from which to copy or import information. In this case, name the job 'TEMPLXXXX##,' where 'XXXX' is the code for your consulting firm, as used in the 'DPPD Firm' field on Page 2, and '##' is a unique identifying number. (NJDOT users creating a template should use the code for their name in the "Reviewed by" field on page 1 for 'XXXX.')

Observing this naming convention will make the job recognizable as a template by NJDOT reviewers and System Managers.

Unit System

All NJDOT jobs unless otherwise noted should use English as the Unit System. The value for this field should default to 'E' for English. If not, the value may be populated or changed by selecting the down arrow beside the field to display a drop-down list from which to select a unit system.

Project Name

The name of the project.

Route

The primary route of the project.

Superseded

Description 1	The primary description for the job. This should be a complete name, not a continuation of the Project Name.
Description 2	A continuation of the description, if needed.
Classifications	
Work Type	The primary type of work being performed for the job. A complete list of Work Types with descriptions may be found in Appendix A of this guide. The Work Type code may be populated by selecting the down arrow beside the field to display a drop-down list from which to select a work type.
Highway Type	The primary type of highway for the job. Enter the highway code by selecting the down arrow beside the field to display a drop-down list from which to select a highway type. A complete description of each Highway Type may be found in Appendix B of this guide.
Job Type	The type of job being estimated. Enter the job type code by selecting the down arrow beside the field to display a drop-down list from which to select a job type. A complete description of each Job Type may be found in Appendix C of this guide.
Location	
County	The county in which the **majority** of job work will be performed. Enter a county code by selecting the down arrow beside the field to display a drop-down list from which to select a county. Entering a primary county also fills in the District field, which is the region where the work will be performed. For jobs that are region-wide the county of the regional office should be designated (i.e. Morris for North, Monmouth for Central and Camden for South). For jobs that are statewide, use Mercer county.

Superseded

Urban/Rural	The primary type of worksite for the job. Enter the urban/rural code by selecting the down arrow beside the field to display a drop-down list from which to select an urban/rural code.
District	The New Jersey regional office in charge of the job. This field is automatically filled in when you enter a county code. Alternatively, enter a district code by selecting the down arrow beside the field to display a drop-down list showing the District Offices. For Statewide jobs, use the code for Headquarters.
Begin Termini	The termini at which the job begins (milepost).
End Termini	The termini at which the job ends (milepost).

Metrics

Depth (in/mm)	The depth of the job being estimated. The value entered must be numeric.
Length (Mi/km)	The length of the job being estimated. The value entered must be numeric.
Width (ft/m)	The width of the job being estimated. The value entered must be numeric.
Lane Mi/km	The total number of lane miles or kilometers involved in the job being estimated. This field is required unless not relevant to the type of work being performed. The metrics are not necessarily exact numbers but rather averages to be used for conceptual areas.

Inflation

Inflation %	The anticipated percentage of inflation per year until work begins on the job. If this number is not known, use the *model inflation* for bid-based Inflation (defined in the Bid Histories section). If using *model inflation*, set this to zero.

Superseded

Years Until Work	The total number of years prior to the start of the project. This number is used with the Inflation % to annually inflate the total job estimate, before applying the contingency percent.
Base Date	The date from which inflation is calculated for bid-based item tasks or cost groups assessed using regression analysis. The entry should be the date construction is expected to start. This field defaults to the current date.
Bid Histories	
Cost Group History	The cost group library from which CES will draw when calculating bid-based prices for cost groups. Enter a library name by selecting the down arrow beside the field to display the Cost Group Bid History Libraries window and select a cost group library. It is used for long range bid-based estimation only. This field is not required for the detailed estimate.
Item History	The bid history library from which CES will draw when calculating bid-based prices for items. Enter a library name by selecting the down arrow beside the field to display the Item Bid History Libraries window and select an item library. It is used for detailed bid-based estimation only. This field is not required for long-range estimation.
Bid-based Inflation	The method of inflation calculation CES uses when determining the costs for bid-based items or cost groups assessed using regression analysis: model inflation or job inflation. Select USE MODEL if you want CES to use the inflation rate determined by the bid history model. Select USE JOB if you want to use the job inflation percentage assigned via the Inflation % field.
Season	The season in which the majority of job work will be performed. NJDOT jobs should use the value 'ALL' to indicate all seasons. The field value should already default to 'ALL.' If not, the value may be changed by selecting the down arrow beside the field to display a drop-down list from which to select it.

Superseded

Other Fields

Date Created The date the estimate is created. This field defaults to the current date, but may be altered.

Last Updated The date the estimate was last updated. When first entering a job, this field defaults to the current date. Once a job has been saved, this field automatically displays the date that information for the job was last updated.

Conceptual Estimate The speculated total cost for the job. Enter an amount in this field or double click in the field to use a formula that derives an amount.

Contingency Percent The percentage of the job cost being set aside to cover expenses for unforeseen occurrences. For project initiation this field should default to “0.00”. Typically this field is not filled in at this time but if the Designer sees the need, it may be populated.

Page 2

Latitude The project’s midpoint latitude, entered in the form of degrees, minutes, and seconds (DDMMSS). This midpoint must fall within the county that is specified on Page 1.

Longitude The project’s midpoint longitude, entered in the form of degrees, minutes, and seconds (DDDMMSS). This midpoint must fall within the county that is specified on Page 1.

Control Group The access control value for the job estimate. This is a required field used for security purposes. Each user is assigned to a control group and can only access job estimates with matching control group values. The value defaults to the control group assigned to the user. Changing the control group value is used to pass responsibility for the job estimate to a user in a different control group.

Superseded

DPPD Firm The code for the name of the firm responsible for producing the long-range estimate, once it is assigned. Enter the name by selecting the drop down menu to display the list of firms from which to select a name.

DPPD Consultant/PM The individual who is responsible for producing the long range estimate once it is assigned. Enter the full name.

To save the job header information, close the Add Job tabbed folder window or select **Save** from the **File** menu or the Button Bar. Make sure you save your work frequently. You can only save your work after required information is entered.

3.1.2 Adding a Job via the Copy Special Option

With CES's Copy Special option, you can choose to copy the job header information, the header and cost group information, or all the information from an existing job to a newly created job. Copying is helpful when creating multiple estimates for the same project in order to evaluate different scenarios, or when a new job is very similar to an existing job.

Superseded

Copying the Job Header Only

In CES, job header information is found on the GENERAL tab of the Job tabbed folder window. To add a job by copying the GENERAL tab information from another job, begin by selecting the job from which to copy information while in the Jobs list window. Next, select **Copy Special** from the **Edit** menu, and then choose **Header**. A Copy Job Header Information window displays.

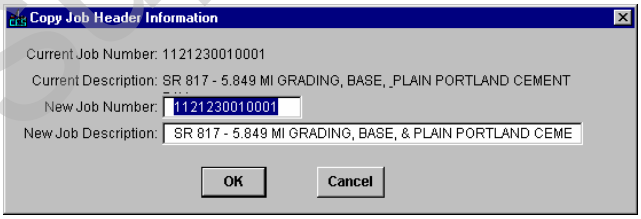


Figure 3-4. Copy Job Header Information Window

Enter information in these fields to complete the window:

New Job Number The NJDOT UPC or DP number. This field defaults to the existing job estimate number; however, since CES requires that all job numbers be unique, it should be overwritten. If you are creating multiple estimate scenarios for the same project, use the naming convention of "NJDOT UPC # + ALT1" for the first

estimate scenario, “NJDOT UPC# + ALT2” for the second estimate scenario and so on, e.g. 048061ALT1, 048061ALT2, etc.

As a time-saving resource, users may wish to create template jobs to copy or import information from. In this case, name the job ‘TEMPLXXXX##,’ where ‘XXXX’ is the code for your consulting firm, as used in the ‘DPPD Firm’ field on Page 2, and ‘##’ is a unique identifying number. (NJDOT users creating a template should use the code for their name in the “Reviewed by” field on page 1 for ‘XXXX’.)

Observing this naming convention will make the job recognizable as a template by NJDOT reviewers and System Managers.

New Job Description The description for the new job. Changing the information listed in this field is optional.

Click the OK button to confirm your entries, or click CANCEL to cancel the action.

If you click OK, CES will list the new job just created in the Jobs list window. This job will contain the same header information as the original job, with the exception of the job number and possibly the job description.

To add or edit the information for the new job, select the job in the Jobs list window and choose **Change** from the **Edit** or right mouse button menu. The Job tabbed folder window will display in a mode in which to change the information shown. Complete the tabs in this window to create the job estimate. For more information about completing the tabs, see Chapter 4 – Adding Job Estimate Details for Long Range Estimates or Chapter 5 – Adding Job Estimate Details for Detailed Estimates.

Superseded

Copying the Job Header and Cost Groups

To add a job by copying all the header and cost group information from an existing job, begin by selecting the job from which to copy information while in the Jobs list window. Next, select **Copy Special** from the **Edit** menu, and then choose **Copy Header and Cost Groups**. A Copy Job Header Information and Cost Groups window displays.

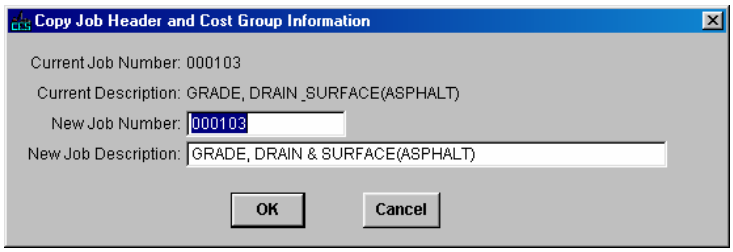


Figure 3-5. Copy Job Header Information and Cost Groups Window

Enter information in these fields to complete the window:

New Job Number

The NJDOT UPC or DP number. This field defaults to the existing job estimate number; however, since CES requires that all job numbers be unique, it should be overwritten. If you are creating multiple estimate scenarios for the same project, use the naming convention of "NJDOT UPC # + ALT1" for the first estimate scenario, "NJDOT UPC# + ALT2" for the second estimate scenario and so on, e.g. 048061ALT1, 048061ALT2, etc.

As a time-saving resource, users may wish to create template jobs from which to copy or import information. In this case, name the job 'TEMPLXXXX##,' where 'XXXX' is the code for your consulting firm, as used in the 'DPPD Firm' field on Page 2, and '##' is a unique identifying number. (NJDOT users creating a template should use the code for their name in the "Reviewed by" field on Page 1 for 'XXXX.')

Observing this naming convention will make the job recognizable as a template by NJDOT reviewers and System Managers.

New Job Description

The description for the new job. Changing the information listed in this field is optional.

Click the OK button to confirm your entries, or click CANCEL to cancel the action.

If you click OK, CES will list the new job just created in the Jobs list window. This job will contain all the original job's header and cost group information with the exception of the job number and possibly the job description.

To add or edit the information for the new job, select the job in the Jobs list window and choose **Change** from the **Edit** or right mouse button menu. The Job tabbed folder window will display in a mode in which to change the information

superseded

shown. Complete the tabs in this window to create the job estimate. For more information about completing the tabs, see Chapter 4 – Adding Job Estimate Details for Long Range Estimates or Chapter 5 – Adding Job Estimate Details for Detailed Estimates.

Copying All Job Information

To add a job by copying all header, cost group, and item information from an existing job, begin by selecting the job from which to copy information while in the Jobs list window. Next, select **Copy Special** from the **Edit** menu, and then choose **All**. A Copy Job Information window displays.

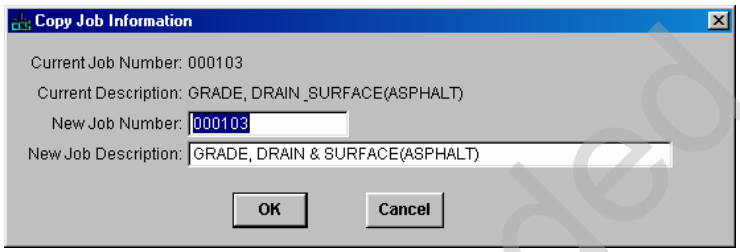


Figure 3-6. Copy Job Information Window

Enter information in these fields to complete the window:

New Job Number

The NJDOT UPC or DP number. This field defaults to the existing job estimate number; however since CES requires that all job numbers be unique it should be overwritten. If you are creating multiple estimate scenarios for the same project, use the naming convention of “NJDOT UPC # + ALT1” for the first estimate scenario, “NJDOT UPC# + ALT2” for the second estimate scenario and so on, e.g. 048061A, 048061B, etc.

As a time-saving resource, users may wish to create template jobs from which to copy or import information. In this case, name the job ‘TEMPLXXXX##,’ where ‘XXXX’ is the code for your consulting firm, as used in the ‘DPPD Firm’ field on Page 2, and ‘##’ is a unique identifying number. (NJDOT users creating a template should use the code for their name in the “Reviewed by” field on Page 1 for ‘XXXX.’)

Observing this naming convention will make the job recognizable as a template by NJDOT reviewers and System Managers.

Superseded

New Job Description	The description for the new job. Changing the information listed in this field is optional.

Click the OK button to confirm your entries, or click CANCEL to cancel the action.

If you click OK, CES will list the new job just created in the Jobs list window. This job will contain all the original job's tabbed folder information with the exception of the job number and possibly the job description.

To add or edit the information for the new job, select the job in the Jobs list window and choose **Change** from the **Edit** or right mouse button menu. The Job tabbed folder window will display in a mode in which to change the information shown. For more information about completing the tabs, see Chapter 4 – Adding Job Estimate Details for Long Range Estimates or Chapter 5 – Adding Job Estimate Details for Detailed Estimates.

Make sure you save your work frequently by selecting **Save** from the **File** menu or the Button Bar. You can only save your work after required information is entered.

Superseded

Superseded

4. Building a Long-Range (Preliminary) Estimate

Once the initial job header information has been entered, additional details are needed to create the long-range cost estimate. This chapter describes how to create a long-range estimate by adding cost group information to the job.

4.1 Long-Range (Preliminary) Estimation Methodology

Long-range or preliminary estimates are developed at the planning stage of a project when specific construction details have yet to be determined. Only limited information (e.g. the type of work, location, or number of lanes) is available to form the basis of the estimate. Long-range estimation is also referred to as *parametric* estimation. For example, a long-range estimate might be based simply on the average cost per lane mile for a given type of work in the northern region of the state.

Highway construction jobs employing similar work (e.g. resurfacing) share common major cost drivers or cost groups. If we know the general makeup or profile of the job in terms of major cost groups, we can use this information to develop a preliminary estimate. For example, if we know from past experience that 70 percent of the total cost of a typical resurfacing job is for asphalt, milling, and pavement marking, we can create an initial estimate for a resurfacing job based on the estimated cost for the asphalt, milling, and pavement marking components, plus another 30 percent for other as yet unspecified work, provided we can develop a reasonable estimate for the asphalt, milling, and pavement marking cost groups. Thus, by estimating the major cost groups of the job, we can derive a better long-range estimate.

In CES, the long-range estimate is the sum of the estimated costs for the active cost groups included in the job. Later, item level information can be added to the job to replace the cost groups and begin developing the detailed estimate.

4.2 Cost Groups

Standard cost groups utilizing different pricing methodology have been defined for use in CES and added to the Cost Group List.

Cost groups using bid-based pricing have been developed for NJDOT by grouping appropriate line items. Each item is assigned a conversion factor to translate its unit quantity to a common unit of measure for the cost group. Because the cost groups are based on items, NJDOT's historical bid data can be used to determine historical quantities and costs for the cost groups. CES uses this historical data to calculate bid-based prices for the cost group quantities that you enter in a job estimate. Cost Group Bid History Library data will be updated regularly by NJDOT.

Superseded

Cost groups using percentages are available in the Cost Group List for item groups such as mobilization (MOBL) and training (TRAN), for which direct bid-based pricing would not be appropriate. Another percentage-based cost group is Constructability Factors (CONS), which suggests factors (variables) that may affect the cost of the job, and requires users to fill in percentages as needed.

User-defined or *generic* cost groups have been set up to allow users to apply their own prices, formulas, or percentages, by entering quantity and price and/or adding variables to the cost group after adding it to the job estimate. There is a user-defined cost group, for each type of calculation rule: *normal* (UNOR)*, percent of* (UPTO), and *percent on top* (UPTT) (see Section 4.2.1*).*

A list of the standard cost groups in the NJDOT CES Cost Group List is attached in Appendix F.

4.2.1 Calculation Rules

Cost groups in CES can be divided into three types, *normal (NORM)*, *percent on top (PCTT)*, and *percent of (PCTO)*, based on their *Calculation Rule*. The calculation rule specifies how the extended amount for a given cost group is determined.

For a *normal* cost group, the extended amount is the quantity entered for the cost group multiplied by the unit price. The unit price can be derived from historical bid data (by referencing a cost group bid history library), entered directly, or calculated using a user-defined formula or expression.

For a *percent on top* cost group, the extended amount is calculated as a percentage of the total cost of all the active *normal* cost groups in the job. You enter the percentage in the unit price field and the quantity is automatically set to 1 percent of the sum of the extended amounts for all active normal cost groups, giving an extended amount equal to a percentage of the total cost for all the active normal cost groups in the job. Thus, the cost for a *percent on top* cost group is an additional percentage on top of the total cost for the active normal cost groups. Note, you can have multiple percent on top cost groups in a job. If so, the cost for each percent on top cost group is a specified percentage of the total estimated cost for all the active normal cost groups.

For a *percent of* cost group, the extended amount is calculated as a percentage of the total cost of the job, taking into account all the active cost groups including all *normal,* all *percent on top* and all *percent of* cost groups in the job. You enter the percentage in the unit price field and the quantity is automatically set to 1 percent of the total cost for the job (i.e. the sum of the extended amounts for all active cost groups including this percent of cost group), giving an extended amount equal to a percentage of the total cost for all the active cost groups in the job. Thus, the cost for a percent of cost group is a percentage of the total cost of the job. Note, you can have multiple percent of cost groups in a job. If so, the cost for each percent of cost group is a specified percentage of the total estimated cost for the job.

Superseded

There is also a selection in CES for calculation rule *Lane Miles (LANE),* which should not be used at this time. This option may be available in the future, as Lane Mile data is populated in the system.

4.2.2 Example

The following example illustrates the application of cost group calculation rules in CES. The sample job contains a *normal* cost group for asphalt (ASPH), with a quantity of 18,509 and a unit price of $44.62, giving an extended amount of $825,871.58.

The milling cost group (MILP) is a *percent on top* cost group, at 10 percent. The 10 percent is entered in the unit price field and CES automatically sets the quantity to 1 percent of the total cost for the *normal* cost groups. Thus, the extended amount for milling is still equal to the quantity ($8,258.716) multiplied by the price (10.00), giving $82,587.16, which is 10 percent of the total cost for the *normal* cost groups. Similarly, training (TRAN) is a *percent on top* cost group, at 1 percent, giving an extended amount of $8,258.72, which is 1 percent of the total cost for the *normal* cost groups.

The mobilization cost group (MOBL) and the constructability factors cost group (CONS) are both *percent of* cost groups, at 5 percent and 3 percent each respectively, and together they make up 8 percent of the total cost for all active cost groups. This means that the non-*percent of* cost groups (ASPH, MILP and TRAN) correspond to the remaining 92 percent of the total cost, which is equal to $916,717.46.

Therefore, the total cost for the job is $996,432.02, i.e. ($916,717.46 x 100)/92, and 1 percent of the total cost is equal to $9,964.32. For the MOBL and CONS cost groups, the assigned percent is entered in the unit price field and CES automatically sets the quantity to 1 percent of the total cost for all active cost groups. Thus, the extended amount for mobilization is still equal to the quantity ($9,964.32) multiplied by the price (5.00), giving $49,821.60, which is 5 percent of the total cost for all the cost groups. Similarly, the extended amount for the constructability factors cost group is 3 percent of the total cost for all the cost groups.

Superseded

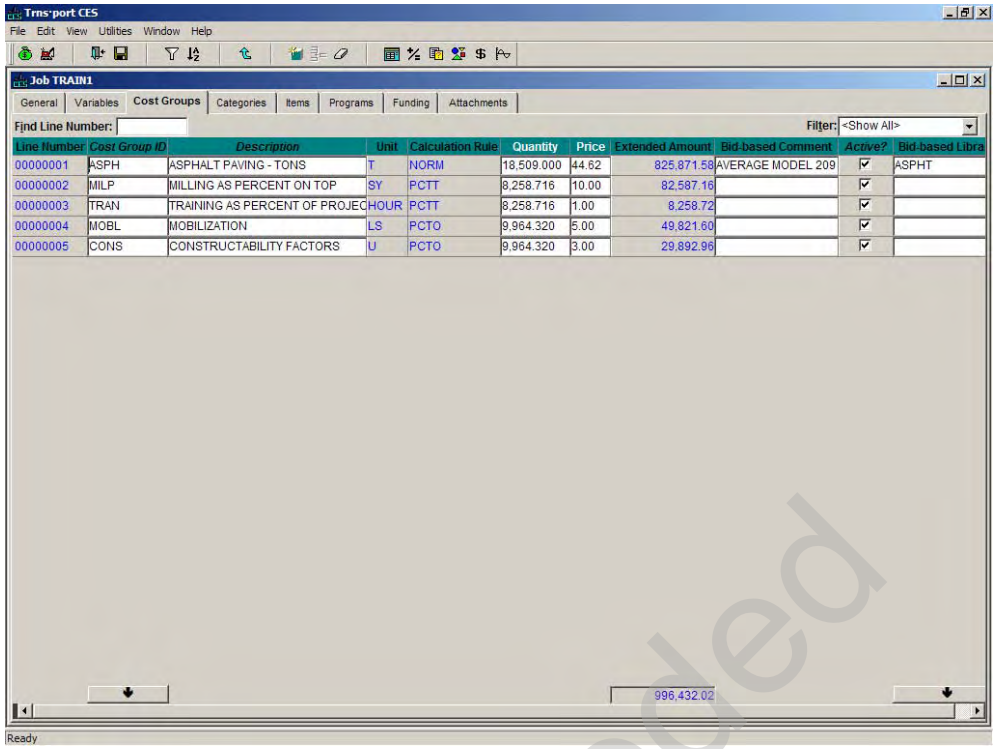


Figure 4-1. COST GROUPS Tab Showing Cost Calculations

Note, you can enter cost groups in any order, regardless of cost group type. As you add cost groups, the quantities and extended amounts for *percent on top* and *percent of* cost groups will be automatically recalculated.

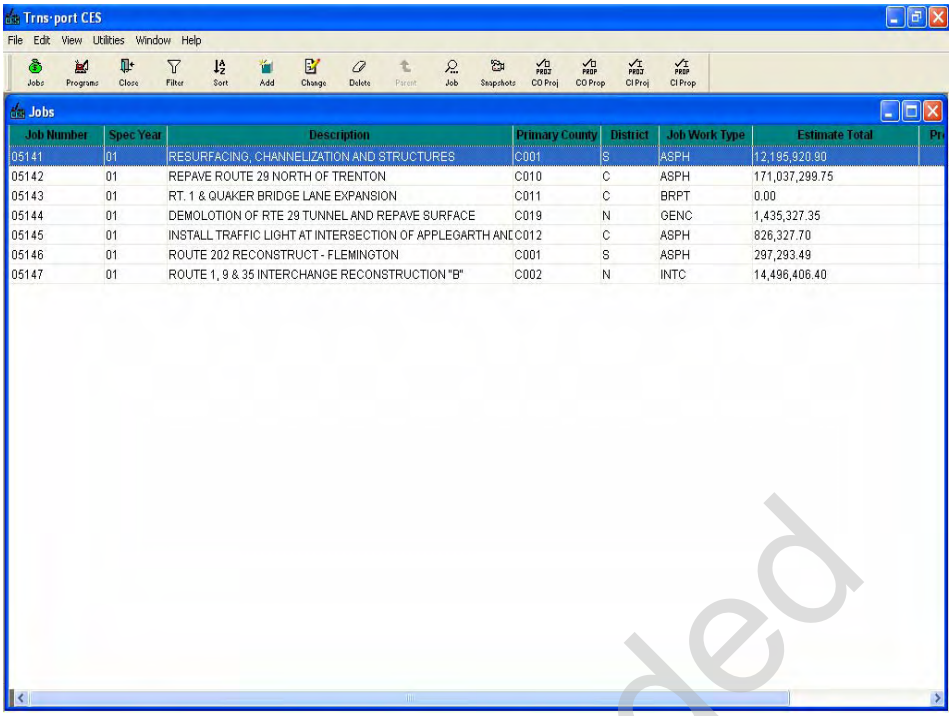
4.3 Select a Job for Long-Range (Preliminary) Estimation

When creating the long-range estimate, the existing job estimate record in CES should be used as the starting point. In most cases, the job record will have been entered by the NJDOT lead engineer assigned to the project before it is assigned to a consulting firm for estimation.

Projects in the early stages of planning and development may have several alternatives. Each alternative will have its own job estimate record, which is named using the UPC# with an alternate identifier appended; for example: 048061ALT1, 048061ALT2, etc. Later, when the decision is made on which alternative to use, you can make a copy of that Job (Edit menu | Copy Special | All), assigning the UPC number alone as the Job/Project number; for example, 048061.

Begin by selecting the desired alternative from the Jobs list window. To access the Jobs list window, click the JOBS button on the toolbar, or select **Open Job List** from the **File** menu. The Jobs list window will display.

Superseded



Job Number	Spec Year	Description	Primary County	District	Job Work Type	Estimate Total	Pr
05141	01	RESURFACING, CHANNELIZATION AND STRUCTURES	C001	S	ASPH	12,195,920.90	
05142	01	REPAVE ROUTE 29 NORTH OF TRENTON	C010	C	ASPH	171,037,299.75	
05143	01	RT. 1 & QUAKER BRIDGE LANE EXPANSION	C011	C	BRPT	0.00	
05144	01	DEMOLOTION OF RTE 29 TUNNEL AND REPAVE SURFACE	C019	N	GENC	1,435,327.35	
05145	01	INSTALL TRAFFIC LIGHT AT INTERSECTION OF APPLEGARTH AND	C012	C	ASPH	826,327.70	
05146	01	ROUTE 202 RECONSTRUCT - FLEMINGTON	C001	S	ASPH	297,293.49	
05147	01	ROUTE 1, 9 & 35 INTERCHANGE RECONSTRUCTION "B"	C002	N	INTC	14,496,406.40	

Figure 4-2. Jobs List Window

This window lists all the existing jobs in CES that match your user ID's control group (i.e. security access), and through it you can change, delete, and view those jobs as well as add new ones. You can also view and create new job snapshots from the Jobs list window.

If the desired job is not shown on the Jobs list window, refer to *Chapter 3 – Creating a New Job Estimate* for information on how to create a new job record or on how to copy an existing job to a new job using the Copy Special option.

Select the desired job and then choose **Change** from the **Edit** or right mouse button menu. CES displays Page 1 of the GENERAL tab of the Job tabbed folder window.

Superseded

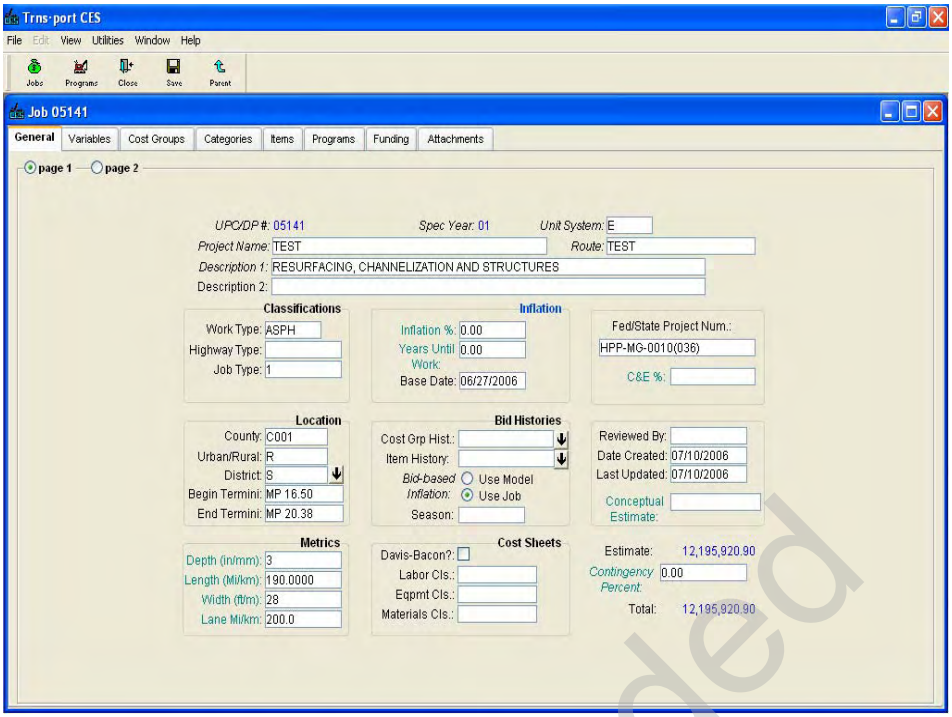


Figure 4-3. Change Job Tabbed Folder Window - GENERAL Tab-Page 1

Each field label in *italics* is a required field and must have data entered. NJDOT also requires data to be entered in certain other fields. Formulas can be used in numeric fields that have teal-colored labels.

To insert a formula into a formula-enabled field, either double-click in the field or select Formula and Expression Builder from the right mouse button menu to display the Formula and Expression Builder Window. To use the Formula and Expression Builder, locate and select a formula that you have already created or build a new formula. Click VALIDATE to confirm that the formula is a valid expression. Click OK to insert the formula, and CES evaluates the formula to derive a value for the field. Refer to *Chapter 11 – Formula and Formula Libraries* for further information on how to create and use formulas.

Some fields will already be populated. Enter or change information for any of the fields outlined in the table below, as needed. For example, you may need to enter or update the data in the Metrics fields.

Change Job - Page 1

UPC/DP# The primary identifier for the job. This field cannot be changed.

Spec Year The designated spec year for the job. This field cannot be changed.

Superseded

Unit System All NJDOT jobs unless otherwise noted should use English as the unit system. The value for this field should default to 'E' for English. If not, the value may be populated or changed by selecting the down arrow beside the field to display a drop-down list from which to select a unit system.

Project Name The name of the project.

Route The primary route of the project.

Description 1 The primary description for the job. This should be a complete description, not a continuation of the Project Name.

Description 2 A secondary description for the job, or a continuation of the primary description.

Classifications

Work Type The primary type of work being performed for the job. A complete list of Work Types with descriptions may be found in Appendix A of this guide. The work type code may be populated by selecting the down arrow beside the field to display a drop-down list from which to select a work type.

Highway Type The primary type of highway for the job. Enter the highway code by selecting the down arrow beside the field to display a drop-down list from which to select a highway type. A complete description of each Highway Type may be found in Appendix B of this guide.

Job Type The type of job being estimated. Enter the job type code by selecting the down arrow beside the field to display a drop-down list from which to select a job type. A complete description of each job type may be found in Appendix C of this guide.

Location

County The county in which the **majority** of job work will be performed. Enter a county code by selecting the down arrow beside the field to display a drop-down list from which to select a county. Entering a primary county also

Superseded

	fills in the District field, which is the region where the work will be performed. For Operations jobs that are region-wide the county of the regional office should be designated (i.e. Morris for North, Monmouth for Central and Camden for South). For jobs that are statewide, use Mercer county.
Urban/Rural	The primary type of worksite for the job. Enter the urban/rural code by selecting the down arrow beside the field to display a drop-down list from which to select an urban/rural code.
District	The New Jersey regional office in charge of the job. This field is automatically filled in when you enter a county code. Alternatively, enter a district code by selecting the down arrow beside the field to display a drop-down list showing the District Offices window from which to select a district office. For Statewide jobs, use the code for Headquarters.
Begin Termini	The termini at which the job begins (milepost).
End Termini	The termini at which the job ends (milepost).
Metrics	
Depth (in/mm)	The depth of the job being estimated. The value entered must be numeric. This is a formula-enabled field.
Length (Mi/km)	The length of the job being estimated. The value entered must be numeric. This is a formula-enabled field.
Width (ft/m)	The width of the job being estimated. The value entered must be numeric. This is a formula-enabled field.
Lane Mi/km	The total number of lane miles or kilometers involved in the job being estimated. This is a formula-enabled field. This field is required unless not relevant to the type of work being performed. The metrics are not necessarily exact numbers but rather averages to be used for conceptual areas.

Superseded

Inflation

Inflation %

The anticipated percentage of inflation per year until work begins on the job. If this number is not known use the *model inflation* for bid-based inflation. If using *model inflation*, set this to zero. This is a formula-enabled field.

Years Until Work

The total number of years prior to the start of the project. This number is used with the Inflation % to annually inflate the total job estimate, before applying the contingency percent. This is a formula-enabled field.

Base Date

The date from which inflation is calculated for bid-based items, item tasks, or cost groups assessed using regression analysis. The entry should be the date construction is expected to start. This field defaults to the current date.

Bid Histories

Cost Group History

The cost group library from which CES will draw when calculating bid-based prices for *normal* cost groups. Enter a library name by selecting the down arrow beside the field to display the Cost Group Bid History Libraries window and select a cost group library. Used for long-range bid-based estimation only. This field is not required for the detailed estimate.

Item History

The item library from which CES will draw when calculating bid-based prices for items. Enter a library name by selecting the down arrow beside the field to display the Item Bid History Libraries window and select an item library. Used for detailed bid-based estimation only. *This field is not required for long-range estimation.*

Bid-based Inflation

The method of inflation calculation CES uses when determining the costs for bid-based items or cost groups assessed using regression analysis: model inflation or job inflation. Select USE MODEL if you want CES to use the inflation rate determined by the bid history model. Select USE JOB if you want to use the job inflation percentage assigned via the Inflation % field.

Superseded

Season	The season in which the majority of job work will be performed. NJDOT jobs should use the value 'ALL' to indicate all seasons. The field value should already default to 'ALL.' If not, the value may be changed by selecting the down arrow beside the field to display a drop-down list from which to select it.

Other Fields

Date Created	The date the estimate was created. This field should not be changed.
Last Updated	The date the estimate was last updated. This field automatically displays the date that information for the job was last updated.
Conceptual Estimate	The speculated total cost for the job. Enter an amount in this field or double click in the field to use a formula that derives an amount.
Contingency Percent	The percentage of the job cost being set aside to cover expenses for unforeseen occurrences. This is a formula-enabled field.

Proceed to Page 2 of the GENERAL tab by clicking the PAGE 2 radio button in the upper left portion of the tab.

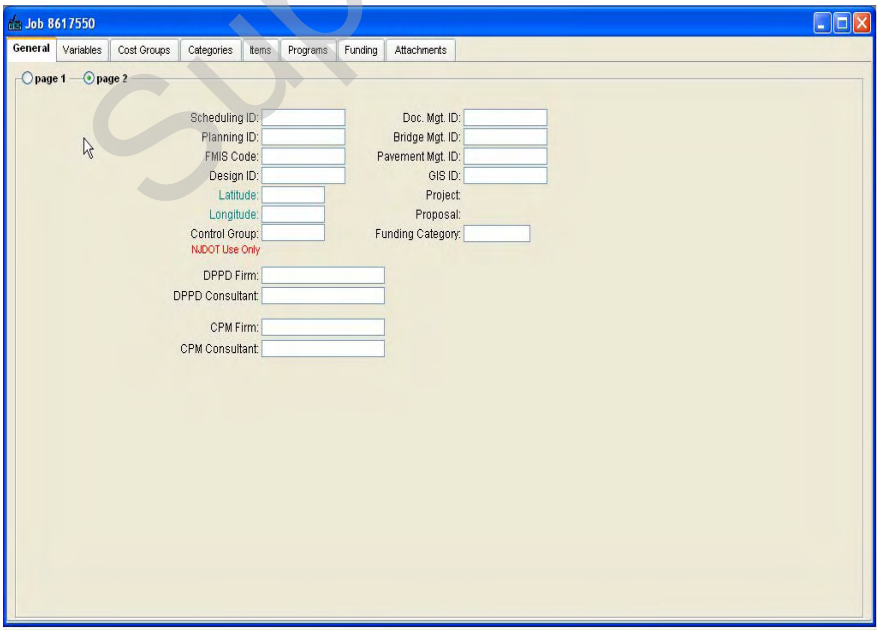


Figure 4-4. Change Job Tabbed Folder Window-GENERAL Tab-Page 2

Superseded

The majority of fields on this page are not currently being used by NJDOT. However, the following fields are required to be populated for long-range estimation:

Change Job - Page 2

Latitude	The project's midpoint latitude, entered in the form of degrees, minutes, and seconds (DDMMSS). This midpoint must fall within the county that is specified on Page 1.
Longitude	The project's midpoint longitude, entered in the form of degrees, minutes, and seconds (DDDMMSS). This midpoint must fall within the county that is specified on Page 1.
Control Group	The access control value for the job estimate. This is a required field used for security purposes. Each user is assigned to a control group and can only access job estimates with matching control group values. The value defaults to the control group assigned to the user. Changing the control group value is used to pass responsibility for the job estimate to a user in a different control group.
DPPD Firm	The code for the name of the firm responsible for producing the long-range estimate. Enter the name by selecting the drop down menu to display the list of firms from which to select a name.
DPPD Consultant/PM	The individual who is responsible for producing the long range estimate once it is assigned. Enter the full name.

Superseded

As always, save your work frequently! To do so, click the SAVE icon on the toolbar or select **Save** from the **File** menu. You can only save your work after required information is entered.

4.4 Adding and Changing Cost Group Information

To produce a long-range estimate, CES requires cost group information. You can add or change cost group information on the COST GROUPS tab of the Job tabbed folder window.

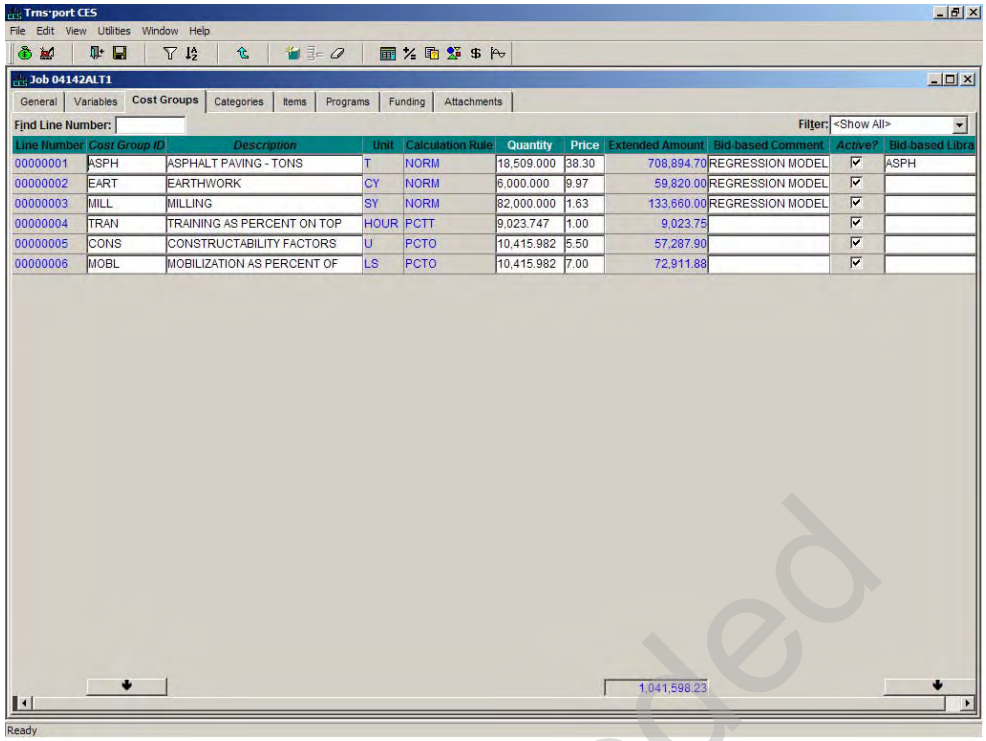


Figure 4-5. Job Tabbed Folder Window-COST GROUPS Tab

There are two data entry options for the COST GROUPS tab. You can enter information via the cost groups grid (as shown in Figure 4-5) or the cost groups detail area. CES defaults to the grid, but you can access the detail view by selecting **Hide/Show Detail** from the **View** menu. A detail area appears in the lower half of the COST GROUPS tab.

Superseded

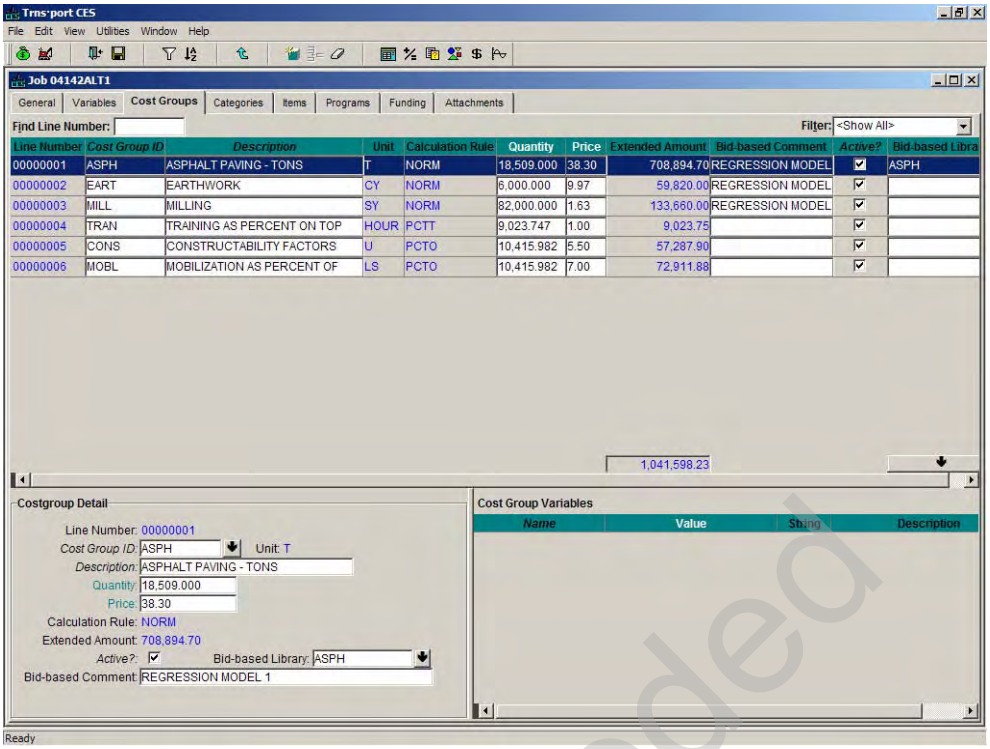


Figure 4-6. COST GROUPS Tab With Detail Area Displayed

The detail area also includes an area in which you can enter variables for the cost group. For example, a cost group variable could be used in a formula to calculate the quantity for the cost group.

If there are no cost groups on the tab, your first step will always be to select **Add** from the **Edit** menu or to press SHIFT+INSERT. In the cost groups grid, CES adds a blank row ready to be filled with information about the cost group that you are defining. For each additional cost group added, you will also need to insert a blank row; otherwise, CES will overwrite the information in the currently selected cost group row.

To change an existing cost group, select the desired cost group and alter the fields in the cost group row as necessary.

The detail area of the COST GROUPS tab contains data entry fields that correspond with the columns available in the cost groups grid, and any variables associated with the selected cost group.

When the detail area is visible on the COST GROUPS tab (shown on the bottom left of the screen of Figure 4-6), you must use that area to add or change information. Although you are able to move from row to row within the grid portion of the tab, you will not be able to type information directly into the grid. To add or change information using the cost groups grid, you must switch back to the default grid view (Figure 4-5) by selecting **Hide/Show Detail** from the **View** menu.

Superseded

As you enter cost group information in the detail area, the corresponding data entry row in the cost groups grid is filled in.

These are the fields that can be edited on the COST GROUPS tab:

Cost Group ID The identifier for the selected cost group. Click the down arrow found either in the lower left portion of the grid area or beside the Cost Group ID field in the detail area to display the Cost Groups window from which to select a cost group.

Description A short description of the cost group. This field is automatically filled in when you select a cost group. Do not change this description.

Quantity For *normal* cost groups, the total number of units of the cost group. Enter a number in this field, type in a formula name, or double-click in the field to insert a formula that derives the number. For information about using formulas, refer to *Chapter 11 – Formulas and Formula Libraries*.

For *percent* cost groups, this field is automatically filled in with a cost amount when you enter a percent value in the price field.

Price For *normal* cost groups, the price assigned to each unit of the cost group. You have several options for completing this field: you can choose to have CES automatically compute a price based on historical data (see Section 4.4.2), you can enter a price directly, you can type in a formula name, or you can double-click in the field to insert a formula that derives the amount. For information about using formulas, refer to *Chapter 11 – Formulas and Formula Libraries*.

