INEIGHT

ESTIMATE INTERMEDIATE USER GUIDE

ESTIMATE

Release 25.7
Last Updated: 19 August 2025

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INTERMEDIATE INTRODUCTION

COURSE DESCRIPTION

This course covers the concepts and functionality you need to know in order to use the InEight Estimate software successfully. As a result, you will be able to build cost estimates and bid proposals with precision and efficiency.

COURSE OBJECTIVES

As a result of this course, you will be able to use the InEight Estimate software to:

- Review and report on project information
- Integrate with MS Excel and scheduling software (MS Project or Oracle Primavera)
- Manage quotes and use additional time-saving tools

HOW TO USE THIS MANUAL

This training manual serves as the working guide during the *E101 Essentials of Project Modeling and Estimating* instructor-led course. The first seven lessons of this document follow a natural progression of putting an estimate together, from set up of a project to finalization of a bid. The remaining lessons cover additional functionality that will help you build and review your project estimate more effectively.

LESSONS

The following lessons are covered in this course:

Course Lessons	
Lesson	Topic
Lesson 9	Reporting
Lesson 10	Data Reproduction
Lesson 11	Excel Integration
Lesson 12	Schedule Integration

Course Lessons	
Lesson 13	Cash Flow
Lesson 14	InEight Estimate Calculators
Lesson 15	Cost Item Assemblies

LESSON FORMAT

This manual is designed to be a “hands on” learning guide. As such, each lesson is organized into sections:

Section	Description
Objectives	Specify what you will learn in each lesson.
Topics	Organize the subject matter, with explanations of key concepts and terms.
Step by Steps	Walk you through the “mechanics” of how to perform specific functions in the software. For each step by step, you will use the Training Job that comes pre-loaded in the InEight Estimate Estimating software.
Exercises	Allow you to practice and reinforce what you learn. For each exercise, you will use the Training Job that comes pre-loaded in the InEight Estimate Estimating software.
Review	Asks you questions to check what you have learned within each lesson.

CALL-OUTS

Throughout the document, you will also find important call-out banners.

TIP	Tips are for important notes and information you want to remember.
NOTE	Notes are for critical information you need to know.

ONGOING USE

This manual is also designed to be a comprehensive reference guide you can use outside of the classroom and revisit as needed. Each lesson is compartmentalized so that you can refer back to each lesson as needed.

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LESSON 9 – REPORTING

LESSON DURATION: 30 MINUTES

LESSON OBJECTIVES

After completing this lesson, you will be able to:

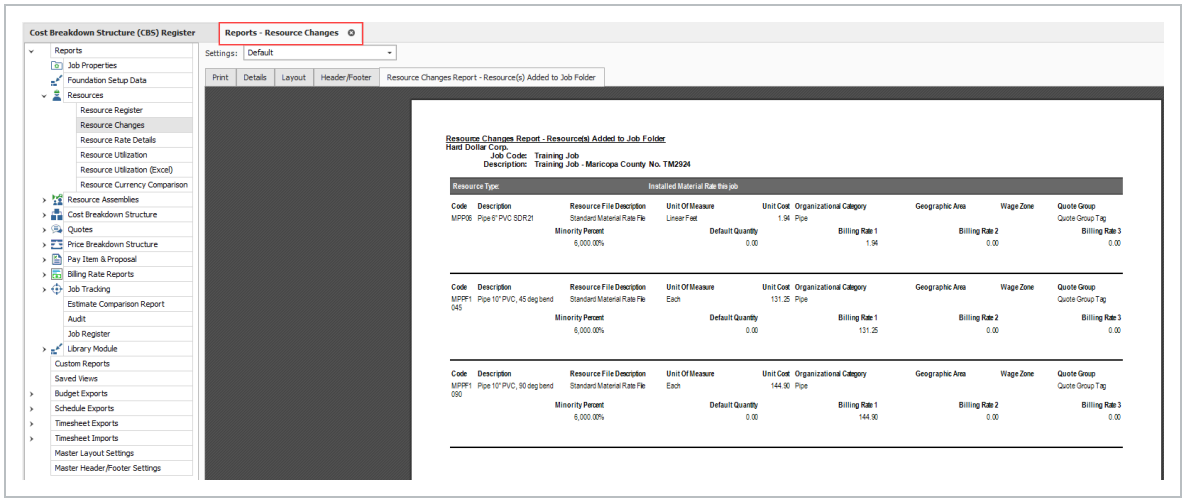
- Run reports from the Reports menu
- Create and run reports from register forms

9.1 REPORTS MENU

InEight Estimate provides a lot of out of the box reports, referred to as “canned” or “system” reports, that can help you review and analyze your estimate.

9.1.1 NON-MODAL REPORT DIALOG BOX

The Reports dialog is docked along with the other forms and registers. You can continue to work with your estimate without being forced to close the Reports dialog box.



If the report becomes undocked, the job code shows in the reports dialog box header.

9.1.2 ADJUSTABLE REPORTS

Most of the reports within InEight Estimate can be adjusted to output the specific data and reporting format you need. Each report has its own set of output settings for configuring and formatting the report.

All InEight Estimate adjustable reports are accessed from the Reports menu. You may even run the same report multiple times and choose different output settings based on what you want to see or who the intended audience is.

For example, you may choose to run the CBS Details Report several times to satisfy different needs or for different audiences, and include or exclude specific data depending on what you or the report recipients want to see.

- For a group of *estimators*, you may want to run a CBS Details Report that shows all cost and productivity data for a job
- For *field personnel,* you may want to run a CBS Details Report that shows no cost data, but all production and resource data
- Finally, for *executive management*, you may want to run a CBS Details Report that shows summary level information only

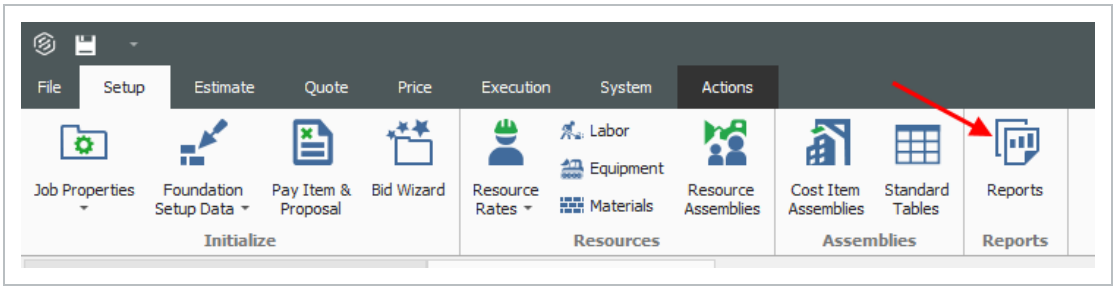
The following steps take you through a brief overview of the Reports menu and how you can access it.

STEP BY STEP – GETTING TO THE REPORTS MENU

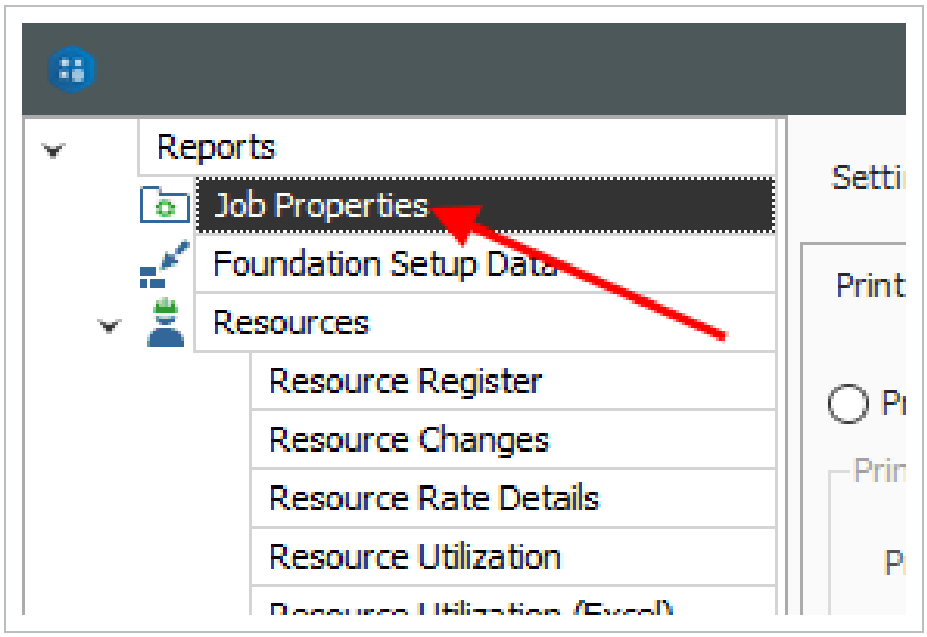
1. Open the **Training Job**, and select **Setup** tab.
   - You access the Reports menu by clicking on the Reports icon

   TIP You can access the Reports menu from the Setup, Estimate, Quote, Price, and Execution tabs.

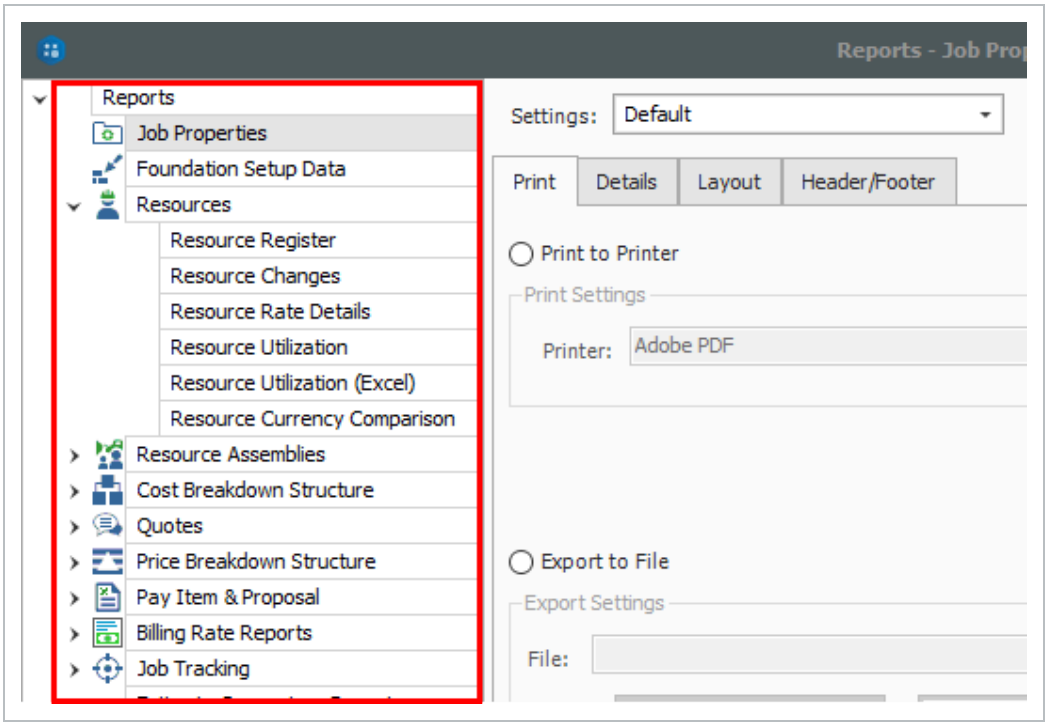
2. Select **Reports**.



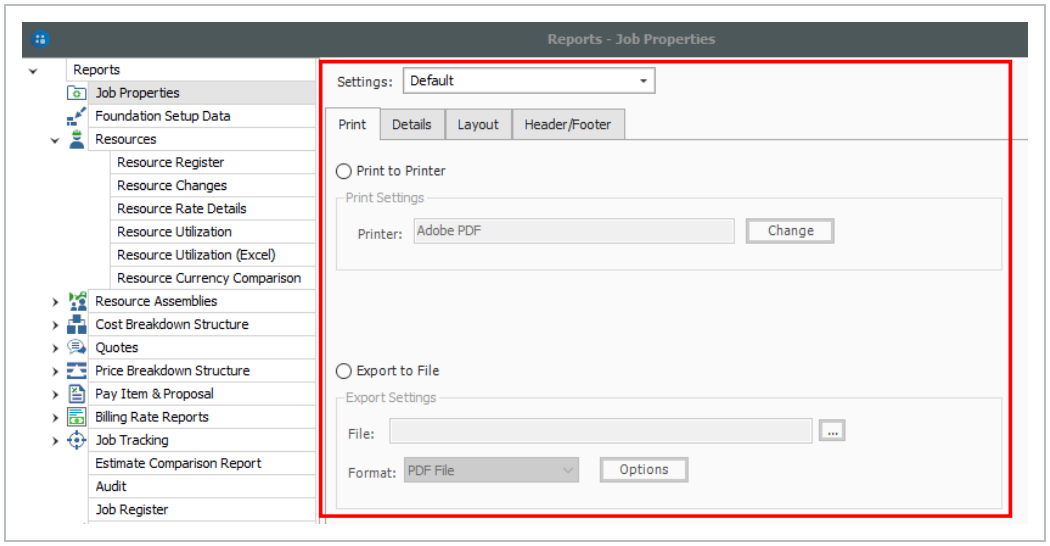
3. Here you select the Report of your choice. For this example, select the first option, **Job Properties**.



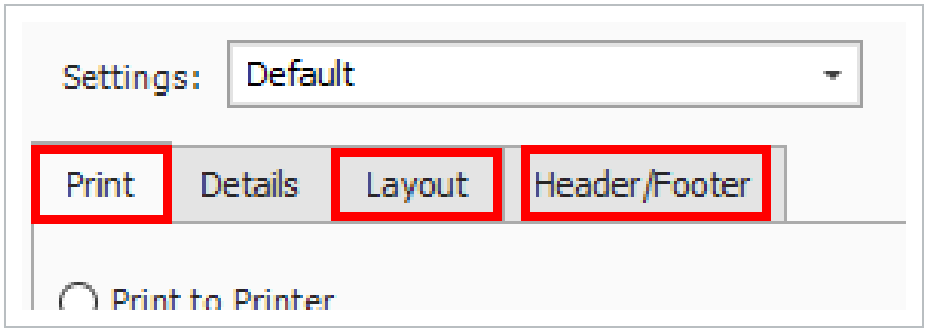
- You will see a split screen with the reports available on the left side bar
- The side bar on the left of the Reports form contains a “tree” of all InEight Estimate adjustable reports



- On the right, when you select a report node on the left, note that it displays the Output Settings on the right side of the form, from which the report settings can be adjusted and the report can then be run

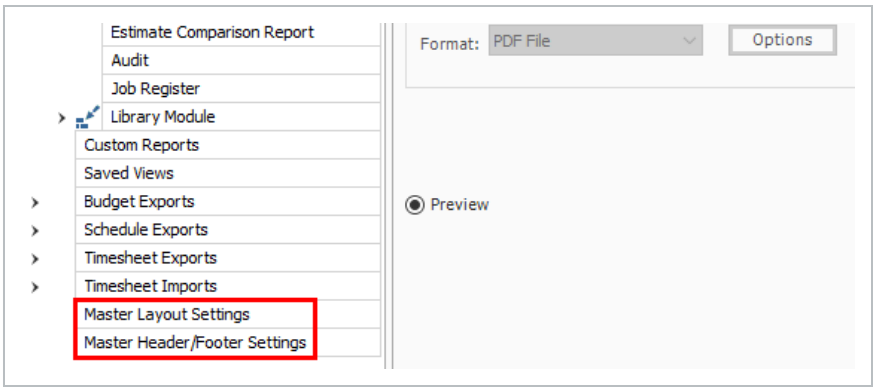


4. Each report has a Print tab, a Layout tab and a Header/ Footer tab specific to that report.



- There are also Master Layout Settings and Master Header/Footer Settings located at the bottom of the left-hand side bar tree. Here you can define settings that will apply to all

reports



9.1.3 OUTPUT SETTINGS

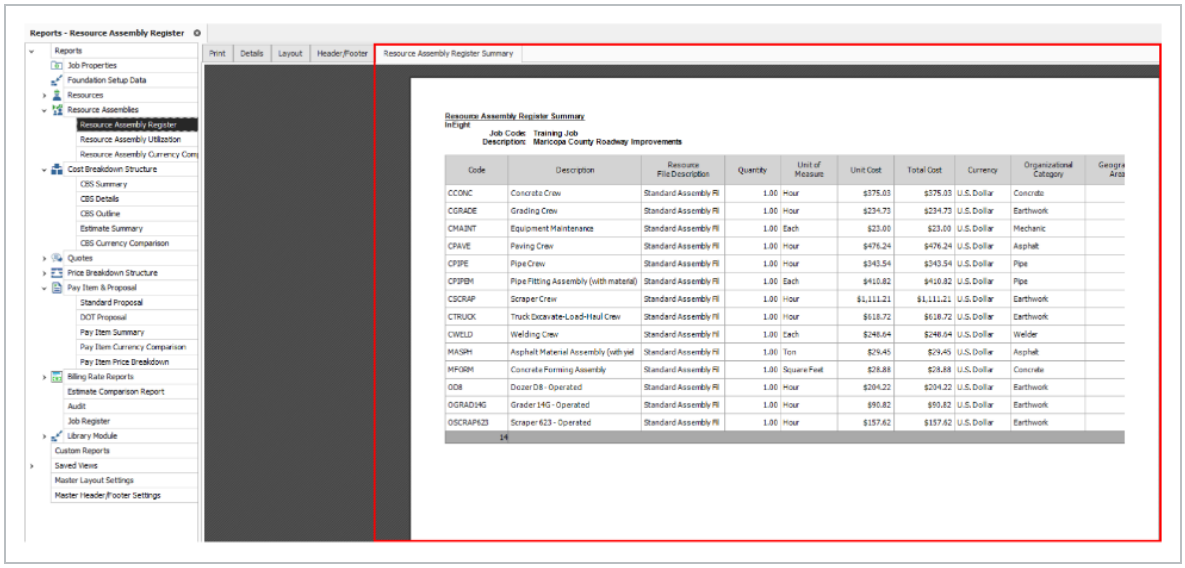
This section provides a more detailed explanation of the output setting tabs.

9.1.3.1 REPORT PRINTING OPTIONS

The Print tab includes three options for printing output: Print to Printer, Export to File, and Preview. Export file outputs include PDF, Excel, text, and more.

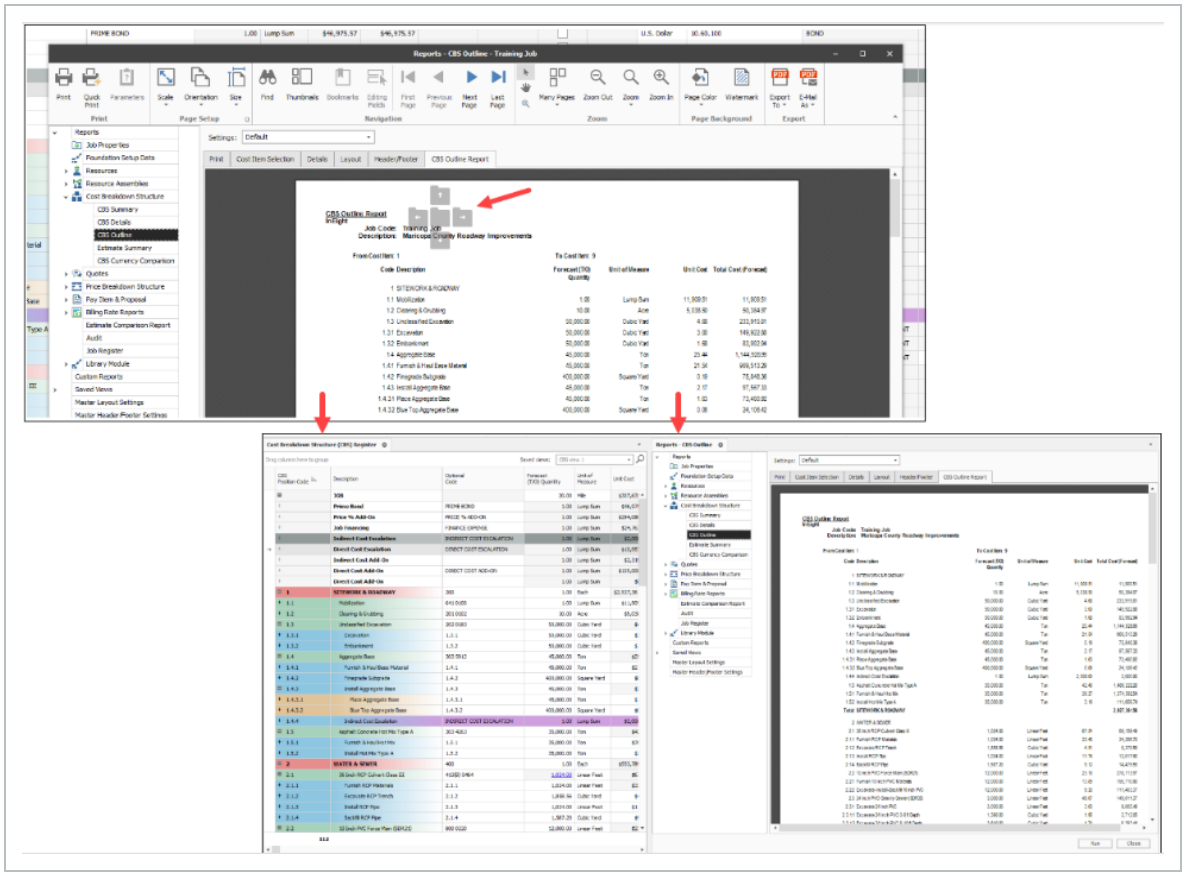
PRINT PREVIEW

The Reports print previews opens in its own tab in the Report Dialog. This lets you keep the report open while continuing to use other parts of the application.