For *percent* cost groups, the percent value assigned to the cost group. You can enter a percent directly, you can type in a formula name, or you can double-click in the field to insert a formula that derives the percent value.

Bid-based Comment A comment field that contains a comment generated by the system when using the automatically computed price based on historical data (see Section 4.4.2). However, this field is editable and can be used to store any textual information.

Superseded

Active Select this check box if the cost group is to be included in the cost calculations for the job. To exclude a cost group from the job estimate, deselect this check box. This allows you to retain cost group definitions in the job even though they are not included in the cost estimate for the job.

Bid-based Library The cost group bid history library that CES uses to arrive at the bid-based price for *normal* cost groups. When this field is blank, CES uses the library specified in the Cost Group History field on the GENERAL tab. If there is another library from which the bid-based price should be drawn, enter that library's name in this field or click the down arrow beside the field to display the Cost Group Bid History Libraries list window from which to select a library.

Click SAVE or select **Save** from the **File** menu to save your work.

As you enter quantities and prices for your cost groups, the extended amounts are automatically calculated and totaled. The total reflects only the cost for active cost groups. If you entered an Inflation % on the GENERAL tab of the Job tabbed folder window, the total extended amount displayed on the COST GROUPS tab may be greater than the sum of the individual cost group extended amounts. The difference is the inflation amount that was calculated for the job.

The Estimate and Total fields on the GENERAL tab of the Job tabbed folder window are also automatically updated to reflect the total cost for the active cost groups.

4.4.1 Using Variables in Your Cost Group

You can add variables to your cost group using the Cost Group Variables section of the detail window. These variables can then be used in formulas to calculate the quantity or price for your cost group. For information about using formulas, refer to *Chapter 11 – Formulas and Formula Libraries*.

Variables defined at the cost group level can only be used with that specific cost group. However, variables defined at the job level can be used with multiple cost groups. Refer to *Chapter 5, Section 5.2* for information on how to define job variables.

To add a variable to your cost group, select the cost group and show the detail area. Select **Variables** from the **Edit** menu, and choose **Add**. CES displays a window that allows you to select whether your variable type is a number (N) or a string (S), and to name your variable.

Superseded

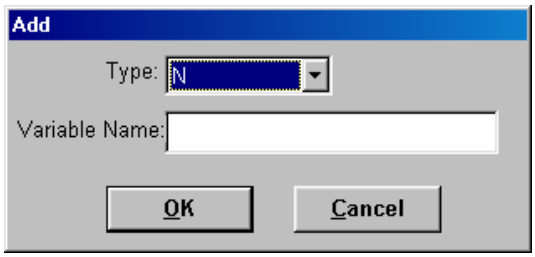


Figure 4-7. Add Variable Window

Choose the variable type and name the variable. Click OK. CES adds the variable to the cost group. If you select the variable type N, then CES allows you to edit the Value field for the variable, but not the String field. If you select the variable type S, then CES allows you to edit the String field, but not the Value field.

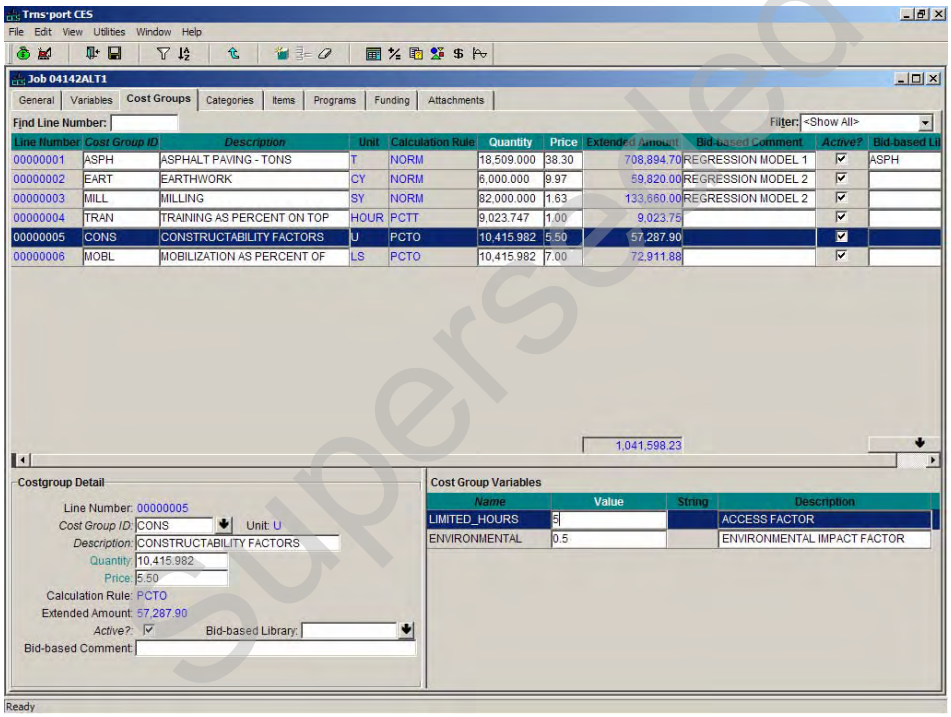


Figure 4-8. COST GROUPS Tab With Added Variables

These fields can be edited for a cost group variable:

Value — Enter a value for the variable or double click in the field to display the Formula and Expression Builder window in which you can build a formula for the value. You can only edit this field if the variable type is N.

String — Enter a string for the variable. You can only edit this field if the variable type is S.

Superseded

Description A brief description of the variable.

To change an existing variable, select that variable in the cost group detail area and alter the fields in the variable row as necessary.

Any new or changed variable will not be available for use in the cost group until you save your work. Click SAVE or select **Save** from the **File** menu to save your work.

4.4.2 Computing Price for Quantity

For *normal* cost groups, if you know a cost group's quantity, you can choose to have CES compute a price for that cost group based on historical data. To perform the necessary calculations, CES draws on the library designated in the Cost Group History field found on the GENERAL tab of the Job tabbed folder window. However, if the Bid-based Library field is filled in on the COST GROUPS tab, then that library is used.

To have CES automatically price a cost group, while in the COST GROUPS tab select the cost group (or multiple cost groups) to be priced, and choose **Compute Price for Quantity** from the **Edit** menu. To select more than one row at a time, hold down the CTRL key while selecting the rows. CES uses the job header information (work type, county, season, highway type, date) and the quantity you specify for the cost group to calculate or look up a price in the specified bid history library and fills in the Price and Extended Amount fields for each selected cost group. The price could be the result of a regression or average model and could have inflation calculated, depending on the values you entered in the job header fields. For each selected cost group that is active, the newly calculated extended amount is then included in the overall job estimate.

If there is a problem determining the bid-based price, the Bid-based Comment field is filled in with the appropriate information necessary to identify the problem. For example, the message in the Comment field can indicate that the selected cost group is not listed in the specified bid history library. One option would be to choose another library in which to search for price information.

If there is still insufficient bid-based information for CES to produce an estimate for the chosen cost group, you might want to consider other estimation options for this cost group, such as entering a price directly. If you enter the price directly, do not apply **Compute Price for Quantity** on this cost group or your price will be overwritten**.**

Click SAVE or select **Save** from the **File** menu to save your work.

Superseded

4.4.3 View Bid-Based Information

When CES uses regression analysis to price a cost group, you can access a graphical view of the regression information by highlighting the cost group and choosing **Bid-based Information** from the **View** menu. CES displays a Bid History Analysis window with the REGRESSIONS tab displayed.

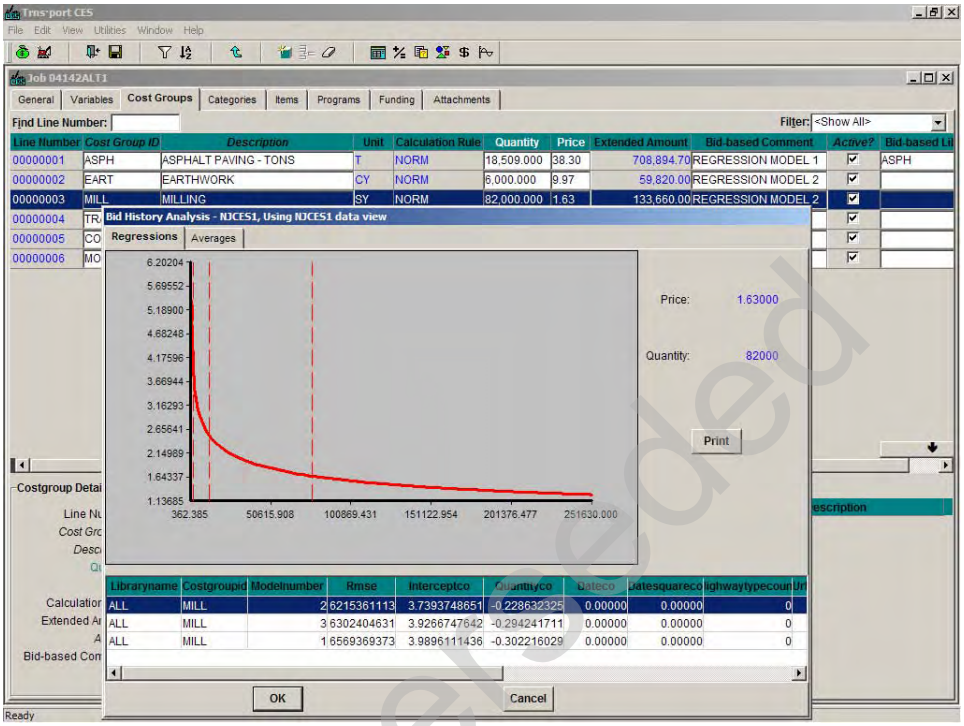


Figure 4-9. Cost Group Bid History Analysis Window-REGRESSIONS Tab

You can interactively display the exact price and quantity amounts for the entire regression. To do this, place your cursor in the regression area of the graphic, and then press and hold down the left mouse button while moving your cursor back and forth in the area. As you move your cursor, the information in the Price and Quantity fields to the right of the curve automatically adjusts to display the amounts that correspond to the location of your cursor in the regression curve.

Use the horizontal scroll bar at the bottom of the window to view specific information about the regression. Click PRINT to print the regression information, click the AVERAGES tab to view the averages information, or click OK or CANCEL to exit the graphic window.

If you have adjusted the Price and Quantity fields by clicking on the regression curve and you click OK to exit, the price of your cost group will be set to the adjusted price. The quantity for the cost group is not changed, but a comment with the adjusted quantity is added in the Bid-based Comment field to indicate that the cost group price is now based on a different quantity. To retain the

Superseded

original price for your cost group, be sure to click CANCEL to exit the graphic window.

The averages information for a cost group displays on the AVERAGES tab of the Bid History Analysis Window. Even if CES does not have the information necessary to perform a regression analysis for a cost group, it still attempts to produce a price for that cost group based on averages.

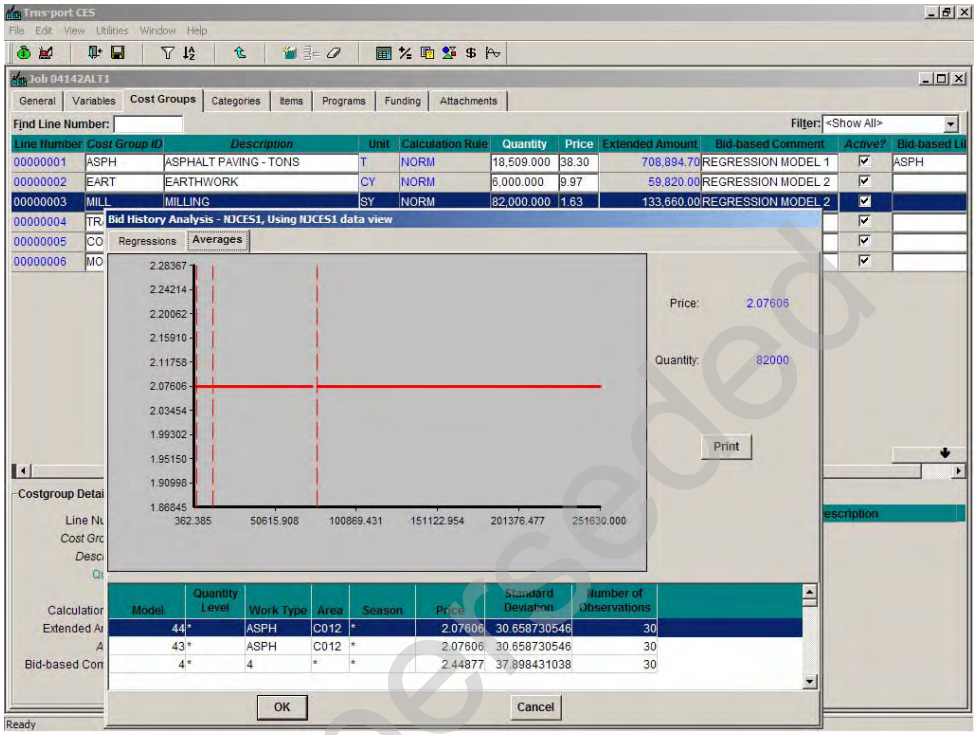


Figure 4-10. Cost Group Bid History Analysis Window-AVERAGES Tab

Similar to the REGRESSIONS tab, you can interactively display the exact price and quantity amounts for the averages graphic chart by pressing and holding down the left mouse button while moving your cursor back and forth in the graphic area. As you move your cursor, the information in the Price and Quantity fields to the right of the graphic automatically adjusts to display the amounts that correspond to the location of your cursor in the averages chart.

Use the horizontal scroll bar at the bottom of the window to view specific averages information. Click PRINT to print the averages information or click OK or CANCEL to exit the graphic window.

If you have adjusted the Price and Quantity fields by clicking on the averages chart and you click OK to exit, the price of your cost group will be set to the adjusted price. The quantity for the cost group is not changed, but a comment with the adjusted quantity is added in the Bid-based Comment field to indicate that the cost group price is now based on a different quantity. To retain the original price for your cost group, be sure to click CANCEL to exit the graphic window.

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4.4.4 Recalculate Cost Groups

The Cost Group Bid History Libraries in CES will be routinely updated (e.g. quarterly) to include bid data for recent NJDOT contracts. CES allows you to quickly recalculate bid-based prices for the cost groups in a job using the updated libraries.

To have CES automatically recalculate prices for a cost group, while in the COST GROUPS tab select the cost group (or multiple cost groups) to be recalculated, and choose **Compute Price for Quantity** from the **Edit** menu. To select more than one row at a time, hold down the CTRL key while selecting the rows. CES will update the Price and Extended Amount fields for each selected cost group using the updated bid history information. For each selected cost group that is active, the newly calculated extended amount is then included in the overall job estimate.

Click SAVE or select **Save** from the **File** menu to save your work.

4.5 Deleting Cost Groups

To delete cost groups from the COST GROUPS tab of the Job tabbed folder window, begin by selecting the row or rows of cost group information to delete. To choose more than one row at a time, hold down the CTRL key while selecting the rows. To delete several rows that are adjacent to each other, select the first row, then hold down the SHIFT key as you select the last row. All the rows to be deleted are highlighted.

Once you have chosen the row(s) to delete, select **Delete** from the **Edit** menu or press SHIFT+DELETE. As shown in Figure 4-11, CES displays a Delete Rows window.

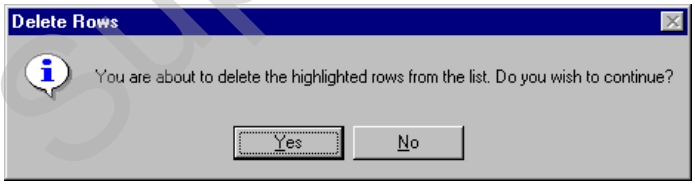

Figure 4-11. Delete Rows Window

Click YES to confirm the deletion, or NO to cancel the action. If you selected more than one row to delete, an additional Delete Rows window displays to give you an extra opportunity to cancel the process. Click YES to complete the deletion.

Click SAVE or select **Save** from the **File** menu to save your work.

4.6 Attachments

CES provides functionality for adding attachments to the estimate. All estimate-related documentation should be attached to the estimate in CES.

Superseded

Per NJDOT policy, the consultant preparing the long-range estimate is required to attach the following estimate-related documentation, where applicable:

- Preliminary Plans
- Transmittal Letter with a date for completion review
- Estimation Checklist (Appendix D)
- Utility Estimation Checklist

Refer to *Chapter 7 – Attachments* for specific information on how to add attachments to a job estimate in CES.

4.7 Snapshots

A snapshot is a complete picture of an estimate job at a given time. It is like freezing the information in an estimate job and keeping it available for use, even if the information in that job later changes. The snapshot process should be used for maintaining an audit trail of an estimate and not as a replacement for saving the job.

Reasons for creating a snapshot of the project for Long-Range Estimation include: change of scope, recalculation of bid-based pricing due to Bid History update, annual review, turnover to QAQC, turnover to consultant from QAQC, before inactivating cost group pricing to prepare for detailed estimation.

Refer to *Chapter 8 – Snapshots* for specific information on how to create snapshots of a job estimate in CES.

4.8 Adding and Changing Program Associations

A program is a group of connected jobs. For example, the different alternatives for a given project could be grouped into a program.

In the Job tabbed folder window, you can associate the current job with one or more programs via the PROGRAMS tab.

Superseded

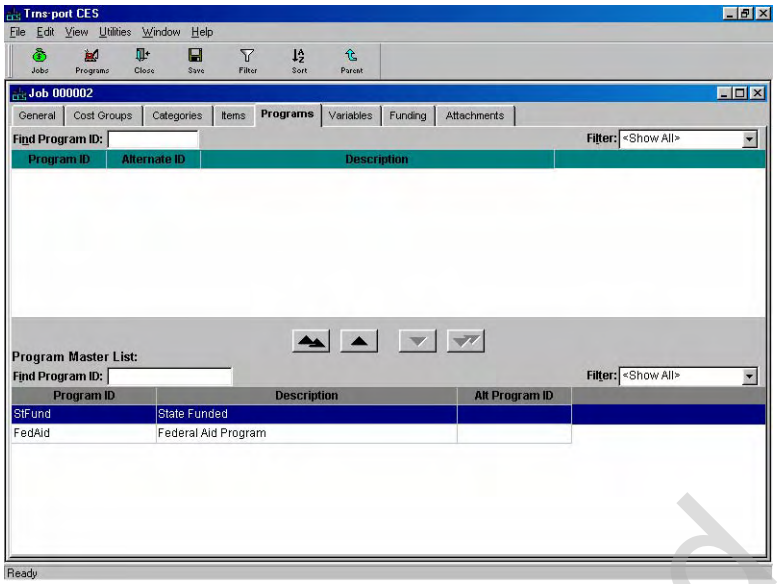

Figure 4-12. Add Job Tabbed Folder Window-PROGRAMS Tab

The PROGRAMS tab is divided into two sections. The upper section lists the programs with which your job is associated. If your job is not associated with any programs, the top section will be empty (see Figure 4-12). The lower section of the tab is a master list of all the programs that are available for association.

Four options allow you to move the programs to and from the lower section of the tab. You can access these options via the **Edit** menu or the buttons near the center of the tab:

Add Selected (single up arrow)	Moves the selected programs from the lower portion of the tab to the upper portion, indicating those programs are now associated with the current job.
Add All (double up arrow)	Moves all the programs from the lower portion of the tab to the upper portion, indicating those programs are now associated with the current job.
Remove Selected (single down arrow)	Moves the selected programs from the upper portion of the tab to the lower portion, indicating those programs are no longer associated with the current job.
Remove All (double down arrow)	Moves all the programs from the upper portion of the tab to the lower portion, indicating those programs are no longer associated with the current job.

Superseded

You can also associate or disassociate programs with the job by clicking and dragging the program to the desired location. Figure 4-13 shows an Add Job tabbed folder window with a program that is associated with the current job.

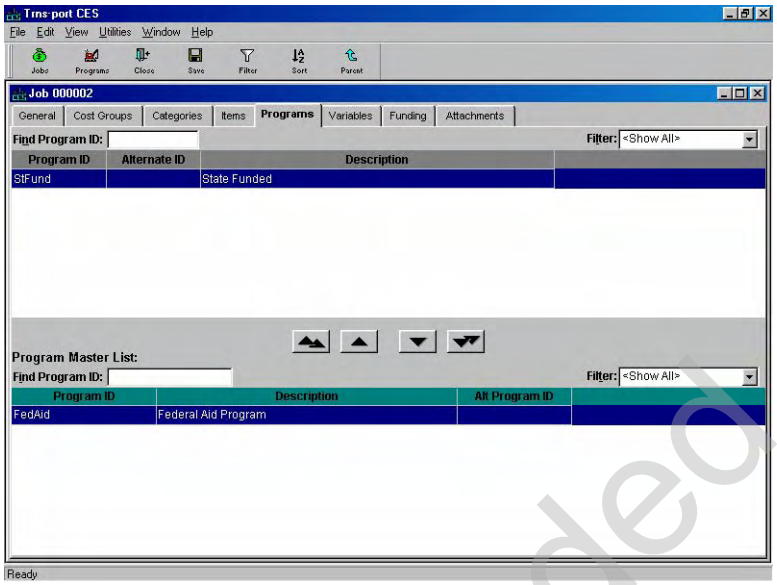

Figure 4-13. PROGRAMS Tab With An Associated Program

Click SAVE or select **Save** from the **File** menu to save your work.

4.9 Reports

CES provides several standard reports that can be used to list detailed information that has been entered. For example, the List Jobs process lists detailed information about the selected jobs, including header information, associated programs, and cost group details.

Refer to *Chapter 9 – Generating Reports* for specific information on how to generate reports in CES.

Superseded

5. Adding Job Estimate Details for Detailed (Final) Estimation

Once DPPD reviews and approves the long range estimate it is passed to Capital Program Management (CPM). From there the detailed estimate may be created. This chapter describes creating a detailed estimate.

5.1 Adding Job Estimate Details for Detailed (Final) Estimation

When creating the detailed (final) estimate, the existing preliminary estimate in CES should be used as the starting point. This record may be modified by locating and selecting the estimate in the Job window and selecting **Change** from the right mouse button menu.

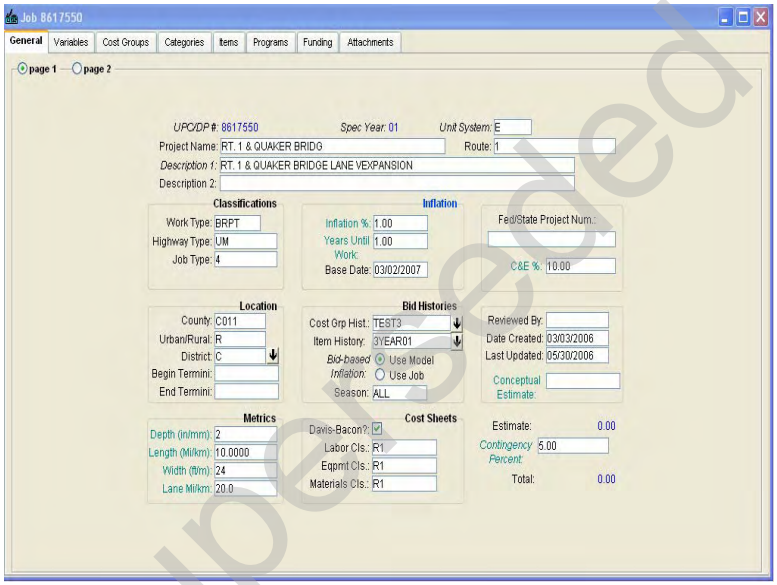

Figure 5-1. Change Job Tabbed Folder Window-GENERAL Tab-Page 1

Superseded

Before beginning, it is important to ensure that the current estimate total on Page 1 of the GENERAL tab is zero ($0.00). If not, it will be necessary to mark all cost groups as inactive. This may be done in the COST GROUPS tab by selecting each cost group and using the right mouse button menu to select **Hide/Show Detail**. Once in the Detail View you can clear the Active box indicator as shown in Figure 5-2. This check box should be cleared for all cost group records before proceeding with the detailed estimate.

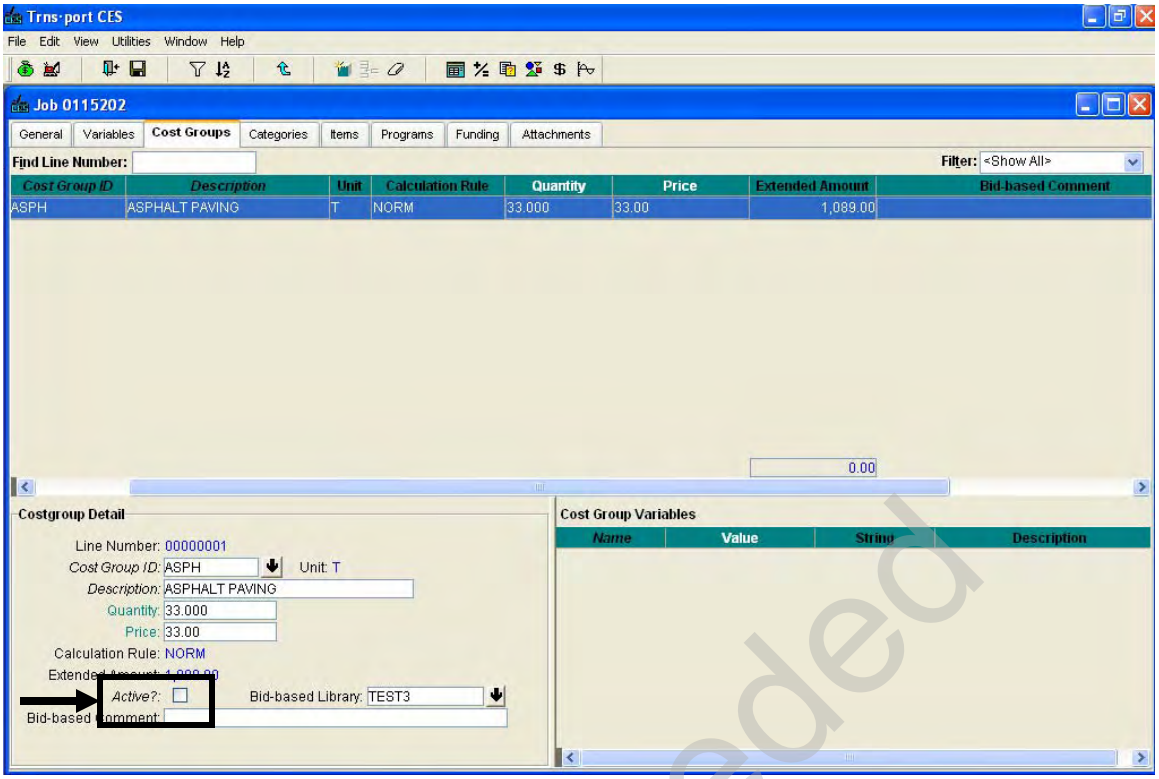

Figure 5-2. Cost Groups Tab – Detail View

After verifying the estimate total is zero, the necessary information to complete the estimate may be entered using the different tabs that are available in the Job tabbed folder window. Fields required by the system are in *Italics*. Fields whose value can be calculated by a formula are in teal. Some fields will already be populated.

These fields that may be populated or updated on Page 1 of the GENERAL tab:

Page 1

UPC/DP# The primary identifier for the estimate. For CPM jobs it is the UPC#. For Operations jobs it is the DP#. This field is not available for edit if you are changing the information for an existing job.

Metrics: NJDOT policy requires that all metric fields be populated for detailed estimation.

Depth (in/mm) The depth of the job being estimated. The value entered must be numeric.

Length (Mi/km) The length of the job being estimated. The value entered must be numeric.

Superseded

Width (ft/m) The width of the job being estimated. The value entered must be numeric.

Lane Mi/km The total number of lane miles or kilometers involved in the job being estimated. This field is *Required.*

The metrics are not exact numbers but rather averages to be used for conceptual areas.

For detailed estimation, this field is required.

Inflation: Update as necessary from previously entered figures.

Inflation % The anticipated percentage of inflation per year until work begins on the job. If this number is not known use the *model inflation* for bid-based inflation. If using *model inflation*, set this to zero. This is a formula-enabled field.

Years Until Work The total number of years prior to the start of the project. This number is used with the Inflation % field to annually inflate the total job estimate, before applying the contingency percent. This is a formula-enabled field.

Base Date The date from which inflation is calculated for bid-based items, item tasks, or cost groups assessed using regression analysis. The entry should be the date construction is expected to start. This field defaults to the current date.

Cost Sheets: These fields are required if you do any cost-based estimation.

Davis-Bacon? Select this check box if the job is federally funded and has laborers who fall under the Davis-Bacon wage guidelines.

Labor Cls: The rate classification code, used to determine which labor wages are brought in when labor is used in job item cost sheets. Enter the labor class by selecting the down arrow beside the field to display a drop-down list from which to select a labor class.

Eqpmt Cls: The rate classification code, used to determine which equipment rates are brought in when equipment is used

Superseded

in job item cost sheets. Enter the equipment class code by selecting the down arrow beside the field to display a drop-down list from which to select an equipment class.

Materials Cls: The materials classification code, used to determine which materials rates are brought in when materials are used in job item cost sheets. Enter the materials class by selecting the down arrow beside the field to display a drop-down list from which to select a materials class.

Bid Histories

Cost Grp Hist: This is for long range estimation only. Do not change it when doing the detailed estimate.

Item History Choose a bid history library from the drop down menu for item level bid history pricing. This field is required if you are doing bid-based item pricing.

Bid-based inflation: The method of inflation calculation CES uses when determining the costs for bid-based items or cost groups assessed using regression analysis: model inflation or job inflation. Select USE MODEL if you want CES to use the inflation rate determined by the bid history model Select USE JOB if you want to use the job inflation percentage assigned via the Inflation % field.

Other Fields

Fed/State Project Num. The federal/state project number assigned to the job. The value entered can be numeric, alphabetic, or alphanumeric. If this is a state job enter **STATE**.

C&E Percent The amount of construction engineering work to be performed on the job expressed as a percentage of the total job amount. Unless it is referred to in a formula, this is not used in any calculations and so does not affect the total.

Reviewed By This field is to be used by NJDOT staff only for indicating the NJDOT estimator responsible for reviewing the estimate. The estimator reviewing the estimate may be specified by selecting the down arrow beside the field to display a drop-down list of values.

Date Created The date the estimate was created. This should not be

Superseded

changed.

Last Updated The date the estimate was last updated. When first entering a job, this field defaults to the current date. Once a job has been saved, this field automatically displays the date that information for the job was last updated.

Conceptual Estimate A formula enabled field that is the current evaluated value of the conceptual estimate expression. Unless it is referred to in a formula, this is not used in any calculations and so does not affect the total.

Contingency Percent The percentage of the job cost being set aside to cover the expenses for unforeseen occurrences. This field should default to 0.00. Typically this field is not filled in at this time but if the Designer sees the need, it may be populated.

Proceed to Page 2 of the GENERAL tab by clicking the PAGE 2 radio button in the upper left portion of the tab.

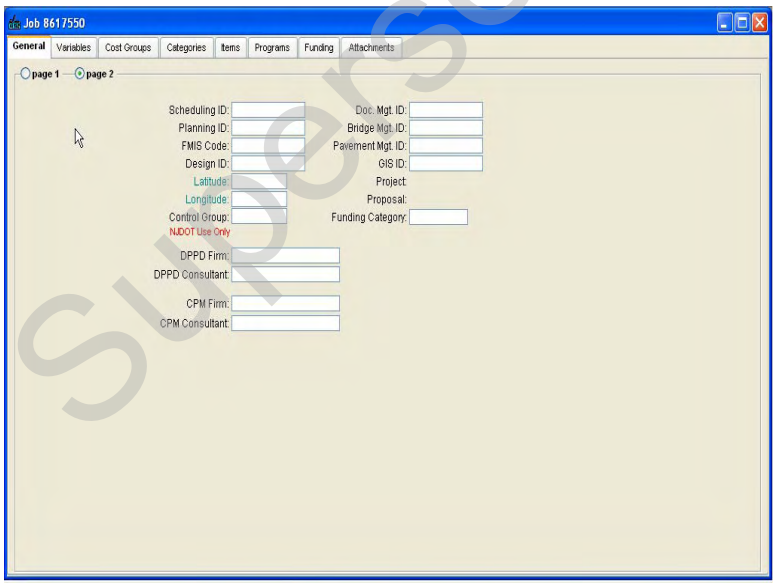

Figure 5-3. Add Job Tabbed Folder Window-GENERAL Tab-Page 2

The majority of fields on this page are not currently being used by NJDOT. However, the following fields are required to be populated:

Page 2

Control Group Read this carefully before making changes! If the job

Superseded

estimate is being created by NJDOT staff, the appropriate control group associated with the consulting firm assigned to the estimate should be selected from the list of values.

If the job estimate is being created by a consultant, this field should already be populated with the correct value. Consultants should NOT change the default value unless passing the job to another consulting firm. Changing the default value will change the security for the job estimate and prevent you from accessing it the next time you log on to CES.

CPM Firm Using the list of values in the drop down menu, populate this field with the name of the firm responsible for producing the detailed estimate.

CPM Consultant The individual who is responsible for producing the detailed estimate, once it is assigned. Enter the full name.

As always save your work frequently! To do so click the SAVE icon on the toolbar or select **Save** from the **File** menu.

5.2 Adding Variables to a Job

The GENERAL tab of the Job Tabbed Folder window includes many different measurements for the job - for example, the depth and length of the job. However, there may be times when you will want to add a measurement that the job takes into account when the total of the job is estimated. The VARIABLES tab lets you enter that information.

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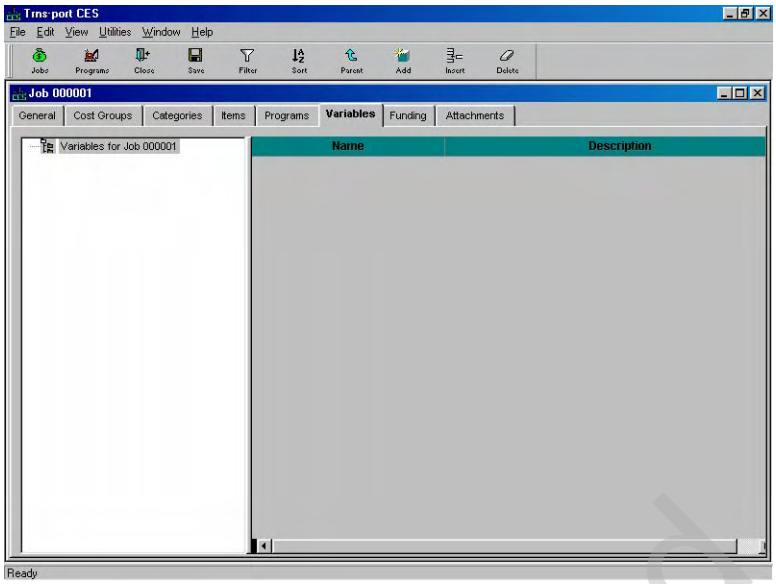

Figure 5-4. Job Tabbed Folder Window-VARIABLE Tab

You may find existing job variables that were created during the long range estimation phase. However, variables defined at the job level can be used throughout the job. For example, if the price of an item is affected by how long the project is in construction, you could create a numeric variable for number of months duration of work. You could create a formula in a reference price task of an item that uses the value you entered in that variable as a factor.

Variables are organized by groups and the variables that belong to each group. You may create as many groups as desired, but a variable can belong to only one group. A variable must belong to a group.

5.2.1 Adding Groups

If the VARIABLES tab is empty, your first step is to create a group.

Select **Add** from the **Edit** menu and choose **Group**. CES displays the VARIABLES tab with one group added.

You can also add a group to the VARIABLES tab by clicking in the grid area and pressing your right mouse button. Select **Add** from the right mouse button menu.

These fields can be edited for a group:

Name The designation that identifies the group. CES automatically enters a name for this field, but it can be edited. **The name must start with a letter and must not contain any spaces. The use of underscores is acceptable.**

A name is assigned by highlighting the assigned name

Superseded

and typing the desired name over the existing text.

Description A description of the variables contained in the group.

A description is assigned by highlighting the assigned description and typing the desired name over the existing text.

5.2.2 Adding Variables in a Group

Once you have a group created, you can add variables to that group. To add a variable to the group, highlight the group in the tree area. Select **Add** from the **Edit** menu and choose **Variable**. CES displays a window that allows you to select whether your variable type is a number (N) or a string (S), and to name your variable.

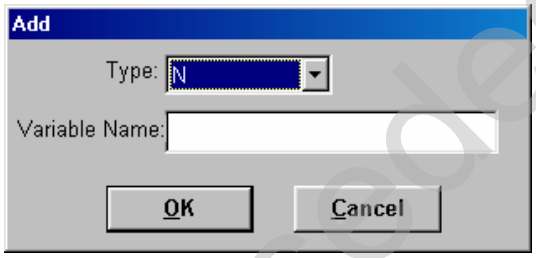

Figure 5-5. Add Variable Window

Choose the variable type and name the variable. Click OK. CES adds the variable to the group. If you select the variable type N, then CES allows you to edit the Value field for the variable, but not the String field. If you select the variable type S, then CES allows you to edit the String field, but not the Value field.

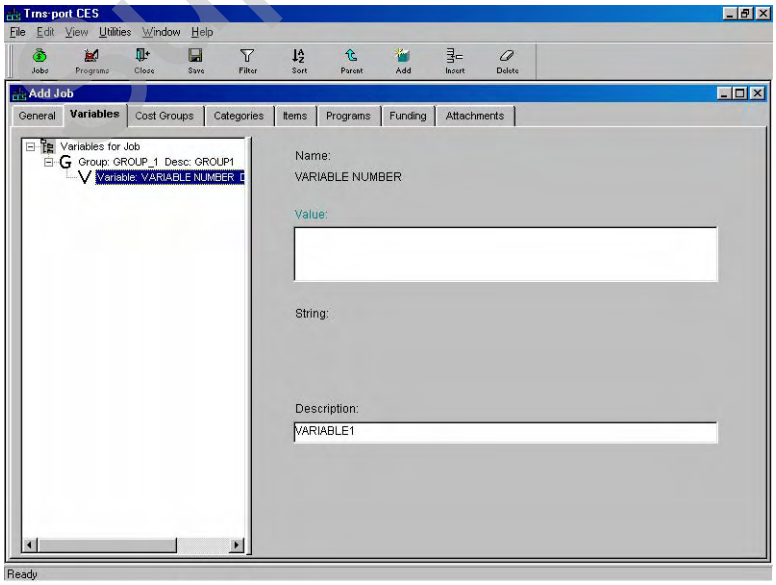

Figure 5-6. Job Tabbed Folder Window-VARIABLE Tab with a Group and Variable

Superseded

These fields can be edited for a variable:

Description A description of the variable.

Value The variable being defined. Enter a formula or double-click in the Value field to display the Formula and Expression Builder Window with which to build a formula (see Chapter 11 - *Formulas and Formula Libraries* for more information). This field is not available if the variable type is S.

String The string being defined. Enter the string directly into the String field. This field is not available if the variable type is N. This field can be for information only, or the string can later be used as part of a formula.

To change an existing variable, select that variable and alter the fields in the variable row as necessary.

Any new or changed variable will not be usable in the CES job until you save your work. Click SAVE or select **Save** from the **File** menu.

5.3 Adding Categories

You can add category information on the CATEGORIES tab of the Job tabbed folder window. Categories in a job are groupings of items that allow job items to be related to each other for funding or other purposes.

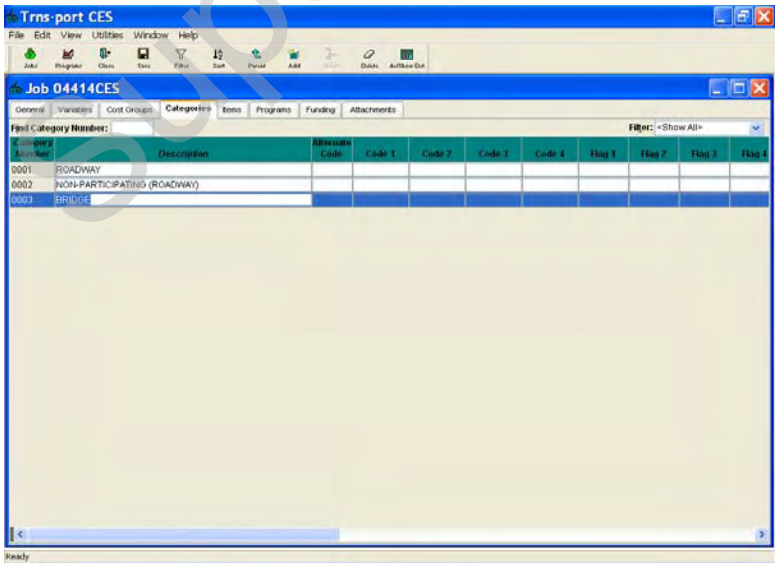

Figure 5-7. The CATEGORIES Tab

The only fields that require information are the Category Number and Description fields.

Superseded

To add a new category, select **Add** from the **Edit** menu or press SHIFT+INSERT on the keyboard. CES displays a window for you to add the category number.

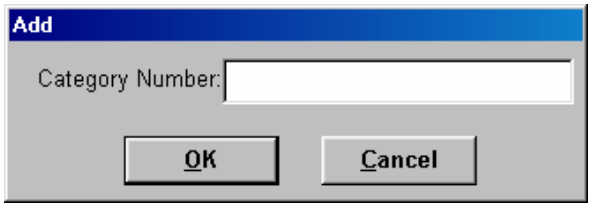

Figure 5-8. Add a New Category Number

Enter a category number and click OK. CES adds a blank row ready to be filled with information about the category that you are defining. Categories must be numbered consecutively, should be incremented by 1, and should use leading zeroes to create a four-digit number. (e.g. 0001, 0002, 0003, etc.).

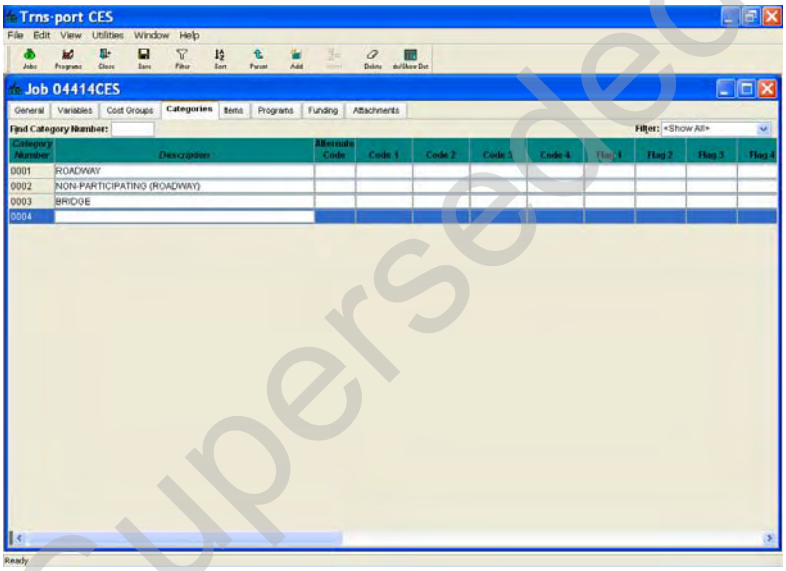

Figure 5-9. The CATEGORIES Tab with a Blank Data Entry Row

Enter the category number and press TAB. Enter a description for the category and either press TAB to fill in the remaining fields, or select **Save** from the **File** menu. If you prefer, you may enter data from the Category Detail window, by choosing **Hide/Show Detail** from the **View** menu or right-mouse button.

For projects with more than one structure, a different category should be set up for each structure. Since the categories assigned on a job are specific only to that particular job this numbering will not carry over to other jobs.

These fields may be populated or edited for a Category:

Category

Superseded

Alternate Code Different categories can be alternates for each other, meaning that a bidder can choose to bid on either category, but not both. If you enter a number here, it indicates that this is an alternate category. NJDOT generally uses alternate items instead of alternate categories.

Description For roadway items enter ROADWAY as the category description. For bridge items use BRIDGE as the category description; or BRIDGE 1, BRIDGE 2, etc, for projects with multiple structures.

See below for categories in federally funded projects.

Bridge ID If this is a structures category, enter the Bridge ID number. This information is required for structures categories.

Bridge Length If this is a structures category, enter the length of the bridge in this category, in feet. This is a formula-enabled field.

Bridge Width If this is a structures category, enter the width of the bridge in this category, in feet. This is a formula-enabled field.

Num. of Spans If this is a structures category, enter the number of spans in the bridge in this category. This is a formula-enabled field.

Bridge Type If this is a structures category, click in the right side of the field to display a drop down list from which to select a Bridge Type code.

Superseded

5.3.1 Federal Categories – NJDOT Policy

See Appendix G for information on the General Detail Categories to be used for Federal Projects.

5.4 Deleting a Job

To delete an existing job, begin by selecting the job to be deleted from the Jobs list window. To select more than one job record at a time, hold down the CTRL key as you select the records. To select multiple records that are adjacent to each other, select the first record, then hold down the SHIFT key as you select the last

record. To select all the records in the list window at once, choose **Select All** from the **Edit** menu.

Once the job(s) to be deleted is selected, choose **Delete** from the **Edit** or right mouse button menu, or press SHIFT+DELETE. A Delete window will display.

Figure 5-10. Job Delete Window

If you select DELETE, CES will erase the job(s), but will retain any snapshots for the job(s), including an automatic snapshot taken during the deletion process. POWER DELETE is a more thorough deletion option that not only erases a job, but also deletes any traces of a job's existence including snapshots and other job information.

CES will display a series of Delete Warning windows listing the tables that will be affected by the deletion. This means you will need to confirm the deletion several times before CES will delete the data from the database. The window title bar lists the number of deletes required. An example of a Delete Warning window is shown in Figure 5-11.

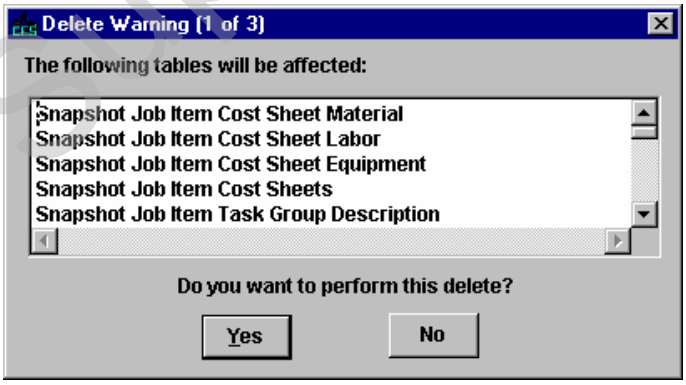

Figure 5-11. Example of Delete Warning (1 of 3) Window

If you click YES in each of the Delete Warning windows, CES will then display a final window to confirm the deletion (see Figure 5-12).

Superseded

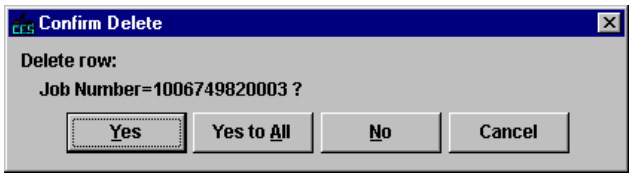

Figure 5-12. Confirm Delete Window

To delete the job currently listed, click YES. If you chose multiple jobs to delete at once, you can click YES TO ALL to delete them simultaneously, or you can click NO to cancel the deletion of the job currently listed and move on to the Confirm Delete window for the next job. Click CANCEL to cancel the deletion of the remaining selected jobs.

5.5 Viewing a Job

To access a job in a mode where you can view but not modify the job's information, double-click on that job from the Jobs list window, or choose **Job** from the **View** or right mouse button menu. In the Job tabbed folder window that opens, you can view the information on the various tabs that are available, but you cannot edit any information on those tabs.

While in View mode, if you find information that needs to be edited, you can easily switch directly to Change mode by selecting **Change** from the **Edit** menu. You cannot, however, switch back to View mode directly from Change mode. If you switch to Change mode, you can edit the tabs as necessary to create the job estimate.

5.6 Changing the Spec Year for a Job

Occasionally you might enter a job, then discover the spec year must be changed. This could occur, for instance, when a job is estimated many years in advance of work being done. The job may require re-estimation as the time of the job draws nearer, and a new spec year may also be required.

When you change the spec year for a job, items that match exactly between the new and old spec years will automatically be changed. Items that are not found in the new spec year will be flagged. Items with matching codes but differing descriptions or units will be flagged as potentially different. You can then check the validity of the item codes, cost sheets, and so forth for the flagged items. CES will not automatically change item codes or convert between unit systems.

To change a job's designated spec year, select the job to change from the Jobs list window, and choose **Change Spec Year** from the **Edit** menu. A Select Spec Year window will display with all the spec years listed, except the one currently assigned to the job (see Figure 5-13).

Superseded

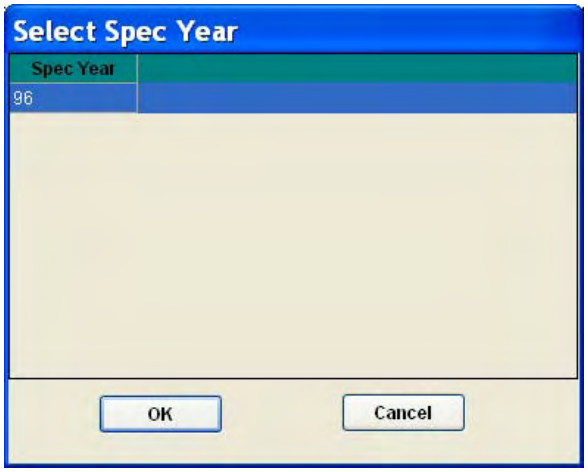

Figure 5-13. Change Spec Year Window

Select the desired spec year, and then click OK. The job will now be listed with the newly designated spec year.

5.7 Splitting a Job

You can split an existing job to incorporate all its item data into two or more new jobs. CES allows you to do this without affecting the original job from which the information is being drawn. Two requirements for splitting a job are that the jobs into which information is being passed cannot contain any items, and they must share the same spec year as the original job.

To split a job, select that job from the Jobs list window and choose **Split Job** from the **Edit** menu. If there are not at least two jobs that meet the requirements for job splitting, a blank Job for Spec Year With No Items window will appear.

If there are at least two appropriate jobs into which to split the chosen job, a window displays listing those jobs (see Figure 5-14).

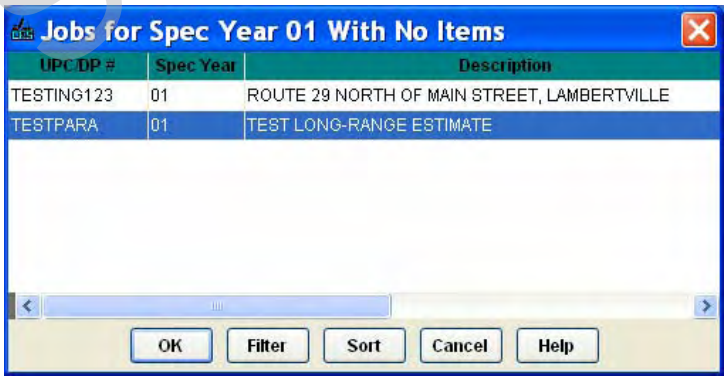

Figure 5-14. Jobs for Spec Year 97 With No Items Window

Filter and sort the window as you would any other list window if necessary. Select the first job into which to place the split job's information, press and hold down

Superseded

the CTRL key, select the other jobs in which the original job is to be split, and click OK. CES displays a list of the items in the job being split, and includes a column with the name of the jobs into which the information is being placed (see Figure 5-15).

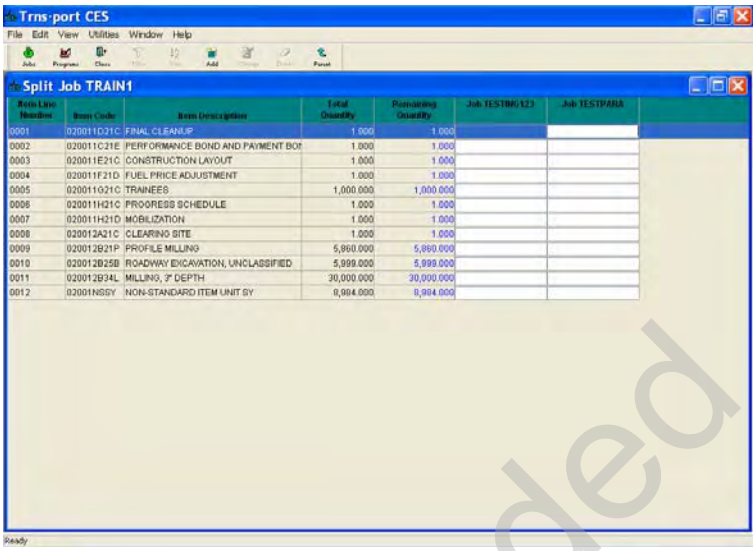

Figure 5-15. Example of a Split Job Window

To assign the original job's items to the selected jobs, you can type quantity information directly in the editable fields, or you can double-click in a field to bring in the remaining quantity for an item.

Once you have assigned all the original job's item quantities to the selected jobs, complete the split by selecting **Close** from the **File** menu. CES will display the Split Job Process window asking if you are sure you want to split the job.

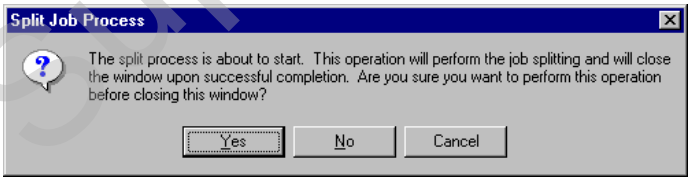

Figure 5-16. Split Job Process Window

Click YES to confirm the job split, NO to cancel the job split and return to the Jobs list window, or CANCEL to cancel the job split and return to the Split Job window.

If you click YES but have not yet assigned all the item quantities from the original job, CES will display an Unassigned quantity window (see Figure 5-17).

Superseded

Figure 5-17. Unassigned Quantity Window

Click OK and then assign all the remaining item quantities in the Split Job window before exiting the window and confirming the job split.

Once all the item quantity assignments are in place and you have confirmed the job split, CES will split the job and return to the Jobs list window. The original job from which the item information was taken remains intact, and the jobs into which the item information was placed now reflect that added information.

At this point you might choose to delete the job that was split since its information is now stored in other jobs. As an additional safeguard, a snapshot is automatically created when a job is split, so the original job's information is stored in snapshot form, as well.

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6. Adding and Pricing Items for Detailed (Final) Estimation

Once job estimate details have been added to the project, item and pricing information may be added for detailed estimation. This chapter describes adding and pricing estimate items.

6.1 NJDOT Policies and Procedures

When adding items to the detailed estimate, NJDOT policies and procedures noted in Appendix H should be followed. Appendix H includes specific instructions regarding: Line numbering, 'No Item' items, Non-Bid items, Alternate items, Fixed Price (Carry) items, Non-Standard items, and Lump Sum items.

6.2 Adding Items

In the Job tabbed folder window, you can add items using either the grid view or the tree view of the ITEMS tab.

6.2.1 Adding Items Using the Grid View

The ITEMS tab of the Job tabbed folder window defaults to a grid view that displays information for all the items associated with the current job.

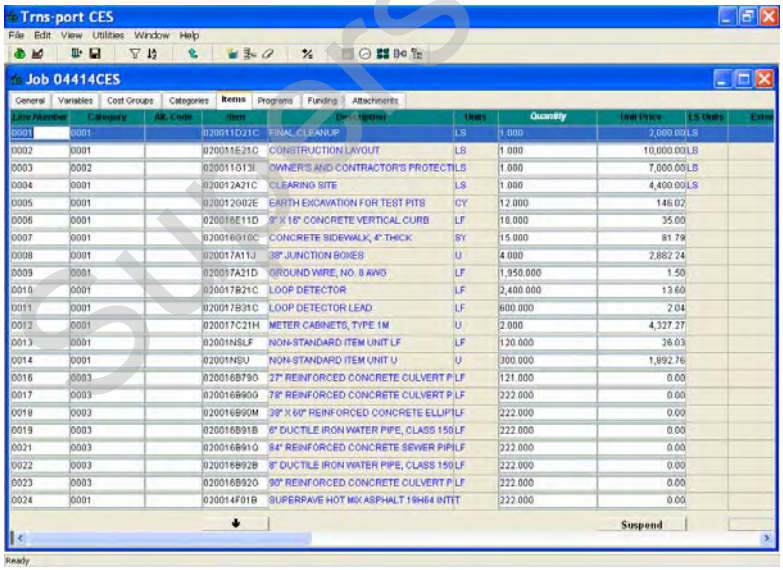

Figure 6-1. Job Tabbed Folder Window-ITEMS Tab-Grid View

If there are no items on the tab, your first step will always be to select **Add** from the **Edit** menu or to press SHIFT+INSERT from your keyboard. CES adds a blank row ready to be filled with information about the item that you are defining.

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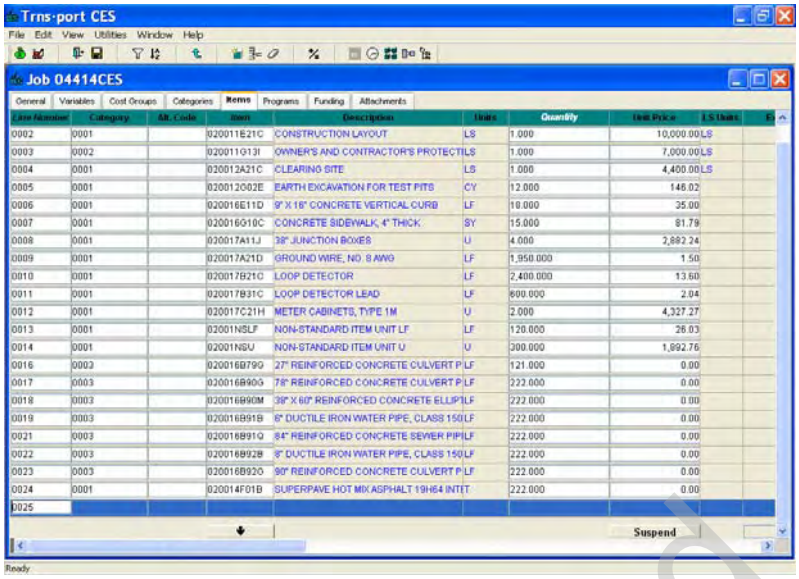

Figure 6-2. ITEMS Tab With a Blank Data Entry Row

For each additional item added, you will also need to add a blank row.

These are the fields that can be edited on the ITEMS tab:

Line Number The line number of the item. This field will auto populate as items are added to the estimate. See Appendix H for NJDOT procedures regarding line numbering.

Alt. Code Different items can be alternates for each other, meaning that a bidder can choose to bid on either item, but not both. The code you enter here indicates that this is an alternate item. The first two characters specify the alternate group, and the third character the alternate number. For example, if you wanted to define two items as alternates for each other, you could enter AA1 as the alternate code for one item, and AA2 for the other. The fact that both items are alternate group AA tells Trns•port that a bidder should choose among them. The different alternate numbers tell Trns•port that the bidder can choose the first item or the second. Complex alternate schemes can be entered as well. For example, suppose that you have five items. The first should be bid no matter what. In addition, a bidder should bid on the second item, or the third and fourth items together, or the fifth item. The first item should have a blank alternate code, the second could have code XY1, the third and fourth could each have code XY2, and the fifth could have code XY3.

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Item

The number that identifies the item. Click the down arrow at the bottom left of the tab screen to display the Items window from which to select an item. You can select multiple items to add from the Items window by holding down the CTRL key. (If you fill in the category Number on the Items window, it will fill in the category for those items.) CES places the first selected item in the currently selected row, and then it creates new rows to accommodate the additional items.

Item numbers beginning with "MM" are for use by Maintenance and Operations only.

Quantity

The total quantity of the item. The quantity for Lump Sum items must always be 1.

Unit Price

Although this field is generally calculated from the item tasks, you can add an *ad hoc* unit price for the item. If you use an ad hoc price, it makes all active tasks for the item inactive. The unit price can be added to the grid view by inserting it or to the tree view by selecting **Add** from the right mouse button menu and choosing **Reference Price**, and then selecting **New Price**.

Comment

A brief comment about the item.

Supplemental Description 1

The primary supplemental description for the item. This is **required** for a Non-Standard Item and demo parcels, but may be used to supply additional information for any item. It will be included on the Bid Proposal file in Expedite for contractors.

Supplemental Description 2

The secondary supplemental description for the item. It provides space for a continuation from Supplemental Description 2 if needed.

Category

The category with which the item is associated. Select the down arrow beside this field to display a drop-down list from which to select a category, or type in the number. Categories available are based on categories that were defined previously in the CATEGORY tab in the Job window.

Fixed Price

Select this check box if the item is a fixed price, meaning the price will be displayed on the Bid

Superseded

Document and the contractor may not change it.

State Furnished Select this check box if the item is acquired from the state (i.e. non-bid item). If this is checked, the item will not be included on the Bid Proposal.

Funding Code This field will not be used in CES. Funding information will be added to the project once it is passed to the Proposal Estimate System (PES).

Code 1 This field is not currently being used by NJDOT.

Click SAVE or select **Save** from the **File** menu to save your work.

6.2.2 Adding Items Using the Tree View

The ITEMS tab of the Job tabbed folder window defaults to a grid view that displays information for all the items associated with the current job; however, if you prefer you can use the tree view to add and change item information. This view also shows any variables used to determine a field value. To access the tree view of the ITEMS tab, select **Tree View** from the **View** menu.

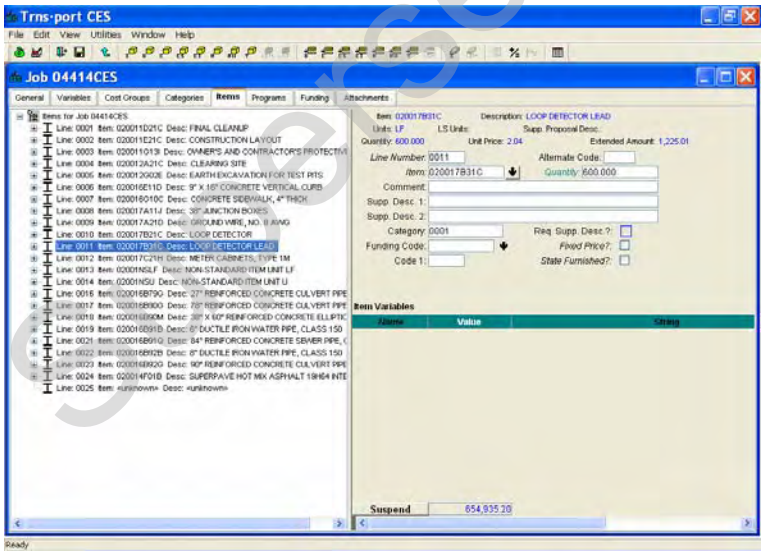

Figure 6-3. Job Tabbed Folder Window-ITEMS Tab-Tree View

You can also add variable information to your items when you are in the detail area.

> **Note:** To switch back to the grid view, you would select **Grid View** from the **View** menu.

In the tree view, a job's items are displayed in the left pane of the ITEMS tab in a tree-like, hierarchical manner, and the information in the right pane corresponds

Superseded

with the currently chosen item in the left pane. If there are no items on the tab, your first step will always be to select **Add** from the **Edit** menu, and then choose **Item**. CES adds an item in the left pane and a data entry area ready to be filled with information about that item in the right pane.

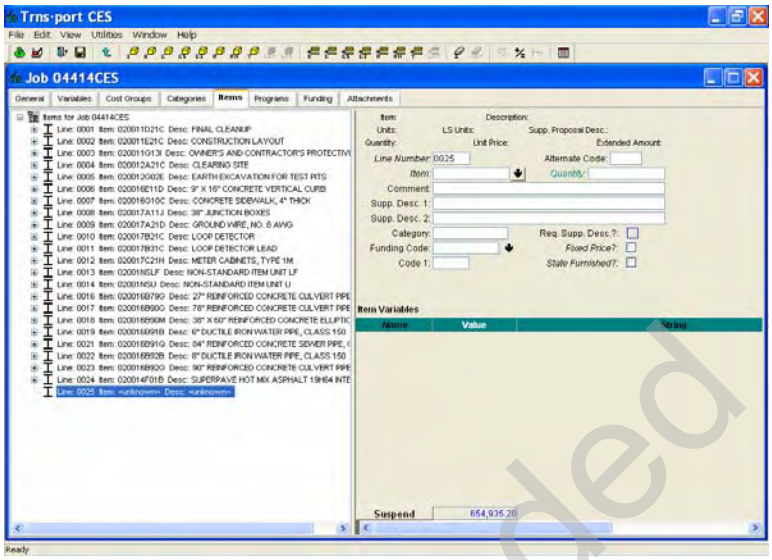

Figure 6-4. Tree View of ITEMS Tab With a Blank Data Entry Area for Selected Item

Edit the item data fields in the tree view in the same way as you would in the grid view.

Click SAVE or select **Save** from the **File** menu to save your work.

6.3 Adding Item Variables

You can add variables to your item using the Item Variables section of the detail window. Variables allow you to add any extra information to your item to include in the final estimate of the job.

To add a variable to your item, make sure you are in the tree view and select **Variables** from the **Edit** menu, and choose **Add**. CES displays a window that allows you to select whether your variable type is a number (N) or a string (S), and to name your variable.

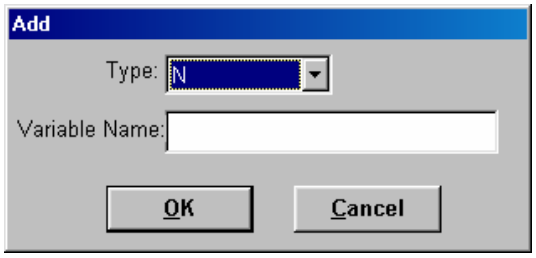

Figure 6-5. Add Variable Window

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Choose the variable type and name the variable. Click OK. CES adds the variable to the item. If you select the variable type N, then CES allows you to edit the Value field for the variable, but not the String field. If you select the variable type S, then CES allows you to edit the String field, but not the Value field. CES inserts the new variable in the Items Variables section of the detail window.

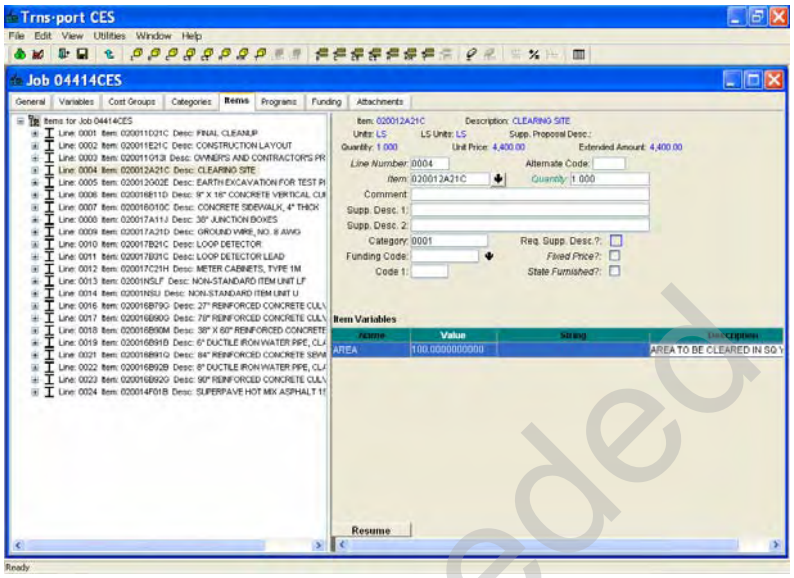

Figure 6-6. ITEMS Tab With an Added Variable

6.4 Adding Item Tasks

To enter a job's item tasks, you must be in the ITEMS tab of the Job tabbed folder window with the tree view displayed. There are several different types of tasks that you can add to an item, including bid-based prices, cost sheets, and reference prices. You can also organize CES tasks by grouping them together within task groups.

6.4.1 Adding and Changing Bid-based Prices

A *bid-based price* is the unit price for a work item that is derived in CES using one of two bid history estimation methods, which, listed in order of priority, are regression and averages. To work with bid-based prices for items, you must first fill in the Item History field found on the GENERAL tab of the Job tabbed folder window. CES draws information from the library listed in this field when calculating bid-based prices.

To add or change a bid-based price for an item, while in the ITEMS tab of the Job tabbed folder window, access the tree view by selecting **Tree View** from the **View** menu. In the left pane of the tree view, select the item to edit.

To add a bid-based price to the selected item, choose **Add** from the **Edit** menu, and then select **Bid-based Price**. The left pane of the ITEMS tab alters to display the new bid-based price at the end of the list of tasks for the selected item. (To

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place the bid-based price elsewhere in the list, highlight the task above which to place the bid-based price, and select **Insert** instead of Add.) The right pane displays a data entry area for the bid-based price.

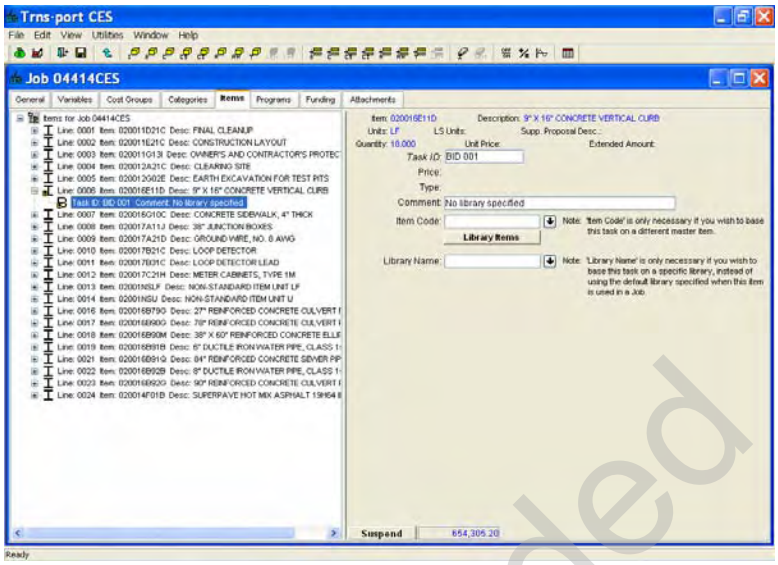

Figure 6-7. ITEMS Tab-Bid-based Price Entry Area

These fields can be edited in the data entry area:

Task ID An identifier for the bid-based price task. This identifier must differ from any other task IDs for the selected item.

Comment An automatically generated comment providing information about the bid-based price, which may be appended or overwritten by the user.

Item Code The item on which the bid-based price is founded. When this field is blank, the price is based on the item selected in the left pane of the ITEMS tab. If there is another item on which the bid-based price should hinge, enter that item's number in this field or click the down arrow beside the field to display the Items list window from which to select an item.

Library Name The item bid history library that CES uses to arrive at the bid-based price. When this field is blank, CES uses the library specified in the Item History field on the GENERAL tab. If there is another library on which the bid-based price should hinge, enter that library's name in this field or click the down arrow beside the field to display the Item Bid History Libraries list window from

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which to select a library.

If CES is missing any data needed to derive the item's bid-based price (such as an item quantity or a bid history library name), a message displays in the Comment field specifying the data that is missing (see Figure 6-7). Once you have added the missing information, CES will recalculate the tasks for the selected item taking the newly added information into account.

If CES does have sufficient information to produce a bid-based price for an item, that price displays in the Price field, and CES multiplies the amount in the Price field by the item's quantity. The resulting amount is then added to the item's extended amount, which in turn is reflected in the job's overall estimated cost.

Once you've entered the bid-based price, save your work. If the Urban/Rural, Highway Type, or Season fields on the GENERAL tab have not yet been completed, an error message appears.

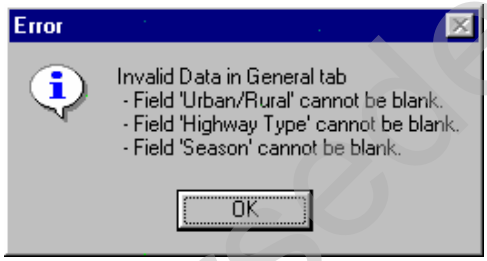

Figure 6-8. Error Message for Bid-Based Price

Return to the GENERAL tab and fill in the required fields, then resave your work.

6.4.2 View Bid-Based Information

When CES uses regression analysis to price an item, you can access a graphical view of the regression information by highlighting the item bid-based task from the Tree View and choosing **Bid-based Information** from the **View** menu. CES displays a Bid History Analysis window with the REGRESSIONS tab displayed.

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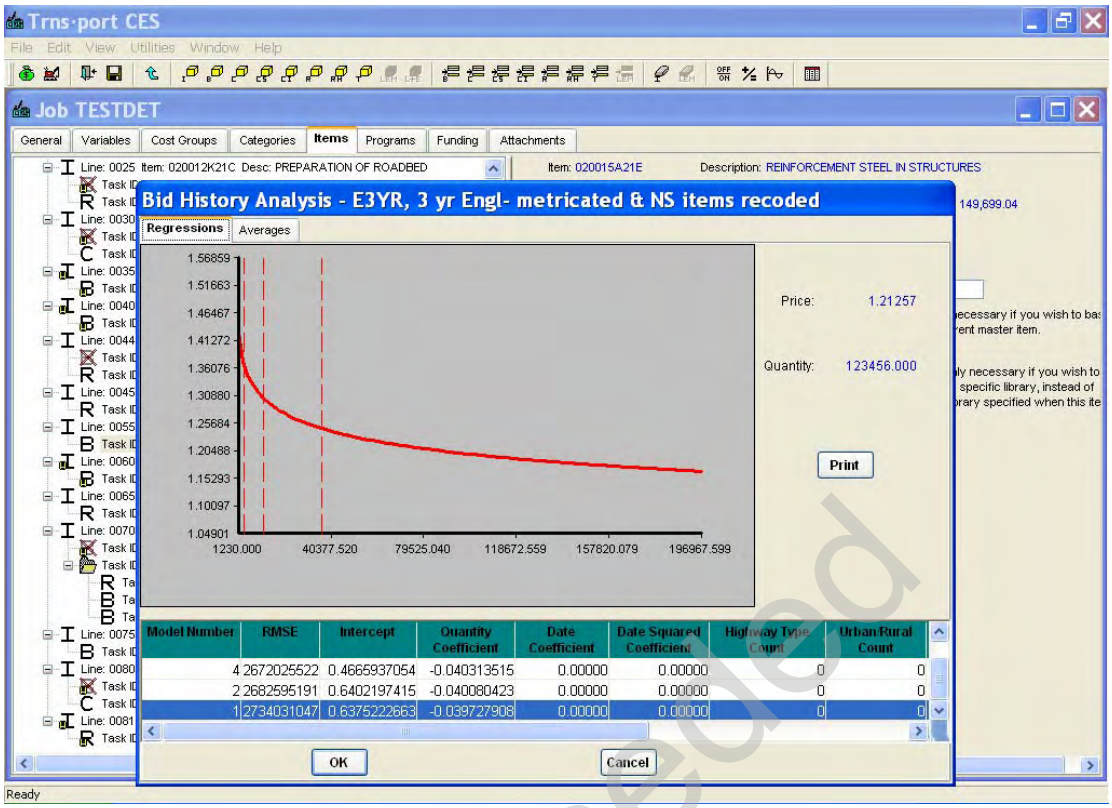

Figure 6-9. Bid History Analysis Window-REGRESSIONS Tab

You can interactively display the exact price and quantity amounts for the entire regression. To do this, place your cursor in the regression area of the graphic, and then press and hold down the left mouse button while moving your cursor back and forth in the area. As you move your cursor, the information in the Price and Quantity fields to the right of the curve automatically adjusts to display the amounts that correspond to the location of your cursor in the regression curve.

Use the horizontal scroll bar at the bottom of the window to view specific information about the regression. Click PRINT to print the regression information, click the AVERAGES tab to view the averages information, or click OK or CANCEL to exit the graphic window.

If you have adjusted the Price and Quantity fields by clicking on the regression curve and you click OK to exit, the price of your item task will be set to the adjusted price. The quantity for the item is not changed, but a comment with the adjusted quantity is added in the Bid-based Comment field to indicate that the item task price is now based on a different quantity. To retain the original price for your item task, click CANCEL to exit the graphic window.

The averages information for an item task displays on the AVERAGES tab of the Bid History Analysis Window. Even if CES does not have the information necessary to perform a regression analysis for an item task, it still attempts to produce a price for that item based on averages.

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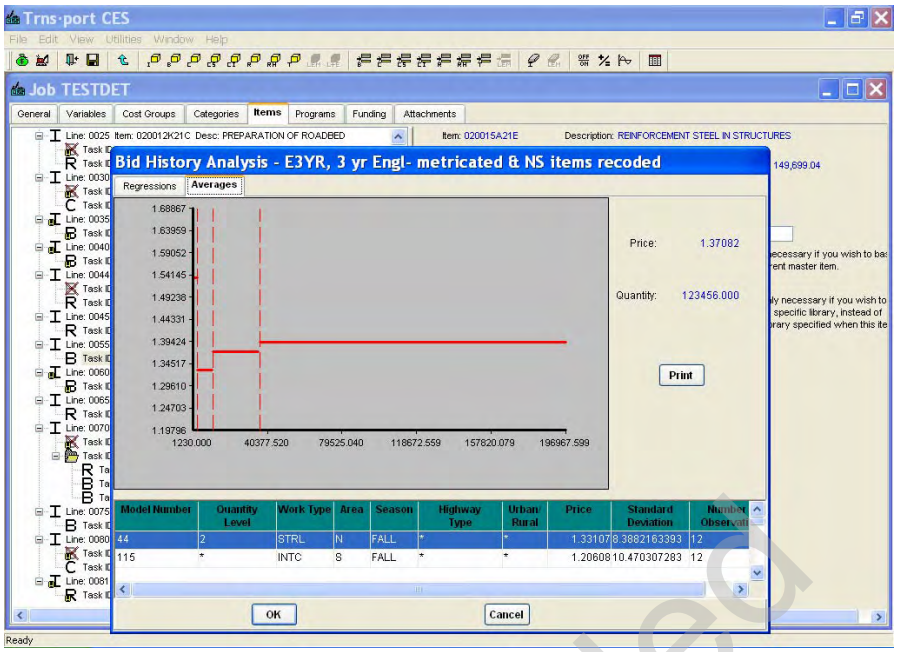

Figure 6-10. Bid History Analysis Window-AVERAGES Tab

Similar to the REGRESSIONS tab, you can interactively display the exact price and quantity amounts for the averages graphic chart by pressing and holding down the left mouse button while moving your cursor back and forth in the graphic area. As you move your cursor, the information in the Price and Quantity fields to the right of the graphic automatically adjusts to display the amounts that correspond to the location of your cursor in the averages chart.

Use the horizontal scroll bar at the bottom of the window to view specific averages information. Click PRINT to print the averages information or click OK or CANCEL to exit the graphic window.

If you have adjusted the Price and Quantity fields by clicking on the averages chart and you click OK to exit, the price of your item task will be set to the adjusted price. The quantity for the item is not changed, but a comment with the adjusted quantity is added in the Bid-based Comment field to indicate that the item task price is now based on a different quantity. To retain the original price for your item task, click CANCEL to exit the graphic window.

6.4.3 Adding and Changing Cost Sheets

A *cost sheet* is a CES utility for tallying the costs of the labor, equipment and material(s) needed to complete a job task.

NJDOT will populate reference tables containing Labor, Equipment and Material rates with data from RS Means, which we be updated periodically.

To add or change a cost sheet for an item, while in the ITEMS tab of the Job tabbed folder window, access the tree view by selecting **Tree View** from the **View** menu.

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In the left pane of the tree view, select the item to edit. There are five different ways to add a cost sheet. You can:

1. Add a new cost sheet “from scratch.”
2. Add a standard CES cost sheet from the Cost Sheet List. (Users may add their own standard cost sheets to the Cost Sheet List.).
3. Add another item’s default cost sheet (this option may not be available for NJ).
4. Add one of this particular standard item’s default cost sheets (this option may not be available for NJ).
5. Add a cost sheet attached to an item in another job.

For any of these options, you need to begin by selecting **Add** from the **Edit** menu, and choosing **Cost Sheet**. From the Cost Sheet submenu, select the appropriate option. Once you’ve selected which way your cost sheet will be added, a window displays from which to select the desired cost sheet.

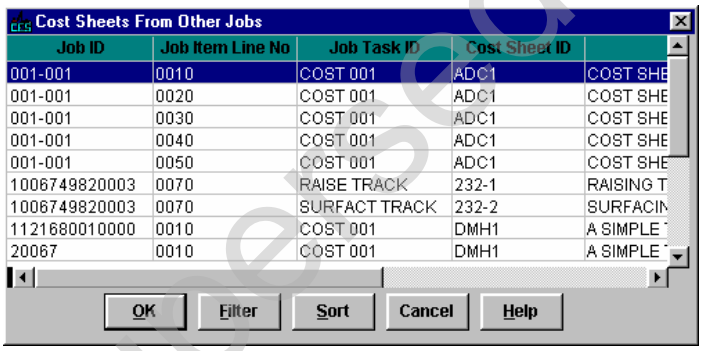

Figure 6-11. Example of Cost Sheet Selection Window

Select the appropriate cost sheet and click OK. Once you click OK, or if you earlier chose the New Cost Sheet option, CES alters the left pane of the ITEMS tab to display the new cost sheet at the end of the list of tasks for the selected item. (To place the cost sheet elsewhere in the list, highlight the task above which to place the cost sheet, and select **Insert** instead of Add.) The right pane displays a data entry area for the cost sheet.

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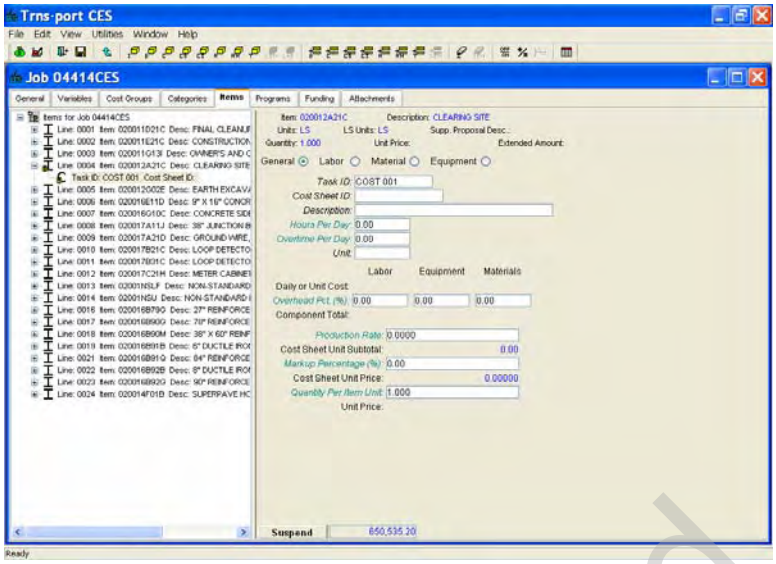

Figure 6-12. ITEMS Tab With Cost Sheet Entry Area Displayed-General Section

There are four sections of the cost sheet data entry area: General, Labor, Material, and Equipment. To complete a cost sheet for the selected item, access these four sections using the radio buttons in the upper portion of the tab and fill out the appropriate data entry fields.

General Section

Click on the GENERAL radio button to display the General section of the cost sheet (see Figure 6-12). These fields can be edited in the General section:

Task ID An identifier for the cost sheet task which is automatically populated but may be edited. This identifier must differ from any other task IDs for the selected item.

Cost Sheet ID An identifier for the CES standard cost sheet or item default cost sheet from which the current cost sheet's information is drawn, if applicable.

Description A short description of the cost sheet.

Hours Per Day The number of hours per day that the crew is expected to work. This number is used to determine the labor and equipment costs as well as the unit price for the task.

Overtime Per The number of overtime hours per day that the crew is

Superseded

Day	expected to work. This number is used to determine the labor and equipment costs as well as the unit price for the task.
Unit	The unit by which the selected cost sheet is measured. Enter a unit or click the down arrow beside the field to display a drop-down list from which to select a unit.
Labor Overhead Percentage	The percentage of the labor expenses for the task that is being set aside to cover unforeseen occurrences. This number is used to determine the labor costs as well as the unit price for the task.
Equipment Overhead Percentage	The percentage of the equipment expenses for the task that is being set aside to cover unforeseen occurrences. This number is used to determine the equipment costs as well as the unit price for the task.
Materials Overhead Percentage	The percentage of the material expenses for the task that is being set aside to cover unforeseen occurrences. This number is used to determine the material costs as well as the unit price for the task.
Production Rate	The rate of production for the selected cost sheet per day; i.e., the number of units of the item that can be produced by the specified labor and equipment in the day defined (hours plus overtime). This number is used to determine the unit price for the task.
Markup Percentage	The percentage of the total expenses for the task that is being set aside to cover unforeseen occurrences. This number is used to determine the unit price for the task.
Quantity Per Item Unit	The amount of cost sheet unit that is necessary to produce one unit of the item to which the cost sheet is attached. For example, if the cost sheet employs a different unit of measure than the item, a conversion factor can be entered here.

Superseded

The fields in the General section of the cost sheet data entry area that cannot be edited are filled by CES when it has sufficient information from the other three sections: Labor, Material, and Equipment. The Cost Sheet Unit Subtotal field is filled as the cost sheet unit price before the Markup Percentage. It is comprised of the labor and equipment rate divided by the production rate, plus the material rate. When CES has enough data to compute a Cost Sheet Unit Price, it multiplies

that unit price by the quantity entered in the Quantity per Item Unit field, which results in an Item Unit Price.

Labor Section

Click on the LABOR radio button to display the Labor section of the cost sheet.

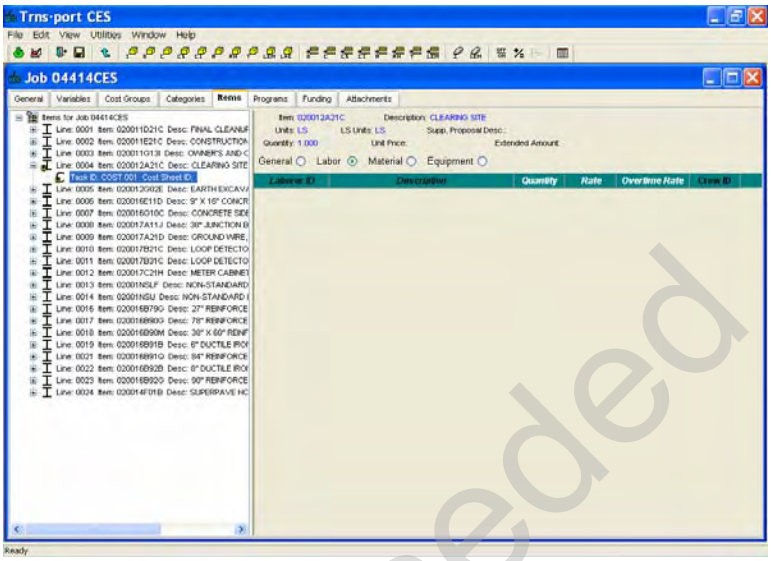

Figure 6-13. Cost Sheet Entry Area-Labor Section

Adding Laborers

If there are no laborers currently listed in the Labor section of the cost sheet (see Figure 6-13), you need to begin either by adding a row in which to enter a single laborer or by adding a predefined work crew. To add a single laborer, select **Add** from the **Edit** menu, and then choose **Laborer**. A row appears in the Labor section.

Superseded

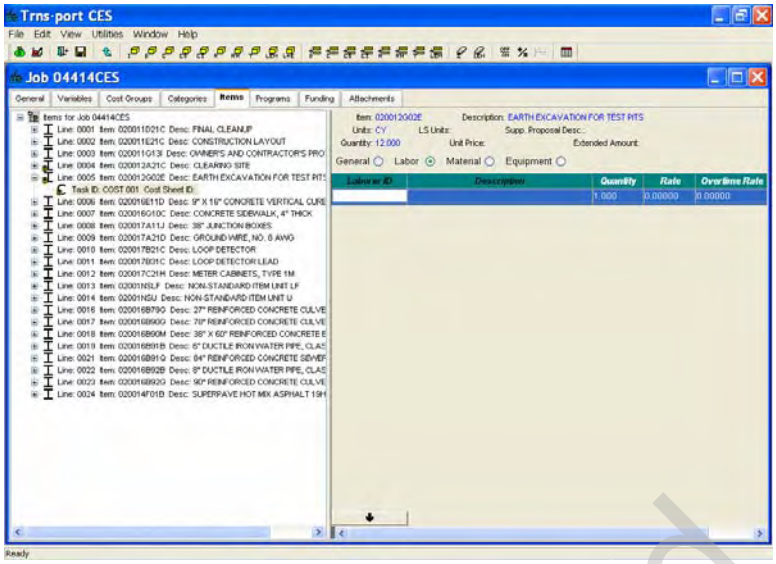

Figure 6-14. Cost Sheet Entry Area-Labor Section with a Blank Row

For each additional laborer added, you also need to insert a blank row; otherwise, CES overwrites the information in the currently selected row. When you insert a row by choosing Add from the Edit menu, the row is placed beneath all the other existing rows. To place the row elsewhere in the list, highlight the row above which to place the new row, and select **Insert** instead of Add.