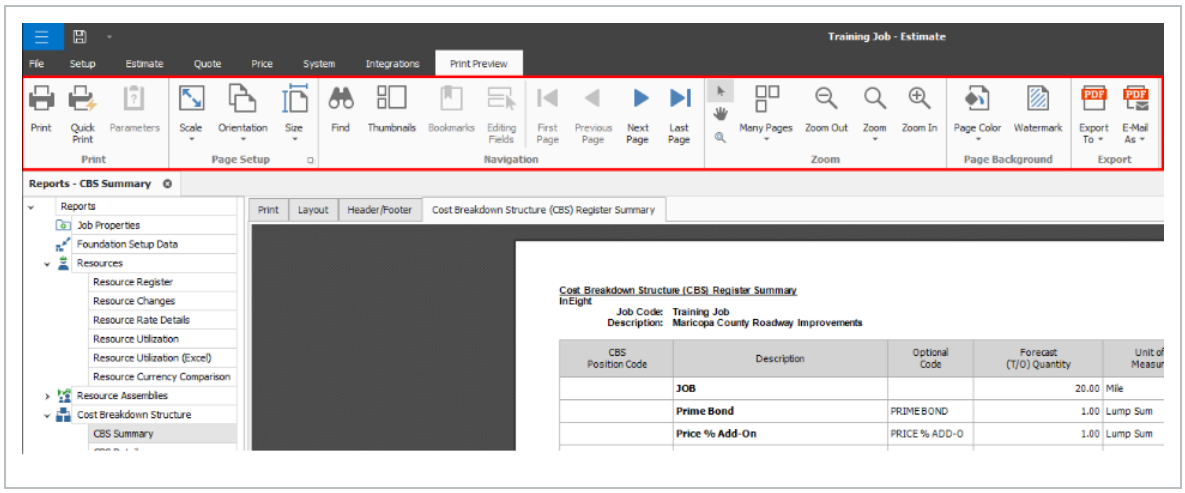
Code	Description	Resource File Description	Quantity	Unit of Measure	Unit Cost	Total Cost	Currency	Organizational Category	Geogra Area
CCONC	Concrete Crew	Standard Assembly Fi	1.00	Hour	$375.03	$375.03	U.S. Dollar	Concrete	
CGRADE	Grading Crew	Standard Assembly Fi	1.00	Hour	$234.73	$234.73	U.S. Dollar	Earthwork	
CMAINT	Equipment Maintenance	Standard Assembly Fi	1.00	Each	$23.00	$23.00	U.S. Dollar	Mechanic	
CPAVE	Paving Crew	Standard Assembly Fi	1.00	Hour	$476.24	$476.24	U.S. Dollar	Asphalt	
CPIPE	Pipe Crew	Standard Assembly Fi	1.00	Hour	$343.54	$343.54	U.S. Dollar	Pipe	
CPIPEM	Pipe Fitting Assembly (with material)	Standard Assembly Fi	1.00	Each	$410.82	$410.82	U.S. Dollar	Pipe	
CSCRAP	Scraper Crew	Standard Assembly Fi	1.00	Hour	$1,111.21	$1,111.21	U.S. Dollar	Earthwork	
CTRUCK	Truck Excavate-Load-Haul Crew	Standard Assembly Fi	1.00	Hour	$618.72	$618.72	U.S. Dollar	Earthwork	
CWELD	Welding Crew	Standard Assembly Fi	1.00	Each	$248.64	$248.64	U.S. Dollar	Welder	
MASPH	Asphalt Material Assembly (with yiel	Standard Assembly Fi	1.00	Ton	$29.45	$29.45	U.S. Dollar	Asphalt	
MFORM	Concrete Forming Assembly	Standard Assembly Fi	1.00	Square Feet	$28.88	$28.88	U.S. Dollar	Concrete	
OD8	Dozer D8 - Operated	Standard Assembly Fi	1.00	Hour	$204.22	$204.22	U.S. Dollar	Earthwork	
OGRAD14G	Grader 14G - Operated	Standard Assembly Fi	1.00	Hour	$90.82	$90.82	U.S. Dollar	Earthwork	
OSCRAP623	Scraper 623 - Operated	Standard Assembly Fi	1.00	Hour	$157.62	$157.62	U.S. Dollar	Earthwork	
14									

You can also undock and float a report on a different form, or you can tile it side by side with another register to view and compare them.



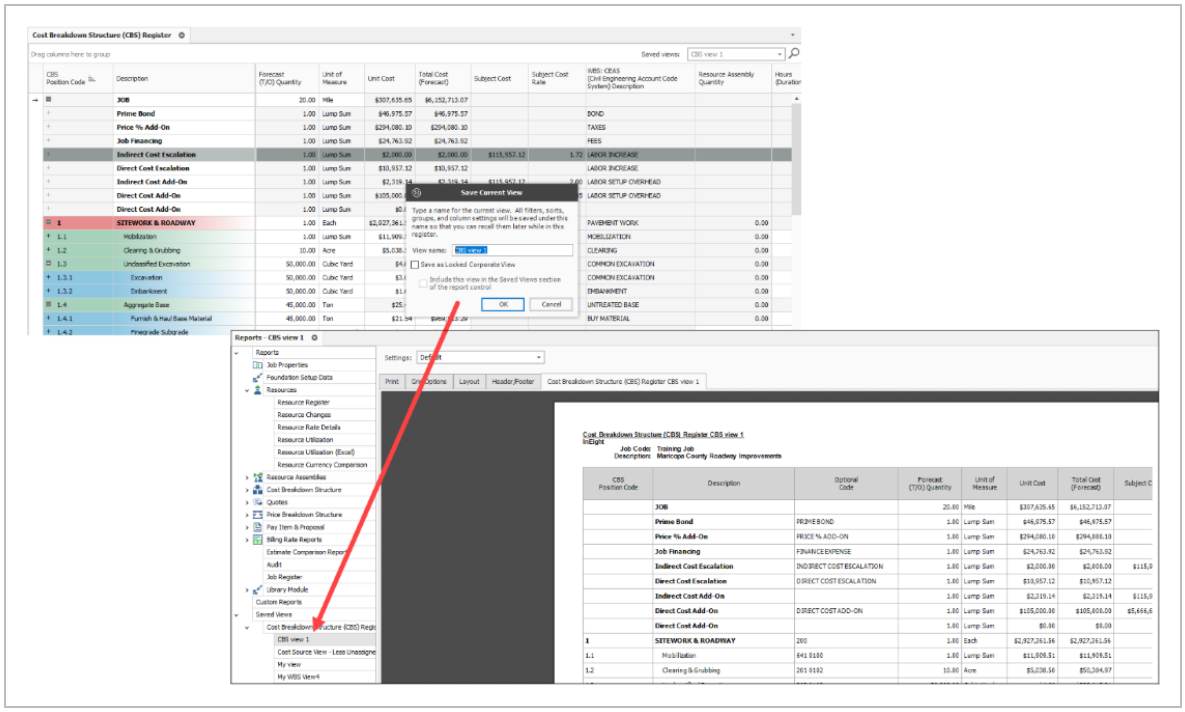
PRINT PREVIEW RIBBON

The Print Preview menu is displayed on its own ribbon. Menu commands are shown in the ribbon as a contextual Print Preview menu when navigating to Reports > Print > Preview > **Run**.

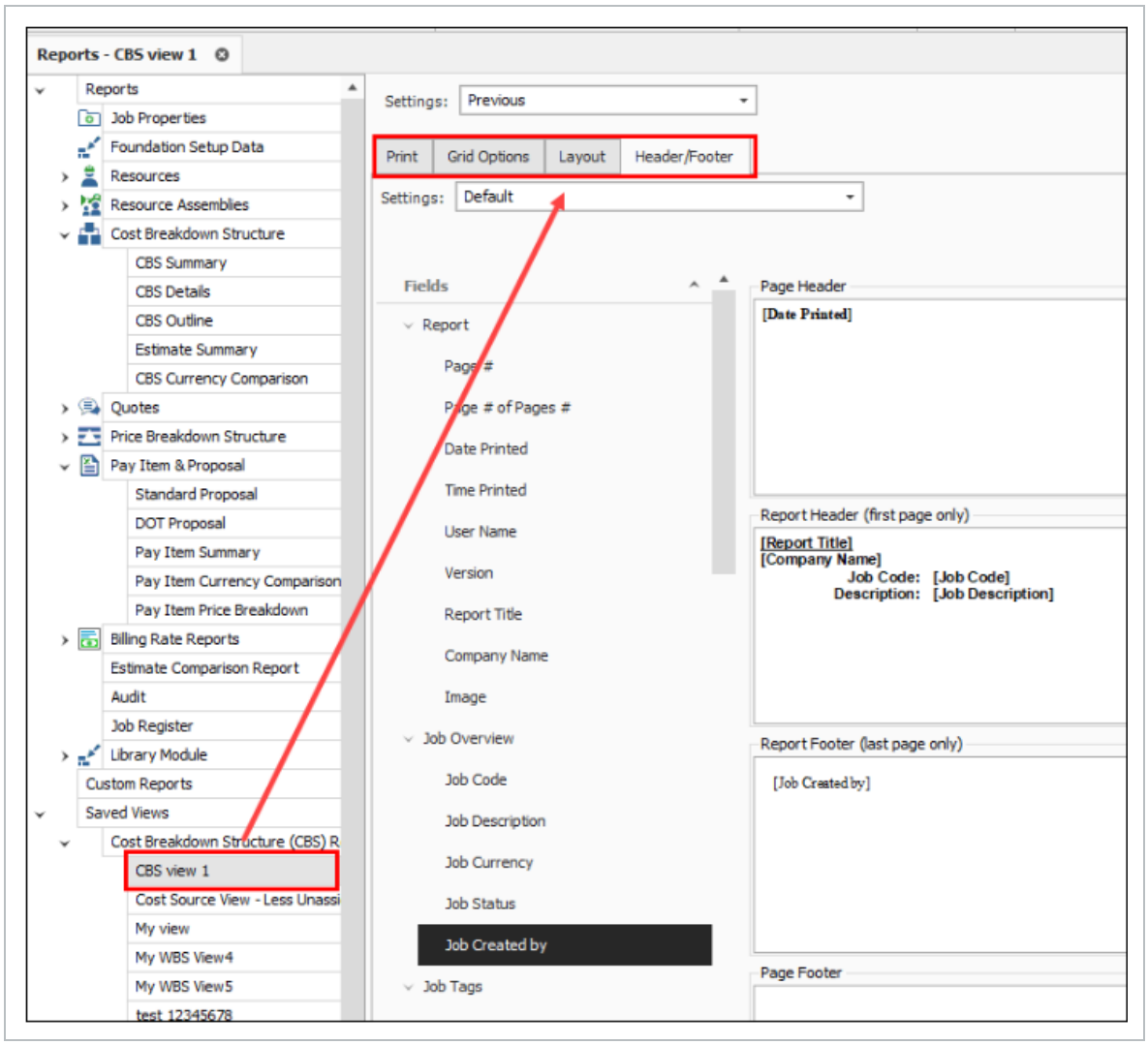


9.1.3.2 APPLY CUSTOM LAYOUTS AND HEADERS/FOOTERS TO REGISTER REPORTS

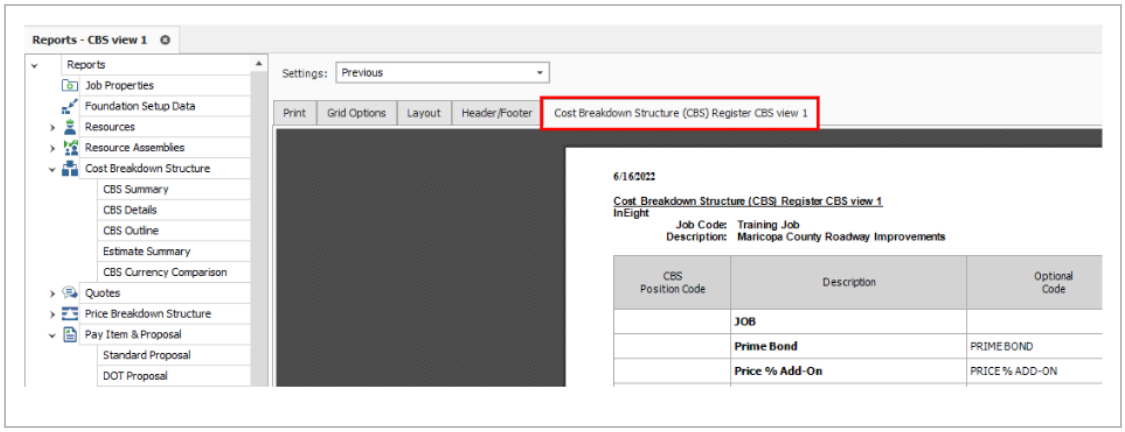
You can apply custom Layouts and header/footers to register based reports. Upon saving a view in any register, select the option to save it as a corporate view and include the view in the reports dialog box.



When selecting a Saved View from the Reports register you can use the Print tab to customize the printing preferences, use the Grid Options tab to change the font type/size, use the Layout tab to modify the design style, and use the Header/Footer tab to insert a header and footer to your report.

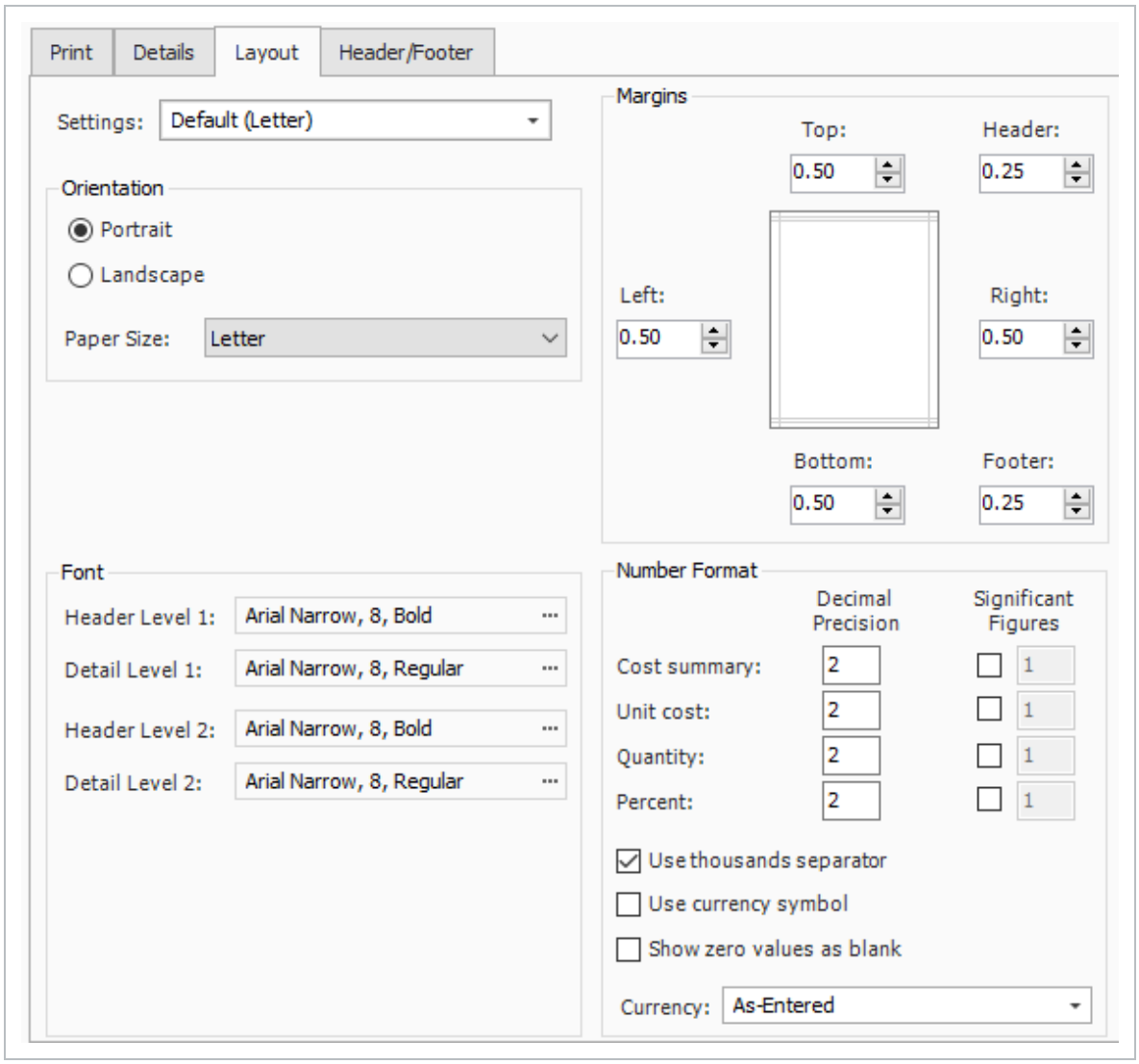


When you click on the Run button it will create a new register-style report. You can modify the layout or header/footer directly in this register. You can also toggle between any of the four other tabs to make modifications and see the changes on the saved view report.



9.1.3.3 REPORT LAYOUT SETTINGS

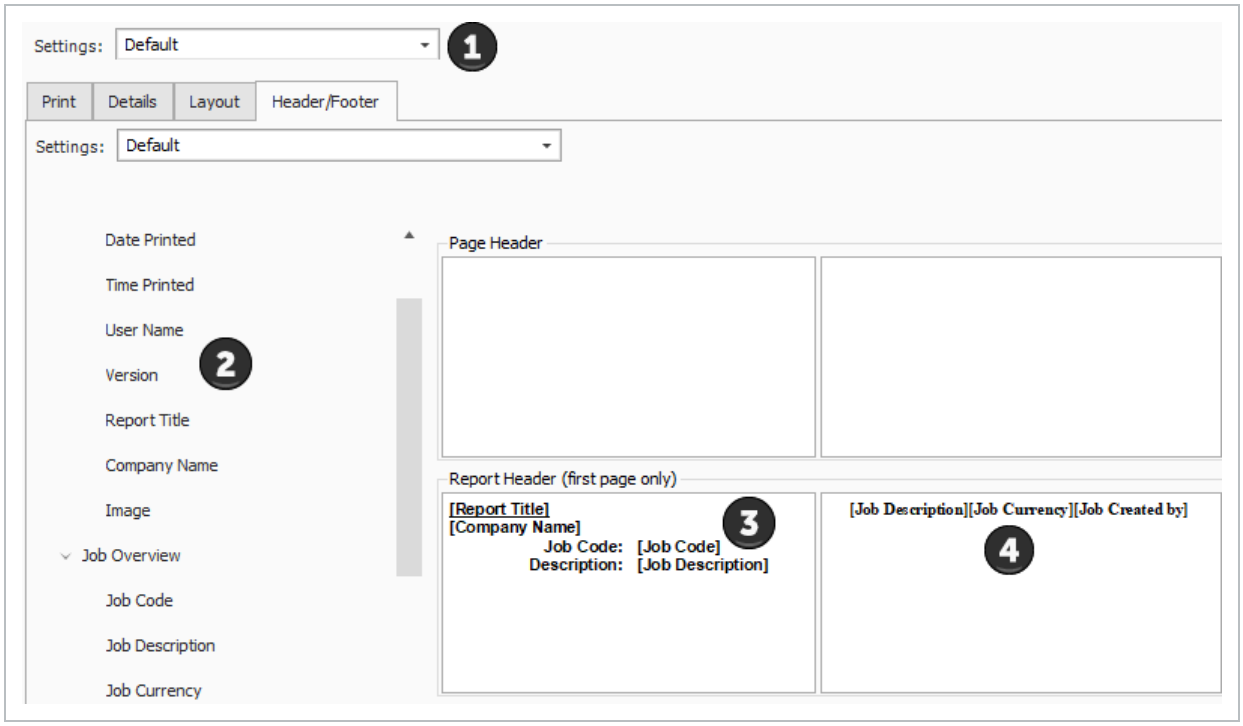
Many of the InEight Estimate adjustable reports include formatting options for the general layout of the report, located under the Layout tab of the report's output settings. Settings for the report include: Orientation, Margins, Font, and Number Format.



9.1.3.4 REPORT HEADER/FOOTER SETTINGS

Many of the InEight Estimate adjustable reports include the option to define and insert headers and footers into the report. You can add information to the left, middle, or right of the header and footer sections of the report.

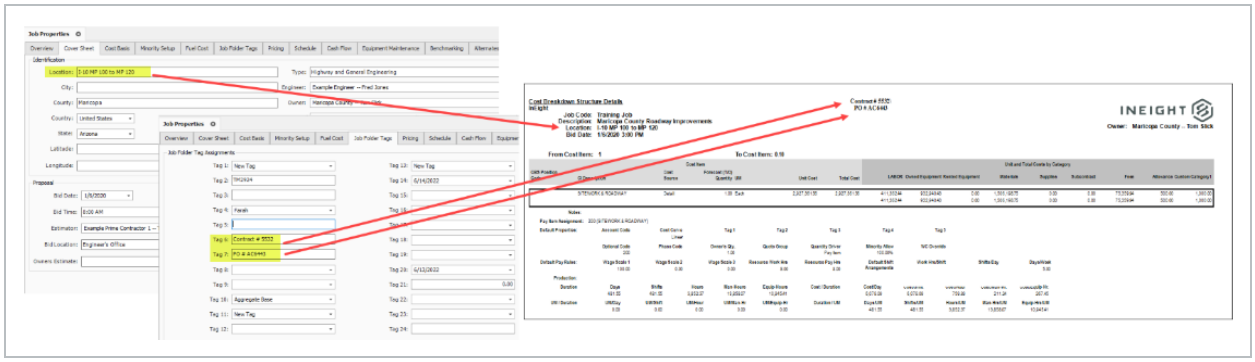
1. Once you define headers and footers, you can save them for use on other reports.
2. You can add page, time, and date stamps as needed, as well as images (e.g., company logo).
3. You can also use brackets to have it “stamp” the report with the Job Code and Job Description.
4. You can enter your own information as desired.