These fields can be edited in the data entry area:

Laborer ID — An identifier for the laborer. Enter a laborer ID, or click the down arrow at the bottom of the Labor section to display the Labor window from which to select a laborer.

Description — A short description of the laborer. This information is automatically brought in if you add a laborer using the Labor window.

Quantity — The number of persons expected to work in the capacity of the selected laborer.

Rate — The rate of pay per hour for the selected laborer.

Overtime Rate — The overtime rate of pay per hour for the selected laborer.

Unlike adding an individual laborer, if you want to add a predefined work crew in the Labor section, it is not necessary to insert a blank row beforehand. When you add a labor crew in CES, the information for that crew is automatically placed

superseded

beneath the last row in the list. If no rows exist, CES simply makes some to accommodate all the necessary information.

To insert a labor crew, select **Add** from the **Edit** menu, and then choose **Crews**. A Select Crews window displays.

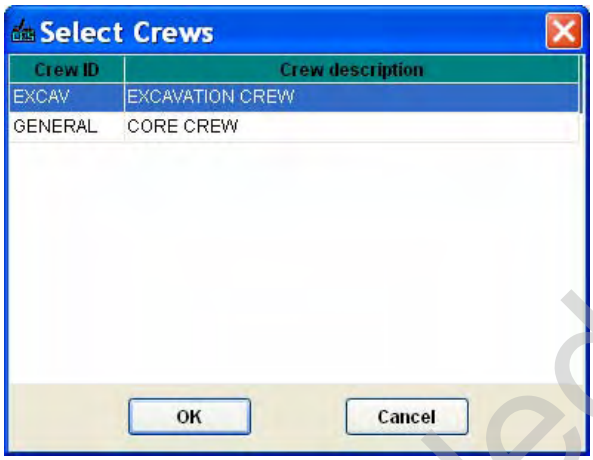

Figure 6-15. Select Crews Window

Select the crew or crews to insert. To choose more than one crew at a time, hold down the CTRL key while selecting the crews. To select several crews that are adjacent to each other, select the first crew and then hold down the SHIFT key as you select the last crew to be chosen. All the crews to be inserted are highlighted.

Once you have chosen the crew(s) to insert, click OK or click CANCEL to cancel the action. If you click OK, the selected crew(s) displays in the Labor section of the cost sheet.

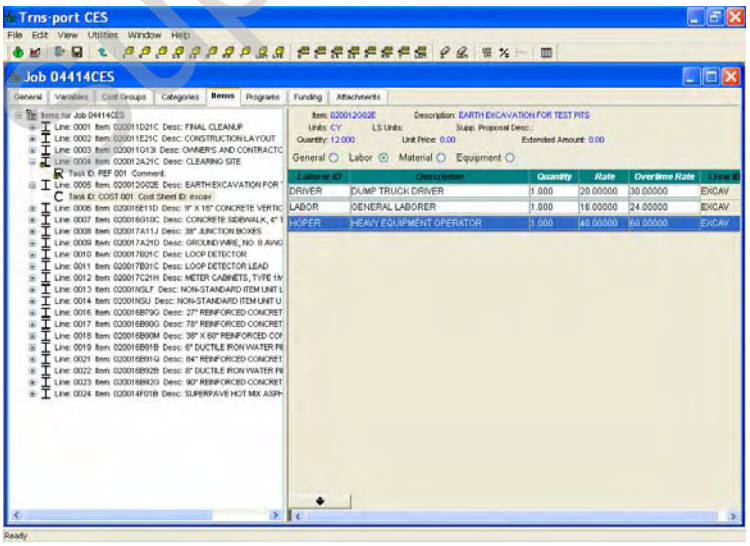

Figure 6-16. Cost Sheet Entry Area-Labor Section With a Labor Crew

Superseded

The Crew ID field identifies the crew ID for laborers who are inserted as part of a crew. You can edit the inserted crew rows just as you would any other rows.

Deleting Laborers

To delete laborers from the Labor section, begin by selecting the row or rows of labor information to delete. To choose more than one row at a time, hold down the CTRL key while selecting the rows. To delete several rows that are adjacent to each other, select the first row and then hold down the SHIFT key as you select the last row to be deleted. All the rows to be deleted are highlighted.

Once you have chosen the row(s) to delete, select **Delete** from the **Edit** menu, and then choose **Laborer**. As shown in Figure 6-17, CES displays a Delete Highlighted Rows window.

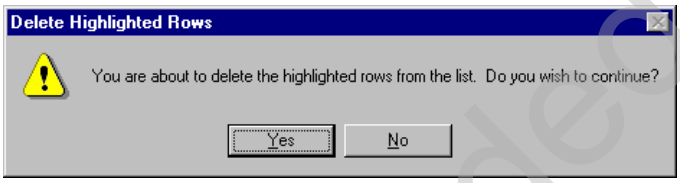

Figure 6-17. Delete Highlighted Rows Window

Click YES to confirm the deletion or NO to cancel the action. If you selected more than one row to delete, an additional Delete Highlighted Rows window displays to give you an extra opportunity to cancel the process. Click YES to complete the deletion.

Material Section

Click on the MATERIAL radio button to display the Material section of the cost sheet.

Superseded

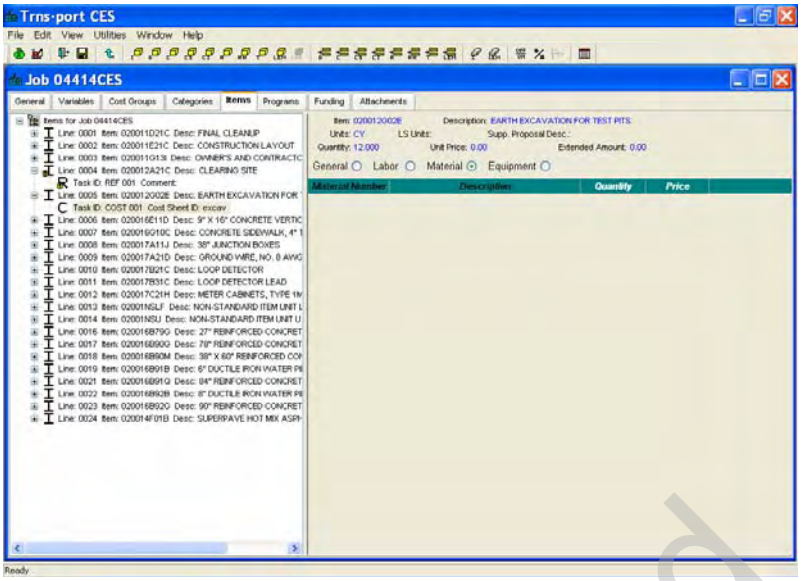

Figure 6-18. Cost Sheet Entry Area-Material Section

Adding Materials

If there are no materials currently listed in the Material section of the cost sheet (see Figure 6-18), you need to begin by adding a row in which to enter material information. To do this, select **Add** from the **Edit** menu, and then choose **Material**. A row appears in the Material section.

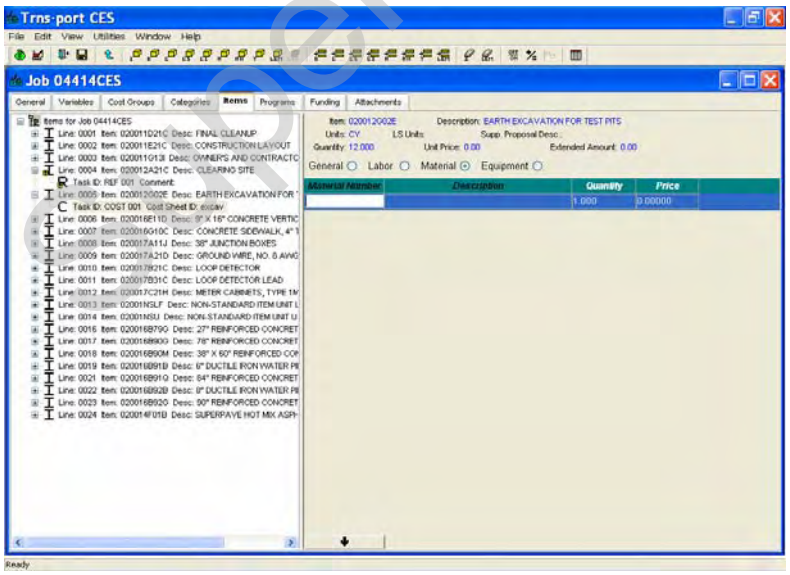

Figure 6-19. Cost Sheet Entry Area-Material Section With a Blank Row

For each additional material added, you will also need to insert a blank row; otherwise, CES overwrites the information in the currently selected row. When you insert a row by choosing Add from the Edit menu, the row is placed beneath all the

Superseded

other existing rows. To place the row elsewhere in the list, highlight the row above which to place the new row, and select **Insert** instead of Add.

These fields can be edited in the data entry area:

Material Number	A unique number or alphanumeric that identifies the material. Enter a material number, or click the down arrow at the bottom of the Material section to display the Materials window from which to select a material.
Description	A short description of the material. This information is automatically brought in if you add a material using the Materials window.
Quantity	The total amount of material (total number of material units) for the cost sheet task.
Price	The cost of one unit of the material.

Deleting Materials

To delete materials from the Material section, begin by selecting the row or rows of material information to delete. To choose more than one row at a time, hold down the CTRL key while selecting the rows. To delete several rows that are adjacent to each other, select the first row and then hold down the SHIFT key as you select the last row to be deleted. All the rows to be deleted are highlighted.

Once you have chosen the row(s) to delete, select **Delete** from the **Edit** menu, and then choose **Material**. As shown in Figure 6-17, CES displays a Delete Highlighted Rows window. Click YES to confirm the deletion or NO to cancel the action. If you selected more than one row to delete, an additional Delete Highlighted Rows window displays to give you an extra opportunity to cancel the process. Click YES to complete the deletion.

Superseded

Equipment Section

Click on the EQUIPMENT radio button to display the Equipment section of the cost sheet.

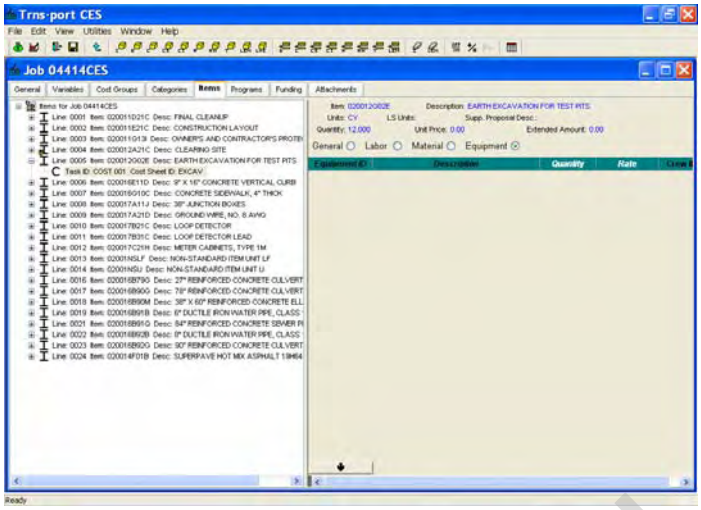

Figure 6-20. Cost Sheet Entry Area-Equipment Section

Adding Equipment

If there is no equipment currently listed in the Equipment section of the cost sheet (see Figure 6-20), you will need to begin either by adding a row in which to enter a single piece of equipment or by adding the equipment that is associated with a predefined work crew. To add a single piece of equipment, select **Add** from the **Edit** menu, and then choose **Equipment**. A row appears in the Equipment section.

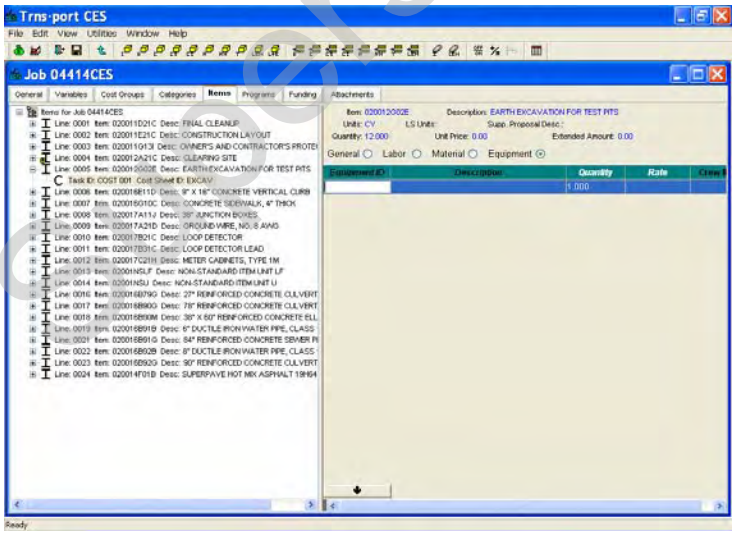

Figure 6-21. Cost Sheet Entry Area-Equipment Section with a Blank Row

For each additional piece of equipment added, you will also need to insert a blank row; otherwise, CES overwrites the information in the currently selected row. When you insert a row by choosing Add from the Edit menu, the row is placed beneath all the other existing rows. To place the row elsewhere in the list, highlight the row above which to place the new row, and select **Insert** instead of Add.

Superseded

These fields can be edited in the data entry area:

Equipment ID An identifier for the equipment. Enter an equipment ID, or click the down arrow at the bottom of the Equipment section to display the Equipment window from which to select a piece of equipment.

Description A short description of the equipment. This information is automatically brought in if you add a piece of equipment using the Equipment window.

Quantity The total amount (number of pieces) of equipment for the cost sheet task.

Rate The cost per hour for the selected equipment.

Unlike adding an individual piece of equipment, if you want to add the equipment associated with a predefined work crew, it is not necessary to insert a blank row beforehand. When you add a work crew in CES, the equipment information for that crew is automatically placed beneath the last row in the Equipment section. If no rows exist, CES simply makes some to accommodate all the necessary information.

To insert a work crew, select **Add** from the **Edit** menu, and then choose **Crews**. A Select Crews window displays.

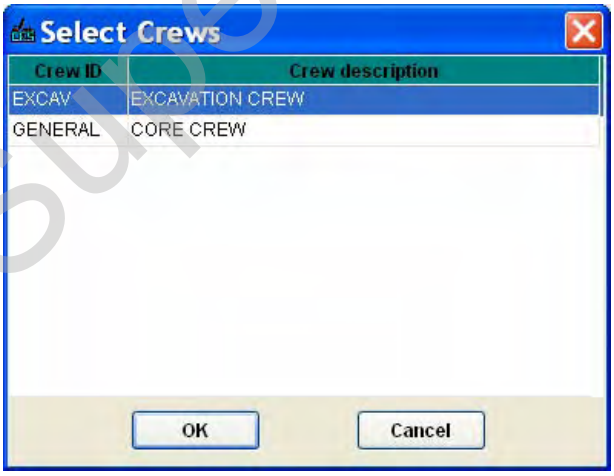

Figure 6-22. Select Crews Window

Select the crew or crews to insert. To choose more than one crew at a time, hold down the CTRL key while selecting the crews. To select several crews that are adjacent to each other, select the first crew and then hold down the SHIFT key as you select the last crew to be chosen. All the crews to be inserted are highlighted.

Superseded

Once you have chosen the crew(s) to insert, click OK or click CANCEL to cancel the action. If you click OK, the equipment information for the selected crew(s) displays in the Equipment section of the cost sheet.

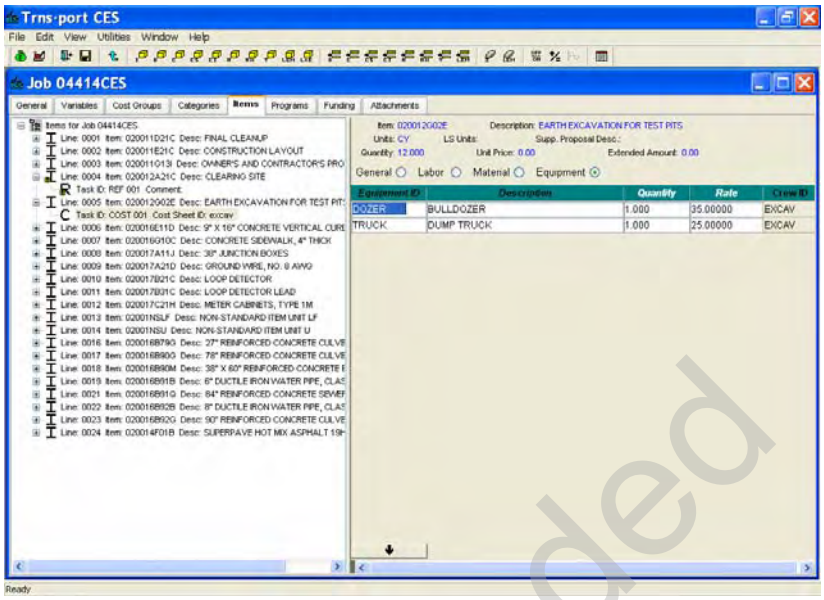

Figure 6-23. Cost Sheet Entry Area-Equipment Section With Work Crew Equipment

The Crew ID field identifies the crew ID for the equipment that is inserted as part of a crew. You can edit the inserted equipment crew rows just as you would any other rows.

6.4.4 Copying Cost Sheets

One of the handiest features of cost sheets is that you can easily copy and adapt them (or portions of them) to meet the needs of a wide variety of items and item tasks. To copy all or a portion of a cost sheet, you must be in the tree view on the ITEMS tab of the Job tabbed folder window. To access the tree view, select **Tree View** from the **View** menu. In the left pane of the tree view, select the item or item task to edit.

Copying Standard and Item Cost Sheets

When you add new cost sheets in CES, you can use existing standard cost sheets as templates. There are other times when you can use those standard cost sheets, however. For instance, if you have begun to enter a cost sheet and then realize that it would have been easier to start from an existing standard cost sheet, you can copy information into your current cost sheet without having to start the cost sheet process again. To do this, make sure that the desired cost sheet is selected in the left pane of the ITEMS tab, choose **Copy** from the **Edit** menu, and then choose the standard cost sheet type. In the cost sheet selection window that

Superseded

displays, choose a cost sheet and click OK. The information from the chosen cost sheet is copied to your current cost sheet.

Copying Blocks of Laborers, Materials, and Equipment

Another way to copy cost sheet information is to copy blocks of laborers, materials, or equipment from one cost sheet to another. To do this, access the section of the cost sheet from which you want to copy information. Select the row or rows of data to copy. Choose **Copy** from the **Edit** menu and then select the **Block of ...** menu option. Access the section of the cost sheet into which to insert the block of elements. Select **Paste** from the **Edit** menu, and then choose the **Block of ...** menu option again.

You can repeat the Paste action as many times as necessary, and into as many cost sheets as you like. CES continues to paste the originally selected set of elements until you copy over them with a new set of the same type elements. CES can simultaneously maintain a copy set for each type of element—laborers, materials, and equipment—so that, for example, you can easily switch from copying and pasting laborers to copying and pasting equipment without losing a copy set as you go.

Click SAVE or select **Save** from the **File** menu to save your work.

6.4.5 Cost Sheet List and Labor, Equipment, Materials, and Crews Lists

NJDOT will populate the reference tables containing Labor, Equipment, and Material rates with data from RS Means, which will be updated periodically. Users may add their own Labor, Equipment, Materials, and Crews to the **Labor, Equipment, Materials**, and **Crews Lists**. These lists may be accessed by selecting **Reference Tables** from the **File** Menu and moving the mouse to the right to highlight the selected list. It is NJDOT policy that users may not change or delete Labor, Equipment and Material rates in the list that were created by other users, since any changes will impact all users.

Users may also add their own standard cost sheets to the **Cost Sheet List**. The **Cost Sheet List** may be accessed by selecting it from the **File** menu. Cost sheets added to the **Cost Sheet List** are accessible to <u>all</u> users of CES. It is NJDOT policy that users may not change or delete cost sheets in the list that were created by other users, since any changes will impact all users. Since the system does not control user ownership of cost sheets, any cost sheets selected from the list should be reviewed when using them in an estimate. Standard cost sheets may be modified in an estimate.

Tip: Users who do not wish to share their cost sheets may store them in a template job, and copy and paste them into their estimates as needed.

Superseded

6.4.6 Adding and Changing Reference Prices

A *reference price* is a price used as the basis for estimating an item's cost. Reference prices can be stipulated directly or they can be derived from formulas. There are two types of reference prices that can be added: new prices and historical prices. Historical reference prices will not be used for NJDOT.

To add or change a reference price for an item, you must be in the tree view on the ITEMS tab of the Job tabbed folder window. To access the tree view, select **Tree View** from the **View** menu. In the left pane of the tree view, select the item to edit.

Adding and Changing a New Reference Price

To add a new reference price for an item, select **Add** from the **Edit** menu, choose **Reference Price**, and then select **New Price**. The left pane of the ITEMS tab alters to display the new reference price at the end of the list of tasks for the selected item. (To place the reference price elsewhere in the list, highlight the task above which to place the reference price, and select **Insert** instead of Add.) The right pane displays a data entry area for the reference price.

Superseded

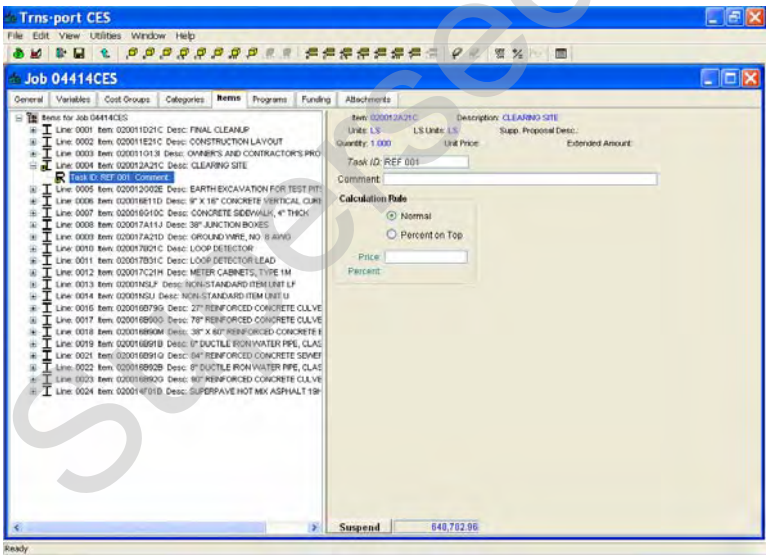

Figure 6-24. ITEMS Tab With Reference Price Entry Area Displayed

Complete these fields to define the reference price being added:

Task ID — An identifier for the reference price task. This identifier must differ from any other task IDs for the selected item. This is populated by the system by default but may be changed by the user.

Comment — A brief comment about the reference price.

Calculation Rule	The way of computing the price for the item; it can either be *Normal*, or *Percent on Top* (a percentage of the total cost of the non-percent-on-top items).
Price	The price for the task. Enter an amount in this field, type in a formula name, or use the Formula and Expression Builder to calculate the amount (see *Chapter 11 – Formulas and Formula Libraries*). This field is available only if the Normal calculation rule is selected.
Percent	The percentage that the percent on top is assigned. Enter an amount in this field, type in a formula name, or use the Formula and Expression Builder to calculate the amount (see *Chapter 11 - Formulas and Formula Libraries*). This field is only available if the Percent on Top calculation rule is selected.

Once you have completed the Price or Percent field, CES multiplies the amount in that field by the item's quantity. The resulting amount is then added to the item's extended amount, which in turn is reflected in the job's overall estimated cost.

To change an existing reference price that you created, select that reference price in the left pane of the ITEMS tab and alter the fields in the right pane as necessary.

Click SAVE or select **Save** from the **File** menu to save your work.

6.4.7 Adding Task Groups

In CES, a *task group* is used to group together an item's related job tasks. A task group can be a part of an item or another task group. To add or change a task group, while in the ITEMS tab of the Job tabbed folder window, access the tree view by selecting **Tree View** from the **View** menu. In the left pane of the tree view, select the item or existing task group to edit.

To add a new task group to the selected item or task group, choose **Add** from the **Edit** menu, and then select **Task Group**. The left pane of the ITEMS tab alters to display the new task group at the end of the list of tasks for the selected item or task group. (To place the task group elsewhere in the list, highlight the task above which to place the task group, and select **Insert** instead of Add.) The right pane displays a data entry area for the new task group.

Superseded

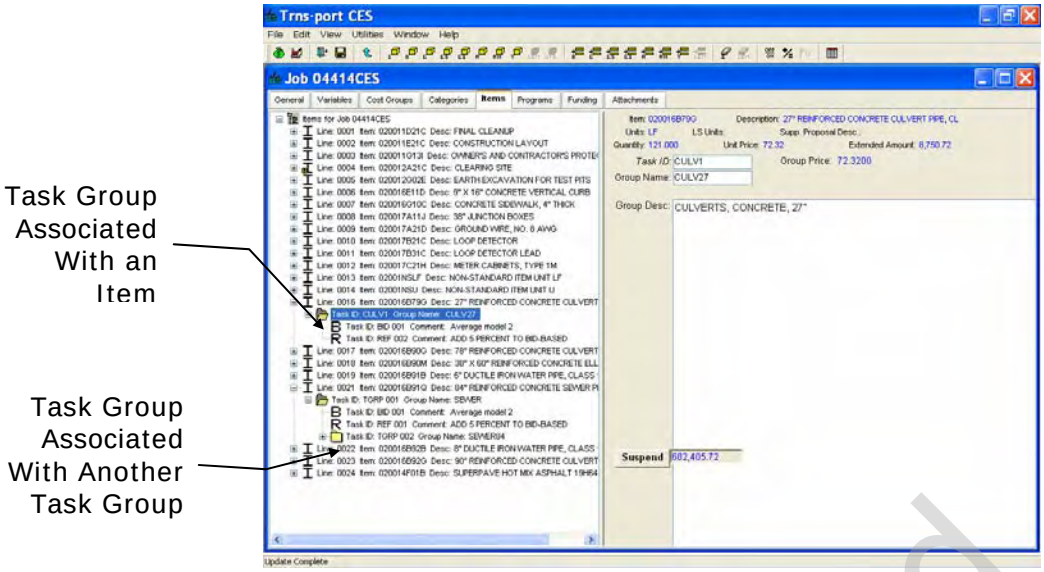

Figure 6-25. ITEMS Tab-Task Group Entry Area

These fields can be edited in the data entry area:

Task ID An identifier for the task group. This identifier must differ from any other task group IDs for the selected item. This is populated by the system by default but can be edited by the user.

Group Name A descriptive designation for the task group.

In addition to entering data in the two fields that are available, you can also type an extensive statement about the task group in the large text entry area in the right pane.

You can add and change tasks in a task group the same as you would the tasks that fall directly under an item. To copy an existing task to a task group, simply hold down control then click on and drag the chosen task to the task group.

Click SAVE or select **Save** from the **File** menu to save your work.

6.5 Deleting Item Tasks

You must be in the tree view of the ITEMS tab to delete item tasks. To access the tree view of the ITEMS tab, select **Tree View** from the **View** menu.

6.5.1 Deleting Bid-based Prices

To delete a bid-based price, select that bid-based price in the left pane of the ITEMS tab. Choose **Delete** from the **Edit** menu, and then select **Bid-based Price**. A Delete window displays (see Figure 6-26).

Superseded

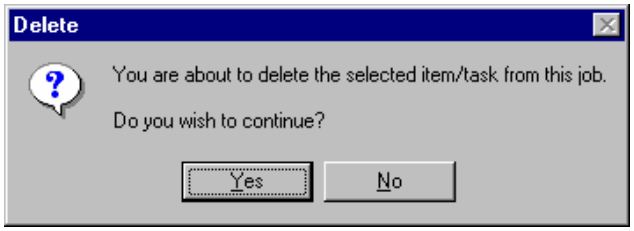

Figure 6-26. Delete Window

Click YES to confirm the deletion or NO to cancel the action. If you click YES, CES deletes the chosen task.

Click SAVE or select **Save** from the **File** menu to save your work.

6.5.2 Deleting Cost Sheets

To delete a cost sheet, select that cost sheet in the left pane of the ITEMS tab. Choose **Delete** from the **Edit** menu, and then select **Cost Sheet**. A Delete window displays (see Figure 6-26). Click YES to confirm the deletion or NO to cancel the action. If you click YES, CES deletes the chosen task.

Click SAVE or select **Save** from the **File** menu to save your work.

6.5.3 Deleting Reference Prices

To delete a reference price, select that reference price in the left pane of the ITEMS tab. Choose **Delete** from the **Edit** menu, and then select **Reference Price**. A Delete window displays (see Figure 6-26). Click YES to confirm the deletion or NO to cancel the action. If you click YES, CES deletes the chosen task.

Click SAVE or select **Save** from the **File** menu to save your work.

6.5.4 Deleting Task Groups

To delete a task group, select that task group in the left pane of the ITEMS tab. Choose **Delete** from the **Edit** menu, and then select **Task Group**. A Delete window displays (see Figure 6-26). Click YES to confirm the deletion or NO to cancel the action. If you click YES, CES deletes the chosen task.

Click SAVE or select **Save** from the **File** menu to save your work.

6.6 Identifying Item Tasks as Active or Inactive

When item tasks are added to a job in Trns•port CES, those tasks are included, or *active*, in the cost estimation for the job. If you determine that an item task is not necessary for the job being estimated, however, you can easily eliminate that task from CES's calculations by marking it as *inactive*. To do this, you must be in the tree view of the ITEMS tab. To access the tree view of the ITEMS tab, select **Tree View** from the **View** menu.

Superseded

To change an active task's status to inactive, select that task in the left pane of the ITEMS tab and choose **Toggle Active / Inactive** from the **Edit** menu. An **X** displays over the selected item task indicating that it is now inactive and the costs for the task are not included in CES's calculations for the current job.

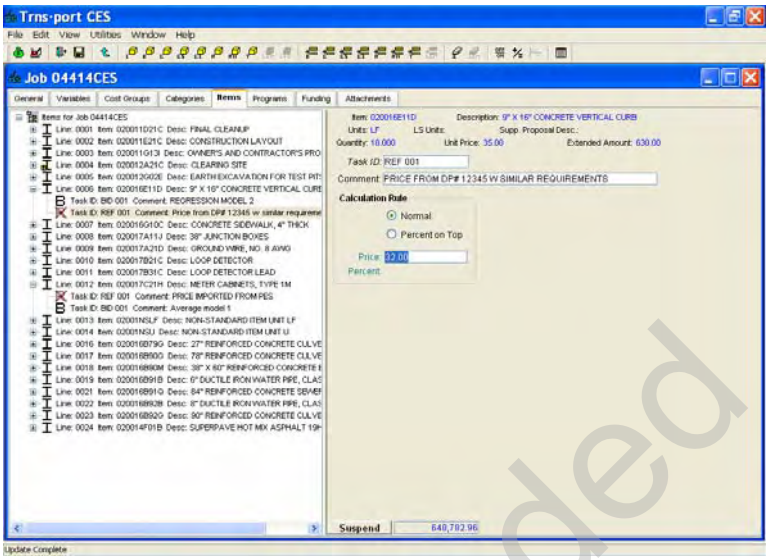

Figure 6-27. ITEMS Tab With Two Inactive Reference Prices

When you mark a task group as inactive, all of its contents are also marked as inactive at the same time. If all tasks for an item are marked inactive, then the extended amount for the task group is blank.

To make an inactive task or task group active again, select that task or task group and choose **Toggle Active / Inactive** from the **Edit** menu. The selected element no longer displays an **X** and will once again be included in CES's estimate calculations.

Click SAVE or select **Save** from the **File** menu to save your work.

6.6.1 Deleting Inactive Tasks

Tasks that are inactive may be kept in the job without affecting the total cost of the job. However, you do have the option of deleting the inactive tasks.

To delete an inactive task, select that task in the left pane of the ITEMS tab. Choose **Delete** from the **Edit** menu, and then select the task. A Delete window displays (see Figure 6-26). Click YES to confirm the deletion or NO to cancel the action. If you click YES, CES deletes the chosen inactive task.

You can also use the Delete Inactive Tasks command to delete all inactive tasks in the job. Select **Delete Inactive Tasks** from the **Edit** menu. A Delete Inactive Tasks window displays.

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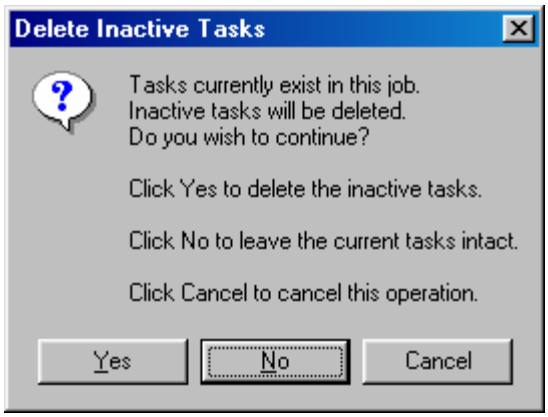

Figure 6-28. Delete Inactive Tasks

Click YES to delete all inactive tasks for the job, or NO to leave the current inactive tasks intact. Click CANCEL to cancel the operation and return to the ITEM tab.

If you click YES, then CES deletes all inactive tasks for the items in the job. Click SAVE or select **Save** from the **File** menu to save your work.

6.7 Using the Tree View's Special Features

The ITEMS tab of the Job tabbed folder window defaults to a grid view that displays information for all the items associated with the current job; however, if you prefer you can switch from the grid view to the tree view to access some special features that make it very easy to manipulate items, tasks, folders, and so forth. To access the tree view of the ITEMS tab, select **Tree View** from the **View** menu.

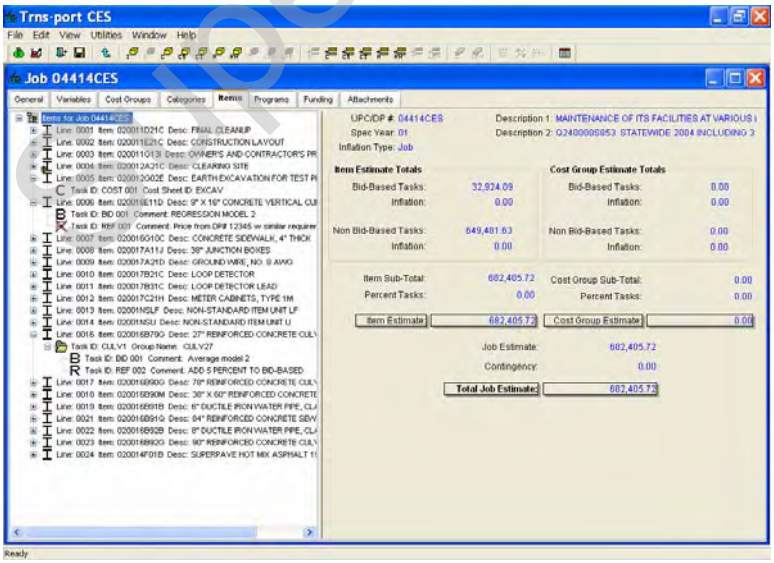

Figure 6-29. Tree View of the ITEMS Tab

Superseded

6.7.1 Recognizing Identifiers

In the tree view, a job's items are displayed in the left pane of the ITEMS tab in a tree-like, hierarchical manner, and the information in the right pane corresponds with the currently chosen item in the left pane.

In the left pane, job elements and information can be identified by icons or letters as follows:

Multi-folder Icon (Items for Job)	Always present at the top of the pane, this icon contains all the item and item-related elements for the job.
The Letter "I"	Represents a job item.
The Letter "B"	Represents a bid-based price.
The Letter "C"	Represents a cost sheet.
The Letter "R"	Represents a reference price.
Single-folder Icon	Represents a task group.
Exclamation Point in yellow square	Indicates that a price or quantity is missing (blank).

A plus symbol next to an icon or item indicates that other elements fall underneath that icon or item. To view the underlying elements, single-click on the plus symbol or double-click on the icon or item. A minus symbol then displays where the plus symbol had been, indicating that the underlying elements for the icon or item are displayed. To fold the elements back up under their icon or item once again, single-click on the minus symbol or double-click on the icon or item.

6.7.2 Manipulating Tasks

One particularly useful feature of the tree view is that you can copy and paste tasks from one item or task group to another item or task group with the click of your mouse. For instance, you can copy and paste an entire cost sheet from one item to the next. When you copy a task in this way, all of its information is copied to the new location.

To copy and paste a task from one item or task group to another, start by selecting the task to copy. Hold down the left mouse button as you drag the selected task until it is directly on top of the desired item or task group. When you release the left mouse button, the task appears not only where it was first located,

Superseded

but also under the item or task group to which it was dragged. To move a task completely, or in other words, to remove it from one item or task group and place it in another, simply follow the same procedure as you would to copy the task, but hold down the CTRL key as you release the left mouse button.

You can use these same copy and paste/movement methods to copy or move an item or task group's entire contents to another item or task group. To do this, click and drag the item or task group itself rather than an individual task.

Click SAVE or select **Save** from the **File** menu to save your work.

6.8 Using the Suspend/Resume Button

Because of the time the recalculation takes on larger jobs, CES has the ability to suspend the full job recalculation while on the ITEMS tab of the job folder window. When the job is in Suspend mode, you do not have to wait for the entire job to recalculate every time a change is made on the ITEMS tab, allowing for quick entry of item price and quantity information. Once your work is finished, you can resume the recalculations.

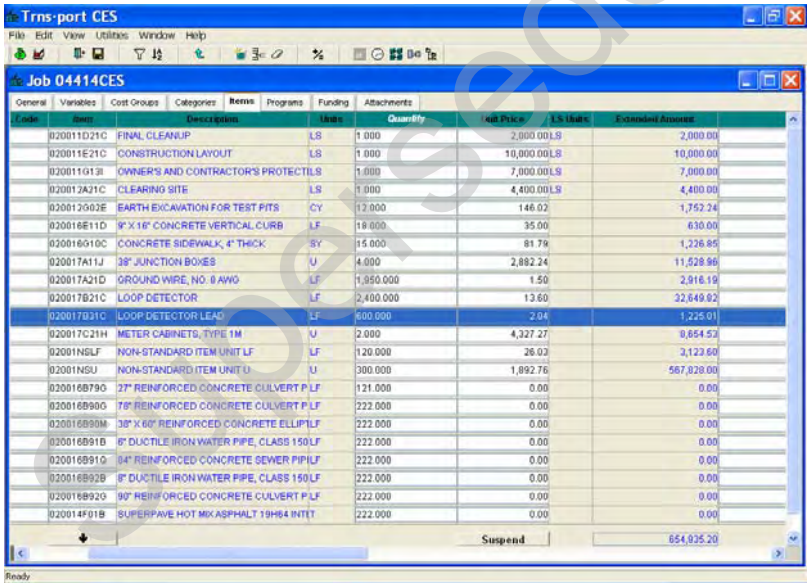

Figure 6-30. The SUSPEND Button in the Grid View

When you click SUSPEND, CES suspends the recalculations to the job. When you click RESUME, the changes are recalculated and the new item extended amount displays.

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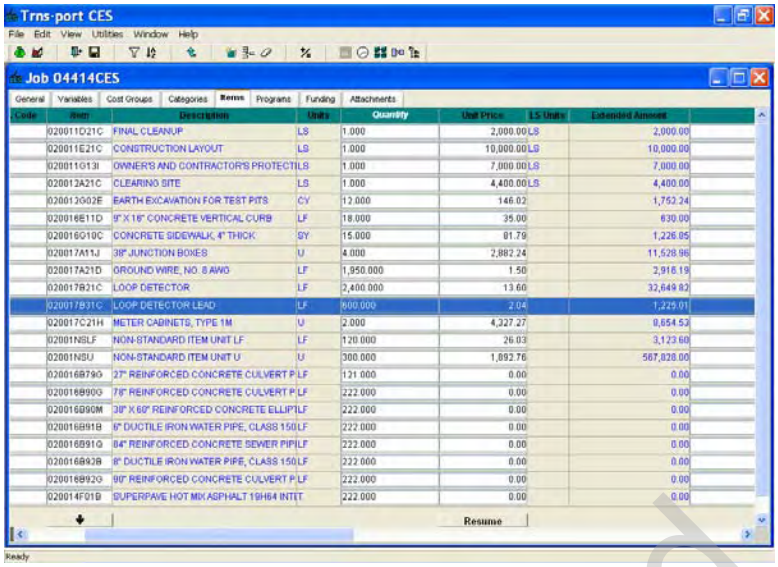

Figure 6-31. The RESUME Button in the Grid View

When you are in Suspend mode (when the RESUME button displays), you cannot see the job estimate total at the bottom of the screen. The recalculation does not update the total job cost until you click RESUME. When you save the job file, the Resume mode is automatically activated and the job is recalculated. The Resume mode is also automatically activated when you leave the ITEMS tab.

When you are in Resume mode (when the SUSPEND button displays), changing an item cost or price causes CES to recalculate the Extended Price for the item and the total job price.

The SUSPEND/RESUME button is also available in the tree view.

6.9 Recalculating Values for Items

CES does not automatically recalculate all the costs for a job each time a change is made to that job. Instead, it recalculates only the job element that changed and its associated higher-level entities. For instance, if you add a quantity to an item after you add a bid-based price, CES recalculates the cost for that item along with the cost for the associated job. In this case, CES looks to the Bid History Library selected on the GENERAL tab to find what the current value is.

CES offers a menu option that recalculates all the costs related to an item. This menu item is available from either the grid view or the tree view of the ITEMS tab.

To recalculate the costs related to an item, begin by selecting the row or rows of item information to include. To choose more than one row at a time, hold down the CTRL key while selecting the rows. To include several rows that are adjacent to each other, select the first item and then hold down the SHIFT key as you select the last item row to be included. All the items to be included are highlighted.

Superseded

Once you have chosen the row(s) to include, select **Recalculate Values** from the **Edit** menu. CES recalculates the costs for the highlighted items.

Click SAVE or select **Save** from the **File** menu to save your work.

6.10 Refreshing Time-based Values for Items

Periodically, time-based values such as wages and rates are updated in the Trns•port database to reflect current market conditions. CES offers an option that applies these updated values to existing job items. To use this option, you must be in the grid view of the ITEMS tab.

The rates for labor, equipment, and materials on a cost sheet can be refreshed. Once you've added a cost sheet, you have to make sure that Labor, Equipment, and Materials Classes have all been selected on the GENERAL tab, or else nothing happens when you refresh your values.

To refresh time-based (also known as time-dependent) values for an item, begin by selecting the row or rows of item information to include. To choose more than one row at a time, hold down the CTRL key while selecting the rows. To include several rows that are adjacent to each other, select the first item and then hold down the SHIFT key as you select the last item to be included. All the items to be included are highlighted.

Once you have chosen the row(s) to include, select **Refresh Time-based Values** from the **Edit** menu. CES inserts updated time-dependent data for the selected item(s), and then it recalculates the costs for the highlighted items.

Click SAVE or select **Save** from the **File** menu to save your work.

Superseded

7. Attachments

CES provides functionality for adding attachments to the estimate. This chapter describes how to add attachments in CES and NJDOT's policies related to attachments.

7.1 NJDOT Policy

With attachments, it is no longer necessary to provide a diskette or CD of the estimate. This section details the required attachments based on NJDOT policy.

7.1.1 Consultant Requirements – Long Range (Preliminary) Estimate

All estimate related documentation should be attached to the estimate in CES. If applicable, the consultant preparing the long range estimate is required to attach the following:

- Preliminary Plans
- Transmittal Letter with a date for completion review
- Estimation Checklist (Appendix D)
- Utility Estimation Checklist

7.1.2 Consultant Requirements – Detailed Estimate

All estimate related documentation should be attached to the estimate in CES. If applicable, the consultant preparing the detailed estimate is required to attach the following:

- Design Plans
- Progress Schedule
- Transmittal Letter with schedule for the project
- Specifications for non-standard items
- Breakdown for lump sum or other items with prices calculated outside of CES
- Any other item you are requested to attach or is pertinent to the estimate

7.1.3 Reviewer Requirements

The reviewer is required to attach the following to the estimate in CES:

- PDS review comments

Superseded

- FDS review comments

Other attachments to the project will be handled in PES.

7.2 Attachments

Several Trns•port CES tabbed folder windows have an ATTACHMENTS tab in the rightmost position. This tab allows you to integrate OLE-compatible documents (for example, Microsoft® Word documents or Excel spreadsheets), Web pages, and plug-in applications into CES while continuing to access all the data related to a CES entity (for example, a job, an item, or a cost group). You can also integrate any attachment into multiple entities of the same type.