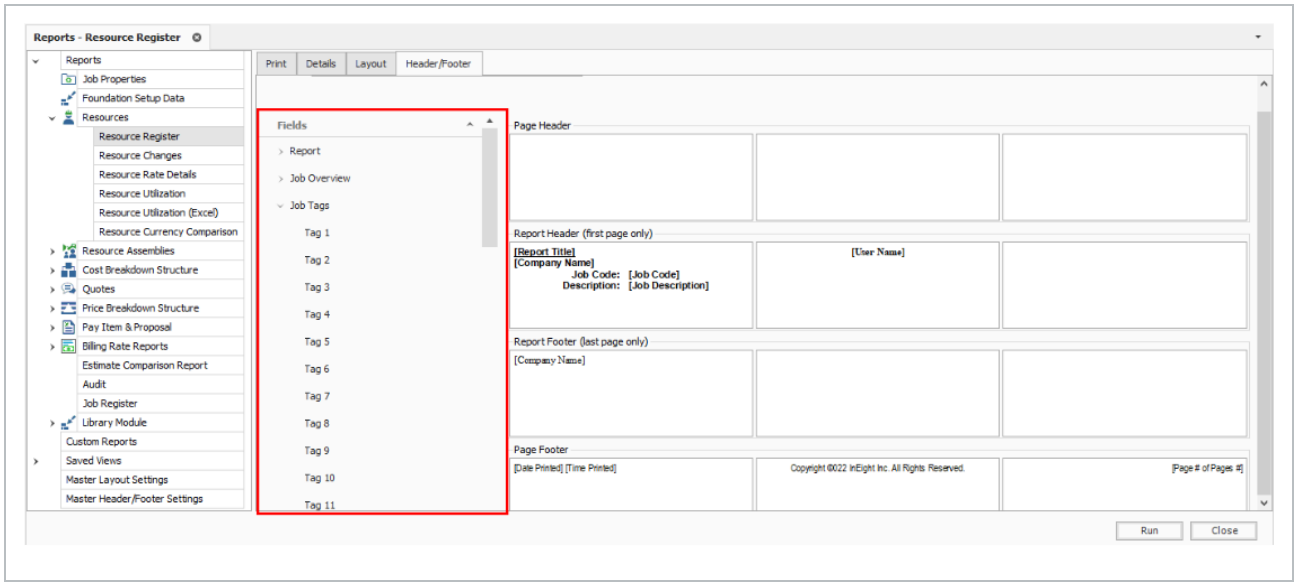
COVER SHEET FIELDS AND JOB FOLDER TAGS

In addition to the existing job code and job description tags in Job Properties, you can use the Cover Sheet fields and Job Folder tags for your headers and footers in all standard reports.

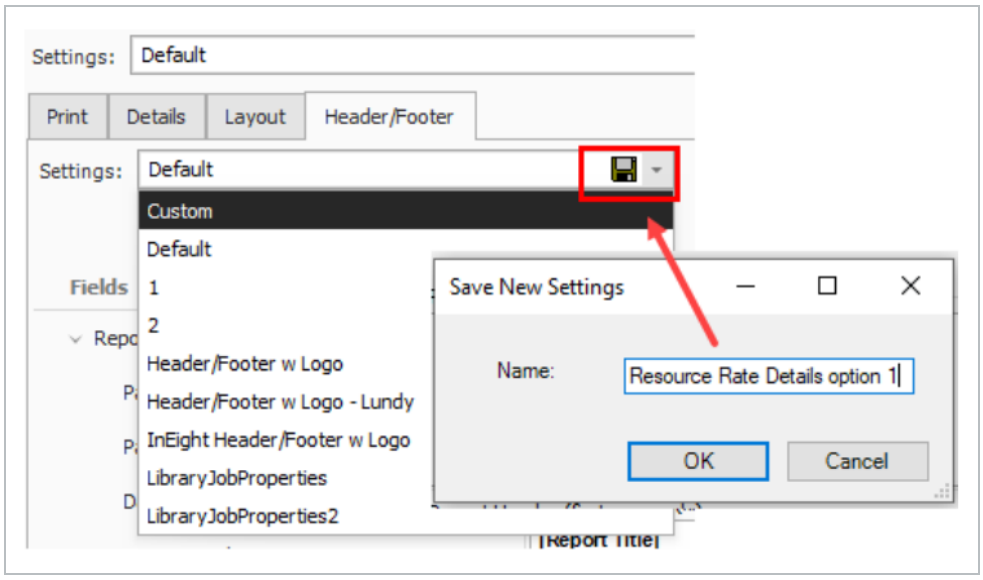
Additional tag values such as contract numbers, work order numbers, PO numbers, company logos, or any other tag fields can also be included. These additions help you customize headers and footers to give the recipients more transparency in the reports.



A Header and Footer field menu exists to the left of the Page Header and Page Footer grid, for all standard reports. This lets you choose which fields from Job Folder Tags and the Cover sheet to include in your report.



You can customize your header and footer layout settings, save them, and re-use them in other reports.



9.1.3.5 REPORT DETAIL SETTINGS

Most reports have a Details tab with various options to configure what information is included on the report.

Settings: Default

Print | Details | Layout | Header/Footer

Show the below Pay item details
- [x] Line Number
- [x] Pay Item Number
- [x] Position Code
- [ ] Subtotals
- [ ] Running Totals
- [ ] Suspended Items

Filter by currency: No Filter

Show the below Proposal header items
- [ ] Job Code
- [ ] Job City
- [ ] Job Description
- [ ] Job County
- [ ] Bid Date
- [ ] Job State
- [ ] Bid Time
- [ ] Job Country
- [ ] Job Location

Include Additional Proposal pages
- [ ] Cover Sheet
- [ ] Preferences Sheet

Term for Document
- (•) Proposal/Bid
- ( ) Tender
- ( ) Custom

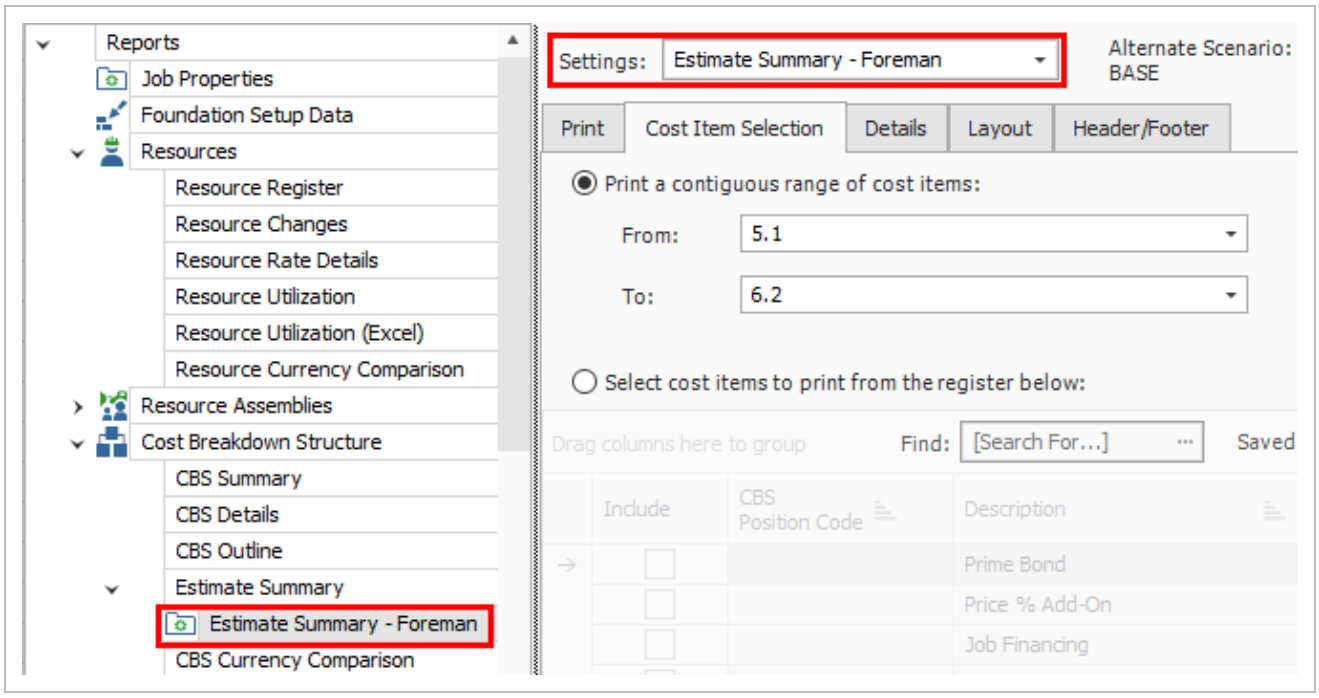
Unit Price precision
- (•) Truncate values based on decimal precision
- ( ) Do not truncate values (show decimal precision)

Certification Text: ( ) None (•) Custom

Signature Block:
- [ ] Submitted By
- [ ] Include Signature Line
- [ ] Include Title Line
- [ ] Include Date Line

9.1.3.6 SAVE OUTPUT SETTINGS

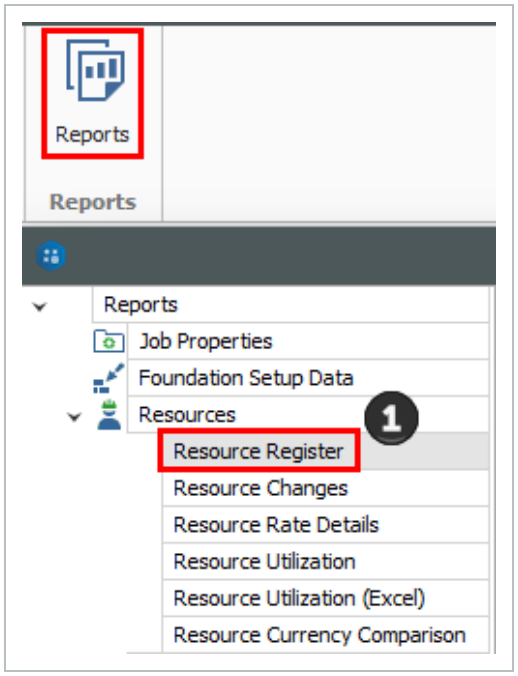
Once you've configured your settings for the report, you can save them as a custom version of that report.



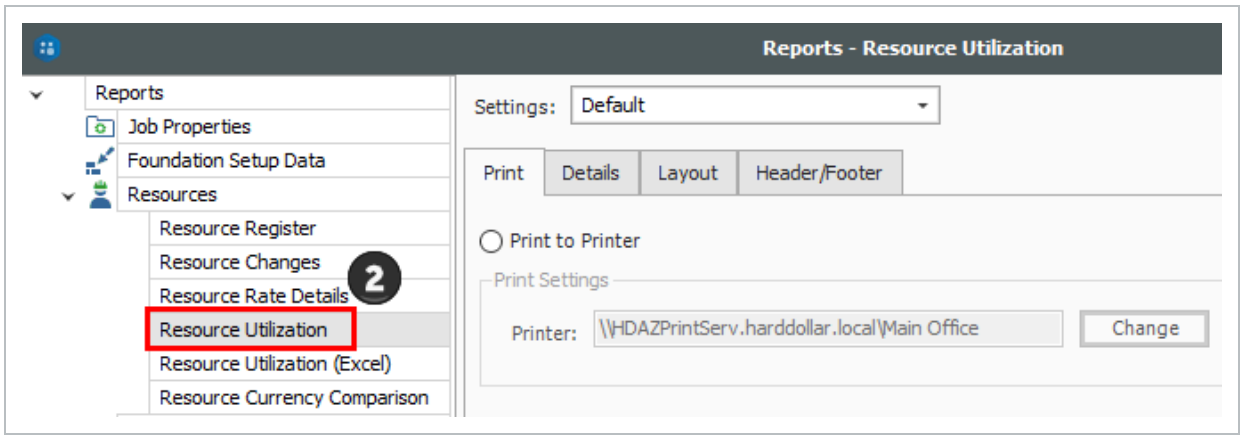
The following steps walk you through configuring the settings and formatting for two different reports.

STEP BY STEP – CONFIGURE REPORT OUTPUT SETTINGS (REPORT 1)

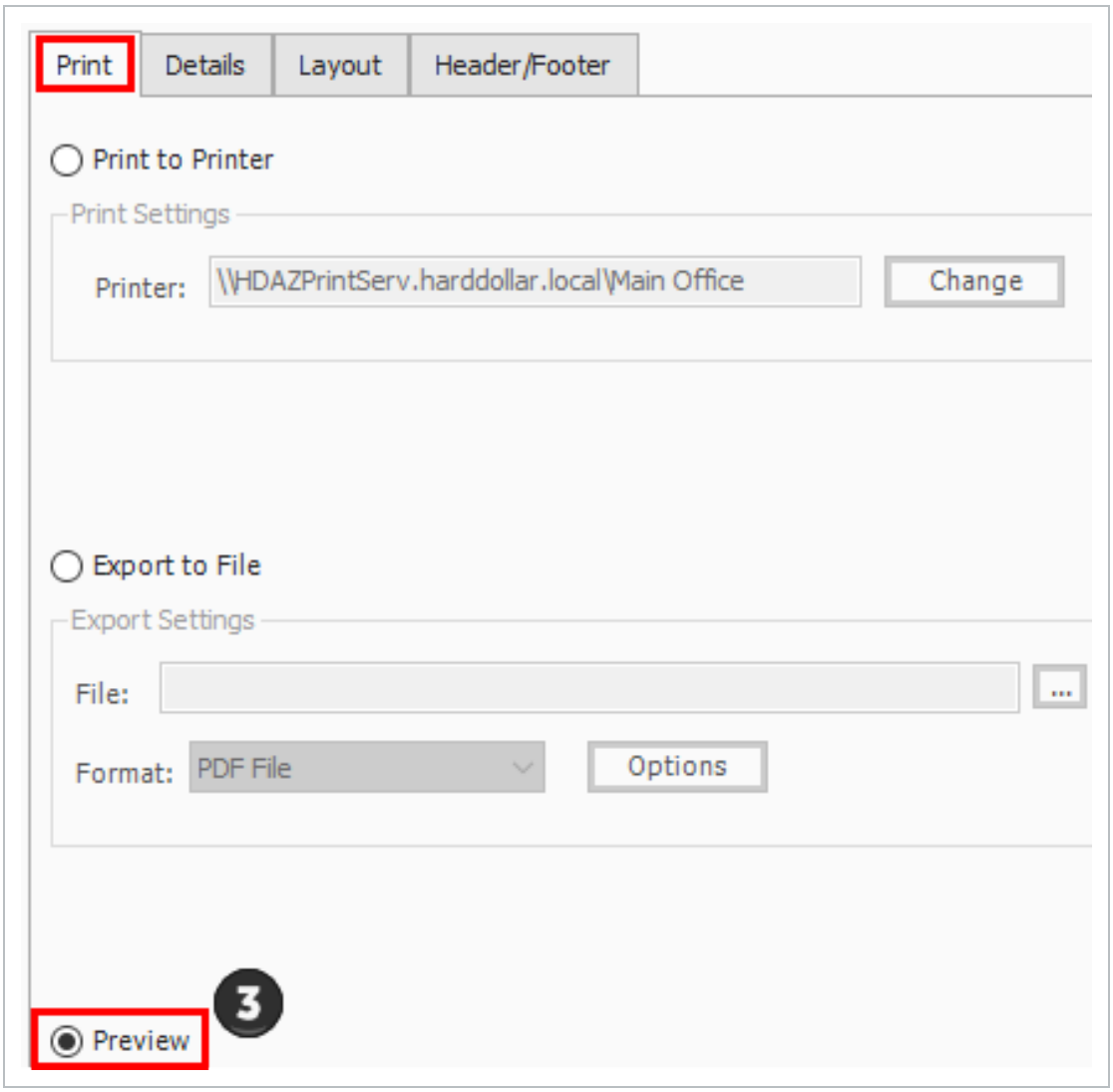
1. Open the **Training Job** and select **Setup >Report>Resources**.



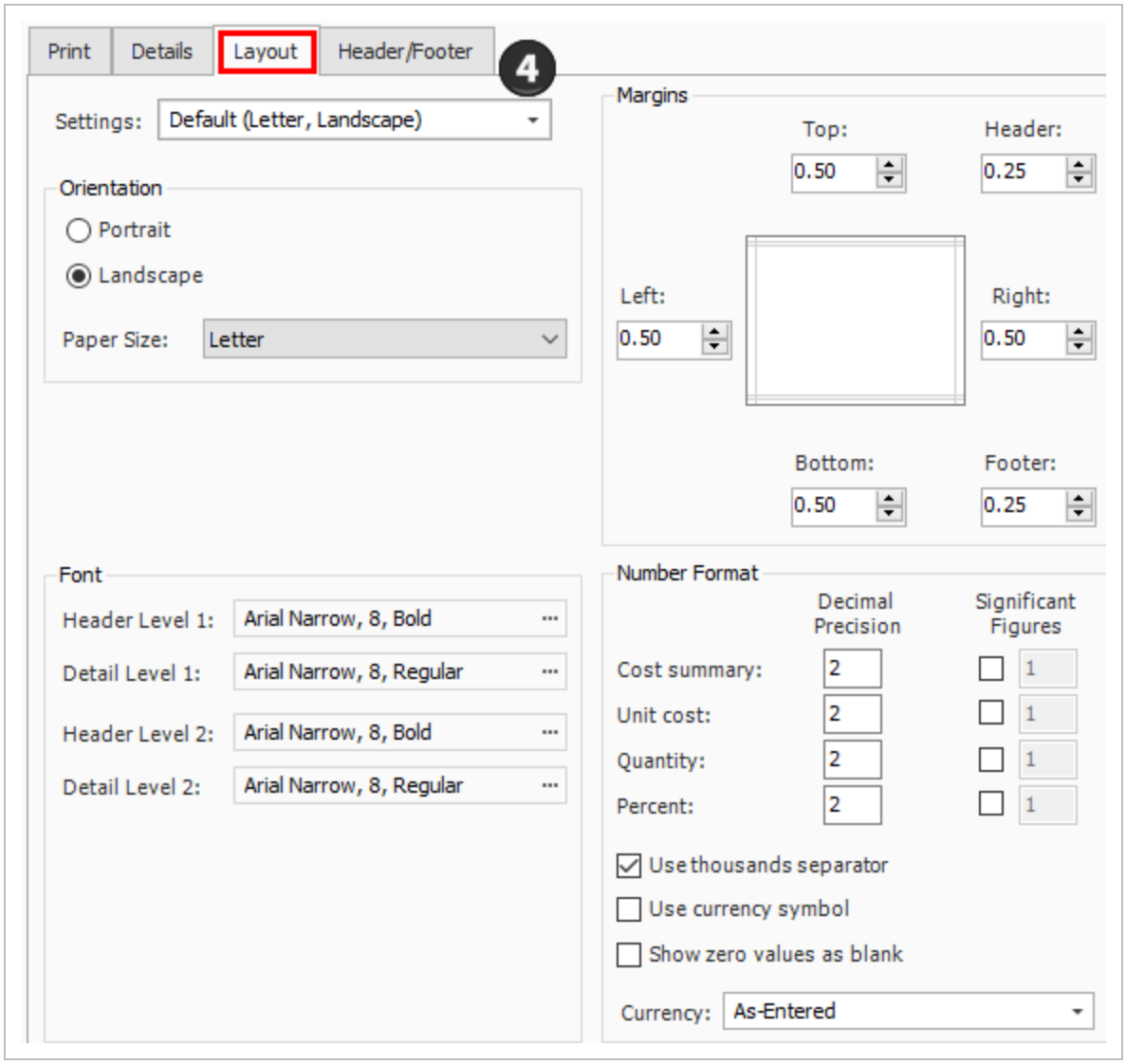
2. Under Resources on the left side bar**,** select **Resource Utilization**.



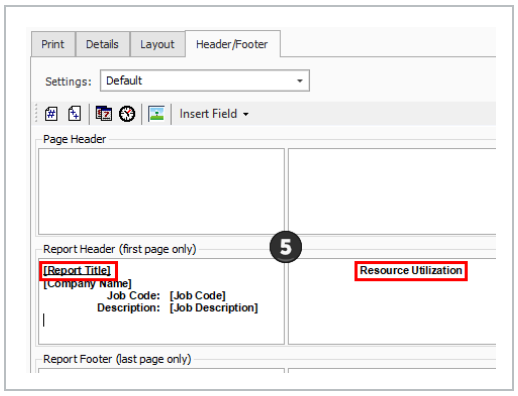
3. On the Print tab there are three options. A best practice is to always set to **Preview** so you can review before printing.



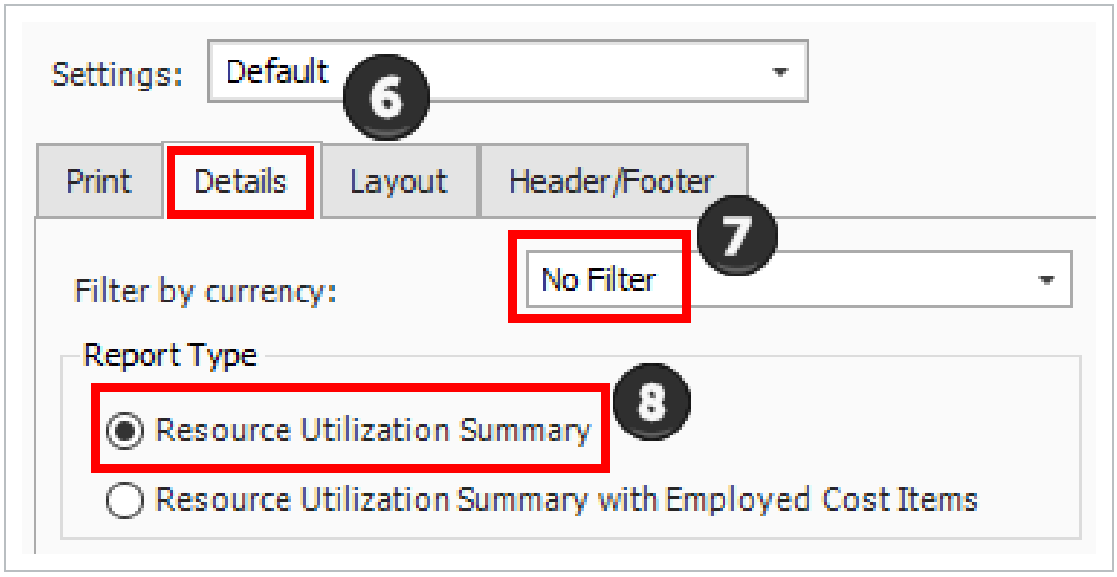
4. On the Layout tab you can make adjustments based on your preferences.



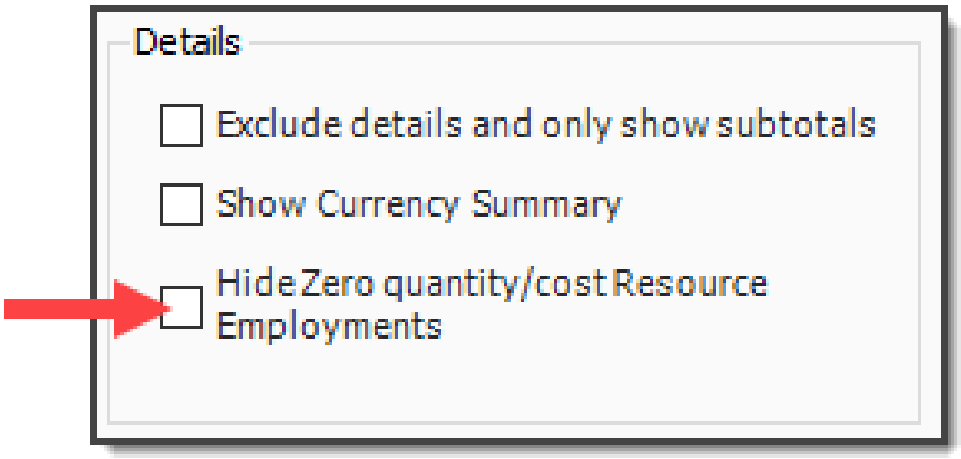
5. Move to the Header / Footer tab. Remove the default **Report Title** from the first page Header only and enter **Resource Utilization** in the center Report Header box as a title that will appear on the first page only.



6. Go to the **Details** tab, and you can see the details and options you can select to customize and adjust the report.
7. For this navigation, you will not Filter by currency; leave the selection as **No Filter**.
8. Under Report Type, choose the first option, **Resource Utilization Summary**.



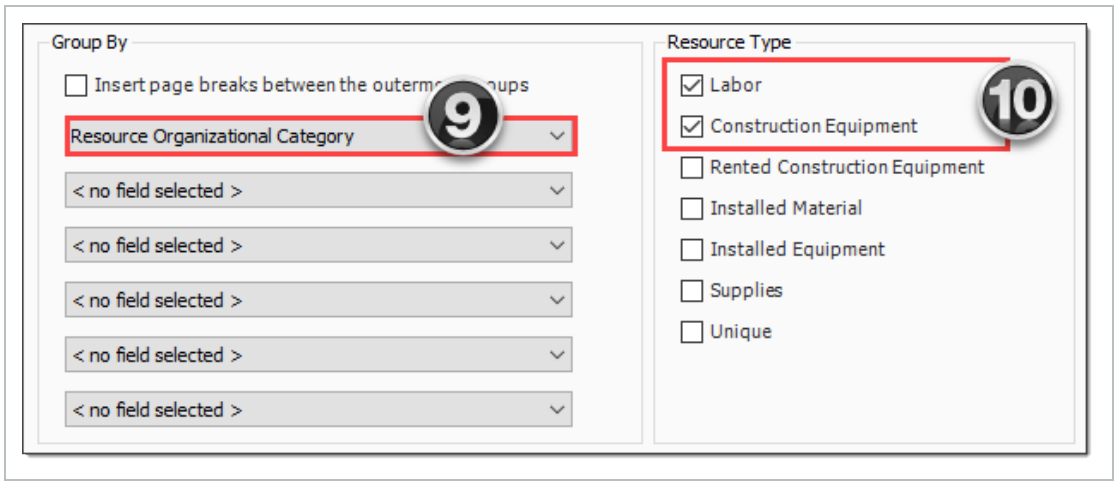
- You can choose to select the Hide Zero quantity/cost Resources Employments Details box if you prefer to have your printed report not show any resources that have a dollar value of zero



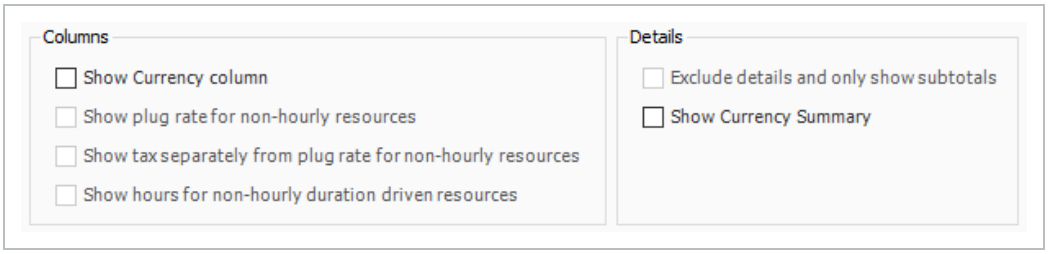
- You can choose if you want the report at a summary level, or if you want it to reference your cost items when you are looking at a resource
- If you choose Resource Utilization Summary with Employed Cost Items, it adds CBS position to the structure of the report
- You would select this if you wanted to see cost items and resources by the cost item

> **TIP** The Details settings are “sticky” features, meaning they default to what was selected the last time.

9. You can use grouping to group by different tags and user-defined fields. Most of them are related to the Resource Rate Register, for example: Geographic Area, Organizational Category, Wage Zone, etc. For this example, group by **Resource Organizational Category**.
10. Next, you can choose the resources you want to see. For this example, select the **Labor** and **Construction Equipment** Resource Types.



- For this example, you will not make any selections under Columns or Details

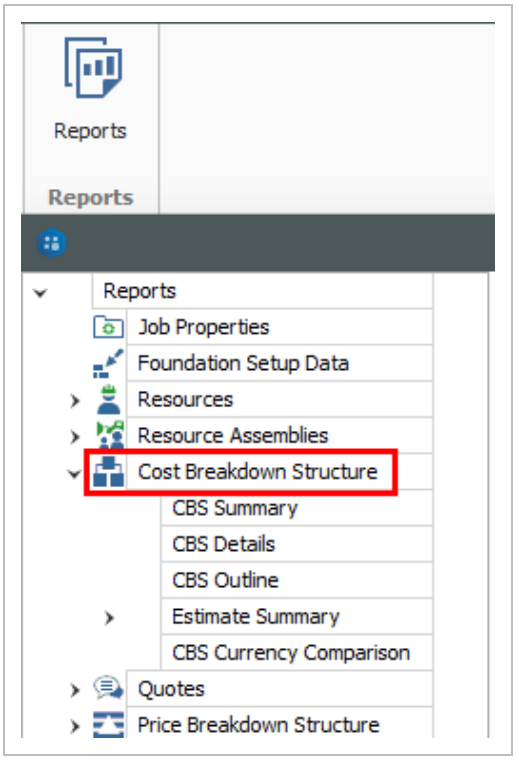


- This is just one of many ways to organize and adjust your report.

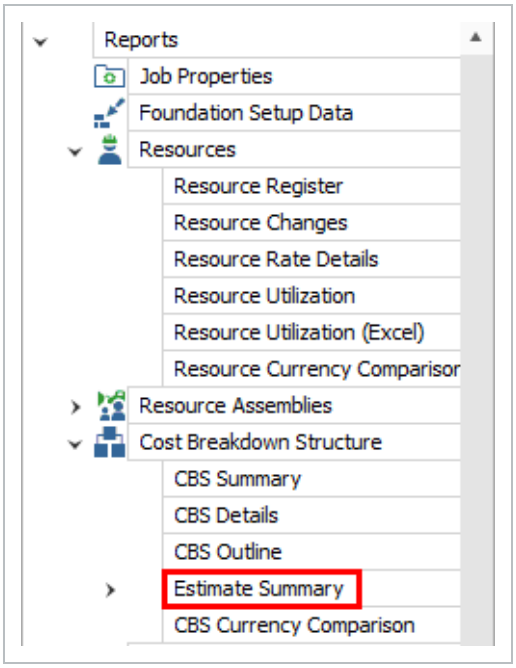
11. Click **Run** to run the report.
    - This report can be helpful for seeing your utilization hours, broken down by regular time and overtime hours
12. Click the red **X** to close this page and open the Construction Equipment page.
13. Click the red **X** to close the Construction Equipment report.

STEP BY STEP – CONFIGURE REPORT OUTPUT SETTINGS (REPORT 2)

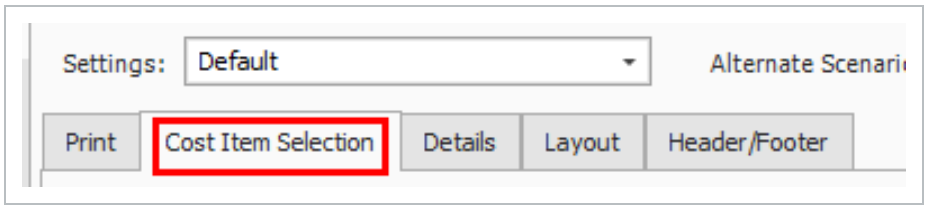
1. Open the **Training Job** and select **Setup >Reports**, then expand the **Cost Breakdown Structure** node.



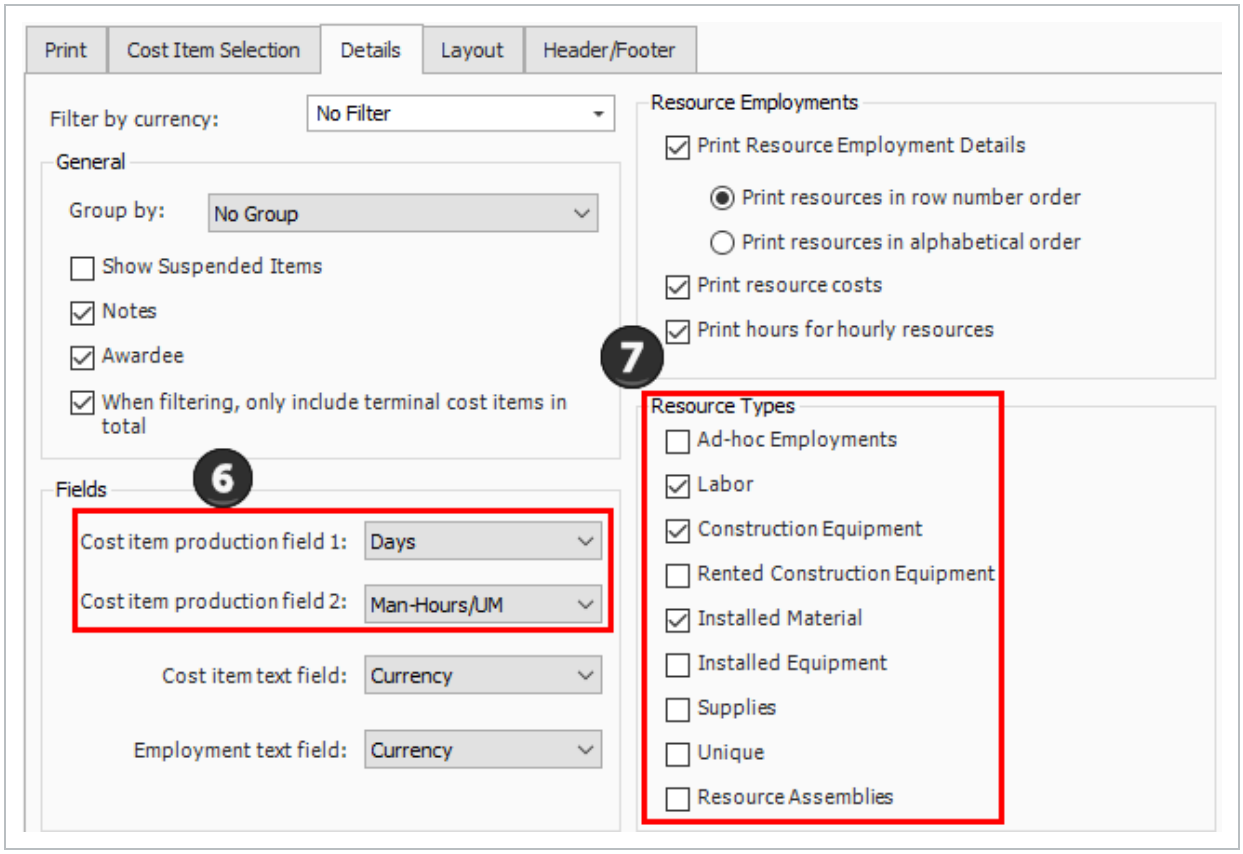
2. Under Cost Breakdown Structure on the left side bar, select **Estimate Summary**.



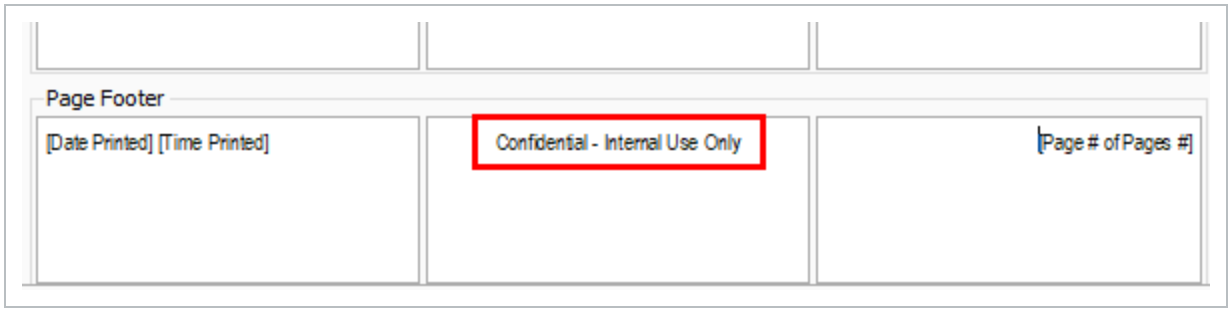
3. Along with the Print, Details, Layout, and Header / Footer tabs, there is an additional tab called **Cost Item Selection**. Select this tab.



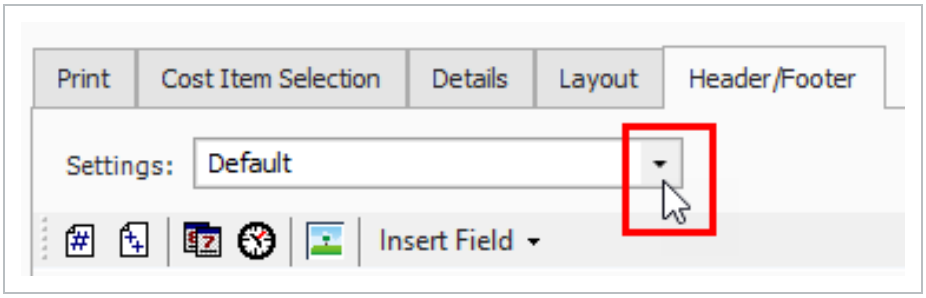
4. The Cost Item Selection tab allows you to report on a selection of cost items:
   - Print a contiguous range of cost items: Allows you to print a series of cost items in a row. In this case, print just items: select 4.1 in the From field and 4.3.2 in the To field.
   - Select cost items to print from the register below: Allows you to use column filters to select the cost items to include in the report; leave this button unselected.
5. You can roll up your cost items to a certain CBS level for the report as well, depending on the level of detail you need.
6. On the **Details** tab, select **Days** for Cost item production field 1, and **Man-Hours / UM** for Cost item production field 2 (this report allows you to report on two production values).
7. Under **Resource Types**, uncheck all of the boxes except **Labor**, **ConstructionEquipment**, and **Installed Material**.



8. Leave the rest of the settings at their defaults, then select the **Header / Footer** tab.
9. In the center **Page Footer** field delete the existing text, then type **Confidential –Internal Use Only**.

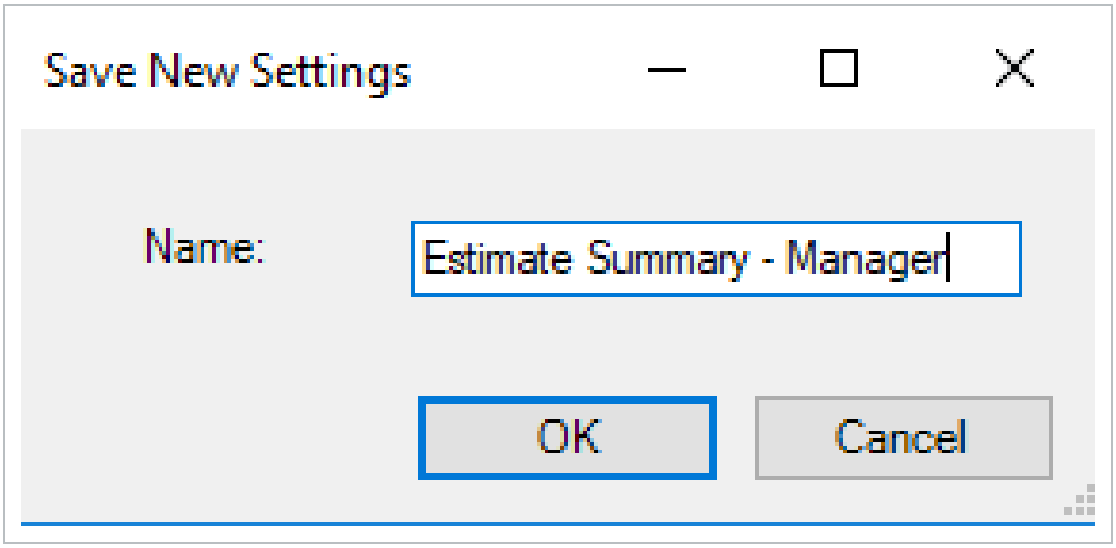


10. To save the settings you've configured, click on the **Settings** drop-down arrow above the output setting tabs.

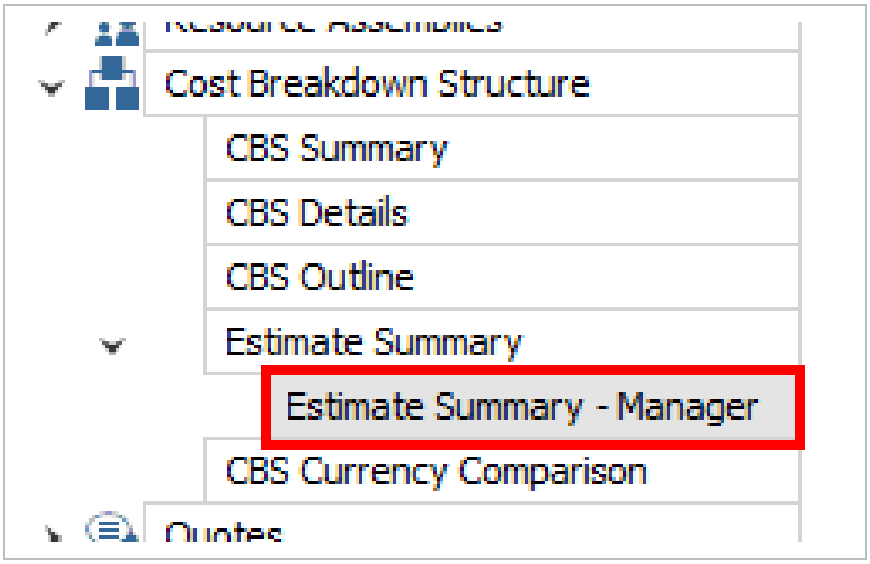


11. Select the **Save disk** icon to save the new settings.

12. Type **Estimate Summary – Manager.**
13. Click **OK**.



- Notice that a custom version of the report now displays under Estimate Summary on the Reports tree on the left