The ATTACHMENTS tab contains a grid that lists all the attachments associated with the entity that is open in the tabbed folder window. The grid also contains attachments that are associated with all entities of the current type. Information displayed about each attachment includes the name, attachment type, and a short description.

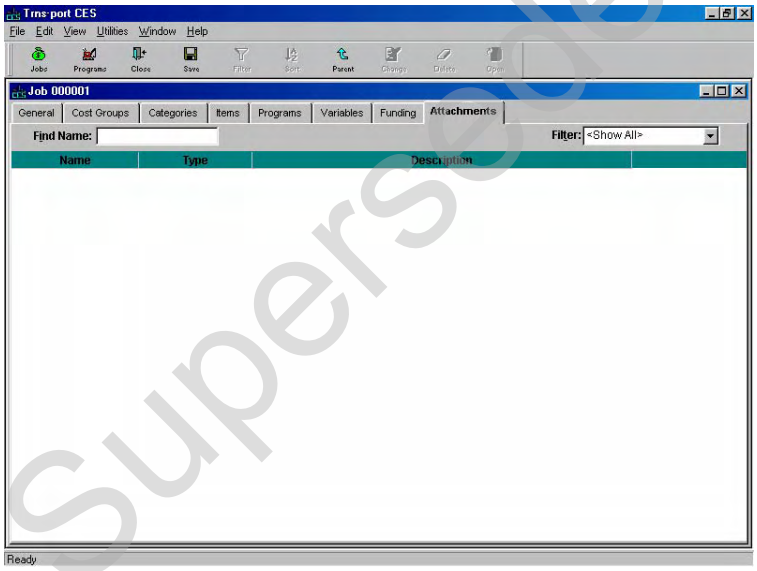

Figure 7-1. ATTACHMENTS Tab

To open an attachment, click on the attachment record to select it and choose **Open** from the **Edit** menu or the right mouse button menu. Double-clicking on a row in the grid also opens an attachment. To open more than one attachment at a time, hold down CTRL and click on each attachment you want to open, then choose **Open** from the **Edit** menu.

You can open any number of attachments simultaneously, but only one instance of each attachment.

Superseded

7.2.1 Adding an Attachment

To add a new attachment, open a tabbed folder add or change window for a Trns•port CES entity and access the ATTACHMENTS tab. Select **Add** from the **Edit** menu or the right mouse button menu and choose the type of attachment to add: an OLE object, a Web page (URL), or a plug-in.

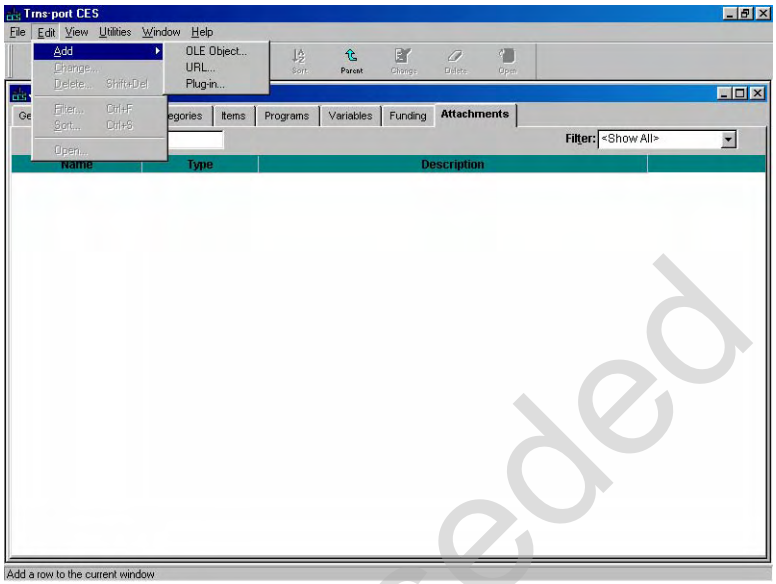

Figure 7-2. Edit Menu for the ATTACHMENTS Tab

Adding an OLE Object Attachment

When you select **OLE Object** from the menu, CES displays the Insert Object window.

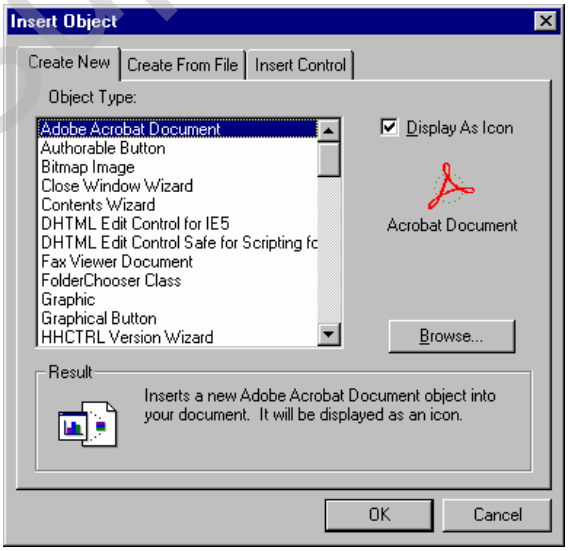

Figure 7-3. Insert Object Window

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To create a new attachment, select the type of object you want to create from the list on the CREATE NEW tab. To attach an existing file, click the CREATE FROM FILE tab and then click the BROWSE button to locate the file.

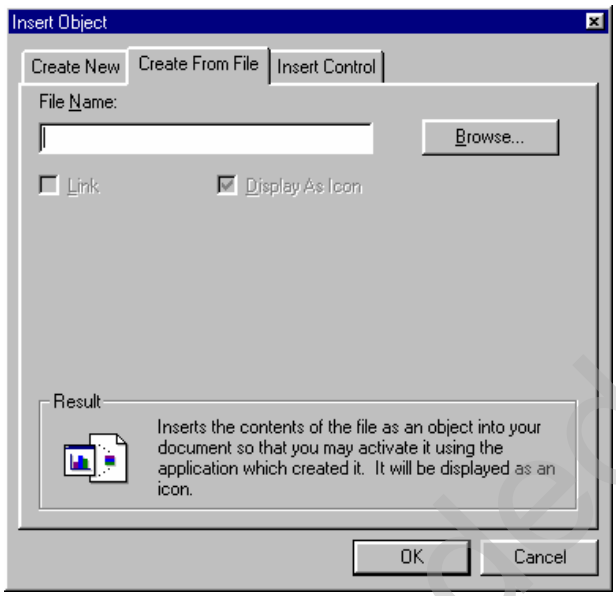

Figure 7-4. CREATE FROM FILE Tab

You can choose to link the object by clicking the Link check box. By linking the object, Trns•port CES will not store the document itself in the CES database, but instead store a reference to the document. Linking an object allows you to modify the object without being logged on to CES; however, if you link to an object, the object must be stored in a location accessible to all other Trns•port users who have access to the particular entity to which the object is being linked. Otherwise, other Trns•port users will not be able to access the linked object.

After you have selected the object type from the Insert Object tab window, click OK. Trns•port displays the Add OLE Attachment window.

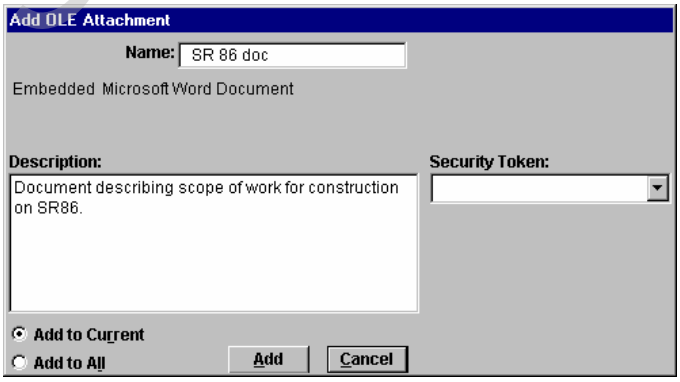

Figure 7-5. Add OLE Attachment Window

Superseded

Click the radio button either to add the attachment to the current entity or to add to all entities. (Note: NJDOT policy is that only System Administrators should use the 'Add to All' feature.)

When you have finished entering information for the attachment, click the ADD button to add the attachment, or CANCEL to exit the window without adding the attachment. If you click ADD, CES adds a new row containing information about the new attachment to the grid on the ATTACHMENTS tab.

> **Note:** After making changes to an OLE embedded document via the ATTACHMENTS tab, be sure to click the SAVE button or choose **Save** from the **File** menu. Otherwise, CES does not retain the changes made.

Adding a Web Page Attachment

When you select Add from the Edit menu and choose **URL**, CES displays the Add Web Attachment window.

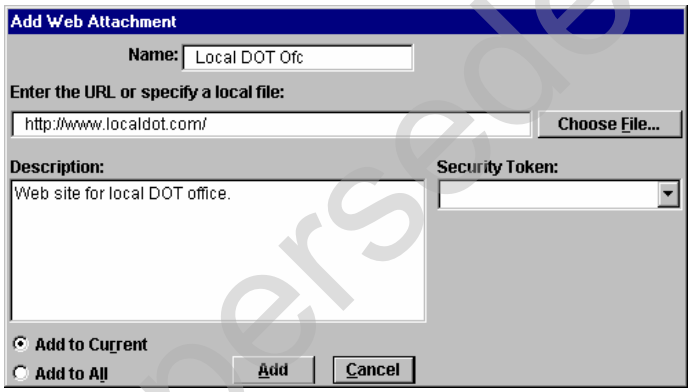

Figure 7-6. Add Web Attachment Window

Enter the URL for the Web page in the text box or click CHOOSE FILE to browse for the file name.

Click the radio button to either add the attachment to the current entity or to add to all entities. (Note: NJDOT policy is that only System Administrators should use the 'Add to All' feature.)

When you have finished entering information for the attachment, click the ADD button to add the attachment, or CANCEL to exit the window without adding the attachment. If you click ADD, CES adds a new row containing information about the new attachment to the grid on the ATTACHMENTS tab.

Adding a Plug-In Attachment

When you select **Plug-in** from the menu, CES displays the Add Plug-in Attachment window.

Superseded

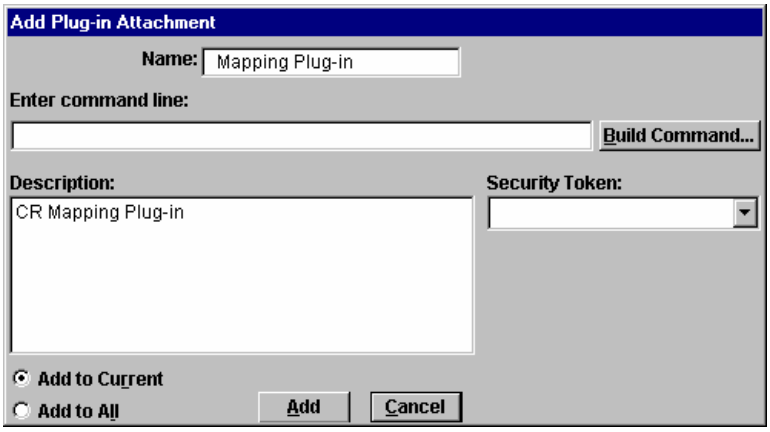

Figure 7-7. Add Plug-In Attachment Window

You can type the command line into the text box, or click the BUILD COMMAND button to open the Build Command Line window.

Figure 7-8. Build Command Line Window

To build your command line in the Build Command Line window, first enter an executable file name by typing it into the text box, or clicking the SELECT FILE button to browse. Enter field variables into the command line by selecting from the Field Variables list and clicking the ADD button beneath the list. You can also enter any other required parameters by typing them into the Other text box and clicking the corresponding ADD button. To clear the command line at any time, click the CLEAR button.

When you have finished entering information into the command line, click OK. CES returns to the Add Plug-in Attachment window.

Click the radio button to either add the attachment to the current entity or to add to all entities. (Note: NJDOT policy is that only System Administrators should use the 'Add to All' feature.)

When you have finished entering information for the attachment, click the ADD button to add the attachment, or CANCEL to exit the window without adding the

Superseded

attachment. If you click ADD, CES adds a new row containing information about the new attachment to the grid on the ATTACHMENTS tab.

7.2.2 Changing an Attachment

To change the properties of an attachment, select the attachment record on the ATTACHMENTS tab and choose **Change** from the **Edit** menu or the right mouse button menu. Trns•port CES displays a Change Attachment window. This window contains all the information entered previously for the attachment. Enter the changes and click OK to save your changes or CANCEL to return to the ATTACHMENTS tab without saving.

7.2.3 Deleting an Attachment

To delete an attachment, select the attachment record on the ATTACHMENTS tab and choose **Delete** from the **Edit** menu or the right mouse button menu. Trns•port CES displays a Confirm Delete window. Click YES to complete the deletion or NO to return to the ATTACHMENTS tab without deleting the attachment.

Superseded

8. Snapshots

A snapshot is a complete picture of an estimate job at a given time. It is like freezing the information in an estimate job and keeping it available for use, even if the information in that job later changes. The snapshot process should be used for maintaining an audit trail of an estimate and not as a replacement for saving the job.

Reasons for creating a snapshot of the project for Long Range Estimation include: change of scope, recalculation of bid-based pricing due to Bid History update, annual review, turnover to Division of Project Management, turnover to consultant from Division of Project Management, before inactivating cost group pricing to prepare for detailed estimation.

Reasons for creating a snapshot of the project for Detailed Estimation include: change of scope, recalculation of bid-based pricing due to Bid History update, refresh of cost-based pricing due to Labor, Equipment, or Material price updates, turnover to Bureau of Quality Assurance (QA), return to consultant from QA, exporting a copy of the job to PES.

Snapshots are automatically taken by the system when: Checking in to PES, Deleting a Job, Importing Job Items from another CES job, Repricing current item tasks with default tasks, Splitting a Job. (If a job is deleted using Power Delete, no snapshot is created.)

This chapter describes how to create snapshots.

Snapshots DO NOT include any attachments to the job.

After running **List Job Snapshots** (see Section 8.1.5), the snapshot report can be saved as text or rich text (recommended) to your local computer for your own use and record.

Superseded

8.1 Maintaining Snapshots for a Job

Looking at a job's snapshot is similar to being in View mode, but without the option of switching to Change mode. You can choose to add a snapshot, and snapshots also occur automatically at prescribed times (for instance, when you split a job or when a job is being exported to or imported from Trns•port PES).

To work with snapshots, select the appropriate job from the Jobs list window and choose **Snapshots** from the **View** or right mouse button menu. CES displays the Snapshot List window.

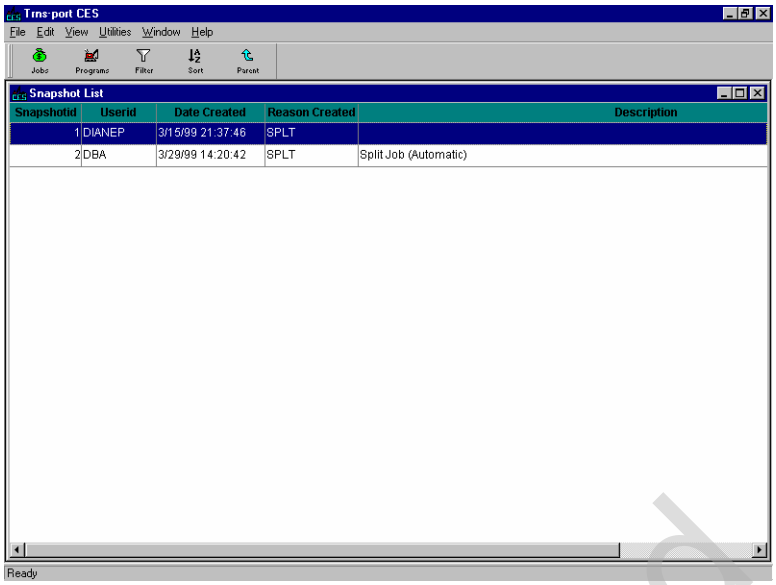

Figure 8-1. Snapshot List Window

This window lists all the snapshots that currently exist for the selected job, if any, along with information about each snapshot such as the creator of the snapshot, the snapshot ID number, and the description of the snapshot.

8.1.1 Adding a Snapshot

To add a snapshot, while in the Snapshot List window, select **Add** from the **Edit** menu or the right mouse button menu. As shown in Figure 8-2, a Snapshot Description window displays.

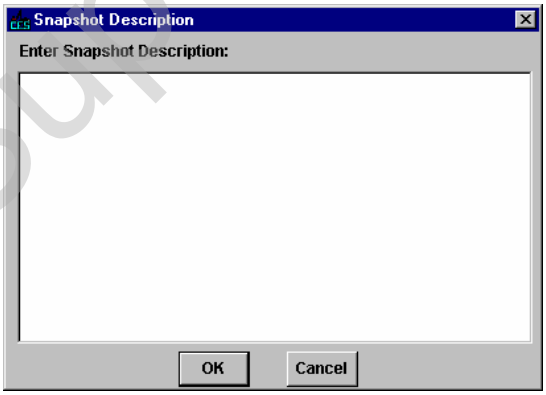

Figure 8-2. Snapshot Description Window

Enter a description of the snapshot in the window and then click OK or click CANCEL to cancel the action.

If you click OK, CES once again displays the Snapshot List window, which now includes the newly added snapshot.

Superseded

8.1.2 Deleting a Snapshot

To delete a snapshot, begin by selecting the snapshot from the Snapshot List window. To select more than one snapshot at a time, hold down the CTRL key as you select the snapshots. To select multiple snapshots that are adjacent to each other, select the first snapshot, then hold down the SHIFT key as you select the last snapshot. To select all the snapshots in the list window at once, choose **Select All** from the **Edit** menu.

Once the snapshot(s) to be deleted is selected, choose **Delete** from the **Edit** or right mouse button menu, or press SHIFT+DELETE. A series of Delete Warning windows will display listing the tables that will be affected by the deletion. This means you will need to confirm the deletion several times before CES will delete the data from the database. The window title bar lists the number of deletes required. An example of a Delete Warning window is shown in Figure 8-3.

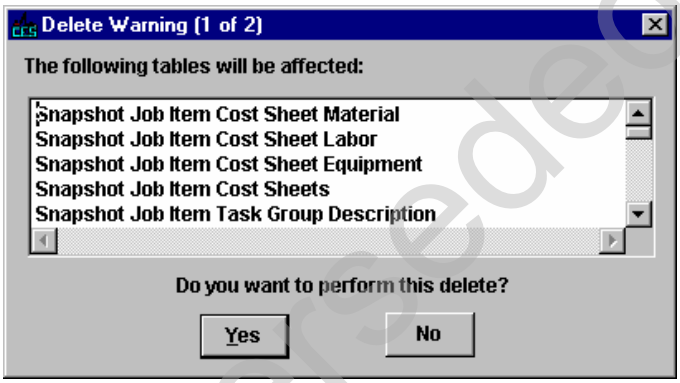

Figure 8-3. Example of Delete Warning (1 of 2) Window

If you click YES in each of the Delete Warning windows, CES will then display a final window to confirm the deletion (see Figure 8-4).

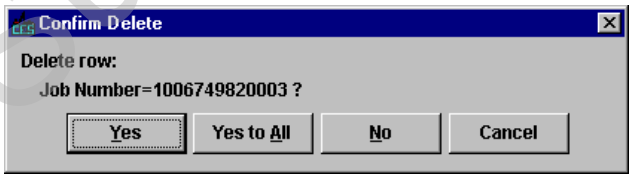

Figure 8-4. Confirm Delete Window

To delete the snapshot currently listed, click YES. If you chose multiple snapshots to delete at once, you can click YES TO ALL to delete them simultaneously, or you can click NO to cancel the deletion of the snapshot currently listed and move on to the Confirm Delete window for the next snapshot. Click CANCEL to cancel the deletion of the remaining selected snapshots.

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8.1.3 Sorting Snapshots

You can sort a snapshot by any of the column titles. To sort the snapshots, choose the column by which you want to sort, and double click the column title. The snapshots will sort in ascending order.

8.1.4 Viewing a Snapshot

To view a snapshot, select it from the Snapshot List window and double-click on it or select **Snapshot** from the **View** or the right mouse button menu. CES displays a tabbed folder window in which you can view but not modify the snapshot's information (see Figure 8-5).

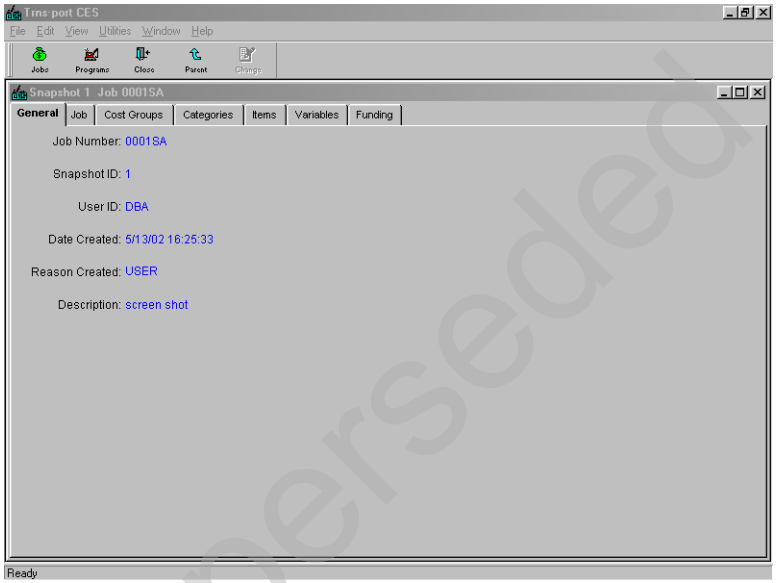


Figure 8-5. Job Snapshot Window

The GENERAL tab of the Job Snapshot window displays the same information about the snapshot as the Snapshot List window. The other tabs that are available correspond with tabs found in the Job tabbed folder window.

8.1.5 Listing Snapshots

To produce a listing of snapshot information, begin by selecting the snapshot or snapshots for which to produce a listing in the Snapshot List window. Select **Run Process** from the **File** or right mouse button menu, and CES displays a Processes window. Select **List Job Snapshots** and click OK to submit a batch process to print the listing.

For information on running and viewing reports, see Chapter 9, Generating Reports.

Superseded

9. Generating Reports

There are several standard reports in CES that may be found useful. This chapter describes how to generate these reports.

9.1 Generating Standard Reports

You can produce listings of information from most list windows in CES that may be printed. To do this, begin by selecting the record or records in the list window. You may choose more than one record at a time by holding down the CTRL key while selecting the records with the mouse. (This works fine for listings; however, some processes such as imports and exports can only be run for one record at a time.) To select all the records in a list window, choose **Select All** from the **Edit** menu or press CTRL+A.

Choose **Run Process** from the **File** or right mouse button menu. CES displays a Processes window with a list of processes available from the list window.

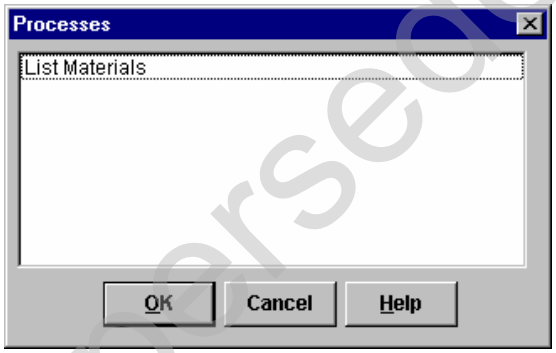


Figure 9-1. Processes Window

The list of available processes is context sensitive and is determined by the active list window. Select a process and then click OK. For some processes, CES will then display a window containing process options in which you enter the necessary information for the process. When you finish selecting options, click SUBMIT to run the process, PARAMETERS to change process submission parameters, or CANCEL to return to the list window without running the process.

If the process did not have options, CES would display this window.

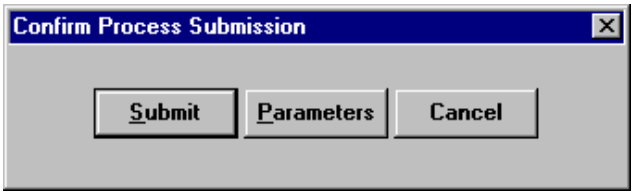


Figure 9-2. Confirm Process Submission Window

Superseded

You can click SUBMIT to run the process, PARAMETERS to specify process submission parameters, or CANCEL to return to the list window without running the process.

9.1.1 Specifying Process Submission Parameters

If you click the PARAMETERS button in the Confirm Process Submission window, CES displays a Process Submission Parameters window.

Important: Most NJDOT and consultant users should never have to change any Process Submission Parameters.

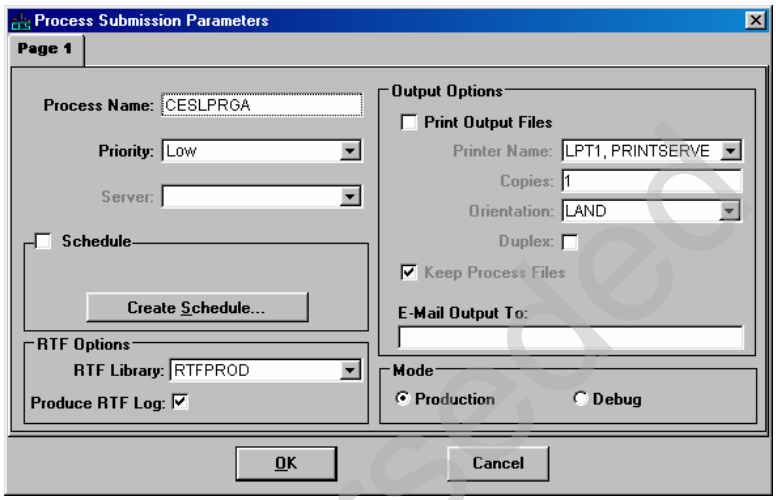


Figure 9-3. Process Submission Parameters Window

Many fields in this window have default values that specify printer destination, queues, and so forth. At a minimum, these fields must have a value:

Process Name Defaults to the process name and a character that CES appends to tell processes apart.

Priority You may choose high, medium, or low priority. There will not usually be enough jobs running at the same time for this to have any impact.

Schedule Allows you to set the frequency and time for the process to run.

RTF Library Defaults to the value set for individual users. Do not change this unless you know what you are doing.

Produce RTF Log If you want the RTF log to be produced, select this check box.

Print Output Please do not use this option unless directed by the CES

Superseded

Files

System Manager. Use the default “Keep Process Files” and print after viewing the resulting output. (See Section 9.3.)

If directed to use this option, click in the Print Output Files check box. Specify the printer name, the number of copies, the paper orientation, and whether you want the printout to be in duplex form (two-sided). If you check the Print Output Files box, your output will print on the specified network printer.

Keep Process Files

If you want the output held so you can view it online or print it later to a different printer, you can click in the Keep Process Files check box. This is the preferred option for NJDOT and consultants, and is the system default.

E-Mail Output To

This feature is not enabled for NJDOT.

Mode

Defaults to Production. Do not use Debug unless the CES System Manager tells you to. This mode generates a detailed log of the batch program for problem determination.

When you finish entering information in the fields, click OK to return to the Confirm Process Submission window or click CANCEL to return to the list window without running the process.

9.1.2 Running the Process

If you click SUBMIT in the Confirm Process Submission window, Trns•port CES runs the process. If Trns•port CES encounters a problem when running the process, it displays an error message. You will have to fix the problem before you can run the process successfully.

When the application server finishes executing a process, it will send a message to the computer from which you ran the process that indicates the success or failure of the process. A message box will display this information.

The CES Process Status List displays a list of all processes you run. You will not be able to view other user’s output (see Section 9.3).

9.2 List Reports

CES provides the following list reports that may be generated. The security associated with your CES user ID determines which reports you can run.

Superseded

9.2.1 Job Detail Estimate

The Job Detail Estimate process lists detailed information about the selected jobs and estimate-related information, including header information, associated cost groups, funding packages, items, and detailed item task information.

9.2.2 List Jobs

The List Jobs process lists detailed information about the selected jobs, including header information, associated programs, cost groups, items, variables, and funding packages.

9.2.3 List Job Snapshots

The List Job Snapshots process lists detailed information about the snapshots for the selected jobs, including header information, associated cost groups, items, item task information, variables, and funding packages.

9.2.4 List Labor

The List Labor process lists detailed information about the selected laborers, including header information and associated wage rates.

9.2.5 List Equipment

The List Equipment process lists detailed information about the selected equipment, including header information and associated rates.

9.2.6 List Materials

The List Materials process lists detailed information about the selected materials, including header information and associated prices.

9.2.7 List Cost Sheets

The List Cost Sheets process lists detailed information about the selected cost sheets, including header information, associated laborers, associated materials, and associated equipment.

9.2.8 List Crews

The List Crews process lists detailed information about the selected crews, including header information, associated laborers, and associated equipment.

9.2.9 List Formula Libraries

The List Formula Libraries process lists detailed information about the selected formula libraries, including header information and associated formulas.

Superseded

9.2.10 List Programs

The List Programs process lists detailed information about the selected programs, including header information, associated jobs, and the program total.

9.2.11 List Cost Groups

The List Cost Groups process lists detailed information about the selected cost groups, including header information, associated variables, and associated items.

9.3 Process Status

To view the status of processes you run, select **Process Status** from the **File** menu. Trns•port CES displays a Process Status List window. This window contains a list that includes all the processes you have submitted that are currently running (which only users with security tokens to do so can delete), queued for processing (the system still has to run the processes but you can delete them), and completed (waiting for you to view, print, save, or delete the output).

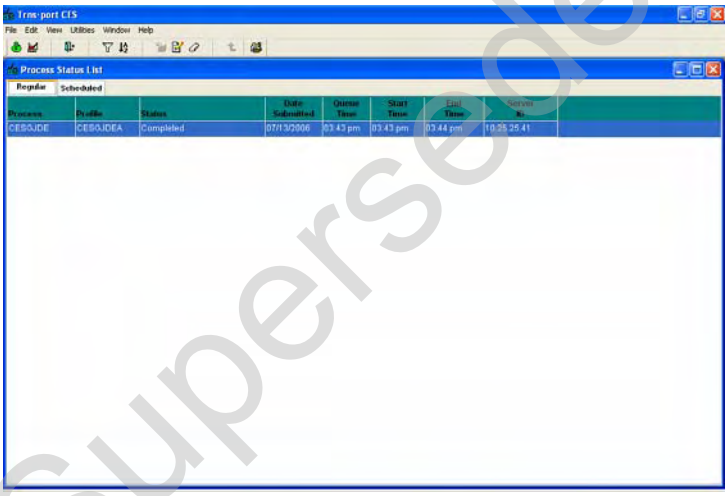


Figure 9-4. Process Status Window

Superseded

If you double-click on a process that has completed, CES displays a list of files the process generated. You can choose to print individual files on a local printer, view the files on screen, store the files so you can process them later, or delete the files.

It is a good practice to limit the number of jobs you keep on your Process Status List. You may save the output (see Section 9.3.4) to your computer and then delete the job from the window by highlighting the job and choosing **Delete** from the right mouse button. Click YES to confirm the delete.

The Process Status window contains a grid, which functions just like grids in tabbed folder windows. You can resize columns by dragging the column border, and re-order columns by selecting the header and dragging the entire column. You can also sort the rows in the grid quickly by double-clicking on any column header.

9.3.1 Working with Process Output Files

You can view and print any file that is generated by a process, including reports, error reports, or process logs. You can also save output files (except PDF files) in either text or rich text format.

9.3.2 Viewing Process Output Files

Follow these steps to view an output file:

1. Select **Process Status** from the **File** menu to open the Process Status List window.

2. Select the process name from the list and choose **Process Files** from the right mouse button menu. Trns•port displays a window listing all the files generated for the process.

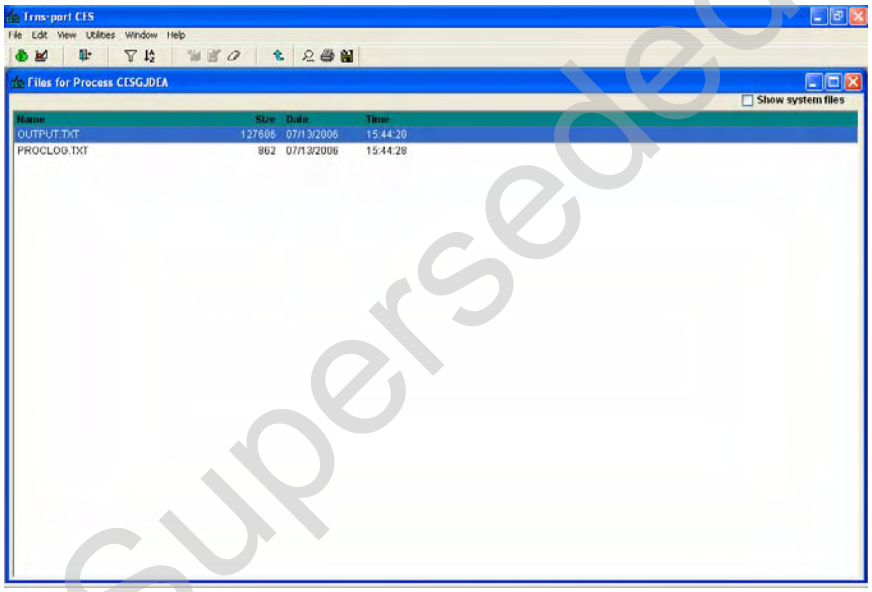


Figure 9-5. Files for Process Window

3. Select the output file you want to view and choose **View File** from the right mouse button menu. Trns•port displays a window containing the formatted output.

Note: To view PDF files, a version of Adobe Acrobat Reader must be installed. Otherwise, a message will appear warning that the file cannot be viewed.

Superseded

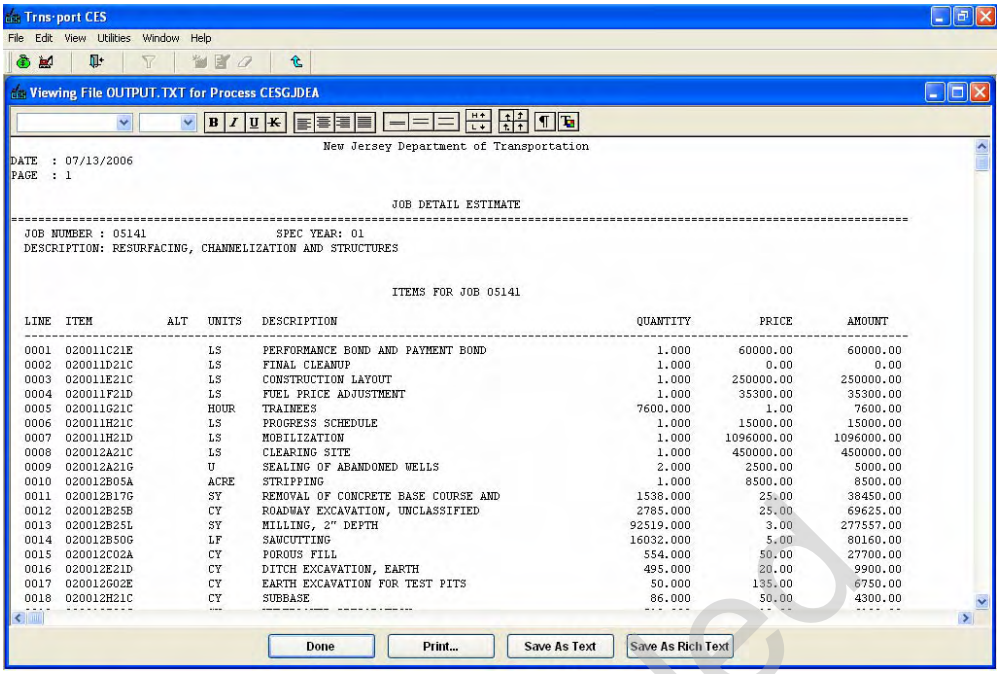


Figure 9-6. Viewing Output Files

9.3.3 Printing Process Output Files

You can print an output file (except those in PDF format) from the File Viewer window by clicking the PRINT button, or from the Process Output list window by choosing **Print** from the right mouse button menu. Trns•port displays a Print option window.

Figure 9-7. Print Option Window

Click PRINT to print the output file on the current printer, PRINTER SETUP to change your printing options, or CANCEL to return to the File Viewer window without printing.

You must print PDF files through the Adobe Acrobat Reader. Clicking **Print** in the File Viewer window will produce the following message.

Superseded

Figure 9-8. Information Window

9.3.4 Saving Process Output Files

You can save process output to a text file (.txt) or, if you want to save the attribute codes with the text, you can save the output to a rich text file (.rtf). The rich text file can be opened and edited in Microsoft Word.

From the Files for Process list window, you can save an output file to your computer by selecting the file and choosing **Save As** from the right mouse button menu.

From the File Viewer window, you can save an output file to your computer by clicking the SAVE AS TEXT button or the SAVE AS RICH TEXT button.

Superseded

10. Maintaining CES Lists and Reference Tables

In this chapter you will learn how to maintain Trns•port CES lists and reference tables. The security role associated with your CES user ID will determine which lists you may access. There may be lists or tables that are unavailable because you do not have security privileges to view them, or you may have view-only access.

NJDOT will subscribe to R.S. Means to provide prevailing NJ rates for Labor and Equipment for the Labor, Equipment, and Crew Lists. This data will be updated periodically by NJDOT. In the future, Materials rates may also be supplied. Consultants will be expected to create their own cost sheets, or use cost sheets created by another user in the Cost Sheet List.

It is NJDOT policy that consultants and NJDOT users should never change or delete any standard Cost Sheets or Labor, Equipment, and Material data entered by another user. You may apply any standard Cost Sheets or Labor, Equipment, and Material data from the lists to a job estimate, and change them in the individual job.

Tip: Users not wishing to share their Cost Sheets with other users may set up a template job, add new cost sheets to items, and copy the cost sheets into new jobs from the template job.

Superseded

10.1 Lists

This section focuses on the Cost Sheet List.

To view this list, select **Cost Sheet List** from the **File** menu.

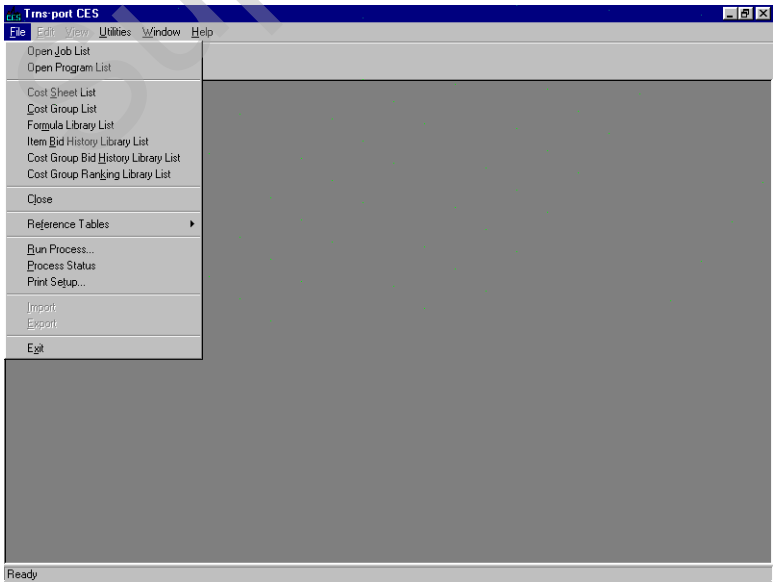
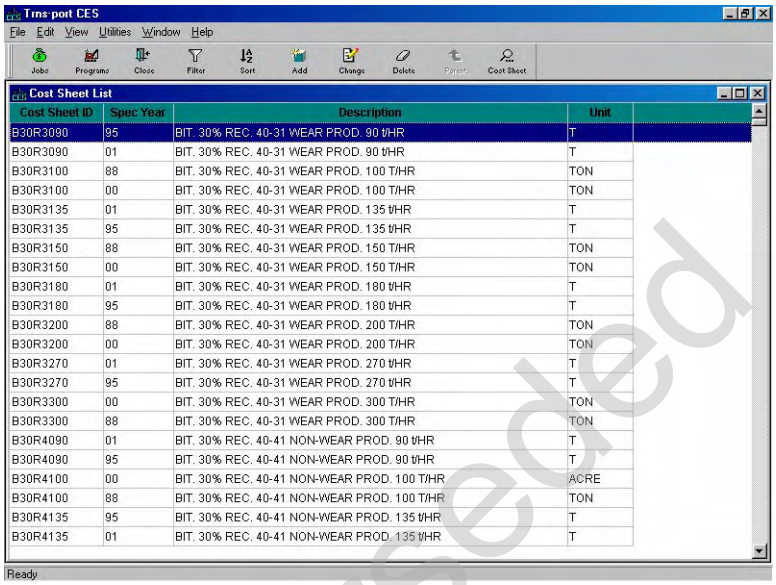


Figure 10-1. Trns•port CES File Menu

10.1.1 Cost Sheet List

When you are working on the ITEMS tab of the Job tabbed folder window using the tree view, an option is available from the Edit menu to add a standard (or default) cost sheet to the current job from CES's list of standard cost sheets. To maintain this standard cost sheets list, choose **Cost Sheet List** from the **File** menu, and CES displays the Cost Sheet List window.



Cost Sheet ID	Spec Year	Description	Unit
B30R3090	95	BIT. 30% REC. 40-31 WEAR PROD. 90 t/HR	T
B30R3090	01	BIT. 30% REC. 40-31 WEAR PROD. 90 t/HR	T
B30R3100	88	BIT. 30% REC. 40-31 WEAR PROD. 100 T/HR	TON
B30R3100	00	BIT. 30% REC. 40-31 WEAR PROD. 100 T/HR	TON
B30R3135	01	BIT. 30% REC. 40-31 WEAR PROD. 135 t/HR	T
B30R3135	95	BIT. 30% REC. 40-31 WEAR PROD. 135 t/HR	T
B30R3150	88	BIT. 30% REC. 40-31 WEAR PROD. 150 T/HR	TON
B30R3150	00	BIT. 30% REC. 40-31 WEAR PROD. 150 T/HR	TON
B30R3180	01	BIT. 30% REC. 40-31 WEAR PROD. 180 t/HR	T
B30R3180	95	BIT. 30% REC. 40-31 WEAR PROD. 180 t/HR	T
B30R3200	88	BIT. 30% REC. 40-31 WEAR PROD. 200 T/HR	TON
B30R3200	00	BIT. 30% REC. 40-31 WEAR PROD. 200 T/HR	TON
B30R3270	01	BIT. 30% REC. 40-31 WEAR PROD. 270 t/HR	T
B30R3270	95	BIT. 30% REC. 40-31 WEAR PROD. 270 t/HR	T
B30R3300	00	BIT. 30% REC. 40-31 WEAR PROD. 300 T/HR	TON
B30R3300	88	BIT. 30% REC. 40-31 WEAR PROD. 300 T/HR	TON
B30R4090	01	BIT. 30% REC. 40-41 NON-WEAR PROD. 90 t/HR	T
B30R4090	95	BIT. 30% REC. 40-41 NON-WEAR PROD. 90 t/HR	T
B30R4100	00	BIT. 30% REC. 40-41 NON-WEAR PROD. 100 T/HR	ACRE
B30R4100	88	BIT. 30% REC. 40-41 NON-WEAR PROD. 100 T/HR	TON
B30R4135	95	BIT. 30% REC. 40-41 NON-WEAR PROD. 135 t/HR	T
B30R4135	01	BIT. 30% REC. 40-41 NON-WEAR PROD. 135 t/HR	T

Figure 10-2. Cost Sheet List Window

Superseded

Adding and Changing Default Cost Sheets

To add a cost sheet to the Cost Sheet List, select **Add** from the **Edit** or right mouse button menu, or press the INSERT key. CES displays the Select Spec Year window.

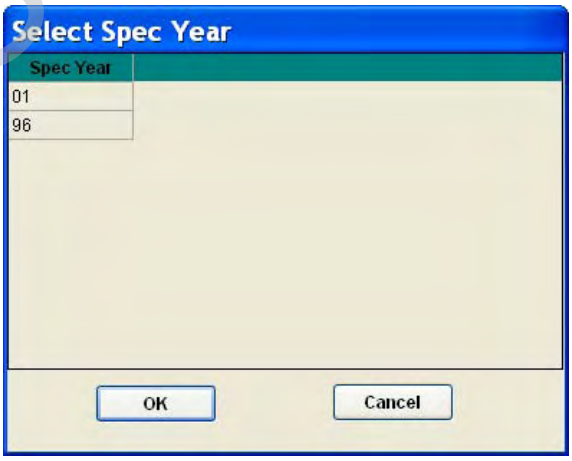


Figure 10-3. Select Spec Year for New Object Window

Select the appropriate spec year for the cost sheet and click OK, or click CANCEL to cancel the action.

If you click OK, CES displays the GENERAL tab of the Add Cost Sheet window.

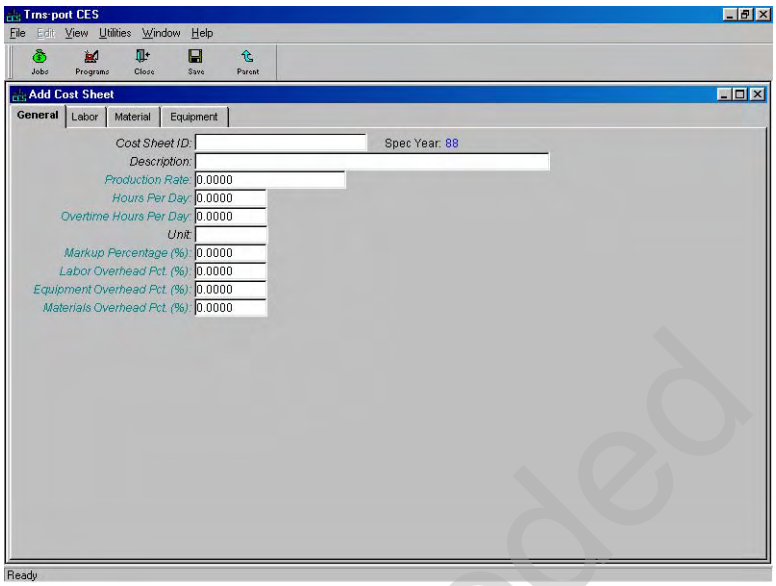


Figure 10-4. Add Cost Sheet Window-GENERAL Tab

General Tab

The fields displayed in teal mean that the value for the field can be determined using a formula. Double click in the field to bring up the Formula and Expression Builder window. To create a complete record, enter information in these fields on the GENERAL tab:

Cost Sheet ID An identifier for the cost sheet.

Description A short description of the cost sheet.

Production Rate The rate of production for the selected item per day. (The selected item refers to the item chosen when the standard cost sheet being defined is copied to the Job tabbed folder Items window.) This number is used to determine the unit price for the task.

This field may be left blank and entered when the cost sheet is attached to an item in a Job, since production rate will generally vary according to the job specifications. Or it may be entered in the standard cost sheet and edited at the Job level.

Superseded

Hours Per Day	The number of hours per day that the crew is expected to work. This number is used to determine the labor and equipment costs as well as the unit price for the task. Tip: Workers may have to be paid for eight hours per day even though their actual access to the job site may be limited to fewer.
Overtime Hours Per Day	The number of overtime hours per day that the crew is expected to work. This number is used to determine the labor and equipment costs as well as the unit price for the task.
Unit	The unit by which the selected cost sheet is measured. Enter a unit or click the down arrow beside the field to display a drop-down list from which to select a unit.
Markup Percentage	The percentage of the total expenses for the cost sheet task that is being set aside to cover unforeseen occurrences. This number is used to determine the unit price for the task.
Labor Overhead Percentage	The percentage of the labor expenses for the cost sheet task that is being set aside to cover unforeseen occurrences. This number is used to determine the labor costs as well as the unit price for the task.
Equipment Overhead Percentage	The percentage of the equipment expenses for the cost sheet task that is being set aside to cover unforeseen occurrences. This number is used to determine the equipment costs as well as the unit price for the task.
Materials Overhead Percentage	The percentage of the material expenses for the cost sheet task that is being set aside to cover unforeseen occurrences. This number is used to determine the material costs as well as the unit price for the task.

Labor Tab

To enter labor information for the cost sheet being added, click the LABOR tab. A column with a white heading means that the value for the field can be determined using the Formula and Expression Builder window (see Chapter 11).

Superseded

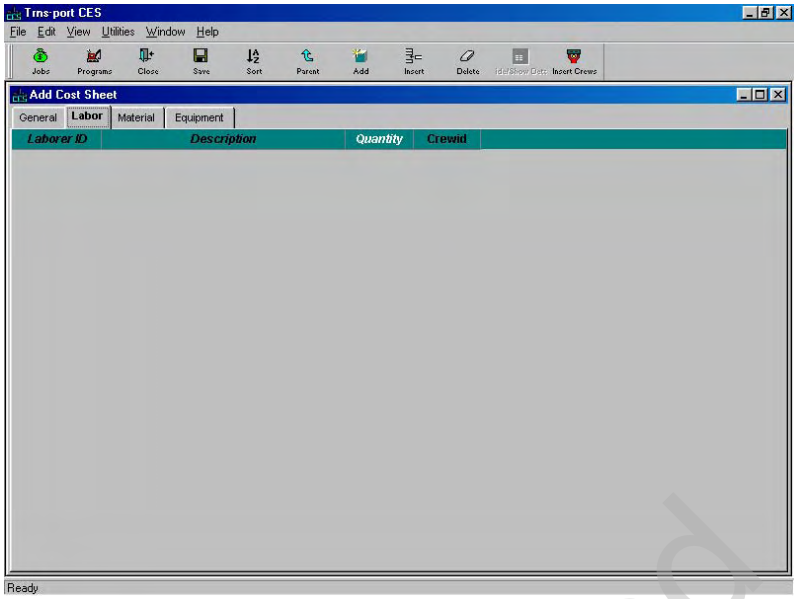


Figure 10-5. Add Cost Sheet Window-LABOR Tab

Adding Laborers to the Cost Sheet

When there are no laborers currently listed on the LABOR tab (see Figure 10-5), you will need to begin either by adding a row in which to enter a single laborer or by adding a predefined work crew. To add a single laborer, select **Add** from the **Edit** or right mouse button menu to display a row in which to add labor information.

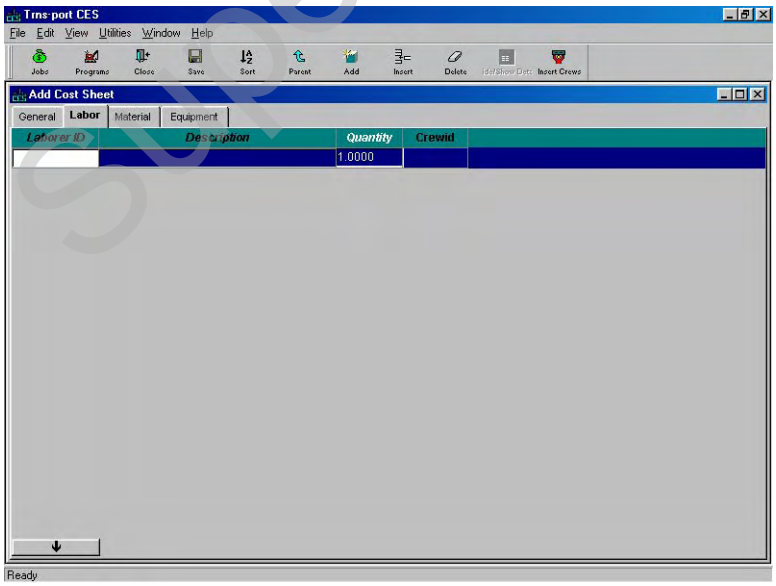


Figure 10-6. Add Cost Sheet Window-LABOR Tab With a Blank Data Entry Row

For each additional laborer added, you will also need to insert a blank row; otherwise, CES will overwrite the information in the currently selected row. When

Superseded

you insert a row by choosing Add from the Edit or right mouse button menu, the row will be placed beneath all the other existing rows. To place the row elsewhere in the list, highlight the row above which to place the pricing row, and select **Insert** instead of Add. These fields can be edited in the data entry grid:

Laborer ID — An identifier for the laborer. Enter a laborer ID, or click the down arrow at the bottom of the tab to display the Labor window from which to select a laborer.

Description — A short description of the laborer. This information is automatically brought in if you add a laborer using the Labor window.

Quantity — The number of persons expected to work in the capacity of the selected laborer.

The Crew ID field is used when a predefined work crew is added to the LABOR tab. Unlike adding an individual laborer, if you want to add a predefined work crew, it is not necessary to insert a blank row beforehand. When you add a labor crew in CES, the information for that crew is automatically placed beneath the last row in the list. If no rows exist, CES simply makes some to accommodate all the necessary information.

To insert a labor crew, select **Insert Crews** from the **Edit** or right mouse button menu. A Select Crews window will display.

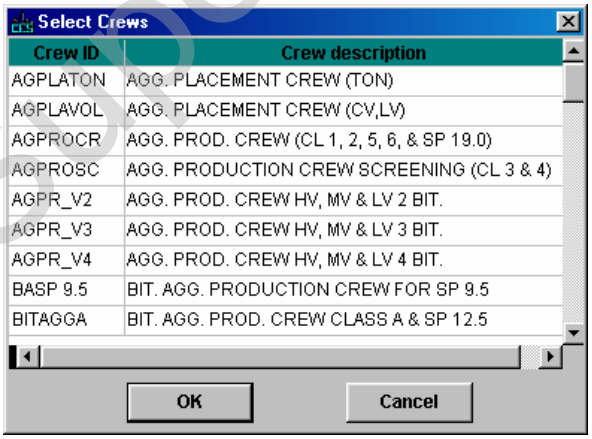


Figure 10-7. Select Crews Window

Select the crew or crews to insert. To choose more than one crew at a time, hold down the CTRL key while selecting the crews. To select several crews that are adjacent to each other, select the first crew and then hold down the SHIFT key as you select the last crew to be chosen. All the crews to be inserted will be highlighted.

Superseded

Once you have chosen the crew(s) to insert, click OK or click CANCEL to cancel the action. If you click OK, the selected crew(s) will display on the LABOR tab.

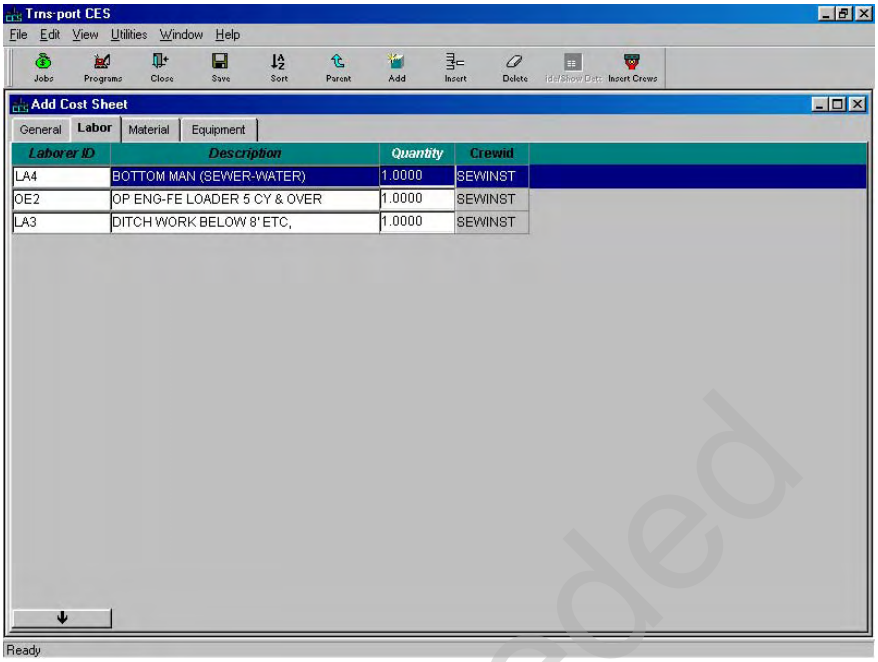


Figure 10-8. Add Cost Sheet Window-LABOR Tab With a Labor Crew

The Crew ID field identifies the crew ID for laborers who are inserted as part of a crew. You can edit the inserted crew rows just as you would any other rows.

Material Tab

To enter material information for the cost sheet being added, click the MATERIAL tab. A column with a white heading means that the value for the field can be determined using the Formula and Expression Builder window.

Superseded

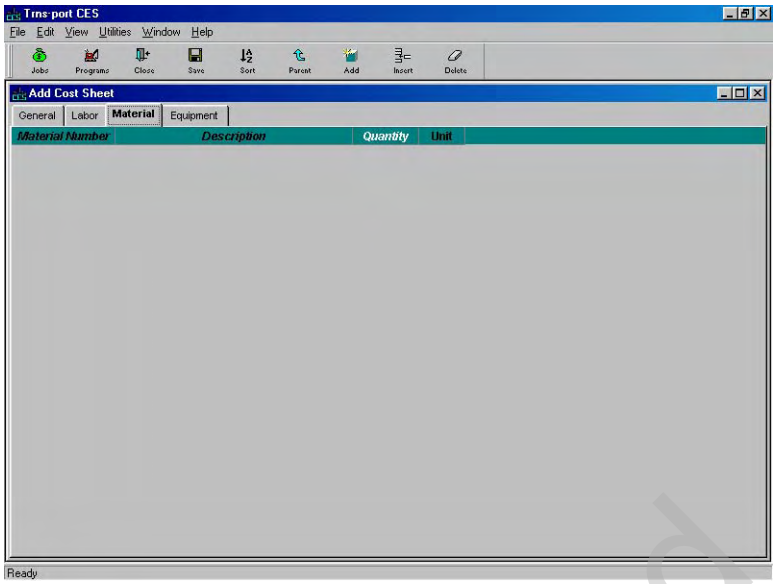


Figure 10-9. Add Cost Sheet Window-MATERIAL Tab

Adding Materials to the Cost Sheet

When there are no materials currently listed on the MATERIAL tab (see Figure 10-9), you will need to begin by adding a row in which to enter material information. To do this, select **Add** from the **Edit** or right mouse button menu to display a row in which to add material information.

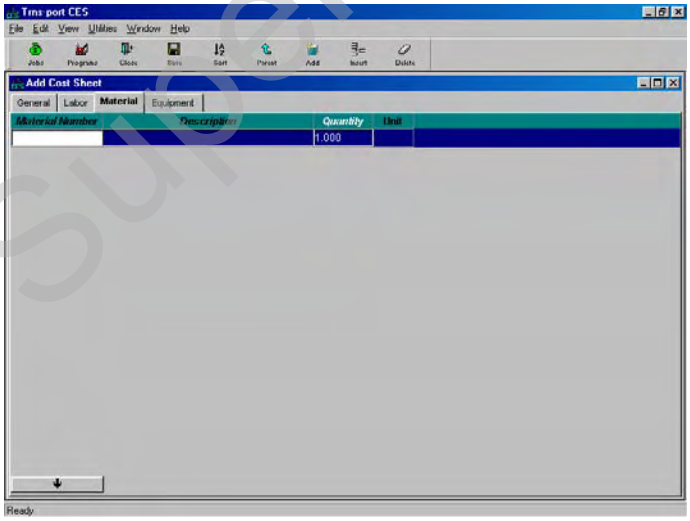


Figure 10-10. Add Cost Sheet Window-MATERIAL Tab With a Blank Data Entry Row

For each additional material added, you will also need to insert a blank row; otherwise, CES will overwrite the information in the currently selected row. When you insert a row by choosing Add from the Edit or right mouse button menu, the row will be placed beneath all the other existing rows. To place the row elsewhere

Superseded

in the list, highlight the row above which to place the pricing row, and select **Insert** instead of Add. These fields can be edited in the data entry grid:

Material Number A unique number or alphanumeric that identifies the material. Enter a material number, or click the down arrow at the bottom of the tab to display the Materials window from which to select a material.

Description A short description of the material. This information is automatically brought in if you add a material using the Materials window.

Quantity The total amount of material (total number of material units) for the cost sheet task.

Equipment Tab

To enter equipment information for the cost sheet being added, click the EQUIPMENT tab. A column with a white heading means that the value for the field can be determined using the Formula and Expression Builder window.

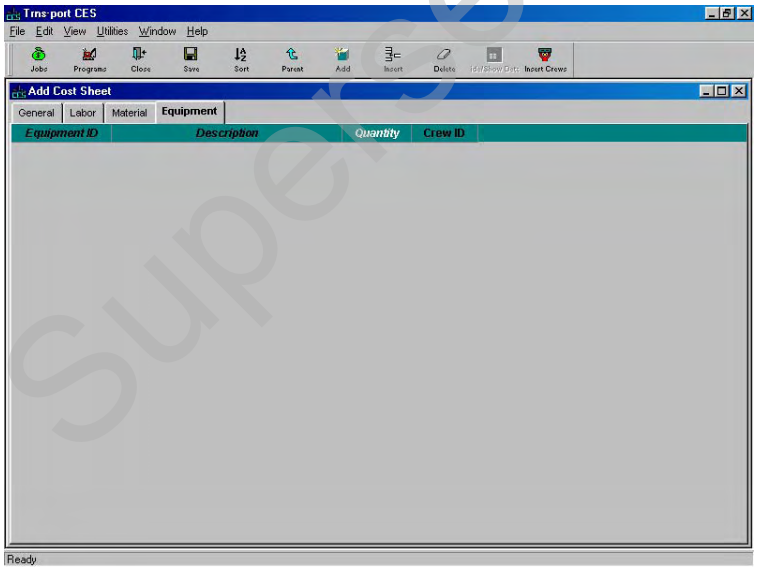


Figure 10-11. Add Cost Sheet Window-EQUIPMENT Tab

Adding Equipment to the Cost Sheet

When there is no equipment currently listed on the EQUIPMENT tab (see Figure 10-11), you will need to begin either by adding a row in which to enter a single piece of equipment or by adding the equipment that is associated with a predefined work crew. To add a single piece of equipment, select **Add** from the **Edit** or right mouse button menu to display a row in which to add equipment information.

Superseded

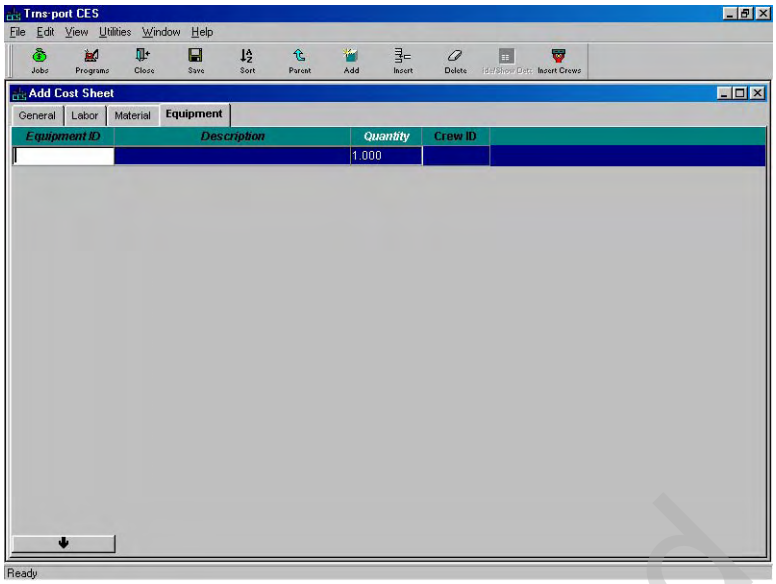


Figure 10-12. Add Cost Sheet Window-EQUIPMENT Tab With a Blank Data Entry Row

Superseded

For each additional piece of equipment added, you will also need to insert a blank row; otherwise, CES will overwrite the information in the currently selected row. When you insert a row by choosing Add from the Edit or right mouse button menu, the row will be placed beneath all the other existing rows. To place the row elsewhere in the list, highlight the row above which to place the pricing row, and select **Insert** instead of Add. These fields can be edited in the data entry grid:

Equipment ID An identifier for the equipment. Enter an equipment ID, or click the down arrow at the bottom of the tab to display the Equipment window from which to select a piece of equipment.

Description A short description of the equipment. This information is automatically brought in if you add a piece of equipment using the Equipment window.

Quantity The total amount (number of pieces) of equipment for the cost sheet task.

Unlike adding an individual piece of equipment, if you want to add the equipment associated with a predefined work crew on the EQUIPMENT tab, it is not necessary to insert a blank row beforehand. When you add a work crew in CES, the equipment information for that crew is automatically placed beneath the last row on the EQUIPMENT tab. If no rows exist, CES simply makes some to accommodate all the necessary information.

To insert a work crew, select **Insert Crews** from the **Edit** or right mouse button menu. A Select Crews window will display (see Figure 10-7). Select the crew or

crews to insert. To choose more than one crew at a time, hold down the CTRL key while selecting the crews. To select several crews that are adjacent to each other, select the first crew and then hold down the SHIFT key as you select the last crew to be chosen. All the crews to be inserted will be highlighted.

Once you have chosen the crew(s) to insert, click OK or click CANCEL to cancel the action. If you click OK, the equipment information for the selected crew(s) will display on the EQUIPMENT tab.

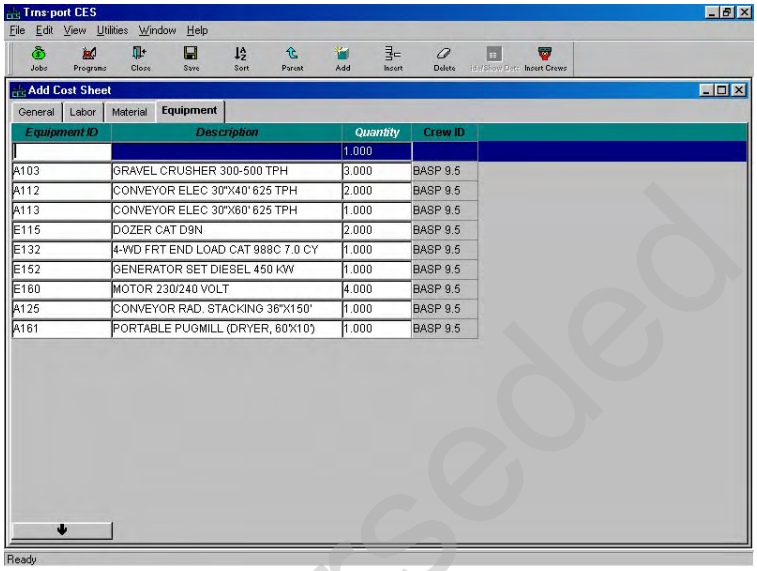


Figure 10-13. Add Cost Sheet Window-EQUIPMENT Tab With Work Crew Equipment

The Crew ID field identifies the crew ID for the equipment that is inserted as part of a crew. You can edit the inserted equipment crew rows just as you would any other rows.

Listing Default Cost Sheets

To produce a listing of default cost sheets, select the cost sheet or cost sheets for which you want to produce a listing and choose **Run Process** from the **File** or right mouse button menu. CES displays a Processes window. Select **List Cost Sheets** and click OK to submit a batch process to print the listing. See Chapter 9 for more information.

10.2 Reference Tables

In this section you will learn how to maintain the Trns•port reference tables that CES uses during processing. To view a list of these tables, select **Reference Tables** from the **File** menu.

Superseded

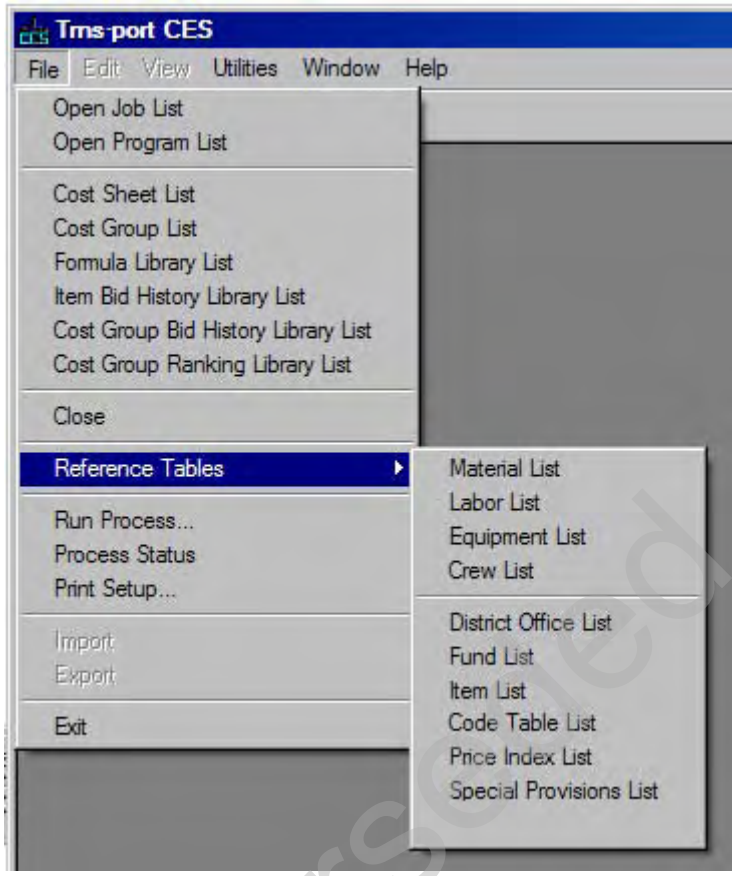
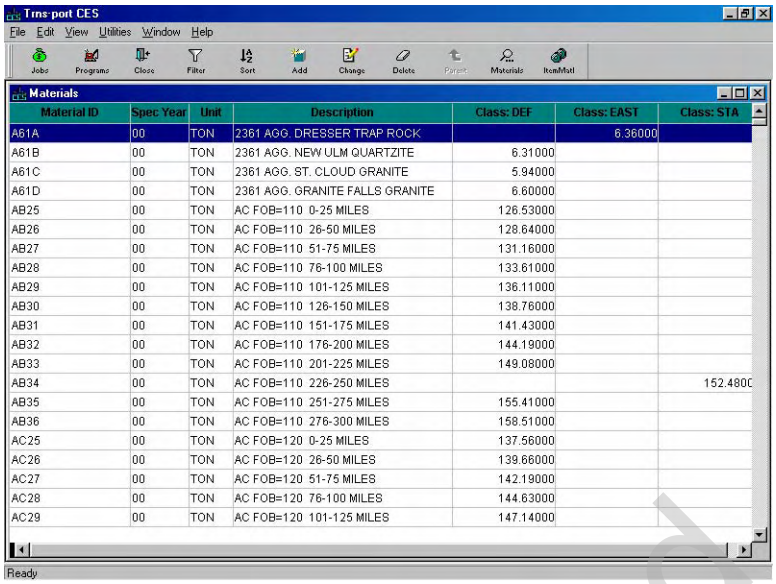


Figure 10-14. Trns•port CES Reference Tables List

10.2.1 Materials List

If you choose **Material List** from the **Reference Tables** submenu, CES displays the Materials list window.

Superseded



Material ID	Spec Year	Unit	Description	Class: DEF	Class: EAST	Class: STA
A61A	00	TON	2361 AGG. DRESSER TRAP ROCK		6.36000	
A61B	00	TON	2361 AGG. NEW ULM QUARTZITE	6.31000		
A61C	00	TON	2361 AGG. ST. CLOUD GRANITE	5.94000		
A61D	00	TON	2361 AGG. GRANITE FALLS GRANITE	6.60000		
AB25	00	TON	AC FOB=110 0-25 MILES	126.53000		
AB26	00	TON	AC FOB=110 26-50 MILES	128.64000		
AB27	00	TON	AC FOB=110 51-75 MILES	131.16000		
AB28	00	TON	AC FOB=110 76-100 MILES	133.61000		
AB29	00	TON	AC FOB=110 101-125 MILES	136.11000		
AB30	00	TON	AC FOB=110 126-150 MILES	138.76000		
AB31	00	TON	AC FOB=110 151-175 MILES	141.43000		
AB32	00	TON	AC FOB=110 176-200 MILES	144.19000		
AB33	00	TON	AC FOB=110 201-225 MILES	149.08000		
AB34	00	TON	AC FOB=110 226-250 MILES			152.4800
AB35	00	TON	AC FOB=110 251-275 MILES	155.41000		
AB36	00	TON	AC FOB=110 276-300 MILES	158.51000		
AC25	00	TON	AC FOB=120 0-25 MILES	137.56000		
AC26	00	TON	AC FOB=120 26-50 MILES	139.66000		
AC27	00	TON	AC FOB=120 51-75 MILES	142.19000		
AC28	00	TON	AC FOB=120 76-100 MILES	144.63000		
AC29	00	TON	AC FOB=120 101-125 MILES	147.14000		

Figure 10-15. Materials List Window

Adding and Changing Materials

To add information about a material to the Material List reference table, select **Tabbed Folder Add** from the **Edit** or right mouse button menu, or press the INSERT key. CES displays the GENERAL tab of the Add Material tabbed folder window.

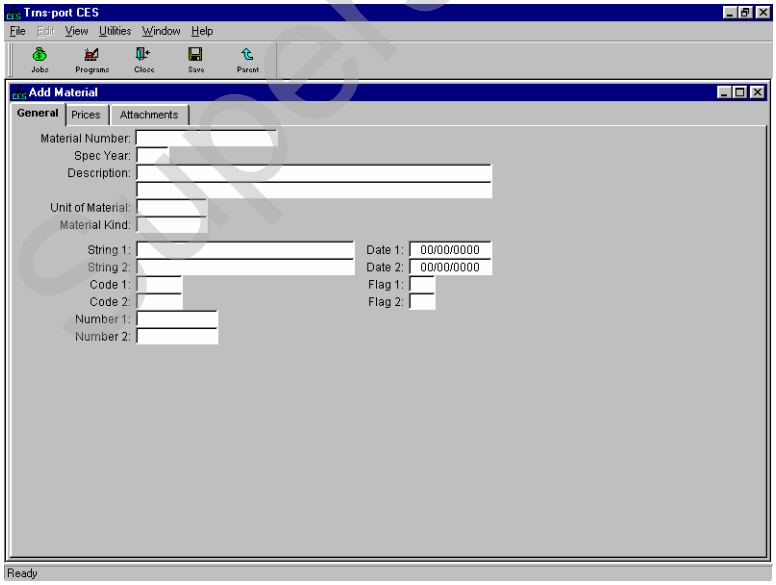


Figure 10-16. Add Material Window-GENERAL Tab

To create a complete record, enter information in these fields on the GENERAL tab:

Material Number A unique number or alphanumeric that identifies the material.

Superseded

Spec Year The specification year for the material.

Description A short description of the material.

Unit of Material The unit of measurement for the material. Enter a unit or click the down arrow beside the field to display a drop-down list from which to select a unit.

Material Kind The kind of material. Enter a material kind or click the down arrow beside the field to display a drop-down list from which to select a material kind.

To enter pricing information about the material being added, click the PRICES tab.

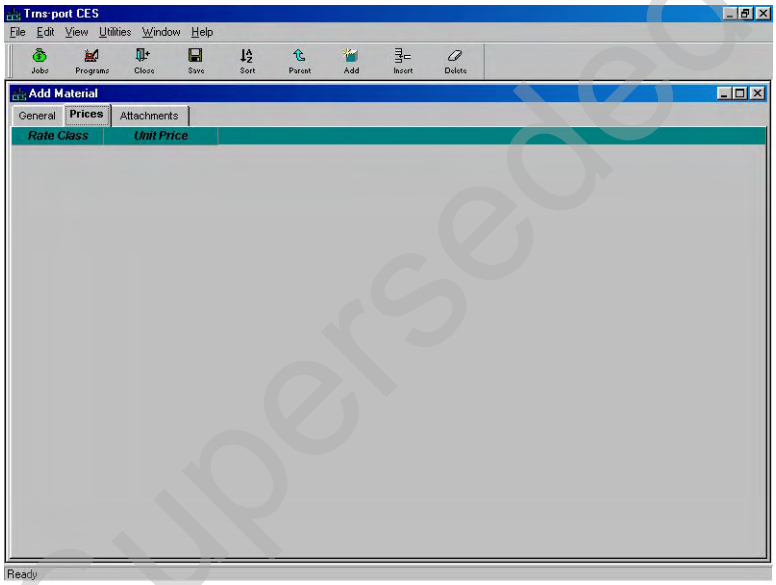


Figure 10-17. Add Material Window-PRICES Tab

On this tab you can assign different prices for the material based on the rate class that is selected.

When there are no prices currently listed on the PRICES tab (see Figure 10-17), you will need to begin by choosing **Add** from the **Edit** or right mouse button menu to display a row in which to add pricing information.

Superseded

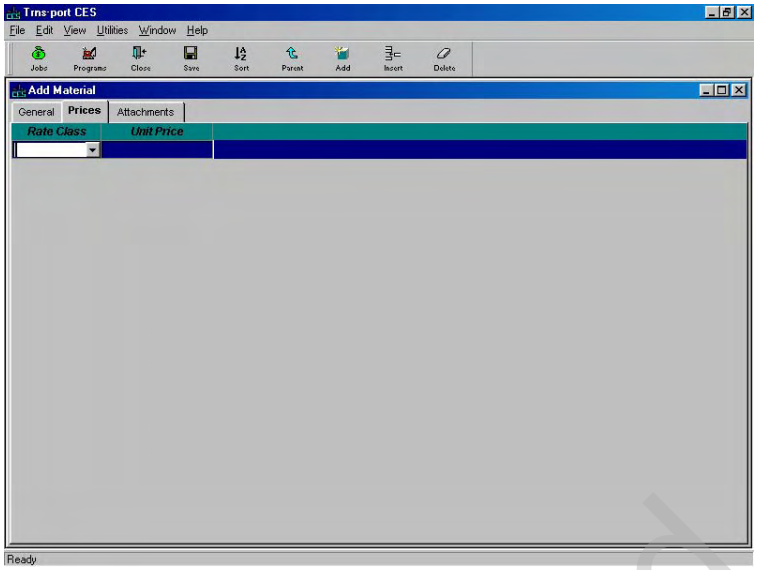


Figure 10-18. Add Material Window-PRICES Tab With a Blank Data Entry Row

For each additional price added, you will also need to insert a blank row. When you insert a row by choosing Add from the Edit or right mouse button menu, the row will be placed beneath all the other existing rows. To place the row elsewhere in the list, highlight the row above which to place the row, and select **Insert** instead of Add. Enter information in these two fields to complete the PRICES tab:

Rate Class	The rate class for the material. Enter a rate class or click the down arrow beside the field to display a drop-down list from which to select a rate class.
Unit Price	The unit price for the material at the selected rate class.

Click SAVE or select **Save** from the **File** menu to save your work.

To change an existing material in the Material List reference table, select that material from the Materials list window and choose **Tabbed Folder Change** from the **Edit** or right mouse button menu. CES displays the Material window. You can add information to or change any field except Material Number and Spec Year.

Reminder: It is NJDOT policy that consultants and NJDOT users should never change or delete any standard Cost Sheets or Labor, Equipment and Material data entered by another user.

Listing Materials

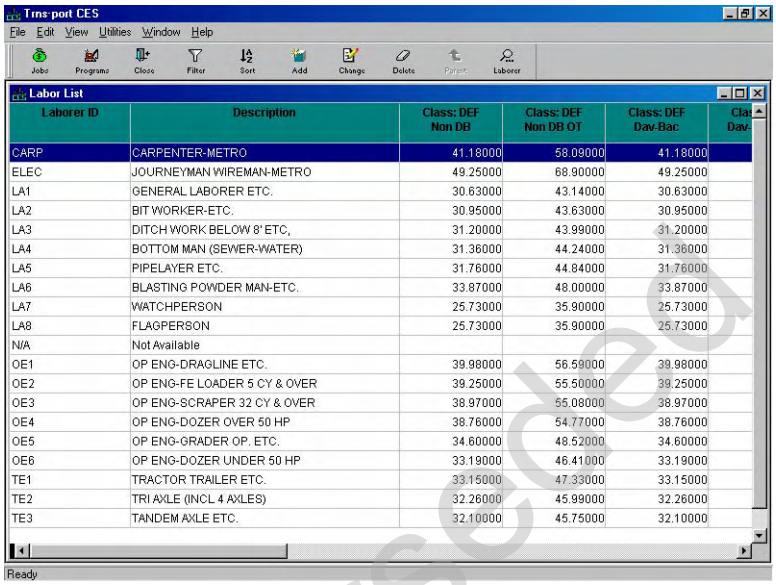
To produce a listing of material information, begin by selecting the material or materials for which to produce a listing in the Materials list window. Select **Run Process** from the **File** or right mouse button menu, and CES displays a Processes

Superseded

window. Select **List Materials** and click OK to submit a batch process to print the listing. See Chapter 9 for more information.

10.2.2 Labor List

If you choose **Labor List** from the **Reference Tables** submenu, CES displays the Labor List window.



Laborer ID	Description	Class: DEF Non DB	Class: DEF Non DB OT	Class: DEF Dav-Bac	Clas Dav-
CARP	CARPENTER-METRO	41.18000	58.09000	41.18000	
ELEC	JOURNEYMAN WIREMAN-METRO	49.25000	68.90000	49.25000	
LA1	GENERAL LABORER ETC.	30.63000	43.14000	30.63000	
LA2	BIT WORKER-ETC.	30.95000	43.63000	30.95000	
LA3	DITCH WORK BELOW 8' ETC,	31.20000	43.99000	31.20000	
LA4	BOTTOM MAN (SEWER-WATER)	31.36000	44.24000	31.36000	
LA5	PIPELAYER ETC.	31.76000	44.84000	31.76000	
LA6	BLASTING POWDER MAN-ETC.	33.87000	48.00000	33.87000	
LA7	WATCHPERSON	25.73000	35.90000	25.73000	
LA8	FLAGPERSON	25.73000	35.90000	25.73000	
N/A	Not Available				
OE1	OP ENG-DRAGLINE ETC.	39.98000	56.59000	39.98000	
OE2	OP ENG-FE LOADER 5 CY & OVER	39.25000	55.50000	39.25000	
OE3	OP ENG-SCRAPER 32 CY & OVER	38.97000	55.08000	38.97000	
OE4	OP ENG-DOZER OVER 50 HP	38.76000	54.77000	38.76000	
OE5	OP ENG-GRADER OP. ETC.	34.60000	48.52000	34.60000	
OE6	OP ENG-DOZER UNDER 50 HP	33.19000	46.41000	33.19000	
TE1	TRACTOR TRAILER ETC.	33.15000	47.33000	33.15000	
TE2	TRI AXLE (INCL 4 AXLES)	32.26000	45.99000	32.26000	
TE3	TANDEM AXLE ETC.	32.10000	45.75000	32.10000	

Figure 10-19. Labor List Window

Adding and Changing Laborers

To add information about a laborer to the Labor List reference table, select **Add** from the **Edit** or right mouse button menu, or press the INSERT key. CES displays the GENERAL tab of the Add Laborer window.

Superseded

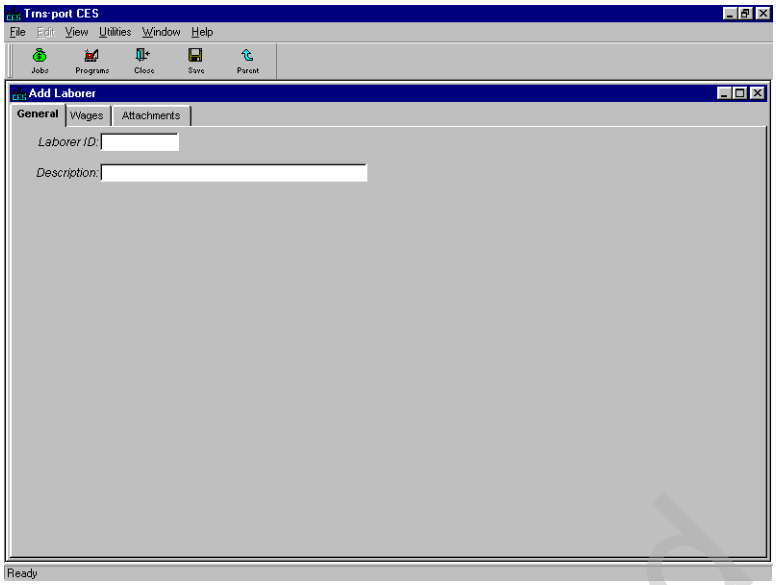


Figure 10-20. Add Laborer Window-GENERAL Tab

To create a complete record, enter information in these fields on the GENERAL tab:

Laborer ID A unique number or alphanumeric that identifies the laborer.

Description A short description of the laborer.

To enter wage information about the laborer being added, click the WAGES tab.

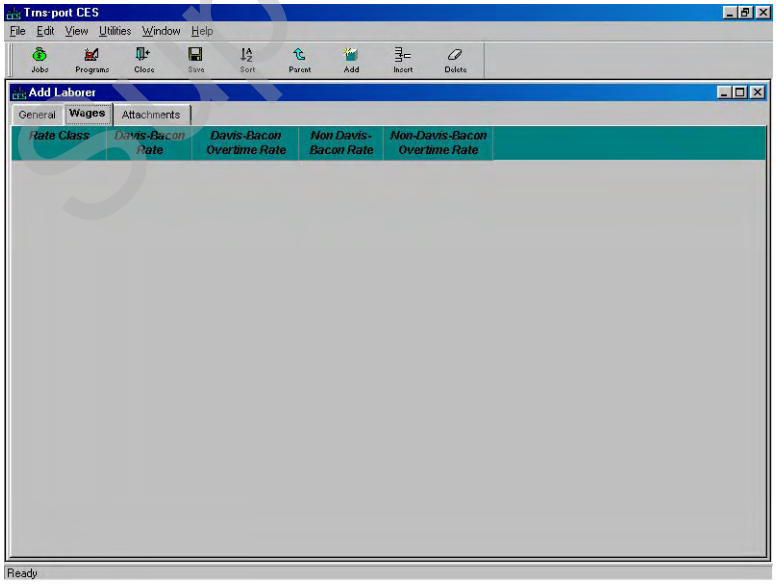


Figure 10-21. Add Laborer Window-WAGES Tab

Superseded

On this tab you can assign different wages for the laborer based on the rate class that is selected.

When there are no wages currently listed on the WAGES tab (see Figure 10-22), you will need to begin by choosing **Add** from the **Edit** or right mouse button menu to display a row in which to add wage information.

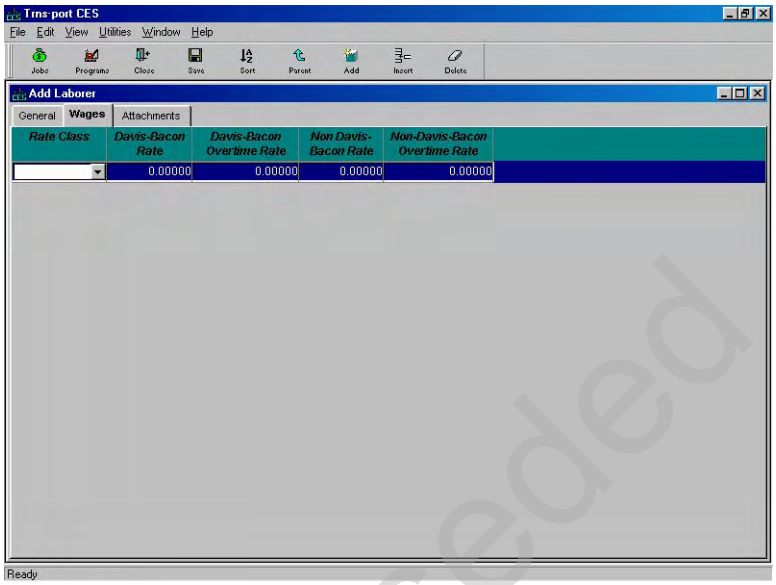


Figure 10-22. Add Laborer Window-WAGES Tab With a Blank Data Entry Row

For each additional wage added, you will also need to insert a blank row. When you insert a row by choosing Add from the Edit or right mouse button menu, the row will be placed beneath all the other existing rows. To place the row elsewhere in the list, highlight the row above which to place the row, and select **Insert** instead of Add. Enter information in these fields (as applicable) to complete the WAGES tab:

Rate Class	The rate class for the laborer. Enter a rate class or click the down arrow beside the field to display a drop-down list from which to select a rate class.
Davis-Bacon Rate	The hourly Davis-Bacon rate of pay for the laborer.
Davis-Bacon Overtime Rate	The hourly Davis-Bacon overtime rate of pay for the laborer.
Non Davis-Bacon Rate	The hourly non-Davis-Bacon rate of pay for the laborer.
Non-Davis-Bacon Overtime Rate	The hourly non-Davis-Bacon overtime rate of pay for the laborer.

Superseded

To change an existing laborer in the Labor List reference table, select that laborer from the Labor List window and choose **Change** from the **Edit** or right mouse button menu. CES displays the Laborer window. You can add information to or change any field except Laborer ID.

Reminder: It is NJDOT policy that consultants and NJDOT users should never change or delete any standard Cost Sheets or Labor, Equipment and Material data entered by another user.