9.1.4 HELPFUL REPORTS

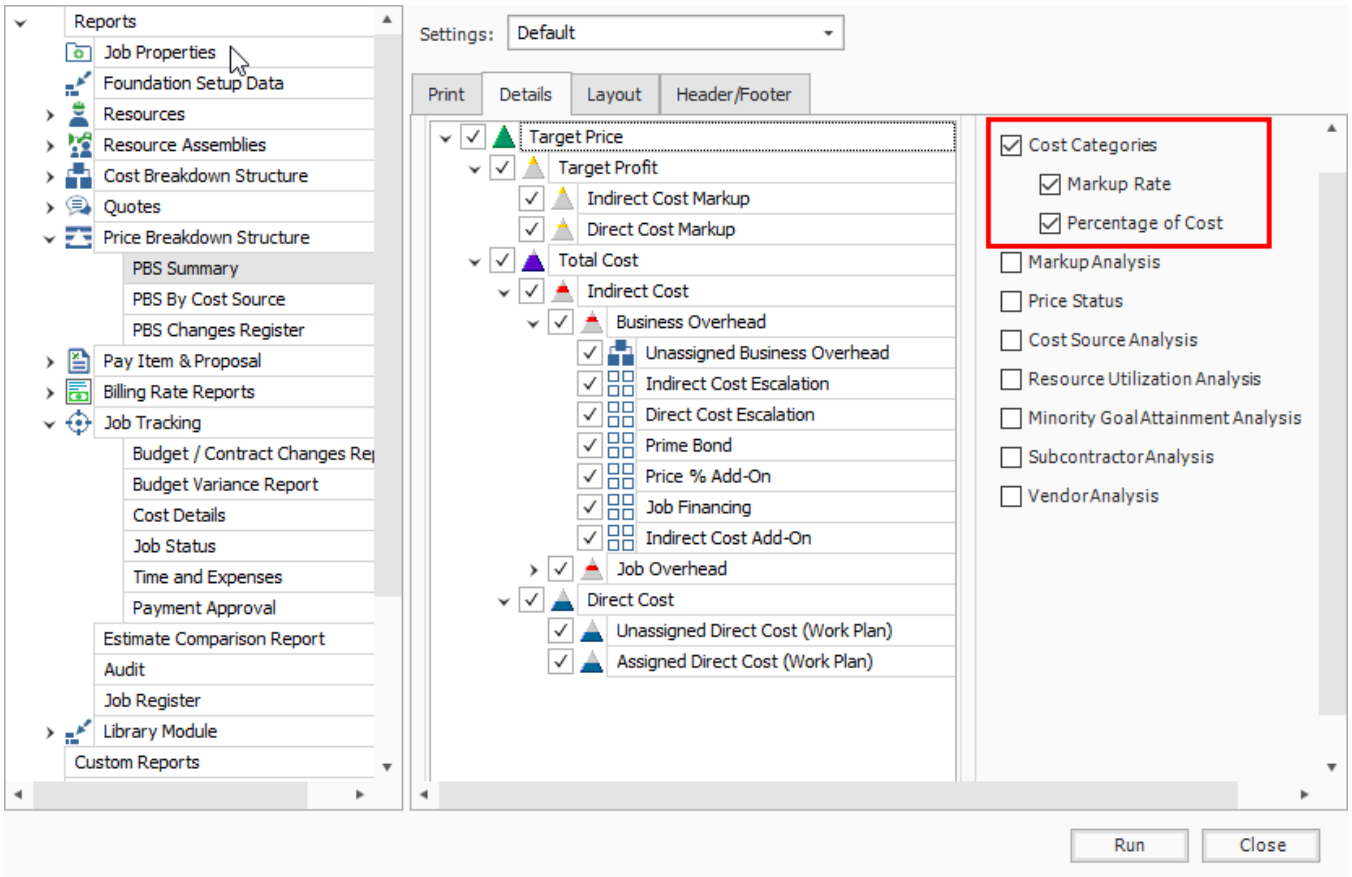
9.1.4.7 PBS SUMMARY

Under the Price Breakdown Structure Report node, the PBS Summary Report gives a good overview of how your price breaks down by cost category. This provides a high-level overview that is cost category driven, providing information based on the total value of the project.

When selecting your settings on the Details tab, a best practice is to select and include:

- Cost Categories
- Markup Rate
- Percentage of Cost

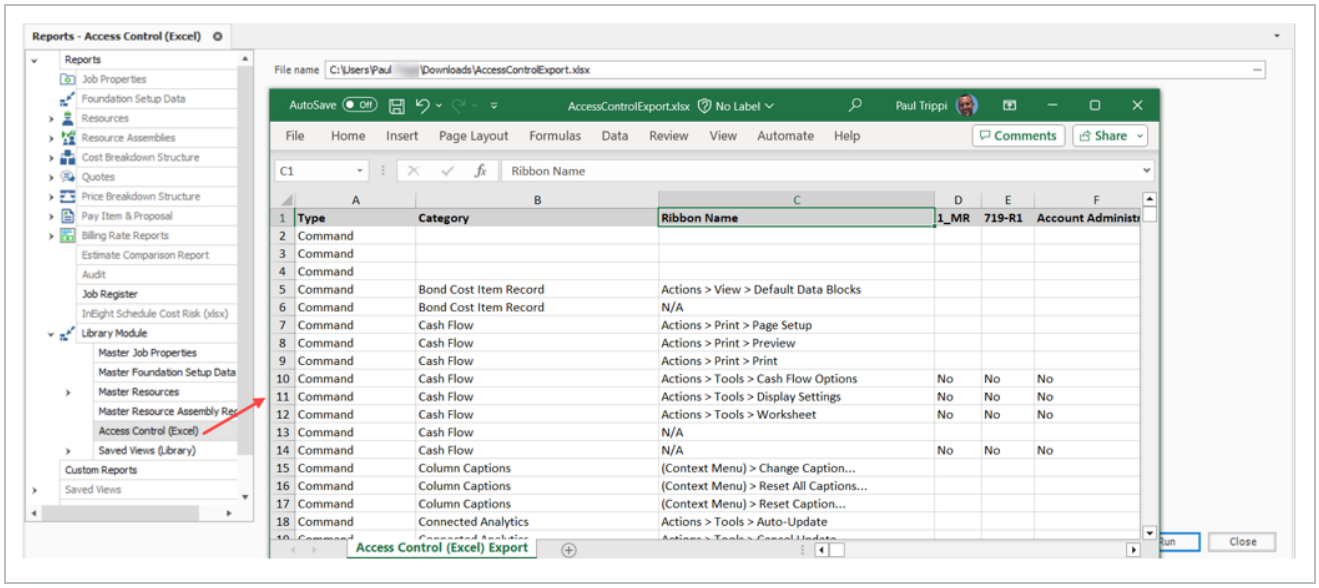
This allows you to see your costs and markup broken out by cost category.



TIP You can also select to show markup rate and what percentage the markup is of your cost.

9.1.5 ACCESS CONTROL

You can use the Access Control report to audit user permissions, command access, and various restrictions without having to search through the Access Control register for this information.



9.1.6 STANDARD PROPOSAL

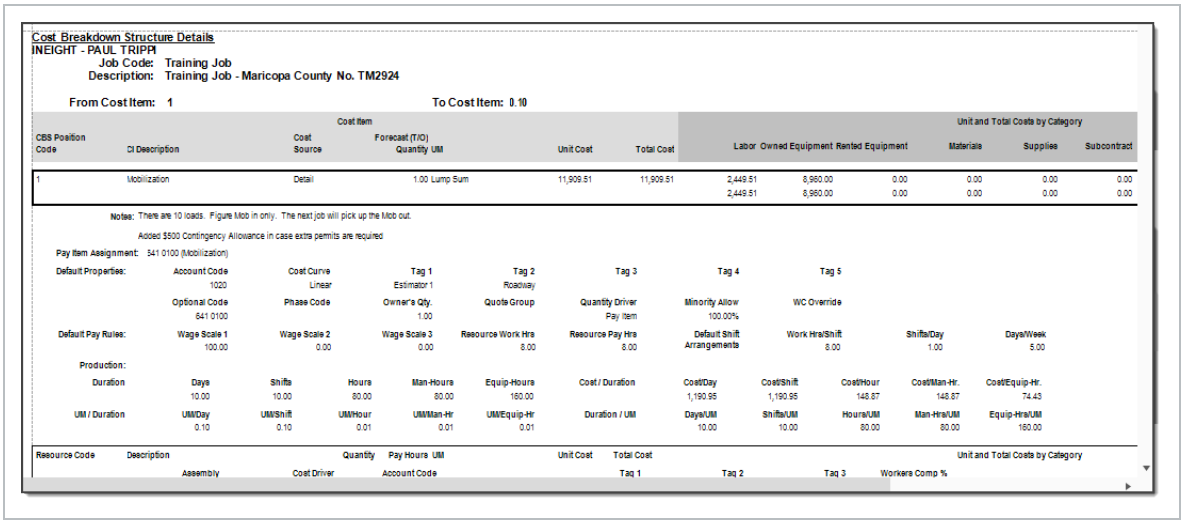
Located under the Pay Item & Proposal report node, the Standard Proposal report can be used for contractors required to submit a pricing proposal to a client. It lists all the pay items with the client provided quantities and your final pricing. You can include subtotals (defined on the Pay Item & Proposal Register), cover sheet information, and a signature block.

Proposal
ACME Company
Job Code: Training Job
Description: Training Job - Maricopa County No. TM2924

Position Code	Line No.	Pay Item No.	Description Subtotal Description	Proposal Quantity	Unit of Measure	Unit Price	Total Price
1	22	200	SITEWORK & ROADWAY				3,402,700.00
1.1	10	641 0100	Mobilization	1.00	Lump Sum	395,600	395,600.00
1.2	20	201 0102	Clearing & Grubbing	10.00	Acre	5,900.00	59,000.00
1.3	30	202 0183	Unclassified Excavation	50,000.00	Cubic Yard	5.50	275,000.00
1.4	40	303 5912	Aggregate Base	40,000.00	Ton	26.50	1,060,000.00
1.5	50	303 4263	Asphalt Concrete Hot Mix Type A	38,000.00	Ton	42.45	1,613,100.00
2	18	400	WATER & SEWER				718,550.00
2.1	60	413(B) 0464	36 Inch RCP Culvert Class III	1,000.00	Linear Feet	97.45	97,450.00
2.2	70	800 0220	10 Inch PVC Force Main (SDR21)	12,000.00	Linear Feet	29.50	354,000.00
2.3	80	800 0330	24 Inch PVC Gravity Sewer (SDR35)	3,000.00	Linear Feet	64.50	193,500.00
2.4	90	800 0400	4 Foot Diameter Manhole	16.00	Each	4,600.00	73,600.00

9.1.7 CBS DETAILS

Under the Cost Breakdown Structure report node, the CBS Details report can be a helpful report for bid review. On the Details tab you can include or not include any of the information contained in the CBS Register, including cost items with production, costs by category, shift arrangements, resources, and notes.



Cost Breakdown Structure Details
INEIGHT - PAUL TRIPPI
Job Code: Training Job
Description: Training Job - Maricopa County No. TM2924

From Cost Item: 1 To Cost Item: 0.10

CBS Position Code	CI Description	Cost Source	Forecast (T/O) Quantity UM	Unit Cost	Total Cost	Labor	Owned Equipment	Rented Equipment	Materials	Supplies	Subcontract
1	Mobilization	Detail	1.00 Lump Sum	11,909.51	11,909.51	2,449.51	8,960.00	0.00	0.00	0.00	0.00
						2,449.51	8,960.00	0.00	0.00	0.00	0.00

Notes: There are 10 loads. Figure Mob in only. The next job will pick up the Mob out.
Added $500 Contingency Allowance in case extra permits are required

Pay Item Assignment: 541 0100 (Mobilization)

Default Properties:	Account Code	Cost Curve	Tag 1	Tag 2	Tag 3	Tag 4	Tag 5
	1020	Linear	Estimator 1	Roadway			
	Optional Code	Phase Code	Owner's Qty.	Quote Group	Quantity Driver	Minority Allow	WC Override
	541 0100		1.00		Pay Item	100.00%	

Default Pay Rules:	Wage Scale 1	Wage Scale 2	Wage Scale 3	Resource Work Hrs	Resource Pay Hrs	Default Shift Arrangements	Work Hrs/Shift	Shifts/Day	Days/Week
	100.00	0.00	0.00	8.00	8.00		8.00	1.00	5.00

Production:

Duration	Days	Shifts	Hours	Man-Hours	Equip-Hours	Cost / Duration	Cost/Day	Cost/Shift	Cost/Hour	Cost/Man-Hr.	Cost/Equip-Hr.
	10.00	10.00	80.00	80.00	160.00		1,190.95	1,190.95	148.87	148.87	74.43

UM / Duration	UM/Day	UM/Shift	UM/Hour	UM/Man-Hr	UM/Equip-Hr	Duration / UM	Days/UM	Shifts/UM	Hours/UM	Man-Hrs/UM	Equip-Hrs/UM
	0.10	0.10	0.01	0.01	0.01		10.00	10.00	80.00	80.00	160.00

Resource Code	Description	Quantity	Pay Hours	UM	Unit Cost	Total Cost	Unit and Total Costs by Category
	Assembly	Cost Driver	Account Code		Tag 1	Tag 2	Tag 3 Workers Comp %

9.1.8 AUDIT

Under the Job Tracking node, the Audit Report is a very important report to run during estimate review to make sure you didn't leave anything out of the estimate. It checks for a number of potential errors in the estimate, including:

- Zero Price Pay Items
- Zero-value cost items
- Pay items without Cost Items assigned
- Resources with a quantity of zero

EXERCISE 9.1 – RUN A SYSTEM REPORT

You can adjust InEight Estimate system reports to report on the particular information you need. Complete the following steps to configure and run the Pay Item Summary report, using the Training Job:

1. From the Reports window, expand the **Pay Item & Proposal** report node.
2. On the Reports tree, select **Pay Item Summary**.
3. On the Details tab, select a **Pay Item Range from 303 4263 – 800 0220**.
4. Choose to **Include Assigned Cost Items**.
5. Show Costs As: **Unit**.
6. Include **Profit Analysis** columns and **Include Pay Item Price** columns
7. Run the report.

You should end up with the following results

ABC Contractors
Job Code: Training Job
Description: Training Job - Maricopa County No. TM2924

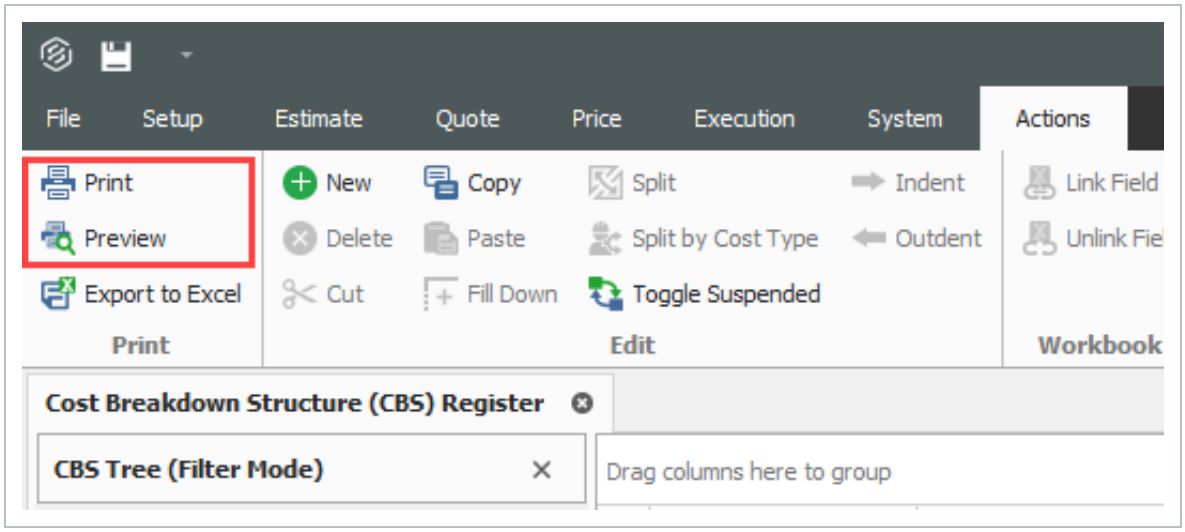
From Item: 303 4263 To Item: 800 0220

Pay/Cost Item					Unit Cost by Category							
Code	Description	Quantity	UM	Assigned Direct Cost	Labor	Owned Equipment	Rented Equipment	Materials	Supplies	Subcontract	Fees	Allowance
303 4263	Asphalt Concrete Hot Mix Type A	38,000.00	Ton	42.62	3.11	6.43	0.00	31.50	0.00	0.00	1.58	0.00
5	Asphalt Concrete Hot Mix Type A	38,000.00	Ton	1,619,430.35	3.11	6.43	0.00	31.50	0.00	0.00	1.58	0.00
5.1	Furnish & Haul Hot Mix	38,000.00	Ton	1,492,382.18	1.43	4.77	0.00	31.50	0.00	0.00	1.58	0.00
5.2	Install Hot Mix Type A	38,000.00	Ton	127,048.17	1.68	1.66	0.00	0.00	0.00	0.00	0.00	0.00
413(B) 0464	36 Inch RCP Culvert Class III	1,000.00	Linear Feet	66.42	19.60	13.48	0.93	30.82	0.00	0.00	1.59	0.00
6	36 Inch RCP Culvert Class III	1,000.00	Linear Feet	66,416.79	19.60	13.48	0.93	30.82	0.00	0.00	1.59	0.00
6.1	Furnish RCP Materials	1,000.00	Linear Feet	32,361.33	0.00	0.00	0.00	30.82	0.00	0.00	1.54	0.00
6.2	Excavate RCP Trench	1,815.00	Cubic Yard	8,183.20	4.85	3.34	0.00	0.00	0.00	0.00	0.00	0.00
6.3	Install RCP Pipe	1,000.00	Linear Feet	11,735.94	6.45	5.29	0.00	0.00	0.00	0.00	0.00	0.00
6.4	Backfill RCP Pipe	1,550.00	Cubic Yard	14,136.32	8.31	4.86	0.93	0.00	0.00	0.00	0.05	0.00
	SUBTOTAL: SITEWORK & ROADWAY			1,685,847.14	137,894.00	257,768.56	926.90	1,227,820.31	0.00	0.00	61,437.36	0.00
800 0220	10 Inch PVC Force Main (SDR21)	12,000.00	Linear Feet	22.51	4.56	4.72	0.00	12.60	0.00	0.00	0.63	0.00
7	10 Inch PVC Force Main (SDR21)	12,000.00	Linear Feet	270,163.37	4.56	4.72	0.00	12.60	0.00	0.00	0.63	0.00
7.1	Furnish 10 Inch PVC Materials	12,000.00	Linear Feet	158,760.00	0.00	0.00	0.00	12.60	0.00	0.00	0.63	0.00
7.2	Excavate-Install-Backfill 10 Inch PVC	12,000.00	Linear Feet	111,403.37	4.56	4.72	0.00	0.00	0.00	0.00	0.00	0.00
	Extended Totals By Category			1,956,010.51	192,599.77	314,466.16	926.90	1,379,020.31	0.00	0.00	68,997.36	0.00

Congratulations, you have completed this exercise!

9.2 REGISTER REPORTS

At any time, you can print a report of the data in the currently displayed register using the Print or Preview option available from the Actions tab for the register you are in.



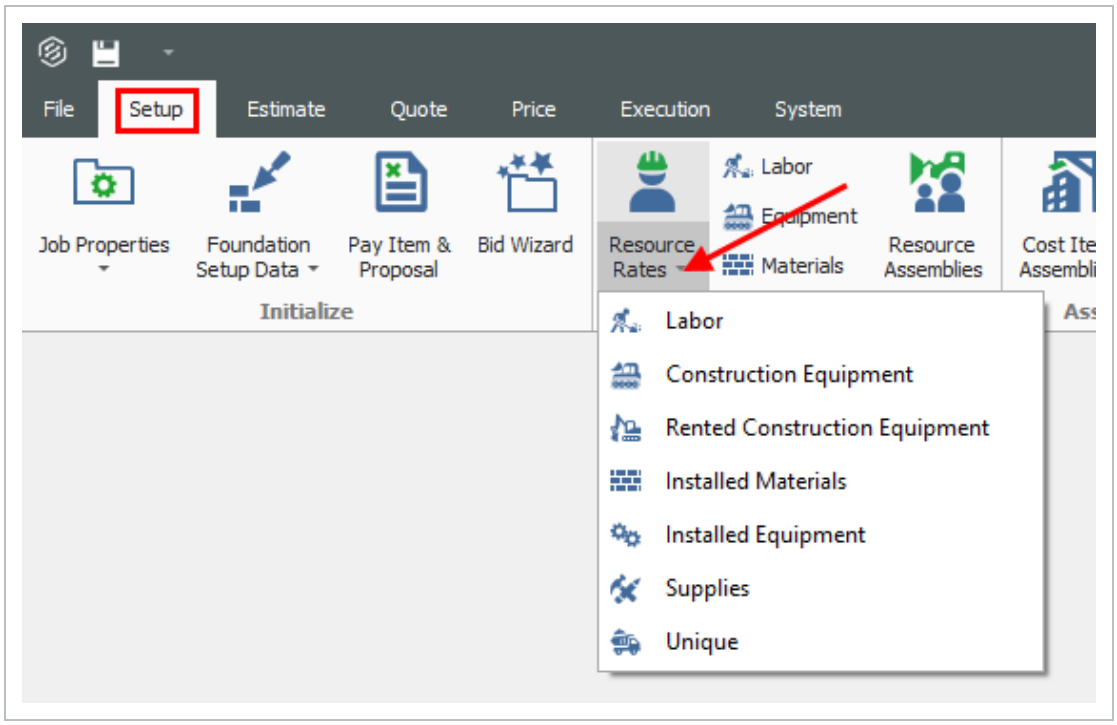
The data that prints is the data currently displayed on the register form. The report will print whatever columns are displayed on the register; if you have customized the display in the register, the report prints that data. In other words, register reports are entirely customizable.

By creating Saved Views, you can report the data on a register form in several different variations.

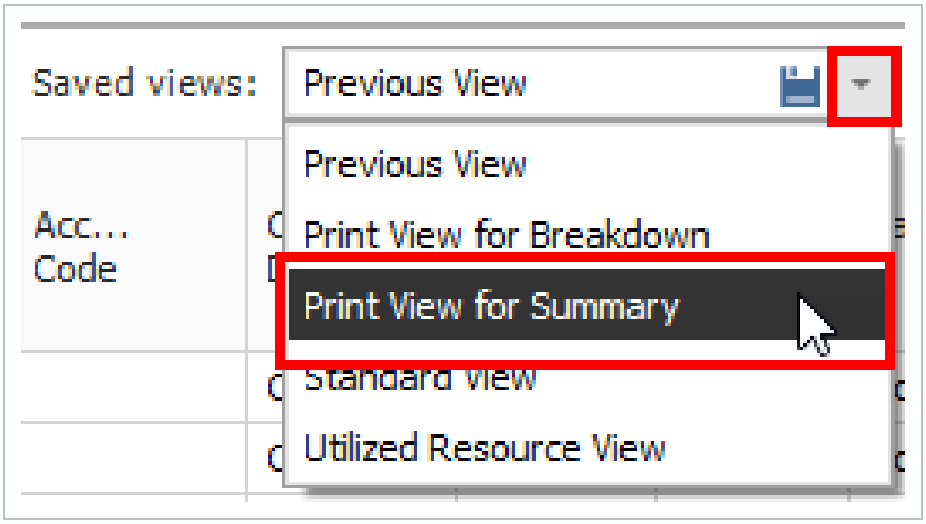
The following step by step example will walk you through creating a custom register report on resource utilization and saving it as a Saved View.

STEP BY STEP – CREATE A REGISTER REPORT

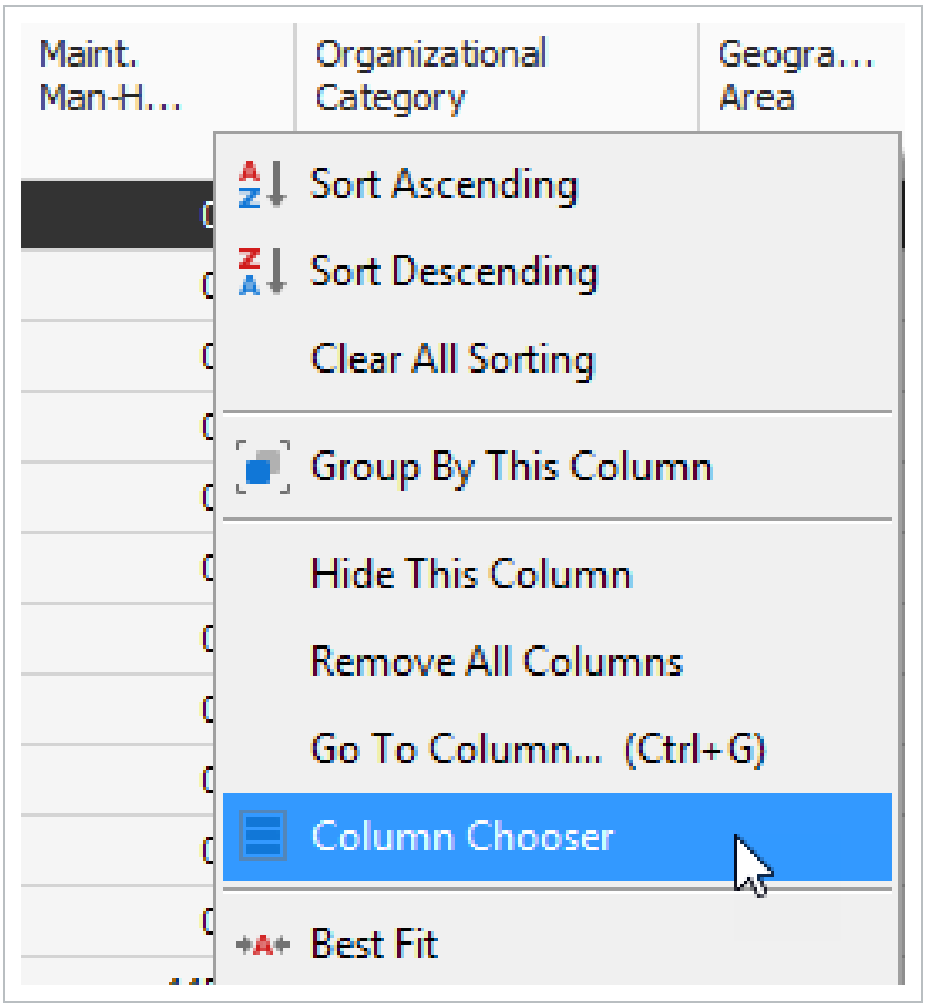
1. Open the **Training Job** and select **Setup** tab, then select the **Resource Rates** drop-down list.



2. From the drop-down list, select **Labor**.
3. From your Saved Views drop down menu on the Resource Rate Register, select the **Print View for Summary** view.



4. Notice this view includes utilization hours
5. Right-click on a column header and select **Column Chooser**.



6. From the Customization window, drag-and-drop the **Minority Percent, Unique Sales Tax, (Scale 2)**, and **Maint. Man-Hour Factor** columns into the register.
7. Close the Customize window.
8. Sort the **Utilization Count** column by clicking on the column header twice so that you see the bars descending.

- This sorts your items so the most utilized resources are at the top

Resource Code	Utilization Count	Maint. Man-H...	Organizational Category
+ LL2	8,946.59	0.00	Laborer
+ LO2	4,734.02	0.00	Operator
+ LT1	3,611.05	0.00	Truck Driver - Team...
+ LO1	1,640.00	0.00	Operator
+ LO4	1,484.63	0.00	Operator
+ LC2	1,188.73	0.00	Carpenter
+ LO3	889.33	0.00	Operator
+ LSSUPT	800.00	0.00	Supervision
+ LSSEC	800.00	0.00	Supervision
+ LSPE	800.00	0.00	Supervision
+ LL3	721.33	0.00	Laborer
+ LIW1	594.37	0.00	Iron Worker

9. Click on the **Saved Views** drop-down menu and select the **Save disc** icon to save the view.
10. Name the view **Labor Utilization View**, and then click **OK** to save the customized view.
11. From the **Actions** menu, select **Preview** to review the report before printing.

Labor Register

INEIGHT - PAUL TRIPPI
E101 - Training Job KL--Sample Training Job

Resource Code	Description	Utilization Count	Unit of Measure	Unique Sales Tax	Minority Percent	Maint. Man-Hour Factor
LO1	Operator Class 1	680.00	Hour	0.00	0.00	0.00
LL2	Laborer	590.00	Hour	0.00	0.00	0.00
LSSUPT	Project Superintendent	560.00	Hour	0.00	0.00	0.00
LSSEC	Secretary	560.00	Hour	0.00	0.00	0.00
LO3	Operator Class 3	220.00	Hour	0.00	0.00	0.00
LL3	Labor Foreman	200.00	Hour	0.00	0.00	0.00
LO4	Operator Foreman	110.00	Hour	0.00	0.00	0.00
LT1	Teamster	100.00	Hour	0.00	0.00	0.00

9.2.1 REGISTER REPORT OUTPUT SETTINGS

Within the Preview for a register report, there are several options to choose from to configure the output of your report.

9.2.1.1 PAGE SETUP

While in the Preview mode, selecting **File > Page Setup** provides setup options for the page format:

- Page Size (legal, letter, etc.)
- Paper Width & Height
- Orientation (portrait or landscape)
- Page Margins (left, right, top, bottom)

9.2.1.2 EXPORTING TO DOCUMENT

Using the Export function allows you to identify a Print range, Image quality, Password Security, and more. Selecting **File > Export Document** prints an Adobe Acrobat (*.pdf) report.

EXERCISE 9.2 – CREATE A CUSTOM REGISTER REPORT

You can configure the columns in your registers for reporting and run your own custom reports. Complete the following steps to configure and run a report from the CBS Register, using the Training Job:

1. Select **Estimate>Cost Breakdown Structure (CBS)**.
2. Under Saved Views, Select **CBS Simple View**.
3. Hide the **Optional Code column**.
4. Add back in the **Man-Hours (Total)** and **Man-Hours / UM** columns.
5. Now add back in the **Labor Total Cost, Owned Equipment Total Cost, and Materials Total Cost** categories for reviewing the estimate.
6. Save the View (create your own name for the view).
7. Select **Preview** to view the report.

You should end up with the following results

Cost Breakdown Structure (CBS) Register

ABC Contracting Inc
Training Job--Training Job - Maricopa County No. TM2924

CBS Position Code	Description	Forecast (T/O) Quantity	Unit of Measure	Man-Hours (Total)	Unit Cost	Labor Total Cost	Total Cost (Forecast)	Man-Hours otal incl. Maintenan	ed Equipment Total	Man-Hours/ UM	Materials Total Cost	Currency
	JOB	20.00	Mile	27,993.15	$306,883.14	$907,442.76	$6,137,662.81	28,438.44	$1,062,750.40		$3,393,700.70	U.S. Dollar
	Prime Bond	1.00	Lump Sum		$48,686.14	$0.00	$48,686.14		$0.00		$0.00	U.S. Dollar
	Price % Add-On	1.00	Lump Sum		$309,475.27	$0.00	$309,475.27		$0.00		$0.00	U.S. Dollar
	Job Financing	1.00	Lump Sum		$0.00	$0.00	$0.00		$0.00		$0.00	U.S. Dollar
	Indirect Cost Escalation	1.00	Lump Sum		$0.00	$0.00	$0.00		$0.00		$0.00	U.S. Dollar
	Direct Cost Escalation	1.00	Lump Sum		$11,026.79	$12,026.79	$11,026.79		$0.00		($1,000.00)	U.S. Dollar
	Indirect Cost Add-On	1.00	Lump Sum		$0.00	$0.00	$0.00		$0.00		$0.00	U.S. Dollar
	Job Management & Equipment	1.00	Lump Sum	2,400.00	$157,096.28	$91,176.28	$157,096.28	2,400.00	$65,920.00	2,400.00	$0.00	U.S. Dollar
	General Expense	1.00	Lump Sum	0.00	$4,200.00	$0.00	$4,200.00	0.00	$0.00	0.00	$0.00	U.S. Dollar
	Direct Cost Add-On	1.00	Lump Sum		$109,544.08	$15,676.56	$109,544.08		$19,450.89		$66,546.70	U.S. Dollar
1	**Mobilization**	1.00	Lump Sum	0.00	$75,000.00	$50,000.00	$75,000.00	0.00	$0.00	0.00	$25,000.00	U.S. Dollar
2	**Clearing & Grubbing**	10.00	Acre	0.00	$0.00	$0.00	$0.00	0.00	$0.00	0.00	$0.00	U.S. Dollar
3	**Unclassified Excavation**	50,000.00	Cubic Yard	3,964.29	$9.95	$110,467.00	$497,466.56	4,115.48	$302,999.56	0.08	$0.00	U.S. Dollar
3.1	Excavation, scrapers	50,000.00	Cubic Yard	1,250.00	$3.00	$33,170.48	$149,922.88	1,325.00	$116,752.40	0.03	$0.00	U.S. Dollar

Congratulations, you have completed this exercise!

LESSON 9 REVIEW

1. The _____ Report gives a good overview of how your price breakdowns by cost category.
   a. Estimate Summary
   b. PBS Summary
   c. Audit

---

2. The _____ Report is a very important report to run during bid review to make sure you didn't leave anything out of the estimate.
   a. CBS Details
   b. Audit
   c. Pay Item Summary

---

3. A best practice is to always set your Print output setting to **Preview** so you can review before printing.
   a. True
   b. False

LESSON 9 SUMMARY

As a result of this lesson, you can:

- Run reports from the Report menu
- Create and run reports from register forms

LESSON 10 – DATA REPRODUCTION

LESSON DURATION: 20 MINUTES

LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Create a job from an existing job or template
- Create a template
- Reproduce estimate data using the Bid Wizard
- Reproduce estimate data using copy/paste
- Add cost items to a job using the CBS Bid Wizard
- Utilize the Snapshot function

10.1 COPY AN EXISTING JOB

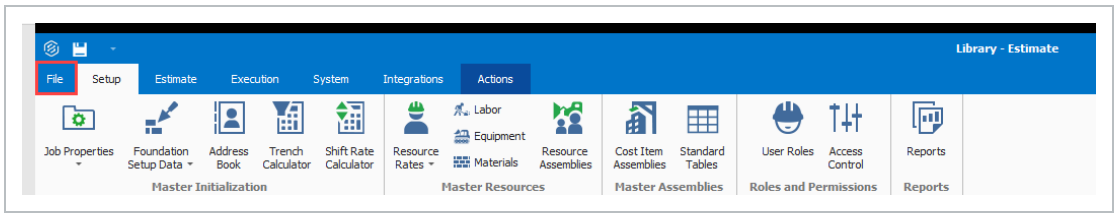
As you build an estimate, you may want to reuse pay items, cost items, or resources from a previous estimate. When you plan to reuse the majority of content within a job, you can simply make a copy of the existing job.

Using the **Create a new Job from… Existing Job** option on the Backstage View creates an exact replica of the existing job, including the job's properties, pay items, cost items, and resources.

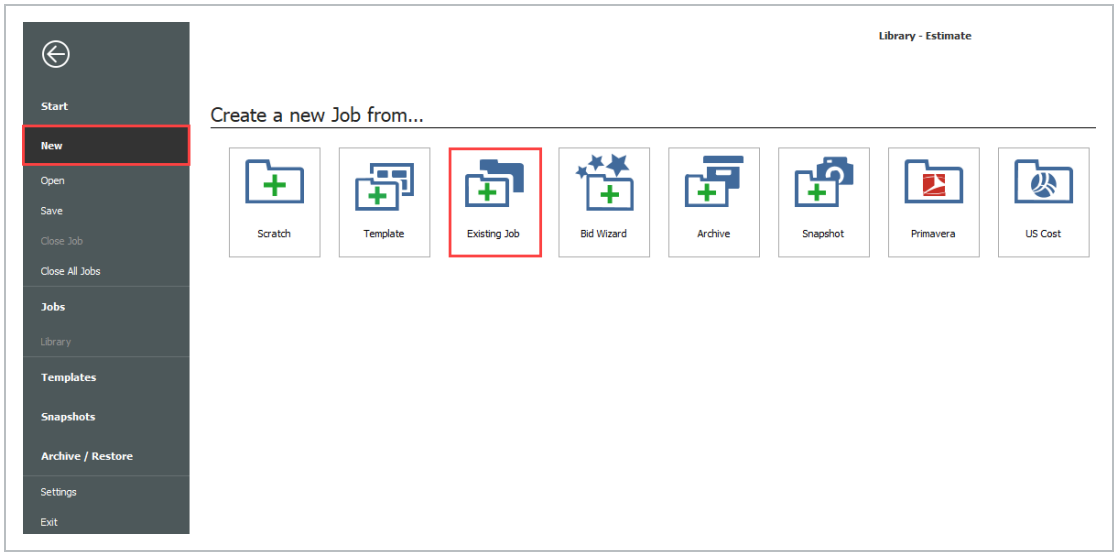
The following Step by Step walks you through how to make a copy of an existing job.

STEP BY STEP – COPY AN EXISTING JOB

1. Click the **File** tab on the **Estimate** landing page.

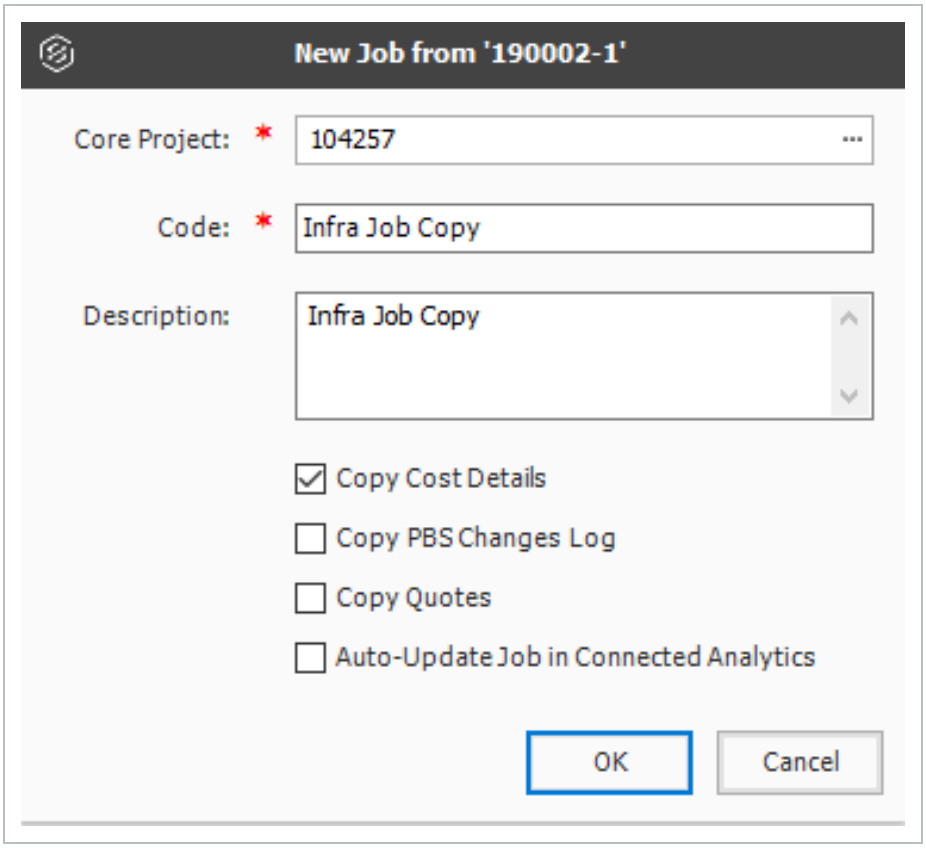


2. From the left side panel, select **New,** then select **Existing Job**.



3. The Job Register displays a list of your existing projects; select the Training Job and click **OK**.

4. On the New Job dialog, click the **ellipses** and select a Core Project.
5. In the Code field, type **Infra Job Copy** with your initials.
6. To copy the cost details from the existing job to the new job, verify that the **Copy Cost Details** checkbox is selected
   - If you wanted to copy just the cost item structure without cost details, you would uncheck the box.
7. Uncheck the check for copying the PBS Changes Log, Copy Quotes and Auto-Update Job in Connected Analytics.
8. Click **OK** to create the new job.



The new job opens with the Job Properties form active, so you can begin to modify the new job as needed. If you look through the tabs on the Job Properties form, you will find that it looks exactly like the job from which it was copied. Other forms, such as the Pay Item & Proposal Register and the CBS Register, also look the same in both jobs until you make modifications in one job or the other.

This is a very easy method for creating a new job, and it is a good choice if you want to copy an entire job. However, if you want to pick and choose which parts of a job to duplicate, the Bid Wizard is a better choice.

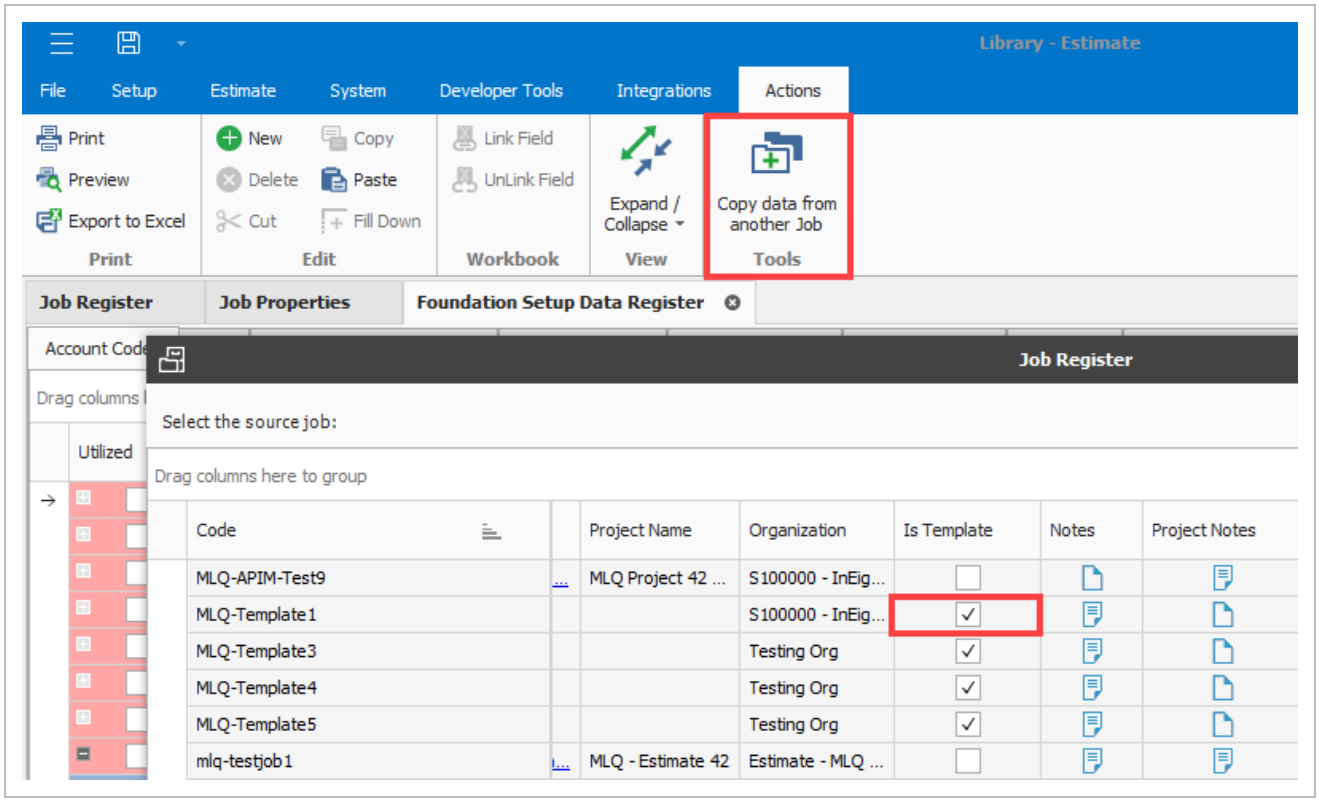
10.2 TEMPLATES

Job Templates provide you the ability to maintain a list of template jobs that can be used to create new jobs. As your company grows and increases the number of projects, the need to standardize the estimating process increases to ensure consistency and reduce the chance of information being overlooked.