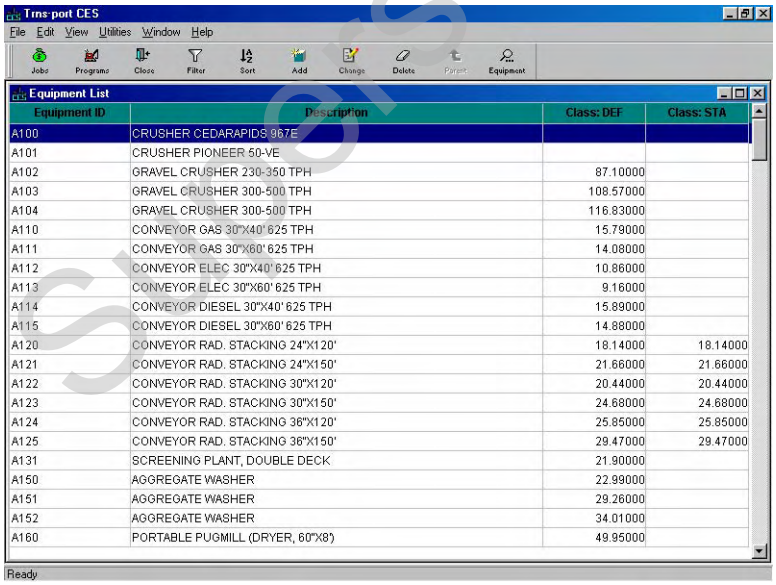
Click SAVE or select **Save** from the **File** menu to save your work.

Listing Laborers

To produce a listing of laborer information, begin by selecting the laborer or laborers for which to produce a listing in the Labor List window. Select **Run Process** from the **File** or right mouse button menu, and CES displays a Processes window. Select **List Labor** and click OK to submit a batch process to print the listing.

10.2.3 Equipment List

If you choose **Equipment List** from the **Reference Tables** submenu, CES displays the Equipment List window.



Equipment ID	Description	Class: DEF	Class: STA
A100	CRUSHER CEDARAPIDS 967E		
A101	CRUSHER PIONEER 50-VE		
A102	GRAVEL CRUSHER 230-350 TPH	87.10000	
A103	GRAVEL CRUSHER 300-500 TPH	108.57000	
A104	GRAVEL CRUSHER 300-500 TPH	116.83000	
A110	CONVEYOR GAS 30"X40' 625 TPH	15.79000	
A111	CONVEYOR GAS 30"X60' 625 TPH	14.08000	
A112	CONVEYOR ELEC 30"X40' 625 TPH	10.86000	
A113	CONVEYOR ELEC 30"X60' 625 TPH	9.16000	
A114	CONVEYOR DIESEL 30"X40' 625 TPH	15.89000	
A115	CONVEYOR DIESEL 30"X60' 625 TPH	14.88000	
A120	CONVEYOR RAD. STACKING 24"X120'	18.14000	18.14000
A121	CONVEYOR RAD. STACKING 24"X150'	21.66000	21.66000
A122	CONVEYOR RAD. STACKING 30"X120'	20.44000	20.44000
A123	CONVEYOR RAD. STACKING 30"X150'	24.68000	24.68000
A124	CONVEYOR RAD. STACKING 36"X120'	25.85000	25.85000
A125	CONVEYOR RAD. STACKING 36"X150'	29.47000	29.47000
A131	SCREENING PLANT, DOUBLE DECK	21.90000	
A150	AGGREGATE WASHER	22.99000	
A151	AGGREGATE WASHER	29.26000	
A152	AGGREGATE WASHER	34.01000	
A160	PORTABLE PUGMILL (DRYER, 60"X8')	49.95000	

Figure 10-23. Equipment List Window

Adding and Changing Equipment

To add information about equipment to the Equipment List reference table, select **Add** from the **Edit** or right mouse button menu, or press the INSERT key. CES displays the GENERAL tab of the Add Equipment window.

Superseded

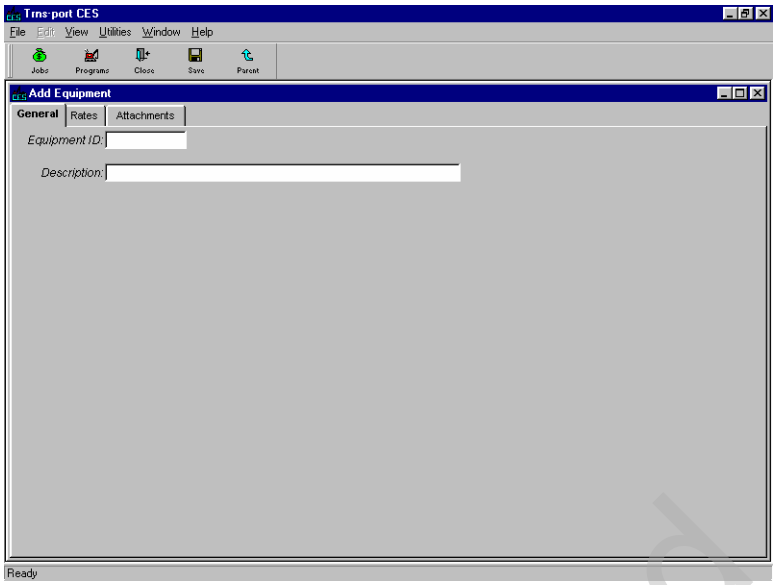


Figure 10-24. Add Equipment Window-GENERAL Tab

To create a complete record, enter information in these fields on the GENERAL tab:

Equipment ID A unique number or alphanumeric that identifies the equipment.

Description A short description of the equipment.

To enter rate information about the equipment being added, click the RATES tab.

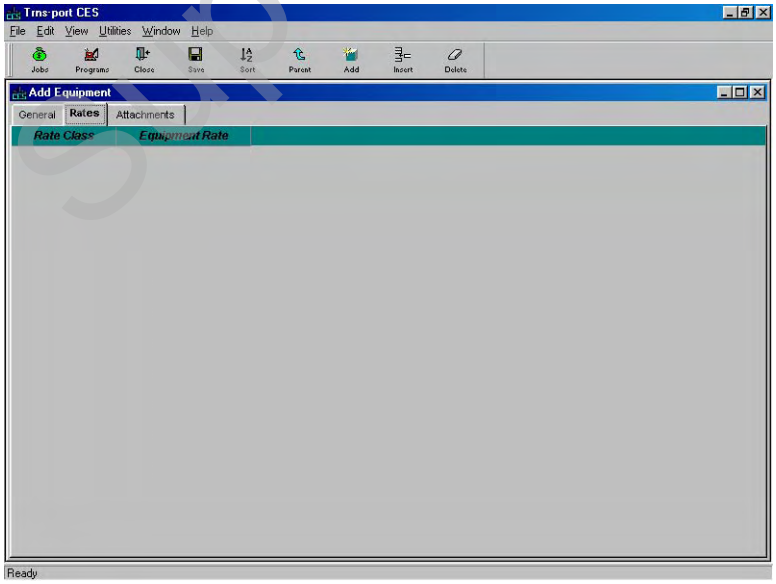


Figure 10-25. Add Equipment Window-RATES Tab

Superseded

On this tab you can assign different rates for the equipment based on the rate class that is selected.

When there are no rates currently listed on the RATES tab (see Figure 10-26), you will need to begin by choosing **Add** from the **Edit** or right mouse button menu to display a row in which to add rate information.

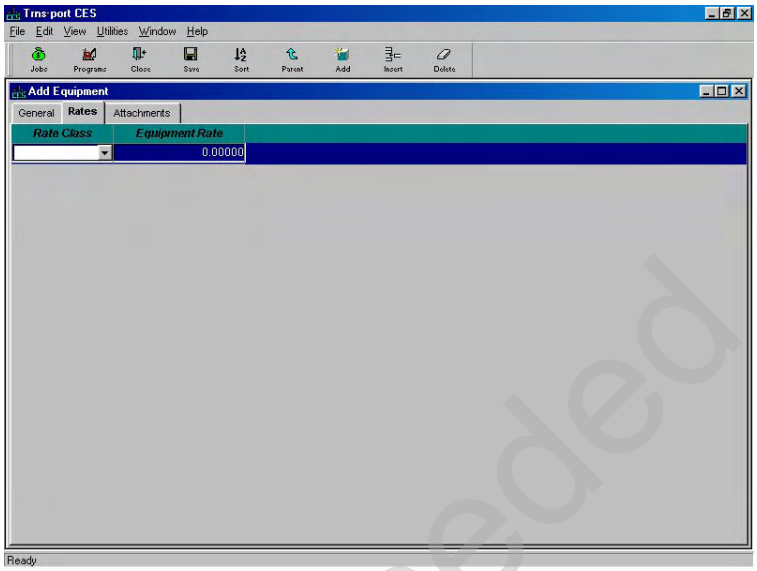


Figure 10-26. Add Equipment Window-RATES Tab With a Blank Data Entry Row

For each additional rate added, you will also need to insert a blank row. When you insert a row by choosing Add from the Edit or right mouse button menu, the row will be placed beneath all the other existing rows. To place the row elsewhere in the list, highlight the row above which to place the row, and select **Insert** instead of Add. Enter information in these two fields to complete the RATES tab:

Rate Class The rate class for the equipment. Enter a rate class or click the down arrow beside the field to display a drop-down list from which to select a rate class.

Equipment Rate The hourly rate for use of the equipment.

To change an existing piece of equipment in the Equipment List reference table, select that piece of equipment from the Equipment List window and choose **Change** from the **Edit** or right mouse button menu. CES displays the Equipment window. You can add information to or change any field except Equipment ID. Reminder: It is NJDOT policy that consultants and NJDOT users should never change or delete any standard Cost Sheets or Labor, Equipment, and Material data entered by another user.

Click SAVE or select **Save** from the **File** menu to save your work.

Superseded

Listing Equipment

To produce a listing of equipment information, begin by selecting the equipment for which to produce a listing in the Equipment List window. Select **Run Process** from the **File** or right mouse button menu, and CES displays a Processes window. Select **List Equipment** and click OK to submit a batch process to print the listing. See Chapter 9 for more information.

10.2.4 Crew List

If you choose **Crew List** from the **Reference Tables** submenu, CES displays the Crew List window.

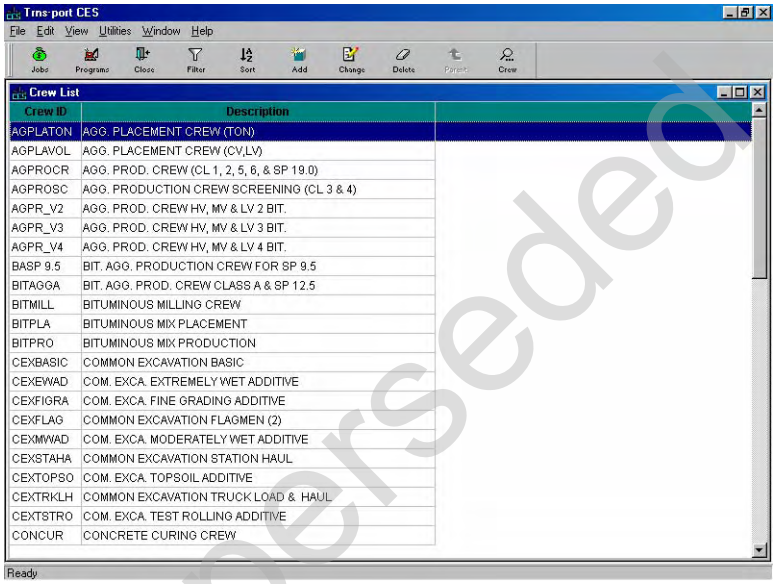


Figure 10-27. Crew List Window

Superseded

Adding and Changing Crews

To add information about a crew to the Crew List reference table, select **Add** from the **Edit** or right mouse button menu, or press the INSERT key. CES displays the GENERAL tab of the Add Crew window.

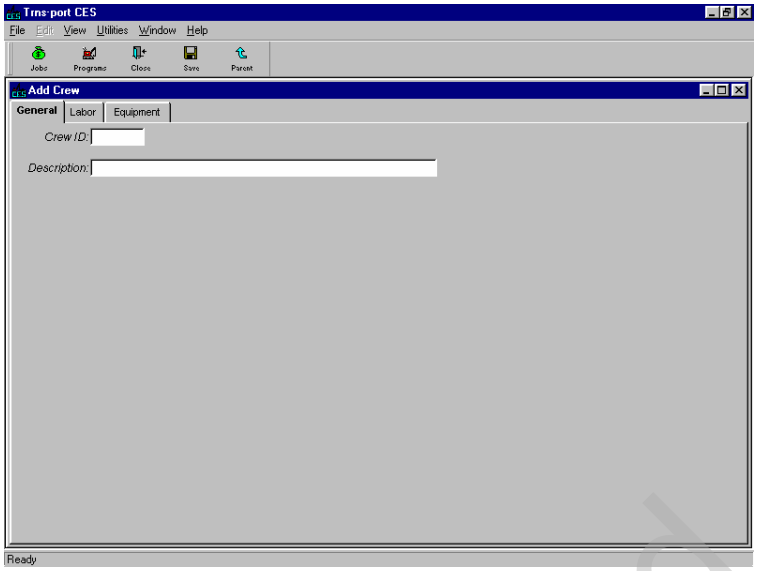


Figure 10-28. Add Crew Window-GENERAL Tab

To create a complete record, enter information in these fields on the GENERAL tab:

Crew ID A unique number or alphanumeric that identifies the crew.

Description A short description of the crew.

To enter labor information about the crew being added, click the LABOR tab.

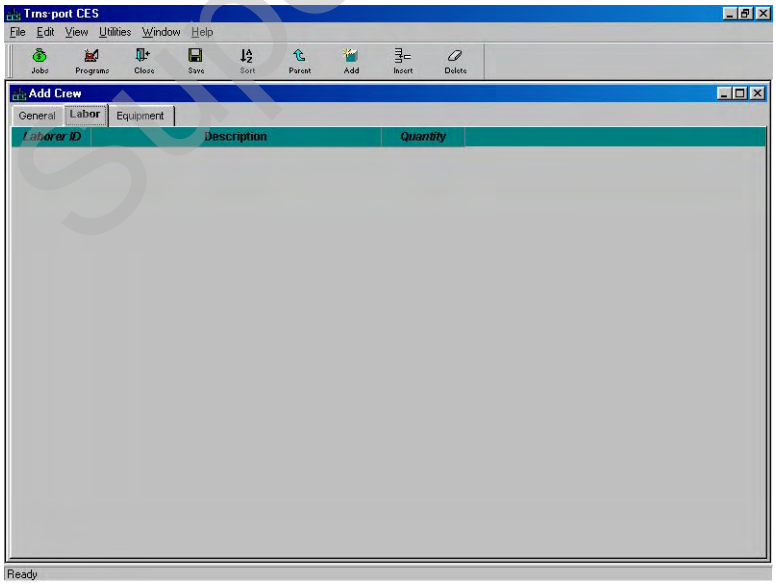


Figure 10-29. Add Crew Window-LABOR Tab

On this tab you can assign different laborers in various quantities to the crew.

Superseded

When there are no laborers currently listed on the LABOR tab (see Figure 10-30), you will need to begin by choosing **Add** from the **Edit** or right mouse button menu to display a row in which to add labor information.

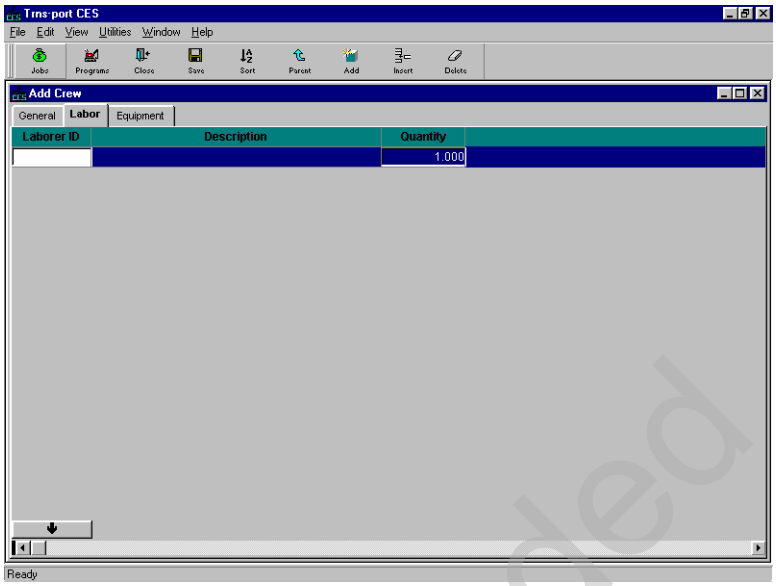


Figure 10-30. Add Crew Window-LABOR Tab With a Blank Data Entry Row

For each additional laborer added, you will also need to insert a blank row. When you insert a row by choosing Add from the Edit or right mouse button menu, the row will be placed beneath all the other existing rows. To place the row elsewhere in the list, highlight the row above which to place the row, and select **Insert** instead of Add.

Enter information in these two fields to complete the LABOR tab (the description field is automatically filled in once the Laborer ID is chosen):

Laborer ID A unique number or alphanumeric that identifies the laborer. Enter a laborer ID or click the down arrow at the bottom of the tab to display the Labor window from which to select a laborer.

Quantity The total number of persons expected to work in the capacity of the selected laborer.

To enter equipment information about the crew being added, click the EQUIPMENT tab.

Superseded

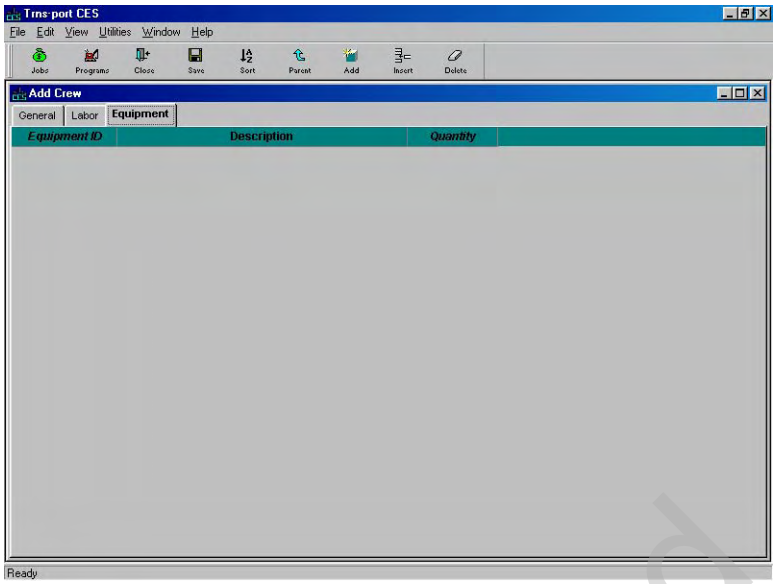


Figure 10-31. Add Crew Window-EQUIPMENT Tab

On this tab you can assign different pieces of equipment in various quantities to the crew.

When there is no equipment currently listed on the EQUIPMENT tab (see Figure 10-32), you will need to begin by choosing **Add** from the **Edit** or right mouse button menu to display a row in which to add equipment information.

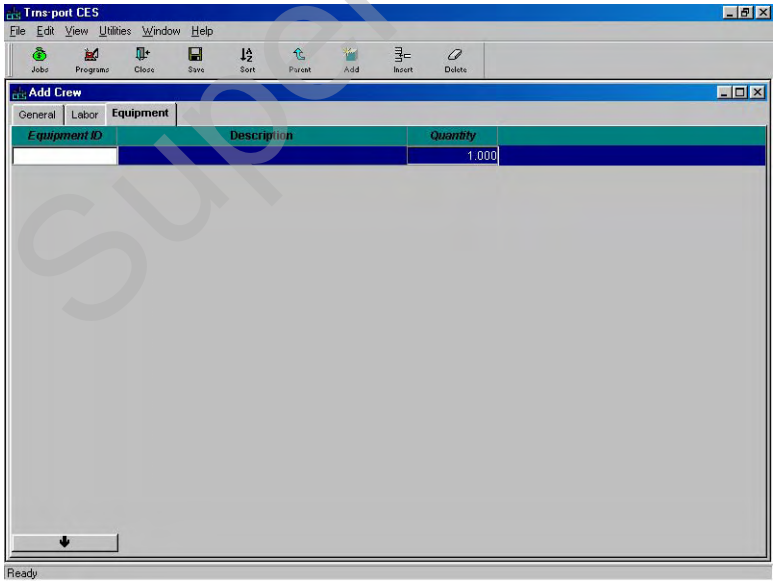


Figure 10-32. Add Crew Window-EQUIPMENT Tab With a Blank Data Entry Row

For each additional piece of equipment added, you will also need to insert a blank row. When you insert a row by choosing Add from the Edit or right mouse button menu, the row will be placed beneath all the other existing rows. To place the row

Superseded

elsewhere in the list, highlight the row above which to place the row, and select **Insert** instead of Add.

Enter information in these two fields to complete the EQUIPMENT tab (the description field is automatically filled in once the Equipment ID is chosen):

Equipment ID	A unique number or alphanumeric that identifies the piece of equipment. Enter an equipment ID or click the down arrow at the bottom of the tab to display the Equipment window from which to select a piece of equipment.
Quantity	The total amount (number of pieces) of equipment for the crew.

To change an existing crew in the Crew List reference table, select that crew from the Crew List window and choose **Change** from the **Edit** or right mouse button menu. CES displays the Crew window. You can add information to or change any field except Crew ID.

Reminder: It is NJDOT policy that consultants and NJDOT users should never change or delete any standard Cost Sheets or Labor, Equipment, and Material data entered by another user.

Click SAVE or select **Save** from the **File** menu to save your work.

Listing Crews

To produce a listing of crew information, begin by selecting the crew or crews for which to produce a listing in the Crew List window. Select **Run Process** from the **File** or right mouse button menu, and CES displays a Processes window. Select **List Crews** and click OK to submit a batch process to print the listing. See Chapter 9 for more information.

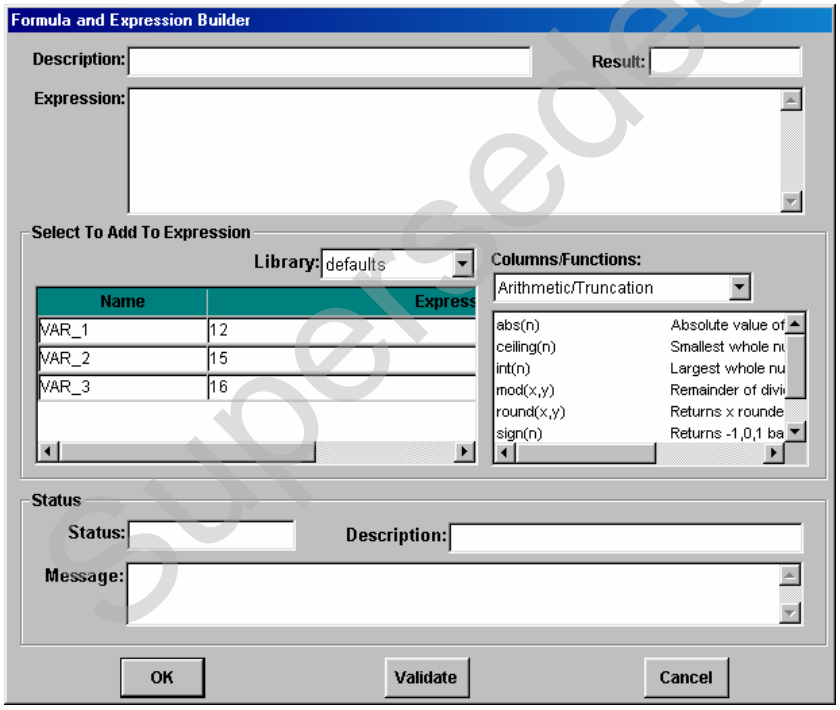
Superseded

11. Formulas and Formula Libraries

In CES, a field label with teal lettering or a column title with white lettering may be populated using a formula. For example, on a Long-Range estimate, the quantity in tons of asphalt could be calculated using a formula based on road length, width, depth and the specific gravity of the asphalt. For detailed estimation, the price for a lump sum item, or a price adjustment based on length of the job could be calculated using formulas. This chapter describes how to create formulas.

11.1 Creating Formulas in a Job

For help in creating a formula you may use the Formula and Expression Builder. It may be accessed by double-clicking on any of the formula-enabled fields in the job, or by right clicking in the field and selecting **Formula and Expression Builder** from the menu. CES displays the Formula and Expression Builder Window.



Superseded

Figure 11-1. Formula and Expression Builder Window

In the Formula and Expression Builder window, only the Description and Expression fields accept user input. You can create a formula or variable for the library using the Formula Library List available from the File menu. You can also create a variable using the VARIABLES tab on the Job tabbed folder window. The other fields are filled in by CES.

The field, tables, and buttons are described as follows:

Description (Expression) A description of the expression or formula being built.

Result Used with the VALIDATE button, the Result field displays the result of the valid expression. If an expression is invalid, the Result field remains blank.

Expression The formula being built. The expression can use the Columns/Functions list to help build the equation, previously created expressions from the Formula Library List, or values can be entered manually. The result of the evaluated field appears in the field for which the expression is being built.

Library The Library field corresponds to the Formula Library List. If you choose a library from the drop down list, then the formulas in that library display in the table. If you double click on a formula or variable in the table, the formula appears in the Expression field.

Columns/ Functions The Columns/Functions field offers an extensive listing of common formula-building functions and expressions columns or functions related to the category selected from the drop down list. For example, if you select Conditional from the drop down list, then you can choose to use equations like *if-then-else* or other conditional statements. If you select Job Columns from the drop down list, then you can choose the value of fields listed on the GENERAL tab of the Job tabbed folder window to include in your expression. If you select Job Variables, then any variables that were created on the VARIABLES tab for the job appear.

Status A list of eight errors, one of which displays if the expression fails validation. If the expression is valid, then the status is *OK.

Description (Status) A brief description of the message in the Status field.

Message A longer description of the message in the Status field.

validate Button When you click the VALIDATE button, CES validates the formula in the Expression field to ensure the syntax is

Superseded

correct and it will return a value. Results of the validation appear in the Status field.

OK Button If the expression is valid, when you click OK, the value of the expression appears in the field for which the expression was built.

CANCEL Button When you click CANCEL, CES returns to the previously active window.

11.1.1 Formula Example

As an example of a CES formula in action, consider that NJDOT's database contains a primary county named "Monmouth" and that the code for Monmouth County is "C017." If you wanted to produce a formula that would check to see if the county for the job is Monmouth, and if it were, the conceptual estimate for the job would be set at 350000 instead of 330000, your formula would look like this:

if(PRIMARYCOUNTY='C017',350000,330000)

CES interprets this formula (roughly speaking) as follows:

If the primary county for the job is C017 (which is Monmouth), then the value in this field (the Conceptual Estimate field) will be 350000; else the value in this field will be 330000.

11.2 Using Formulas

To insert a formula into a formula-enabled field either double-click in the field or select Formula and Expression Builder from the right mouse button menu to display the Formula and Expression Builder Window. To use the Formula and Expression Builder, locate and select a formula that you have already created from the Library or build a new formula. Click OK to insert the formula, and CES evaluates the formula to derive a value for the field.

If you prefer, you may simply type a formula into the field. Or you may copy and paste an existing formula that you have stored in a text file outside of CES. Hold down the Control key and press C to copy, then hold down the Control key and press V to paste the formula in the field. You can check the formula by double-clicking on the field, and then clicking on VALIDATE.

As a time-saver, you may also use formula-enabled fields to do simple math calculations. For example, if you type 4*2 in the field, then tab out of the field, CES will do the multiplication and return a value of 8.

11.2.1 Formula Library List

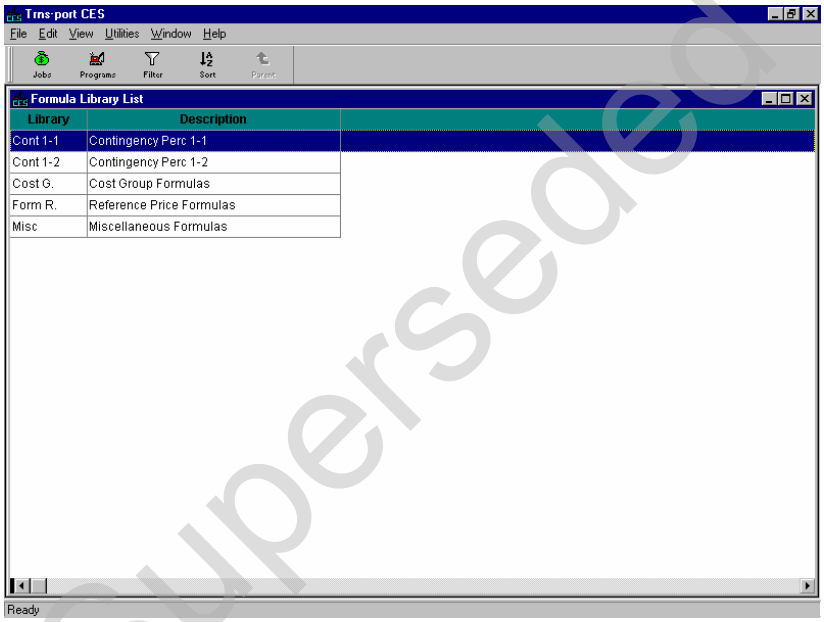
Commonly used formulas may be pre-defined in the **Formula Library List** and then selected in the Expression Builder window when creating an estimate.

Superseded

Formulas added to the **Formula Library List** are accessible to all users of CES. It is NJDOT policy that users may not change or delete formulas in the library that were created by other users, since any change will impact all users. Since the system does not control user ownership of formulas, any formulas selected from the library should be reviewed for accuracy when using them in an estimate. Formulas may be modified in an estimate.

Tip: Users who do not wish to share their formulas may store them in a text file on their computers, and copy and paste them into their estimates as needed. Note you may experience difficulty if you store your formulas in a word-processing document or other format that may add hidden code.

To access the **Formula Library List** window select **Formula Library List** from the **File** menu. CES displays the Formula Library List window.



Superseded

Figure 11-2. Formula Library List Window

Adding and Changing Default Formula Libraries

To add a default formula library to the Formula Library List, select **Add** from the **Edit** or right mouse button menu, or press the INSERT key. CES displays the GENERAL tab of the Add Formula Library window.

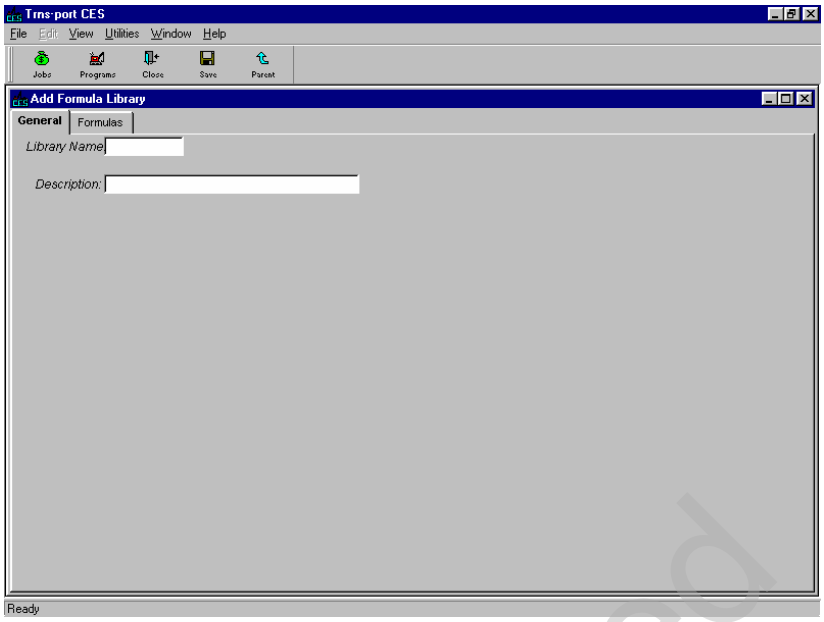


Figure 11-3. Add Formula Library Window-GENERAL Tab

General Tab

To create a complete record, enter information in these fields on the GENERAL tab:

Library Name A unique descriptive identifier of the formula library.

Description A short (40 characters) description of the formula library. This may identify the functions of the formulas, the type of items or data they apply to, or the user or firm that created them.

Formulas Tab

To add formulas to the new formula library, click the FORMULAS tab.

Superseded

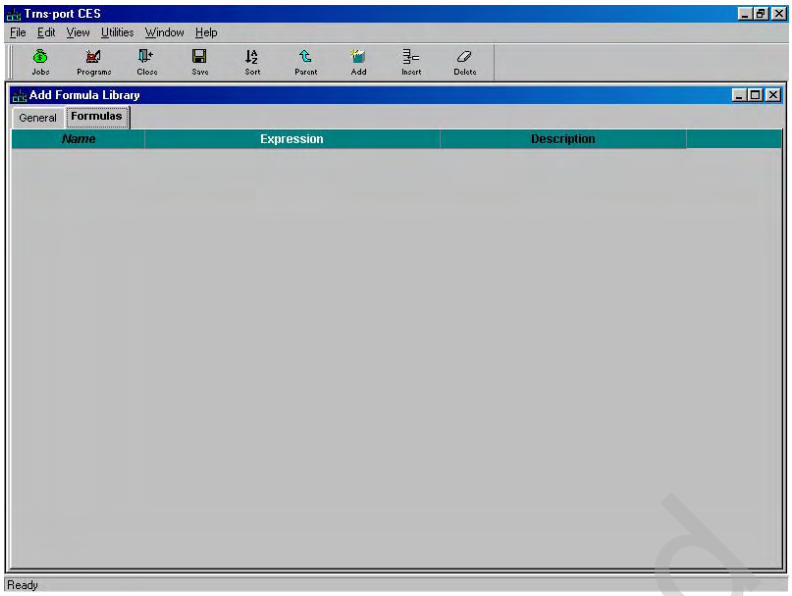


Figure 11-4. Add Formula Library Window-FORMULAS Tab

On this tab you can assign different formulas to the formula library. When there are no formulas currently listed on the FORMULAS tab (see Figure 11-4), you will need to begin by choosing **Add** from the **Edit** or right mouse button menu to display a row in which to add formula information.

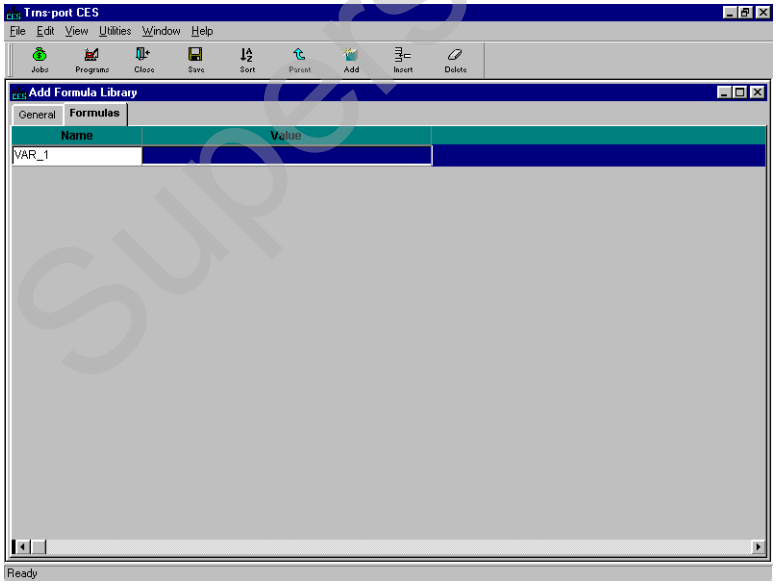


Figure 11-5. Add Formula Library Window-FORMULAS Tab With a Blank Data Entry Row

For each additional formula added, you will also need to insert a blank row; otherwise, CES will overwrite the information in the currently selected row. When you insert a row by choosing Add from the Edit or right mouse button menu, the row will be placed beneath all the other existing rows. To place the row elsewhere

Superseded

in the list, highlight the row above which to place the pricing row, and select **Insert** instead of Add. These fields can be edited in the data entry grid:

Name	The designation that identifies the formula or expression. The value entered must begin with a letter, cannot contain any spaces, and can consist of letters, numbers, and underscores (_).
Expression	The actual formula or expression being added to the formula library.
Description	A short description of the formula or expression.

To change an existing standard formula library, select that library from the Formula Library List window and choose **Change** from the **Edit** or right mouse button menu. CES displays the Formula Library window in which you can alter any of the fields except Library Name. Any formula entered will not be accessible until you save your work. Reminder: It is NJDOT policy that users may not change or delete formulas in the library that were created by other users.

Click SAVE or select **Save** from the **File** menu.

Superseded

12. Passing Final CES Estimate to PES

Once the final estimate has gone through all last-minute changes and is ready for advertisement, it must be passed to the Trns•port Proposal Estimate System (PES®) by NJDOT staff. This chapter describes the steps necessary to export a job from CES and import it into PES.

12.1 Steps to Export, Import, and Reassign the Project Number

Step 1: Export Job from CES

1. In CES, select the job in the Jobs window to be imported into PES.
2. Right click on the job and select the **Run Process** option from the menu.
3. Select and submit the Export Copy of Job process.
4. Check the status of the Job by selecting **Process Status** from the **File** menu.
5. Once the process named CESECJ completes, double click on the job in the Process Status window.
6. Right click on the output.txt file and select the **Save As** option from the menu.
7. Save the output.txt file as <EstimateName>.xml.
8. Note both the file name and the location where you saved it.

Step 2: Upload File to PES

1. In PES from the window dropdown menu select **Upload File** from the **Utilities** menu and choose **Process I/O File**.
2. Locate and select the file <EstimateName>.xml created during Step 1, Export Job from CES.
3. Save the file to the directory called “qpjiportdir.”

Step 3: Import File into PES

1. In PES, select **Run Process** from the **File** menu.
2. From the list of processes, select Import New Projects.
3. For the import data options select **Estimator (Trns·port format)**.
4. Change the default file name from ESTIMATE.XML to <EstimateName>.xml (the file uploaded during step 2).

Superseded

5. Upload File to PES.

6. Submit the import process.

Step 4: Verify Import into PES

1. Check the status of the Job by selecting File>Process Status from the window dropdown menu.

2. Once import process completes, open the Projects window in PES to verify the job was imported.

3. Check the pesipjn.log that gets created during the import for errors. This log may be found by double clicking on the process named PESIPJN in the Process Status window. Please contact NJDOT CES Support if assistance is needed.

Step 5: Copy Project and Assign DP# in PES

Steps 5 and 6 are done in order to assign the DP#, since Project Number is not an editable field in PES.

1. Locate the newly imported <Estimate Name> project in the PES Project window.

2. Highlight the project with the cursor and select Edit>Copy Special from the window dropdown menu.

3. Specify the DP# assigned to the project as the New Project Control Number.

Step 6: Delete <Estimate Name> Project in PES

1. Locate the <Estimate Name> project in the Project window in PES.

2. Right click on the project and select **Delete** from the menu.

3. Delete the project by clicking YES to all warning messages.

12.2 Verify That All Necessary Data Fields Have Been Filled In

There are some important data fields that may not be passed in the export/import process, or may not have been populated in the CES Job, or may have changed since the CES job was created.

Please check that all Project fields are correctly populated, *especially those indicated in italics in the charts below.*

The GENERAL tab contains general information fields used for identifying the project on two pages. To update a complete record, enter information in these fields:

Superseded

Project Number	A unique alphanumeric or number used by Trns•port to identify a project. (**DP#)**
UPC Number	Not required on Maintenance projects.
Federal/State Project Number	Maintenance should enter STATE if the project is 100 percent state funded. However, if there is federal funding and a Federal Project Number, it should be entered.
Spec Year	Select Spec year from drop-down menu.
Description	This description should match the name of the project as listed on the plans, key sheet, and advertising memo. Trns•port prints on most project reports. These two lines of data allow you to enter a brief description (maximum 120 characters).
Location	The location of the primary work performed in the project.
Unit System	This field will default to E (English).
CES Job Number	Entry into this field is not required.
Road Name	The name of the primary road on which project work is being performed. If the work is being performed on various roads or Statewide enter Various or Statewide.
Route	*The route number or road number of the road affected by a project. This field can be left blank if there is no Route indicated.*
Road Section No.	Leave blank.
Beginning Termini	*Milepost at the beginning of the project (this is not a required field).*
Ending Termini	*Milepost at the end of a project (this is not a required field).*

Superseded

Beginning Station	This field lets you define more precisely where the work for this project is taking place. This data is passed to BAMS/DSS for pinpointing the projects on maps.
Ending Station	This field lets you define more precisely where the work for this project is taking place.
Status	Select the current status of the Job from the drop-down menu.
Const. Eng. Pct	This field defaults to 0.00. Do not change it from the default.
District	Select the Region where a project or contract is located from the drop-down menu.
Project Grade	This field will not be used.
Project Work Type	*Select work type from the drop-down menu. Appendix A identifies and defines work types.*
Project Type	*Select the project type from the drop-down menu.*
Estimated Amt. of Project	This field will default to 0.00, or an amount may carry over from CES. This is not a required field.
Reviewed By	*Select reviewer or estimator's name from the drop-down menu.*
Date of Estimate	Enter today's date. Date can be entered using the calendar or by manually entering it.
Prices by	Enter the same person as the Reviewed by entry.
Date Priced	Enter the date pricing was performed either by manual entry or using the calendar provided.
Revised by	If revisions have been made, enter the name of the person making the revisions.
Last Revision	The date the estimate was last revised. Enter manually or use the calendar provided.
Control Group	This field will be pre-populated. It determines who is able to

Superseded

access each project. **DO NOT alter this field.**

Type of Road *Select the type of Highway from the drop-down menu (see Appendix B for definitions).*

Urban/Rural Class *Select Urban or Rural. This is a required field.*

Securities in Lieu of Retainage Skip this field.

Longitude of Midpoint *The longitude of the midpoint of construction. For Statewide projects use 0746452. For regional projects use the following: North, 0743759; South, 0750042; Central, 0741630; and HQ, 0744788. If the project is not Statewide or Regional use the actual midpoint longitude of construction. The coordinate entered MUST be within the first county selected in the COUNTY tab.*

Latitude of Midpoint *The latitude of the midpoint of construction. For Statewide projects use 401838. For regional projects use the following: North, 405493; South, 395487; Central, 401435; and HQ, 401530. If the project is not Statewide or Regional use the actual midpoint latitude of construction. The coordinate entered MUST be within the first county selected in the COUNTY tab.*

Field Book Skip this field.

Superseded

COUNTY Fields

Please check that all County fields are correctly populated, especially those indicated in *italics* in the chart below.

County or Cong. Dist. Code A code value indicating that the project will perform work in that county. Choose a code from the drop-down menu.

County Name This will be automatically populated when you select the county code.

Percent of Project Length	*The approximate percentage of the length of the project that lies within this county. If the project is checked out to CES, the county with the highest percentage will be used for estimation. The latitude and longitude of the project midpoint should fall within the county with the highest percentage.*

CATEGORY Fields

Please check that all Category fields are correctly populated, especially those indicated in *italics* in the chart below.

Category Number	A four digit unique identifier for a project category. Start with 0001 and number consecutively by ones.
Category Description	Roadway or Bridge, etc. This is a required field.
Proposal Section Number	This field is not required.
Combine with Like Categories	Make sure the box is **NOT** selected.
Category Work Class	Select the work class category. This field is not required for state projects.
Federal Work Category	Select the Federal Work Category for Federal projects.
Catg. Suppl. Work Code	This field will not be used.
Bridge ID	*This is a REQUIRED field when structures are involved in the category. The NJDOT structure # should be used.*
Bridge Length	*The length of the bridge represented by the category. Not needed for roadway projects.*
Bridge Width	*The width of the structure represented by the category.*

Superseded

Category Alternate Code	This field will not be used.
Federal Construction Class	Describes the type of construction used for the category. Select from the drop-down menu.
Construction Eng. Pct.	This field will not be used.
Category Length	*The length of the category in miles.*
Category Width	*The width of the portion of the project represented by the category in feet.*
Category Depth	*The average pavement depth in inches.*
Lane Mi	*Calculate and fill in the lane miles for the category.*
Number of Spans	*Fill in the number of spans of the structure represented by the category.*
Bridge Type	*Select the type of bridge from the drop-down menu.*
Highway Type	Select the highway type from the drop-down menu (see Appendix B for definitions).
Highway Number	This field will not be used.
Beginning Termini	This field will not be used.
Ending Termini	This field will not be used.
Beginning Station	Fill in the station at the beginning of the project. If the category represents a structure, fill in the beginning station of the structure.
Ending Station	Fill in the ending station of the project. If the category

Superseded

	represents a structure, fill in the ending station of the structure.
Road Section Number	This field will not be used.
Unit Number	This field will not be used.
Unit Description	This field will not be used.
Adj. Code	This field will not be used.
Adj. %	This field will not be used.
String 1- 6	These fields will not be used.
Flag 1 - 5	These fields will not be used.
Code 1 – 4	These fields will not be used.
Number 1 - 2	These fields will not be used.