In InEight Estimate you can create job folders and store them in a separate register as templates. This allows you to store cost items in master templates separate from the jobs in your Job Register.

You can copy the template's foundation setup data, such as account codes, tags, work breakdown structures, and work group tags to your estimate. In Setup > Foundation Setup Data > **Copy data from another Job**, select a template job to copy its foundation data.

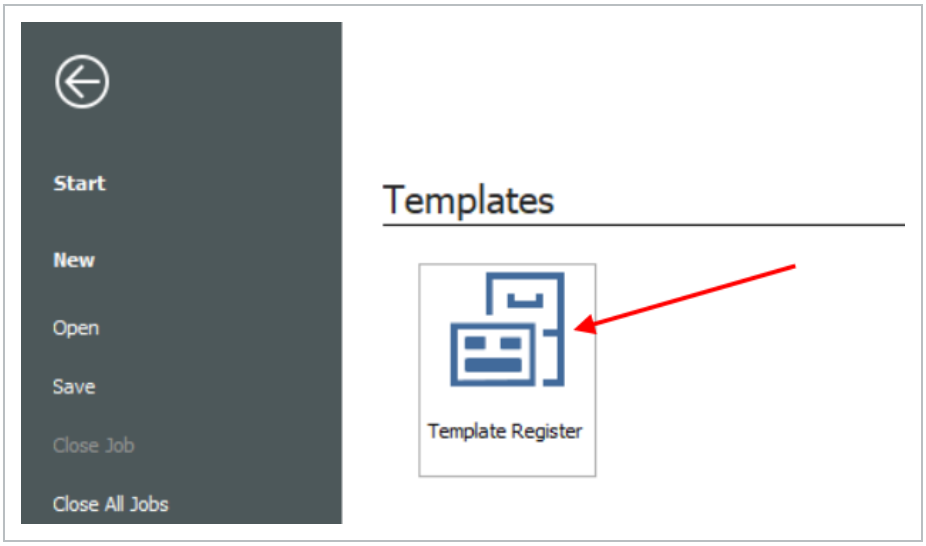
The Copy data from another Job action includes jobs marked as *Is Template*.



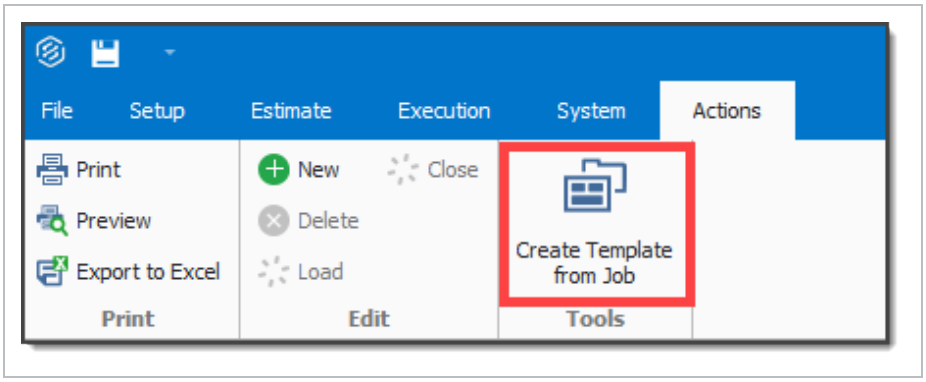
You can create templates from scratch or from existing job folders. The following steps walk you through how to create a new template from an existing job folder.

STEP BY STEP – CREATE A TEMPLATE

1. Click the **File** tab on the Estimate landing page.
2. From the left side panel, select **Templates**.
3. Under Templates, select the **Template Register.**

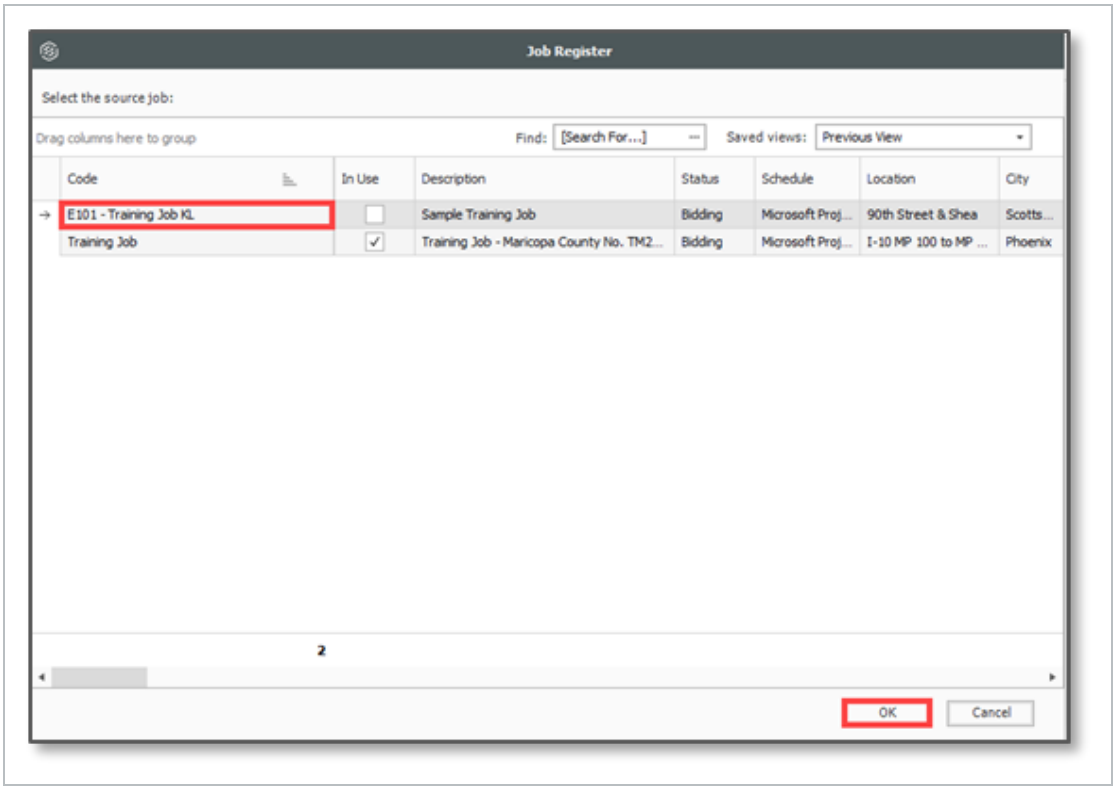


4. From the Actions tab, select **Create Template from Job**.



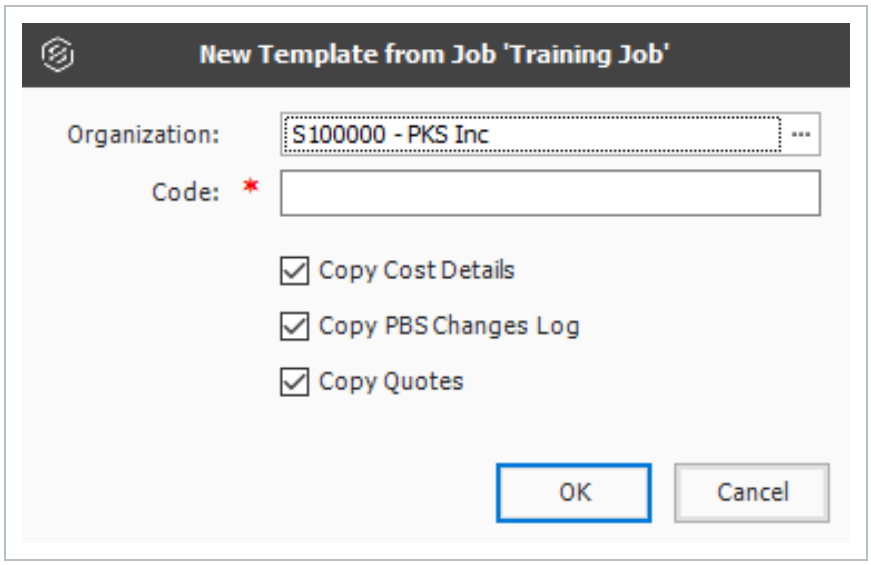
- The Job Register opens for you to select the source job for the template
- Assume that you want to make a template from your E101 Training Job

5. Select the **E101 Training Job with your initials**, then click **OK**.

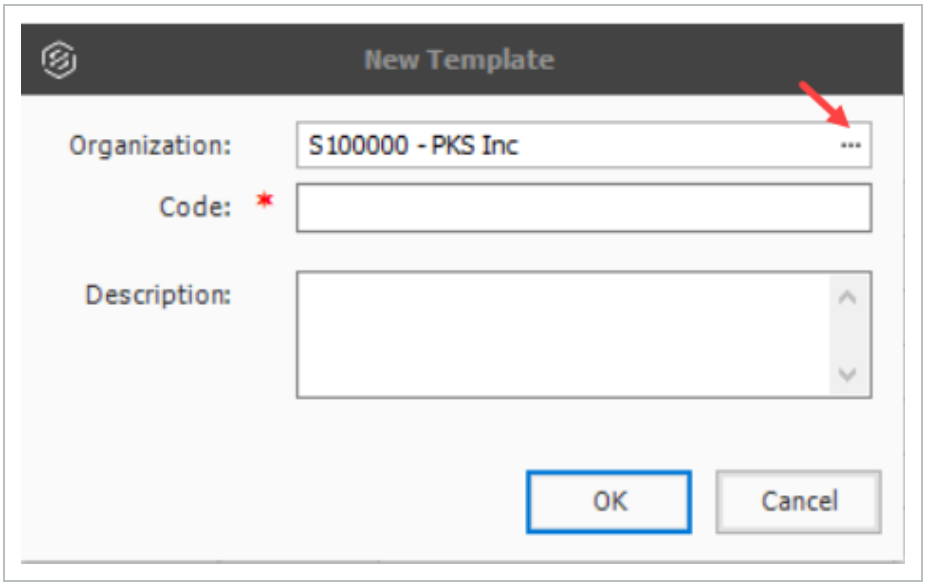


NOTE You cannot create templates from jobs that are published to Job Tracking.

- The New Template From Job 'Training Job' with your initials prompt appears.

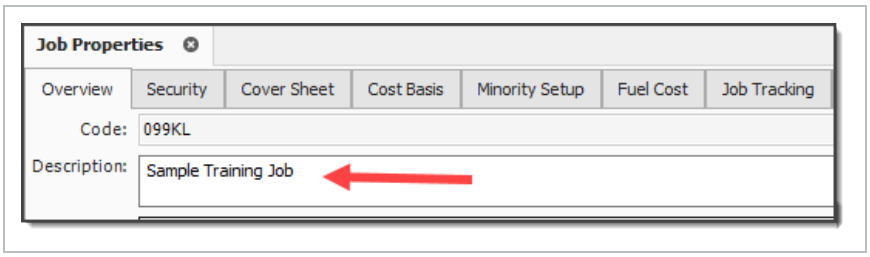


6. Click the ellipsis to the right of the Organization field.

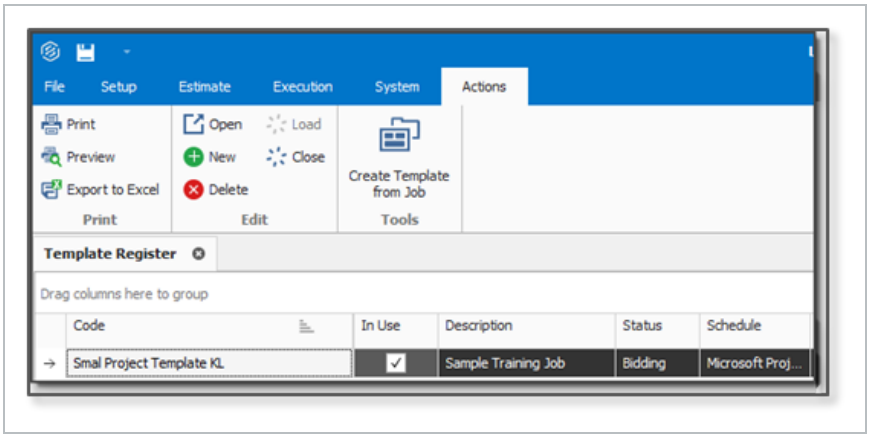


The Organization Register Library opens.

7. In the Organization Register Library, select an **organization** and then click **OK**.
8. In the Code field, type **Small Project Template[your initials]**.
   - Leave Copy Cost Details and Copy PBS Changes Log checked
9. Click **OK**.
   - The new template is created and opens to the Job Properties form
   - You can add the description in addition to the code for any new job you are creating from a template. This description is later added to the Overview tab of the new job on the Job Properties form



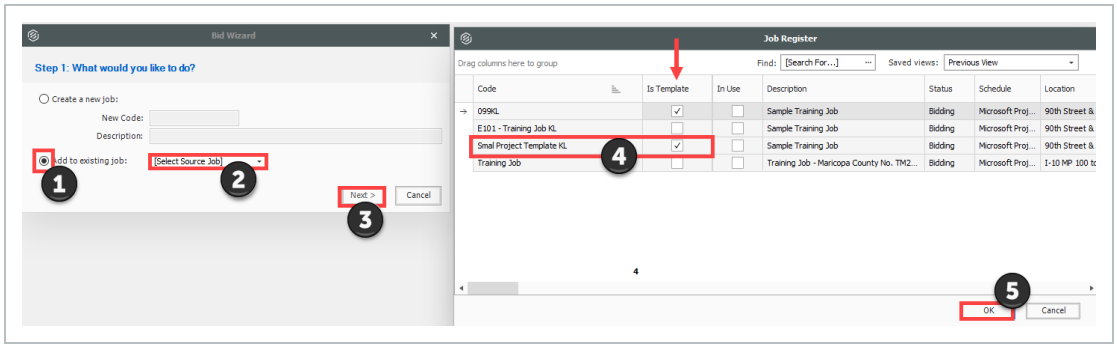
   - Back in the Templates Register, you can see the new template created



- Similar to copying an existing job, you can create a new job from a template from the New menu in the Backstage View.

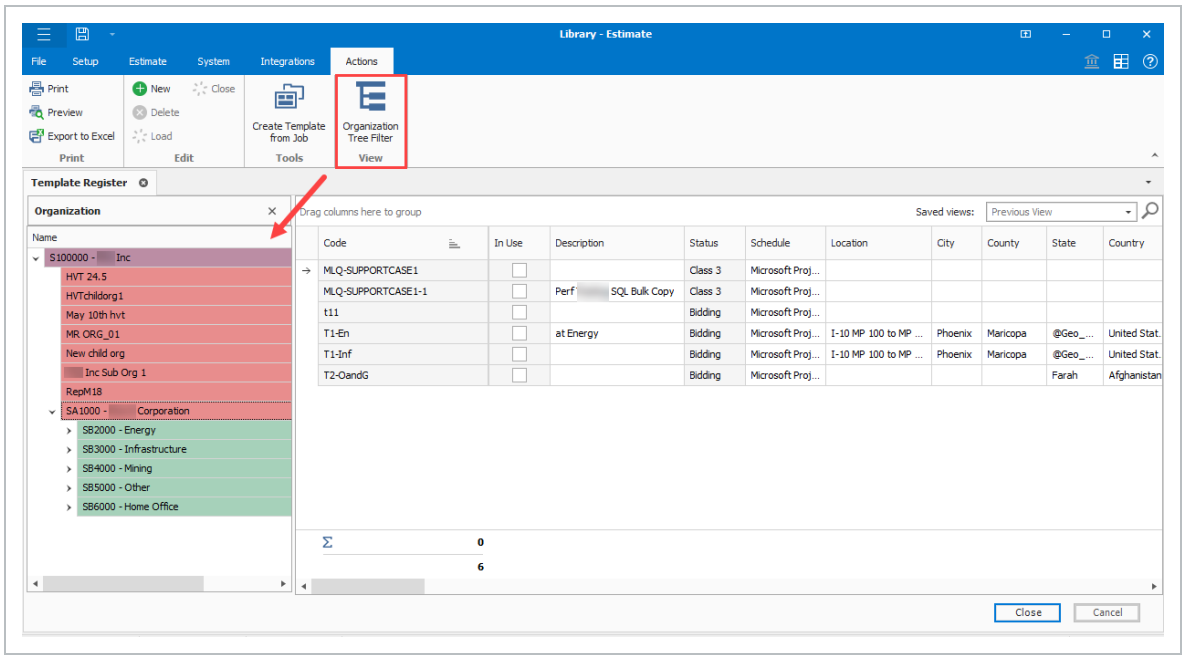
- You can also create a new job from a template from the New menu in the Bid Wizard.

10. Select **Add to existing job**
11. From Select Source Job, click the **dropdown** arrow
12. Click **Next**
13. Select a job that is shown as having a Template
14. Click **OK**

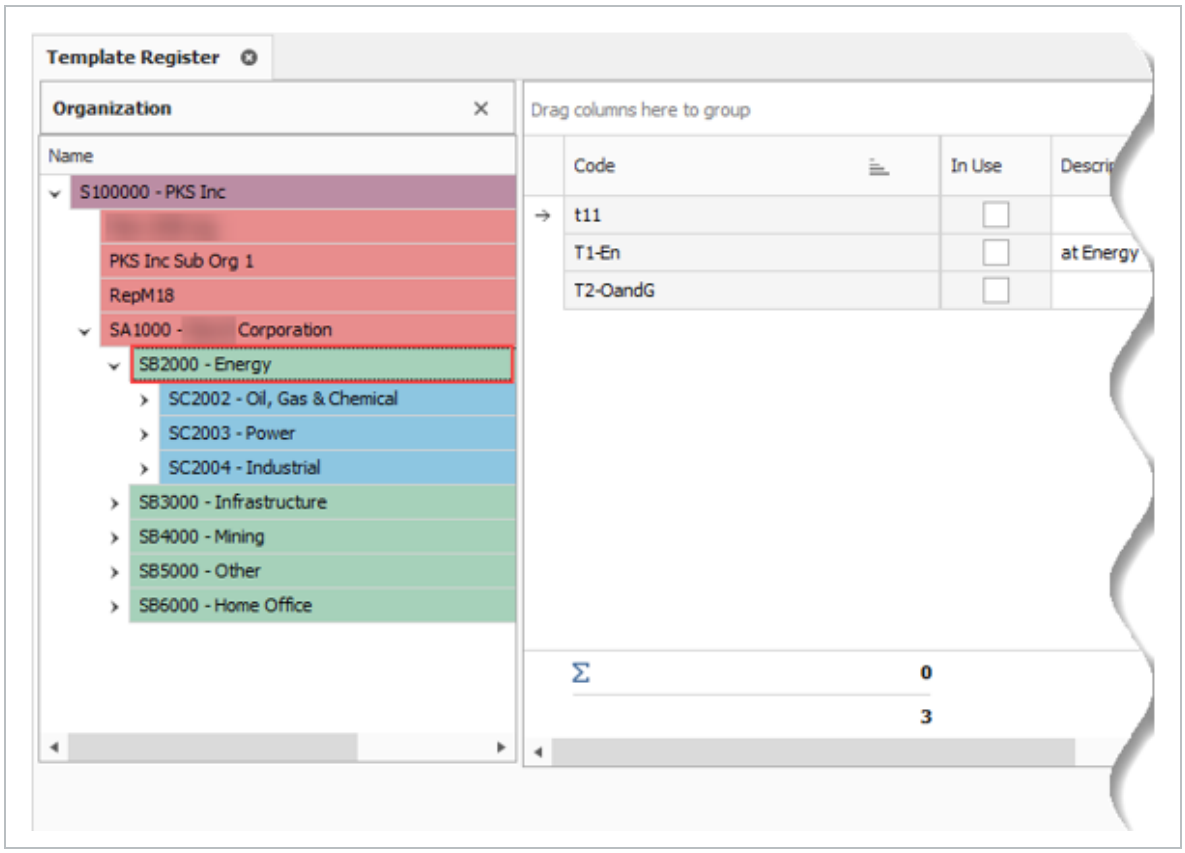


10.2.1 OBS FILTER TREE

The Template register's organization tree filter shows the templates assigned to a selected organization.



Just like the job register, the list of templates is filtered based on the selected organization. The primary difference between the OBS tree filter in the job and template registers is that estimates are associated with projects in the job register, and projects belong to an organization. In the template register, templates belong to an organization.