Please refer to PES documentation for further information on creating a Project.

Superseded

Appendix A. Contract and Project Work Types Contract Classification

Frequently, highway construction projects and contracts are classified into general classifications such as new construction, rehabilitation, widening, preventative maintenance, etc. While these improvement type classifications are important for program budgeting and reporting purposes, they are limited for the purpose of classifying contracts based on task functionality. For example, some widening jobs are heavy on asphalt items while others are heavy on earthwork, drainage and/or concrete items. Better functional classification of contracts allows more accurate market determination, which will improve the State's ability to examine competition and bidding issues using the BAMS/DSS system. From an estimating perspective, work type (and major item) classifications can be used effectively to improve project cost estimation using CES and/or Trns•port Estimator®.

A recommended list of contract work types is provided in the following table. Using these functional work types allows for better identification and grouping of like contracts for the purpose of determining and analyzing the markets where like contractors interact for various contracting functions (e.g. asphalt, earthwork, structures). Also, since Trns•port BAMS/DSS® is the source for historical bid prices, consistent use of work type and item classifications across all Trns•port modules facilitates enhanced bid-based pricing for cost estimating.

The Job Work Type variable (JOB.jobworktype) in CES, which corresponds to the Contract Work Type variable (DPROPOSL.cnprpwrk) in BAMS/DSS, can be used to store the functional classification.

The general construction classifications (new construction, widening and resurfacing, etc.) should also be entered for each project. For example, the Job Type variable (JOB.jobtype) in CES can be used to store these improvement type classifications.

To a large extent, the functional classification of contracts is a subjective process that requires the exercise of judgment. Generally, we can classify the contracts according to what functions are likely to control the award of the job as measured by the major item dollar percentages. Absent special circumstances, such as a high degree of specialty work or lump sum items, a major item concentration of *35 percent or greater* is usually considered as determinative of work type classification. Many contracts will not fall neatly into any particular category, with the dollars evenly divided across more than one major item. In such cases, a General Construction work type code may be appropriate.

In practice, contract work types initially assigned in CES can be reviewed and revised later when the detailed line items have been fully specified for the project. For example, when the data is finally passed to BAMS/DSS, work type coding can be re-evaluated for data analysis purposes using the Contract Profile Ad Hoc program that summarizes the contract dollar percentages by item classification.

Superseded

Table A-1. NJDOT Project and Contract Work Types

Work Type Code	Work Type Classification Description	Examples
ASPH	Primarily asphalt work. Typically over 35 percent asphalt item dollars.	NEW CONSTRUCTION RESURFACING RECONSTRUCTION BITUMINOUS PAVEMENT
BRPT	Bridge painting and cleaning	BRIDGE PAINTING BRIDGE CLEANING
CONC	Primarily Portland cement concrete work	CONCRETE PAVEMENT
CURB	Curbs, sidewalks, and gutters	CURB & GUTTER
DRNG	Drainage work and Erosion control Drainage projects are those involving primarily the non-incidental improvement to drainage or erosion control. Drainage projects may include the installation/rebuilding of box culverts, ditches, inlets, gutters, and/or piping structures. Erosion control may include the installation of rip rap, wire mesh netting, construction of sediment ponds, slope stabilization, retaining walls, etc.	CULVERTS DITCHES DRAINAGE EROSION CONTROL
ERTH	Earthwork	EARTHWORK EXCAVATION GRADING
FENC	Fencing	FENCES GATES
GDRL	Guiderail Guiderail refers to the non-incidental installation of guiderail/guardrail upon an existing facility. Installation of guiderail/guardrail should be the primary activity related to contracts of this classification.	GUIDERAIL/GUARDRAIL MEDIAN CROSSOVER PROTECTION
GENC	General construction Typically 20 percent or more individually allocated to paving (asphalt or concrete), earthwork (and/or drainage), and structures.	
INTC	Interchange Interchange work includes new interchange construction and the reconstruction or widening of an existing interchange. New interchange projects involve the construction of a new facility or structure that allows the junction of highways, usually on different levels – thereby permitting traffic to move from one to another without crossing traffic streams. The facility construction includes the connected entrance and exit ramps.	INTERCHANGE

Superseded

Work Type Code	Work Type Classification Description	Examples
	Interchange projects will be of varying complexity and widely varying cost depending on the nature and location of the conjoining roadways and the nature of the improvement. Typical interchange projects include improvements made to “diamond” and “at-grade” interchanges, while complex interchange projects include improvements made to cloverleaf interchanges and interchanges at the junction of two interstate highways, and the like.	
ITS	Intelligent Transportation Systems	ITS FACILITIES CCTV TRAFFIC MONITORING
JNTS	Joints	PAVEMENT CRACK SEAL JOINT REPAIR
LAND	Landscaping	LANDSCAPING MOWING
LTNG	Lighting	LIGHTING, RELAMPING
MISC	Miscellaneous Includes non-incidental specialty work in separate contracts not covered by another work type classification.	EMERGENCY STANDBY MACHINE SWEEPING NOISE BARRIERS PAVEMENT CLEANING REST AREAS
PVMK	Pavement marking	PAVEMENT MARKING
RMVL	Removal of buildings	DEMOLITION OF BUILDINGS
SGNL	Signals Non-incidental improvements to signalization at intersections.	TRAFFIC SIGNALS
SIGN	Signs Non-incidental improvements to signing.	SIGNING
SRFP	Surface prep	MILLING RUMBLE STRIPS
STRL	Structures – large Typically over $500,000, but more importantly bid on by large structures contractors.	BRIDGE REPAIR/REHAB BRIDGE RECONSTRUCTION
STRS	Structures – small Typically under $500,000, but more importantly bid on by small structures contractors.	BRIDGE REPAIR/REHAB
UTIL	Utility work Includes potable water, gas mains, telephone and electric utility work.	UTILITIES

Superseded

Appendix B. Highway Types

A highway type should be specified on every job estimate. Highway types may be any combination of the values defined in the table below by combing a value from Column A with a value from Column B.

Exceptions to this are: **Various,** which should be specified when a project encompasses multiple highway types; **Planning and Statewide Projects, Enhance**, which should be used for Maintenance jobs; and **Not Applicable**, which should only be used when the work does not fall into one of the pre-defined highway types.

Table B-1. NJDOT Highway Types

Column A	Column B
Expressway A divided multi-lane arterial highway for through traffic with full or partial control of access and generally with grade separations at major intersections. On rare occasions expressways may also include two lane roadways.	**Principal Arterial** Forms an interconnected network of continuous routes serving corridor movements having the highest traffic volumes and the longest trip lengths including substantial statewide or interstate travel.
Freeway An expressway with full control of access and grade separations at all intersections.	**Minor Arterial** Interconnect with and augment the principal highway system. Service trips of moderate length at somewhat lower level of travel mobility. Provide relatively high overall travel speeds with minimum interference to through movements.
Divided A highway, street or road with opposing directions of traffic separated by a median.	**Major Collector** Serve important intra-county traffic corridors and provide service to major county traffic generators.
Undivided A highway, street or road with opposing directions of traffic.	**Minor Collector** Serve smaller places and towns and connect locally important traffic generators.
	Local All roads not included in the higher classifications. These streets and roads provide direct access to abutting land and permit access to the roads of higher classification. They offer the lowest mobility.

Superseded

Appendix C. Project/Job/Proposal Construction Classifications

Table C-1. Project/Job/Proposal Construction Classifications

Type	Description
1. New Construction	New construction or major reconstruction of divided or undivided highways. Includes all major phases of construction site preparation, earthwork, drainage, structures, paving, etc. whether contracted separately or as a complete project. Minor items such as signing, landscaping and guiderail are included unless they are in separate specialty contracts. If Maintenance of Traffic will include two or more stages or if extensive Maintenance of Traffic equipment is needed, use Class 2.
2. Reconstruction, Widening and Dualization	The removal and replacement, rebuilding or upgrading of an existing facility, including intersections. There may be grade changes but normally the changes will not be significant. Includes all phases of construction. May include short utility relocations, placement and/or relocations of Intelligent Transportation Systems (ITS) facilities. Includes widening equivalent to one lane width or wider. Includes structures when decks are replaced on existing substructures or decks are widened and substructures extended. Includes intersection improvements when roadway area is also rebuilt.
3. Widening and Resurfacing	Widening and resurfacing of existing highway facilities when the total added width is equivalent to less than one lane width in each direction and grades are not changed. Includes minor grading, extending culverts, curb and gutter, etc. Includes bridge deck widening possibly without substructure changes. May require relocations of ITS facilities.

Superseded

Type	Description
4. Resurfacing	Overlaying existing highways, and surfacing or overlaying existing shoulders with asphaltic material. Includes joint repair, minor widening with asphaltic materials, some base corrections or asphaltic base, curb and gutter replacement, and adjustments at structures, drives and street returns. Does not include extensive reconstruction, pavement replacement or construction of new pavements, excavation, utility or sewer work. Projects with milling operations may involve reconstruction of ITS device pavement sensors.
5. Bridge Repair	Repair of bridges, includes repairs to decks, curbs, rails, beams and structures. If total deck removal and replacement is required, the contract should be classified as reconstruction. Bridge Repair also includes bridge painting, which consists of the removal of lead based paint and the application of a high performance coating system.
6. Intersection Improvements	Minor construction or reconstruction of street or highway intersections. Normally includes some removal, grading, drainage and paving. May include curb and sidewalk along with traffic signals installed at the intersection. If intersection pavement is to be rebuilt, the contract should be classified as reconstruction.
7. Electrical, Safety, and Traffic Control	Placement, replacement and betterment of guiderail, signs, striping, traffic signals, highway lighting, sign lighting, electrical signs, movable bridge electrical systems and other safety and traffic control devices, along streets and highways, when let on a specialty contract basis. If electrical, safety and traffic control devices are included as part of a major contract type, they should be included under the miscellaneous activities for that type.
8. Miscellaneous	Construction activities, let on a specialty contract basis, not assignable to other work classes. Includes demolition of buildings, removal of asbestos, and railroad pavement painting.

Superseded

Type	Description
9. Unique	Construction activities of a distinctive nature, which is let on a specialty contract basis. Includes wetland replacement and restoration.
10. Intelligent Transportation Systems (ITS)	Construction of ITS devices and communication networks. Systems include computerized traffic signal control, dynamic message signs, closed circuit television, highway advisory radio, fiber optics and wireless technologies, traffic detection, weather station and data development traffic monitoring. Includes the integration of proposed devices with Traffic Operation Centers central control systems and interagency resource sharing through the regional and statewide ITS Architectures. If ITS systems are included as part of a major contract type, they should be included under the miscellaneous activities for that type.
11. Landscape	Design and installation of landscape architectural elements to enhance transportation facilities or to mitigate environmental and negative effects caused by transportation facility improvements. Work includes functional, aesthetic and safety plantings, reforestation, wetland mitigation, urban streetscapes, bicycle and pedestrian improvements, and structures aesthetics. This work may be part of other contracts or as independent contracts.
12. Demolition	Advanced Demolition of Buildings - the demolition and removal of buildings and appurtenances within acquired ROW, in advance of the main construction contract. Clearing Site, Underground Storage Tank Removal, Sealing of Abandoned Wells, and Asbestos Remediation could be included in this type of project.
13. Drainage	Includes cleaning, inspecting, capacity restoration and in-kind repairs to highway drainage facilities.

Superseded

Appendix D: Long Range (Preliminary) Estimation Checklist

Prior to submitting a long range estimate, the estimator should verify that the following items were accounted for in the estimate. For any items marked "No" please provide a written explanation.

Table D-1. NJDOT Estimation Checklist

Items to be checked	YES	NO
1). Construction		
a). Railroad coordination complete?		
b). Access issues resolved?		
c). Work hour / lane restrictions identified?		
d). Night work required?		
e). Full 8 hour work shifts to be utilized?		
f). Safety concerns addressed?		
g). Bonuses included?		
h). Liquidated Damages included?		
i). Permit/environmental approval conditions/restrictions		
j). Staging / Storage area(s) identified?		
k). Site accessible to Contractor?		
l). Project Awarded at logical construction time of year?		

Superseded

Items to be checked	YES	NO
2). Cost Estimate		
a). Researched for labor intensive items with hidden costs?		
b). Environmental issues / costs researched?		
c). Archeological issues / costs researched?		
d). ROW researched, prices obtained?		
e). Utility cost estimate received from companies?		
f). Current Bid Prices used for estimate?		
3). Plan Preparation		
a). All features on plan verified with field trip?		
b). Utilities identified?		
c). Drainage report / plan prepared?		
d). Noise analysis performed?		
e). Typical section established?		
f). Geotechnical site conditions have been researched?		
g). Subsurface conditions verified?		
h). Different retaining wall options / prices investigated?		

Superseded

Appendix E: NJDOT Non-standard Item Request Form

QMSESTNS-1
1/2006

New Jersey Department of Transportation
Quality Management Services
Office of Estimating and Project Delivery Support

Non-Standard Item Number Request

For Office Use Only
Item Number: _____

Type and enter all information completely.
Do not refer to attachments in your responses.

Submit only one item per form.
Send a specification in electronic format with this form.

Suggested NS Item Description:	**Proprietary:** Yes ☐ No ☐	**Date of Request:**
Existing standard item replaced by this item:	**Design Phase** PDS ☐ FDS ☐ PS&E ☐	
Is a Construction detail required? Yes ☐ No ☐		
Project Name:		
Construction Activity: Roadway ☐ Bridge ☐ Utility ☐	**Reference projects, if any:**	
Materials:		
Recommended Primary Use:		
Method of Construction:		
Method of Measurement:		
Basis of Payment:		
Estimated Cost Per Unit of Application: $ *Cost backup must be attached.*	**Materials Available:** Yes ☐ No ☐	
Cast in Place: Yes ☐ No ☐	**Special Order:** Yes ☐ No ☐	

Specification Numbers: List the specification number if your item meets any of the following specification requirements.

Specification	Number
AASHTO	
ASTM	
FHWA	
NJDOT	

Testing: List report number if the item has been tested by any of the following organizations.

Organization	Report Number
NTPEP	
HITEC	
NASHTO	
SASHTO	
Other:	

Manufacture: Is this product manufactured in the USA? Yes ☐ No ☐
If so, state by whom and if the use is routine or experimental. Attach any approval letters.

Royalty: If proprietary, what are the royalty costs and on what basis are they collected?

Safety: Has this item been certified according to NCHRP 350 and passed the test? Yes ☐ No ☐

Note: The office requires at least two working days to assign a non-standard item number. Failure to submit the required information may delay the issuance of the item number and the evaluation, approval and funding of your technology or product.

Additional Information:

Contact Information:
Name of Company or DOT unit:

Person furnishing information:	Title:
Phone number:	Fax number:
Email address:	

Superseded

Appendix F. Standard Cost Groups

F.1 Cost Groups for Long Range Estimation

Standard cost groups utilizing different pricing methodology have been defined for use in CES and added to the Cost Group List.

Cost groups utilizing bid-based pricing have been developed by grouping appropriate line items. Each item is assigned a conversion factor to translate its unit quantity to a common unit of measure for the cost group. Because the cost groups are based on items, the historical bid data can be used to determine historical quantities and costs for the cost groups. Bid-based cost groups use a calculation rule of *normal (NORM),* price multiplied by quantity.

Cost groups utilizing percentages are available in the Cost Group List for item groups such as mobilization (MOBL) and training (TRAN), for which direct bid-based pricing may not be appropriate. Another percentage based cost group is Constructability Factors (CONS), which suggests factors (variables) that may affect the cost of the job, and requires users to fill in percentages as needed. Cost groups utilizing percentages have also been set up for most item classifications to allow for flexibility in putting together the estimate. Percentage-based cost groups use a calculation rule of *percent of (PCTO)*, or *percent on top (PCTT)*.

Cost groups using a calculation rule of *normal (NORM)* are named ending in '1'. Cost groups utilizing a calculation rule *percent on top (PCTT)* are named ending in '2'. Cost groups utilizing a calculation rule *percent of (PCTO)* are named ending in '3'. This convention corresponds to the order in which the different type of cost groups are calculated in CES. (See Chapter 4, Section 4.2.1. for further explanation.)

User-defined or "generic" cost groups have been set up to allow users to apply their own prices, formulas or percentages, by entering quantity and price and/or adding variables to the cost group after adding it to the job estimate. There is a user-defined cost group for each type of calculation rule: *normal* (UNORM1), *percent on top* (UPCTT2), and *percent of* (UPCTO3).

A list of the standard cost groups in the NJDOT CES Cost Group List follows.

Table F-1. NJDOT Standard Cost Groups

Cost Group ID	Cost Group Description	Unit of Measure	Calculation Rule
ASPH1	Asphalt items	T	NORM
ASPH2	Asphalt items	PCT	PCTT
ASPH3	Asphalt items	PCT	PCTO
ASPX1	Asphalt, other	SY	NORM

Superseded

Cost Group ID	Cost Group Description	Unit of Measure	Calculation Rule
ASPX2	Asphalt, other	PCT	PCTT
ASPX3	Asphalt, other	PCT	PCTO
BASE1	Base, aggregate	CY	NORM
BASE2	Base, aggregate	PCT	PCTT
BASE3	Base, aggregate	PCT	PCTO
BRID1CY	Bridge, concrete (in CY)	CY	NORM
BRID1LB	Bridge, steel (in LB)	LB	NORM
BRID1LF	Bridge, concrete & steel (in LF)	LF	NORM
BRID1SF	Bridge, sheeting/walls (in SF)	SF	NORM
BRID2	Bridge, incl concrete & steel structures	PCT	PCTT
BRID3	Bridge, incl concrete & steel structures	PCT	PCTO
BRPT1	Bridge painting	T	NORM
BRPT2	Bridge painting	PCT	PCTT
BRPT3	Bridge painting	PCT	PCTO
CLER1	Clearing & prep site; bldg& util removal	LS	NORM
CLER2	Clearing & prep site; bldg& util removal	PCT	PCTT
CLER3	Clearing & prep site; bldg& util removal	PCT	PCTO
CONC1	Concrete, paving (roadway, sidewalk, driveway)	CY	NORM
CONC2	Concrete, paving (roadway, sidewalk, driveway)	PCT	PCTT
CONC3	Concrete, paving (roadway, sidewalk, driveway)	PCT	PCTO
CONS3	Constructability factors – user-defined cost group	PCT	PCTO
CURB1	Curbing	LF	NORM
CURB2	Curbing	PCT	PCTT
CURB3	Curbing	PCT	PCTO
DRAN1CY	Drainage items, concrete (in CY)	CY	NORM
DRAN1LF	Drainage items (in LF)	LF	NORM
DRAN1U	Drainage items, inlets & manholes (in U)	U	NORM
DRAN2	Drainage items	PCT	PCTT
DRAN3	Drainage items	PCT	PCTO
EART1	Earthwork items, excavation	CY	NORM

Superseded

Cost Group ID	Cost Group Description	Unit of Measure	Calculation Rule
EART2	Earthwork items, excavation	PCT	PCTT
EART3	Earthwork items, excavation	PCT	PCTO
ELEC1LF	Electrical, conduit/service wire	LF	NORM
ELEC1U	Electrical, junction boxes/cabinets	U	NORM
ELEC2	Electrical items	PCT	PCTT
ELEC3	Electrical items	PCT	PCTO
EROC1	Erosion control	CY	NORM
EROC2	Erosion control	PCT	PCTT
EROC3	Erosion control	PCT	PCTO
ENVIR	Environmental	U	NORM
FENC1	Fences and gates	LF	NORM
FENC2	Fences and gates	PCT	PCTT
FENC3	Fences and gates	PCT	PCTO
GDRL1	Guardrail/Guiderail	LF	NORM
GDRL2	Guardrail/Guiderail	PCT	PCTT
GDRL3	Guardrail/Guiderail	PCT	PCTO
GENR1	General, field office & office equipment	U	NORM
GENR2	General, field office & office equipment	PCT	PCTT
GENR3	General, field office & office equipment	PCT	PCTO
ITS1	Intelligent transportation systems	U	NORM
ITS2	Intelligent transportation systems	PCT	PCTT
ITS3	Intelligent transportation systems	PCT	PCTO
LAND1	Landscape items (in SY)	SY	NORM
LAND1U	Landscape items (in U)	U	NORM
LAND2	Landscape items	PCT	PCTT
LAND3	Landscape items	PCT	PCTO
LTNG1	Lighting	U	NORM
LTNG2	Lighting	PCT	PCTT
LTNG3	Lighting	PCT	PCTO
MILL1	Milling and rumble strips	SY	NORM
MILL2	Milling and rumble strips	PCT	PCTT
MILL3	Milling and rumble strips	PCT	PCTO
MISC1	Miscellaneous, monuments	U	NORM

Superseded

Cost Group ID	Cost Group Description	Unit of Measure	Calculation Rule
MISC2	Miscellaneous, monuments	PCT	PCTT
MISC3	Miscellaneous, monuments	PCT	PCTO
MNBR1	Bridge maint (bureau of maintenance)	MH	NORM
MNBR2	Bridge maint (bureau of maintenance)	PCT	PCTT
MNBR3	Bridge maint (bureau of maintenance)	PCT	PCTO
MNTC1	Maintenance of traffic, temporary	U	NORM
MNTC2	Maintenance of traffic, temporary	PCT	PCTT
MNTC3	Maintenance of traffic, temporary	PCT	PCTO
MOBL3	Mobilization	PCT	PCTO
NOIS1	Noise abatement measures	SY	NORM
NOIS2	Noise abatement measures	PCT	PCTT
NOIS3	Noise abatement measures	PCT	PCTO
NONR1	Non-roadway, buildings, benches, bikeracks	U	NORM
NONR2	Non-roadway, buildings, benches, bikeracks	PCT	PCTT
NONR3	Non-roadway, buildings, benches, bikeracks	PCT	PCTO
OTHR1	Other -performance/payment bond, insurance	LS	NORM
OTHR2	Other, performance/payment bond, insurance	PCT	PCTT
OTHR3	Other, performance/payment bond, insurance	PCT	PCTO
PVMK1	Pavement marking, traffic stripes	LF	NORM
PVMK2	Pavement marking, traffic stripes	PCT	PCTT
PVMK3	Pavement marking, traffic stripes	PCT	PCTO
RMVA1	Removal of asphalt pavement	SY	NORM
RMVA2	Removal of asphalt pavement	PCT	PCTT
RMVA3	Removal of asphalt pavement	PCT	PCTO
RMVB1	Removal of bridge materials & structures	LS	NORM
RMVB2	Removal of bridge materials & structures	PCT	PCTT
RMVB3	Removal of bridge materials & structures	PCT	PCTO
RMVC1	Removal of concrete pavement	SY	NORM
RMVC2	Removal of concrete pavement	PCT	PCTT
RMVC3	Removal of concrete pavement	PCT	PCTO
SCHD1	Project schedule	LS	NORM

Superseded

Cost Group ID	Cost Group Description	Unit of Measure	Calculation Rule
SCHD2	Project schedule	PCT	PCTT
SCHD3	Project schedule	PCT	PCTO
SURV1	Survey and stakeout	LS	NORM
SURV2	Survey and stakeout	PCT	PCTT
SURV3	Survey and stakeout	PCT	PCTO
TRAN1	Trainees and training reimbursement	LS	NORM
TRAN2	Trainees and training reimbursement	PCT	PCTT
TRAN3	Trainees and training reimbursement	PCT	PCTO
TRFP1	Traffic control & signs, permanent	U	NORM
TRFP2	Traffic control & signs, permanent	PCT	PCTT
TRFP3	Traffic control & signs, permanent	PCT	PCTO
UTIL1	Utility items	LF	NORM
UTIL2	Utility items	PCT	PCTT
UTIL3	Utility items	PCT	PCTO
UDEF1	User-defined cost group – *Normal* calculation rule	U	NORM
UDEF2	User-defined cost group – *Percent on Top* calculation rule	PCT	PCTT
UDEF3	User-defined cost group – *Percent of* calculation rule	PCT	PCTO

Superseded

Appendix G. Categories for Federal Projects

For Federal Projects, the following General Detail Categories should be used. Not all of the categories below may be required on every project; however, the order in which they are listed shall be followed. Categories should be numbered sequentially.

Table G-1. Categories for Federal Projects

Category	Category Examples
Roadway	Category for roadway items not assigned in one of the other listed categories
Construction Engineering	Curing & Storing Items Field Office Items Materials Lab Items Nuclear Density Gauge Telephone Service
Non-Participating (Roadway)	Clean Existing Drainage Structure Clean Existing Pipe Owner's & Contractor's Protective Liability Ins. Pollution Liability Insurance Proprietary Items not approved by FHWA
Erosion Control	Construction Driveway Dewatering Basins Embankment, Temporary Erosion Control Floating Turbidity Barrier Geotextile Haybale Items Inlet Filters Inlet Sediment Traps Roadway Excavation, Temporary Erosion Control Silt Fence Items Temporary Riprap Temporary Slope Drain Temporary Stone Check Dam Temp. Stone Outlet Sediment Traps
General Landscape	Any non-Latin or Wildflower landscape item

Superseded

Latin Landscape	Any landscape item with a Latin name
Wildflowers	Wildflower seeding
Third Party Participation	Separate category for each party
Utility Betterments (Roadway)	Separate category for each company
Bridge	Separate category for each structure
Non-Participating (Bridge)	Clean Exist Drainage Structure
Utility Betterments (Bridge)	Separate category for each company
Non-Bid Items	Items which will not be included in the Bid Proposal, such as Non-contract Construction Engineering

Superseded

Non-Participating (Federal) Item Details

Owner's & Contractor's Protective Liability Insurance – 1G13I

This is a Lump Sum Item. See the next section to calculate the cost.

Pollution Liability Insurance – 1G34I

This item is to be used only when there are cleanup items. Use 5 percent of the cost of the cleanup items. Some of the cleanup items are as follows:

Standard Pay Item No.	Description
2A60C	Clearing Site, Tank Removal
2A12D	Disposing of Contaminated Soil

2A26D	Recycling of Contaminated Soil
2A10E	Post Excavation Soil Sampling and Analyses
2A15E	Composite Soil Sampling and Analyses
2A20E	Ground Water Sampling and Analyses
2B37B	Roadway Excavation, Regulated Waste
	Off-site Management of Regulated Waste

Approach slabs – 4E21E – 4E51F with any of the following conditions:

if one-way traffic loading is less than 500 80-kN (18-kip) equivalent single axle load applications per day;

posted speed limit is less than 35 MPH (55 KPH);

the abutments are not supported on pile foundations.

Maintenance operations such as cleaning existing pipes, drainage structures, ditches, repairing impact attenuators, mowing etc. FHWA sometimes participates in this work. Contact the Project Manager for guidance. All projects that include cleaning of existing pipe shall utilize pay items for this work based on a range of pipe sizes. Cleaning of existing pipe will be measured and payment made by the linear foot or meter based on a range of 2 foot (600 mm) increments in diameter up to 8 feet (2 400 mm) and then on individual sizes beyond that. Some of the items to be used for this work are as follows:

Standard Pay Item No.	Description
6B01X	Clean Existing Pipe, 10” (250 mm) diameter
6B03X	Clean Existing Pipe, 12”to 24” (300 to 600 mm) diameter
6B06X	Clean Existing Pipe, over 24” to 48” (600 to 1 200 mm) diameter
6B12X	Clean Existing Pipe, over 48” to 72” (1 200 to 1 800 mm) diameter

Superseded

6B18X	Clean Existing Pipe, over 72” to 96” (1 800 to 2 400mm) diameter
6B19X	Clean Existing Pipe, 102” (2 590 mm) diameter
6C21P	Cleaning Existing Drainage Structures

White Concrete Curbing, Barrier Curb, and Island (6E30E – 6E61I), but could be participating for 100 feet (30m) or less to match existing white material.

BR/BH funds for **approach work** past the touchdown points for new / rehabilitated structures.

Fishing piers (or bridges) and pedestrian walkways for recreational access.

Maintenance dredging if the dredged material is not used as a fill.

Items of work paid for by **other** agencies or private developers.

Type II Noise Barriers

Waterway openings and net fill requirements mandated by NJDEP when they differ from FHWA requirements.

Structures less than 20 feet (6.1 LM) in span if BR/BH funds are being utilized for the project.

Greater than 2:1 **mitigation** of wetland sites. FHWA <u>sometimes</u> participates in greater than 2:1 replacement if FHWA considers the impact significant. Contact the Project Manager for guidance.

<u>Sometimes</u> the use of **liners** for Wetland Mitigation Sites as they do not permit ground water recharge. Contact the Project Manager for guidance.

Sidewalks on bridges when there are no sidewalks on the approaches for pedestrians. Contact Project Manager for guidance.

<u>Sometimes</u> Memorial and/or Vanity **Plaques** on structures.

Proprietary items not approved by FHWA. Contact the Project Manager for guidance.

Superseded

Appendix H. Procedures Regarding Items

The best use of the Bid Price Report is to find projects listed in the Report which are similar in work type, location and quantities to the project being estimated. If such projects are found, the prices for these projects will be indicators of what to use in the estimate. When “not too similar” projects are the best that can be found in the Report, the prices for those projects can still be utilized if the following “rules of thumb” are taken into account:

- Quantity – the larger the quantity the lower the cost except very large quantities may not cost less. Very small quantities are usually disproportionately expensive.
- Restrictions on the contractor:
- Working hours – most construction workers get paid for an 8-hour day even if they work less. Therefore, costs will be more on a project that requires the work to be carried out in less than 8-hour shifts.
- Access to the work site – the more access is restricted, the higher the cost of doing the work.
- Stage Construction – the more complicated the construction staging the higher the cost.
- Maintenance of Traffic – working in close proximity to traffic costs more. The closer the proximity and the higher the traffic volume, the higher the cost.
- Night Work – work done at night usually costs about 30% more than the same work done during the day.
- Completion Date
- Costs will be higher if a contractor must work overtime in order to meet the completion date. Work done on overtime costs about 30% extra. In lieu of overtime a contractor may increase his prices to cover anticipated liquidated damages.
- Some materials require significant lead times for fabrication or manufacture. Costs will be higher if the completion date does not allow sufficient lead time for such items since the contractor will have to pay a premium for getting early delivery or may increase his prices to cover anticipated liquidated damages.
- Availability of some materials is seasonal and requiring work to be done “out of season” will significantly increase the cost. For example, hot mix asphalt is not readily available in the winter because most plants are shut down.

Superseded

- Location – work in urban areas costs more than work in rural areas.
- When adding items to the detailed estimate, NJDOT policies and procedures noted below should be followed.

H.1 Line Item Numbering

Line items are to be numbered in increments of one. Items that need to be inserted into the estimate should be added using the next incremental line number in the estimate and assigned to the appropriate item category. (See 'No Item' below.)

Starting in September 2006, NJDOT policy mandates the use of the Standard (and Non-Standard) Item Number in the "bubbles" on the plan sheets to identify items instead of the old sequential Pay Item Number. The "Pay Item Number" column formerly on the EDQ sheet will be changed to "Sequence Number" and the "Standard Item Number" will be changed to "Pay Item Number." Line numbers in CES do not have to match Sequence Numbers. Note that project/proposal line numbers may be reassigned as the project is passed through the Trns•port system.

H.2 'No Item' Item

With the implementation of CES, the item 99Z99 – 'No Item' <u>will no longer be used</u>. Items that need to be inserted into the estimate should be added using the next incremental line number in the estimate and assigned to the appropriate item category. Items may then be viewed by category by sorting on the category column in the ITEMS tab of the Job window.

H.3 Non-Bid Items

Non-bid items, items that are not to be included in the proposal, shall be grouped in a category of their own called "NON-BID ITEMS," and should be flagged as "State Furnished." An example is Utilities Work.

H.4 Alternate Items

Different items can be alternates for each other and a bidder can choose to bid on either item but not both. Numbering of alternates will be the same as in the past. For further explanation, from the Alt. Code column header, choose **Field Help** from the right-mouse menu.

H.5 Item Details

The following items should be calculated with the following information in mind:

- Construction Stakes and Markers - Generally, do not use this item with Construction Layout. Use when In-House forces will provide the Construction Layout.
- Field Office - Add 3 months to project duration.

Superseded

- Field Office Maintenance - Add 1 month to project duration; If project cost is over $25 million add 2 months to duration.
- Materials Field Laboratory - Add 1 month to project duration.
- Curing and Storage facility - Add 1 month to project duration.
- Telephone Service - use $250 per month for the number of months estimated for the field office. Make sure it is marked as a **fixed** item.
- Fuel Price Adjustment – The calculation for the Fuel Price Adjustment is based on the Standard Specifications, Section 106.13. Use the monthly price in the Asphalt Cement & Fuel Price Index in the Fuel&AsphaltPriceAdjust.xls spreadsheet to make this calculation. Both are available on the NJDOT Website. Make sure it is marked as a **fixed** item.
- Trainees - 1000 hours/$1 million at a rate of $1.00/hr.
- Training Reimbursement - Use 0.5% of the total project cost. Make sure it is marked as a **fixed** item.
- Railroad Protective Liability Insurance – use only on wholly State funded projects over $1,000,000. Use one-half of one percent of the total project cost and paid as a lump sum. Make sure it is marked as a **fixed** item.
- Underlayer Preparation – use under Concrete Surface Course and Base Course only.
- Asphalt Price Adjustment – Projects that have a combined weight of 2,000 Tons (1 800 Mg) of hot mix asphalt and Superpave (surface, intermediate, and base) courses, and Dense or Open-Graded friction courses shall include the item Asphalt Price Adjustment. It is based on the Standard Specifications in Section 404.25. The amount of asphalt cement used in estimating Asphalt Price Adjustment shall be 5 percent for hot mix asphalt (and Superpave) base and intermediate course, 5.5 percent for hot mix asphalt (and Superpave) surface course, and 6 percent for Dense or Open-Graded friction courses. The asphalt price index to be used is available on the NJDOT Website. The estimated cost shall include a yearly 10 percent inflationary rate for the number of years for which these hot mix asphalt items will be furnished on the Project. The calculations for the amount of asphalt cement required and for the estimated cost for the item Asphalt Price Adjustment shall be included with the Roadway Quantity Calculations. Use the monthly price in the Asphalt Cement & Fuel Price Index in the Fuel&AsphaltPriceAdjust.xls spreadsheet to make this calculation. Both are available on the NJDOT Website. Make sure it is marked as a **fixed** item.
- Traffic Directors, Flaggers – Make sure hours are in line with the length and complexity of the job, with a maximum of 10,000 hours.

Superseded

H.6 Fixed Price Items

The items listed above as fixed items are not negotiated and should be marked as "Fixed Price" (i.e. Carry Items) by clicking in the box marked "Fixed" for that item in the CES Job ITEMS tab.

H.7 Non-Standard Items

Every item, including non-standard items, requires a unique Item Number on the plans and on the Construction Cost Estimate. Non-Standard Items are now included in the Master Item List. If an Item Number for a Non-Standard Item is not on the Master Item list, complete the *Non-Standard Item Number Request Form* (see Appendix E) and submit it to the division of Quality Assurance for processing.

For Non-Standard Pay Items, the Estimator should contact suppliers, manufacturers and other agencies that may have used the item or similar items. Include all backup information on how the price was calculated with the submission. If an in-place cost is not available, develop it assuming that the in-place cost is comprised of 30% labor, 20% equipment, 25% materials and 25% overhead and profit.

H.8 Lump Sum Items

Lump sum items including Performance and Payment Bond, Final Cleanup, Construction Layout, Owner's and Contractor's Protective Liability Insurance, Progress Schedule, and Clearing Site may be priced according to the chart below. Charts will be updated by NJDOT on an annual basis. If the consultant determines that special project needs require adjustment to the suggested amount, they may price accordingly, with an explanation attached to the job in CES. Mobilization must be calculated using the percentages in Tables H-1 through H-7.

Superseded

Table H-1. Performance and Payment Bond - 1C21E

Project Costs (Mil.)	Class 1, 2, 6		Class 3, 4, 7		Class 5	
	North	South	North	South	North	South
Less Than 1.0	7,500	6,500	9,000	8,000	5,000	5,500
1.0 to 5.0	27,000	24,500	25,000	20,000	15,000	15,000
5.0 to 10.0	50,000	48,000	42,500	35,000	20,000	25,000
10.0 to 20.0	105,000	75,000	70,000	65,000	40,000	35,000
20.0 to 30.0	152,000	120,000	200,000			
30.0 to 40.0	200,000	175,000	255,000			
40.0+	500,000	350,000	265,000			

Table H-2. Final Cleanup - 1D21C

Project Costs (Mil.)	Class 1, 2, 6		Class 3, 4, 7		Class 5	
	North	South	North	South	North	South
Less Than 1.0	5,000	5,000	4,000	4,000	5,000	5,000
1.0 to 5.0	7,500	7,500	5,000	5,000	7,500	7,500
5.0 to 10.0	15,000	15,000	10,000	10,000	8,000	8,000
10.0 to 20.0	17,500	17,500	12,500	12,500	10,000	10,000
20.0 to 30.0	20,000	20,000	15,000	15,000		
30.0 to 40.0	22,000	22,000	20,000	20,000		
40.0+	35,000	35,000	25,000	25,000		

Table H-3. Construction Layout - 1E21C

Project Costs (Mil.)	Class 1, 2, 6		Class 3, 4, 7		Class 5	
	North	South	North	South	North	South
Less Than 1.0	17,500	27,500	25,000	25,000	20,000	15,000
1.0 to 5.0	45,000	50,000	40,000	35,000	25,000	20,000
5.0 to 10.0	165,000	155,000	50,000	40,000	30,000	25,000
10.0 to 20.0	300,000	250,000	100,000	50,000	35,000	30,000
20.0 to 30.0	450,000	425,000	550,000			
30.0 to 40.0	500,000	450,000	650,000			
40.0+	750,000	750,000	750,000			

Superseded

Table H-4. Owner's & Contractor's Protective Liability Insurance - 1G13I

Project Costs (Mil.)	Class 1, 2, 6		Class 3, 4, 7		Class 5	
	North	South	North	South	North	South
Less Than 1.0	5,000	5,000	5,000	3,500	5,000	5,000
1.0 to 5.0	10,000	9,000	6,000	6,000	10,000	10,000
5.0 to 10.0	17,500	13,500	10,000	10,000	12,500	12,500
10.0 to 20.0	30,000	20,000	15,000	20,000	15,000	15,000
20.0 to 30.0	50,000	30,000	40,000			
30.0 to 40.0	55,000	35,000	50,000			
40.0+	100,000	70,000	60,000			

Table H-5. Progress Schedule - 1H21C

Project Costs (Mil.)	Class 1, 2, 6		Class 3, 4, 7		Class 5	
	North	South	North	South	North	South
Less Than 1.0	5,000	5,000	5,000	5,000	5,000	5,000
1.0 to 5.0	10,000	10,000	7,500	7,500	6,000	6,000
5.0 to 10.0	20,000	20,000	10,000	10,000	7,500	7,500
10.0 to 20.0	30,000	30,000	15,000	15,000		
20.0 to 30.0	50,000	50,000	20,000	20,000		
30.0 to 40.0	55,000	55,000	30,000	30,000		
40.0+	60,000	60,000	35,000	35,000		

Table H-6. Mobilization - 1H21D (Percentage)

Project Costs (Mil.)	Class 1, 2, 6		Class 3, 4, 7		Class 5	
	North	South	North	South	North	South
Less Than 1.0	10	10	10	10	10	10
1.0 to 5.0	10	10	10	10	10	10
5.0 to 10.0	12	12	12	12	12	12
10.0 to 20.0	12	12	12	12		
20.0 to 30.0	14	14	14	14		
30.0 to 40.0	14	14	14	14		
40.0+	15	15	15	15		

Superseded

Table H-7. Clearing Site - 2A21C

Project Costs (Mil.)	Class 1, 2, 6		Class 3, 4, 7		Class 5	
	North	South	North	South	North	South
Less Than 1.0	20,000	20,000	25,000	25,000	10,000	10,000
1.0 to 5.0	40,000	40,000	30,000	30,000	15,000	15,000
5.0 to 10.0	110,000	110,000	50,000	75,000	20,000	20,000
10.0 to 20.0	275,000	275,000	60,000	80,000		
20.0 to 30.0	300,000	325,000	200,000	200,000		
30.0 to 40.0	325,000	350,000	300,000	300,000		
40.0+	500,000	500,000	500,000	500,000		

Formulas for these lump sum items may be found in CES in the Formula Library List under the File menu. The libraries are identified by the item number and description in the Library Description field. Users may apply a formula or simply enter an item price from the chart.

H.9 Contingencies and Escalation Calculations

Use the Contingencies and Escalation Form to calculate the Construction Engineering (CE) Amount, and the Change Order Contingencies Amount. To determine the Project Classification use the charts in Appendix C.

H.10 Maintenance and Operations Only Items

Certain items are designated for use by Maintenance and Operations only. This includes all item numbers beginning with "MM;" for example, MME001M.

These items will not be in the spec book, but are considered to be standard items. They require specifications in the bid proposal, but do not require an entry in the Item Supplemental Description field.

Superseded

Appendix I: Procedures for Sub-Contracting an Estimate

Sometimes consulting firms will sub-contract part of an estimate to another consulting firm. Because of how security works in CES, a consulting firm cannot see the job estimates of other consulting firms. This appendix outlines the procedures for sharing a job estimate when more than one consulting firm is involved in its creation.

Step 1: Prime Makes a Copy of “Prime” Estimate for Sub-contracting Firm

1. In the Job list window highlight the job to be copied.
2. Select **Copy Special** from the **Edit** menu and choose **All**.
3. Specify a new project name. The recommended format is <Current Job Number>-SUB. For example, project 12345 would be named 12345-SUB when copied.
4. The copied job is the “sub” estimate. The original job is the “prime” estimate.

Step 2: Prime Assigns “Sub” Estimate to Sub-contracting Firm

1. Right-click on the copied job and select **Change** from the menu.
2. Navigate to Page 2 of the GENERAL tab of the Job window.
3. Use the drop-down list in the Control Group field to select the sub-contracting firm that will be working on the estimate.
4. Save the change.
5. Notify the Sub-contracting firm that the “sub” estimate is now assigned to their firm in CES. The Prime consulting firm may still work on its part of the estimate using the “prime” estimate.

Step 3: Sub-contracting Firm Creates Estimate

1. Based on the procedures outline in this manual, the sub-contracting firm should create an estimate as it normally would using the “sub” estimate assigned by the prime firm.
2. Once the sub-contracting firm completes the “sub” estimate, it should be assigned back to the prime consulting firm.

Step 4: Sub-contracting Firm Assigns Completed “Sub” Estimate to Prime

1. In the Job list window, select the “sub” estimate.
2. Right-click on the job and select **Change** from the menu.
3. Navigate to Page 2 of the GENERAL tab of the Job window.

Superseded

4. Use the drop-down list in the Control Group field to select the prime contracting firm.
5. Save the change.
6. Notify the prime contracting firm that the “sub” estimate is now assigned to their firm in CES.

Step 5: Prime Imports Items from “Sub” Estimate to “Prime” Estimate

> **Note:** Only items will be imported by this process – categories or other changes will not be imported.

1. In the Job list window, select the “prime” estimate.
2. Select **Import** from the **File** menu and choose **Job Items from CES Job**.
3. Select the “sub” estimate from the list.
4. Click OK.
5. For the Combine Jobs Option select “Do Not Combine Item Quantities.”
6. Receive message that “Import Completed Successfully.”

> **Note:** A snapshot of the “prime” job was automatically created before the import.

7. Open the job estimate and verify the items imported as expected.
8. Make adjustments as needed.
9. Do not delete the “sub” estimate. It should be retained as a point of reference.

Superseded

Instructions:

Step 1. In the column entitled "Utility", provide any additional utilities identified in the Utility Owner & Conflict Identification Worksheet.

Step 2. Place the Sub-Totals from the Utility Owner Issues and Estimate Worksheet (Appendix J2) in the column entitled "Sub Total". **Note**: if there are multiple Water, Sewer, Electric Companies etc., only place one Sub Total covering all of them in the Sub-Total column. If there is no involvement place N/A in the Sub-Total column.

Step 3. Total all of the Sub Totals into one Grand Total

Utility	**Sub Total**
Water	
Sewer	
Electric	
Gas	
Cable	
Phone	
Railroad	
Long Distance Cable	
Pipelines	
Fire Alarm Systems	
Grand Total	

Superseded

Step 4. Calculate Contingency: for every one year of construction the contingency shall be 10% of the Grand Total for Utility Costs. (i.e. 3 year duration = 30% Contingency)

Step 5. Calculate Total Utility Cost Estimate:

- Insert Grand Total from form above
- Add the Contingency to the Grand Total for the Total Utility Cost Estimate

Grand Total	+	Contingency	=	Total Utility Cost Estimate

Step 6. Lead Design Engineer Sign and Date

_____ Date _____