10.2.2 ARCHIVE AND RESTORE TEMPLATES

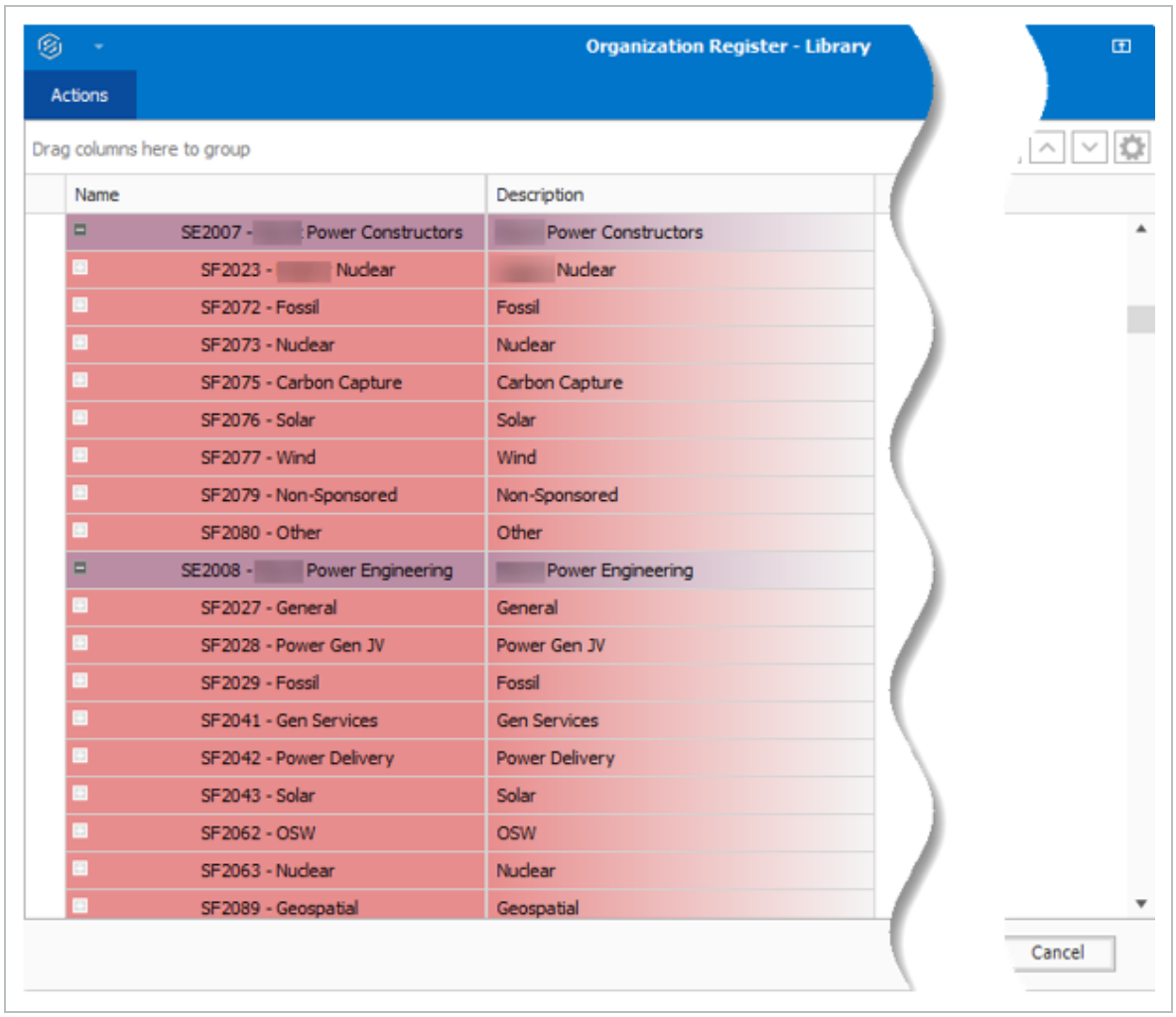
The templates feature gives you the ability to archive and restore templates, enabling templates to become portable. You can move templates between different environments. You can also backup the templates similarly to the Jobs Archive and Restore function.

STEP BY STEP – ARCHIVE AND RESTORE A TEMPLATE

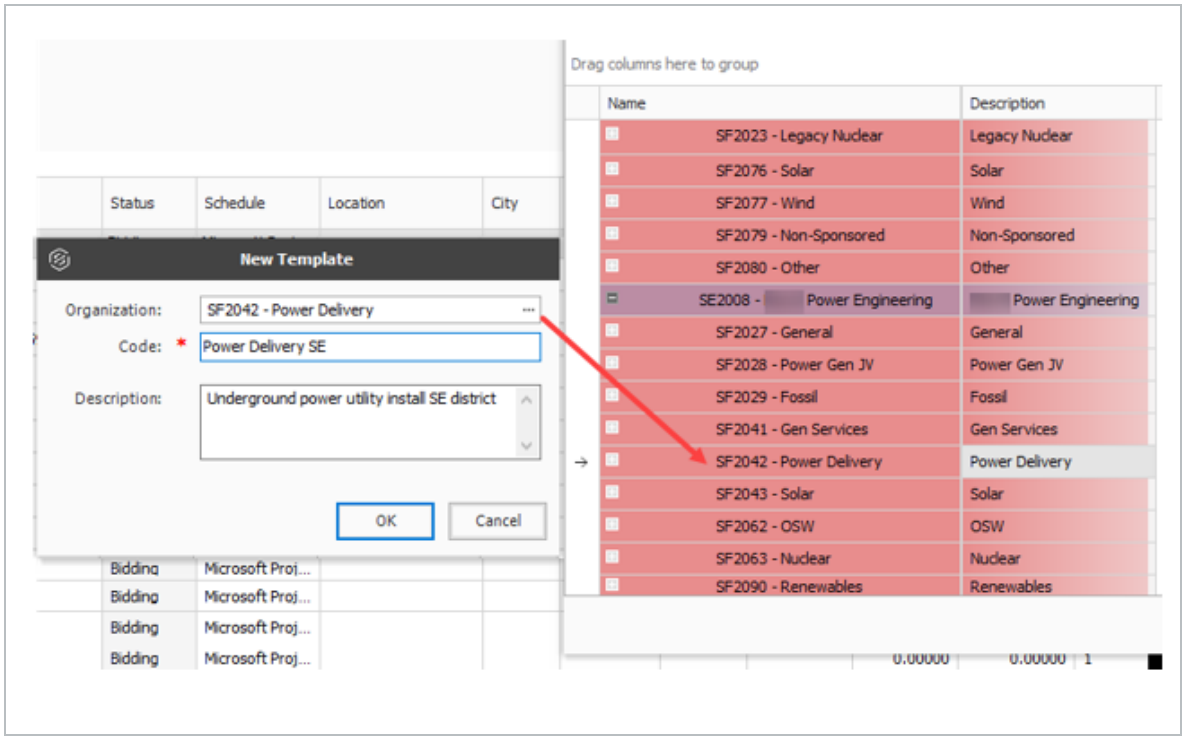
1. Click **File** to open the Backstage View.
2. Select **Archive / Restore**.
    - Several options appear for archiving and restoring your jobs, templates, and library
3. Select **Archive Template**.
    - The Template Register appears
4. Select the **Small Project Template [your initials]** template you previously made, then click **OK**.

5. When prompted to include attachments, click **Yes**.
    - The Save As window appears
6. Browse to where you want to save the job, then click **Save**.
7. Select **Restore Template** from the Archive / Restore page of the Backstage View to begin restoring the template.
8. Browse to the archived template and select it.
9. Click **Open**.
    - If the template already exists, a prompt will appear asking if you want to overwrite it
        - To overwrite it, select **Yes**
        - If you select **No**, you will be prompted to save it under a new Template Code

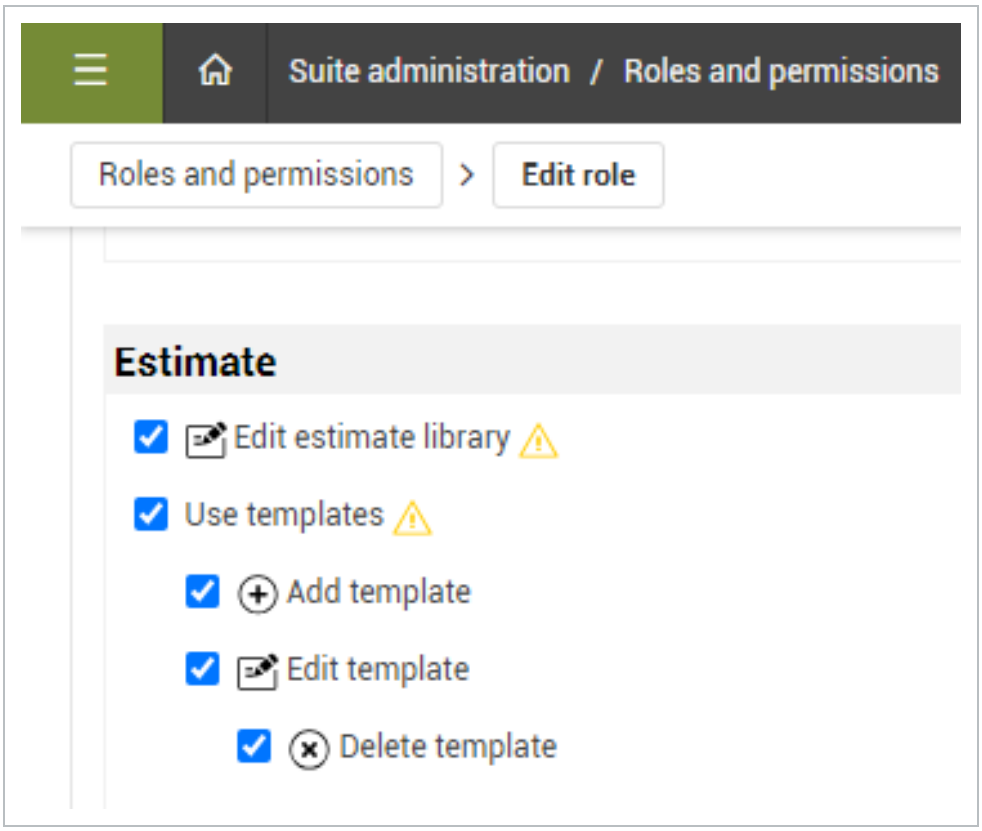
You can assign templates to specific organizational nodes in the OBS, grant permissions, and control user access for templates.



For example, you can assign a template to a specific node level in the OBS that is specific to Power Delivery. The OBS node structure assignment is useful for assigning estimators access to designated templates as determined by an Estimate administrator.

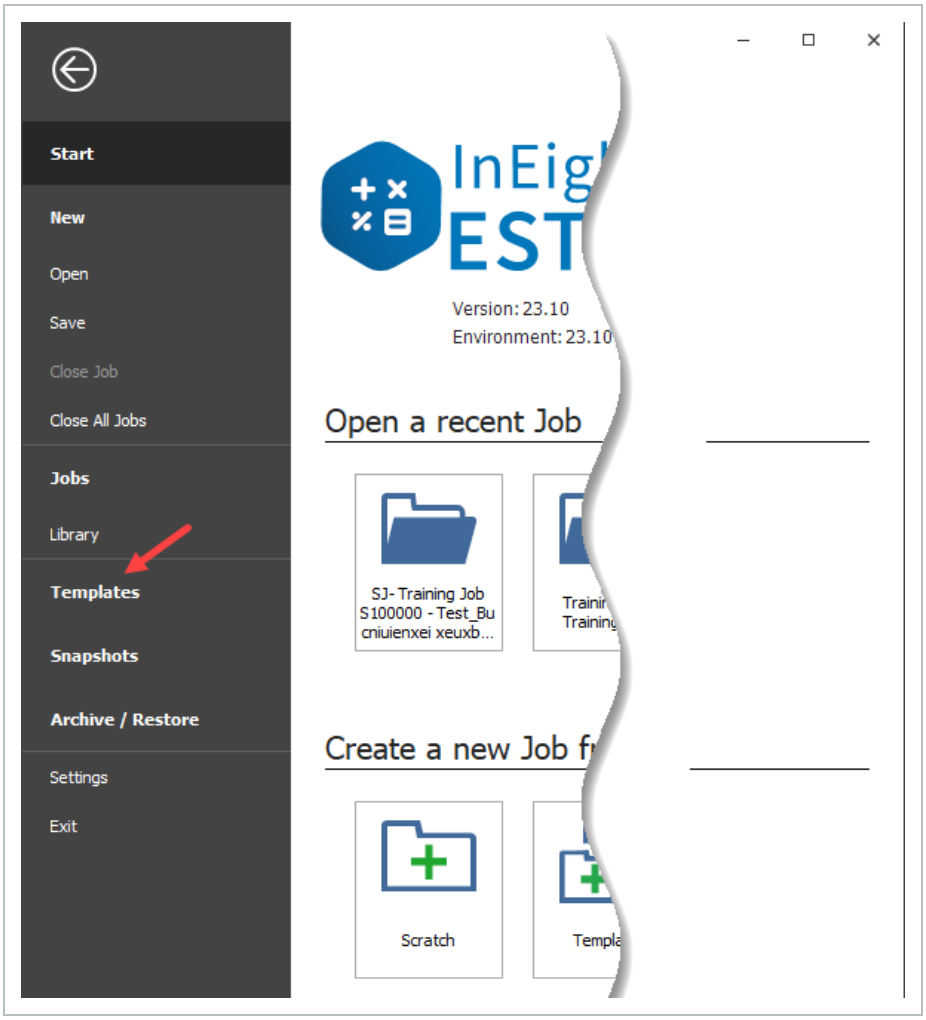


Estimators with the appropriate Estimate/template permissions in Suite Administration > Roles and Permissions > Master Data Libraries > **Estimate**, can use the templates in which they are assigned to in their designated OBS node.

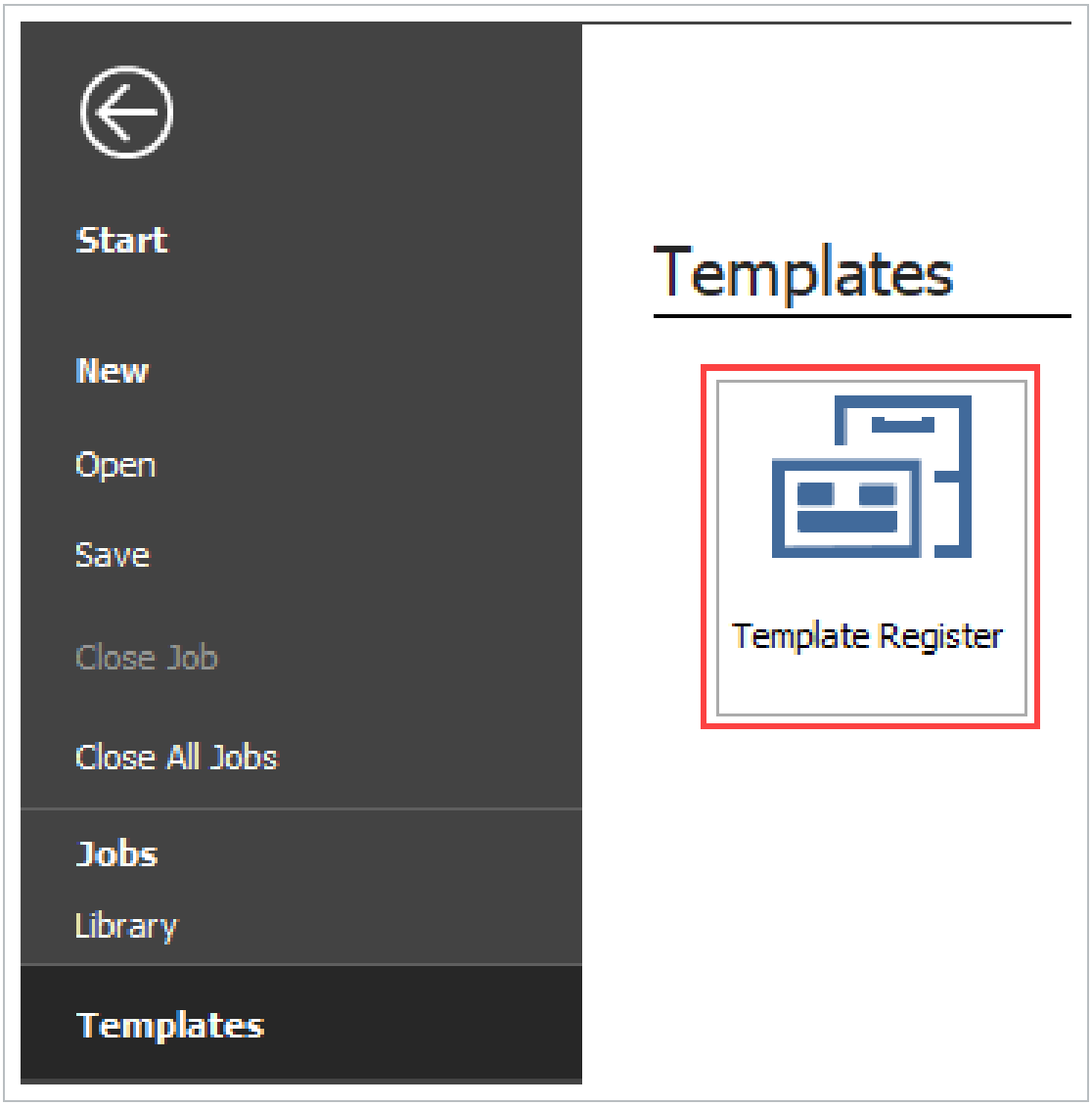

Suite administration / Roles and permissions
Roles and permissions
Edit role
Estimate
Edit estimate library
Use templates
Add template
Edit template
Delete template

STEP BY STEP – ASSIGN TEMPLATE TO OBS

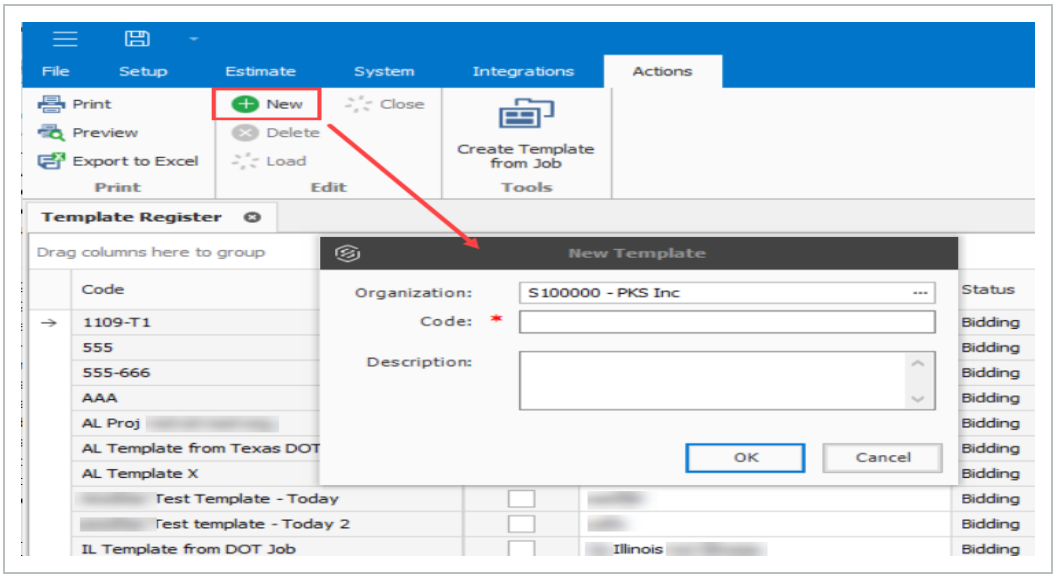
1. Open the **Training Job**, then select the **Templates**.



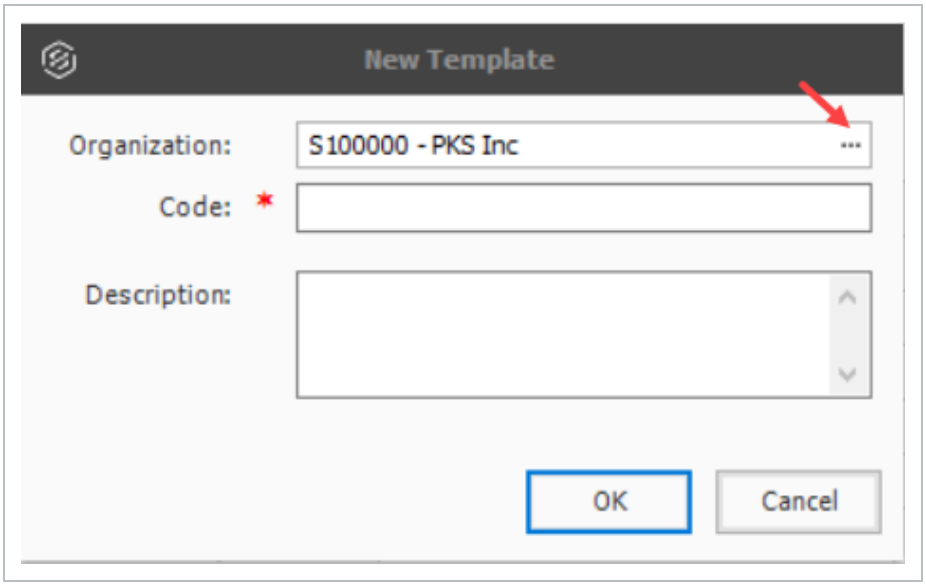
2. Select **Template Register**.


Start
New
Open
Save
Close Job
Close All Jobs
Jobs
Library
Templates
Templates
Template Register

3. Select **New**.

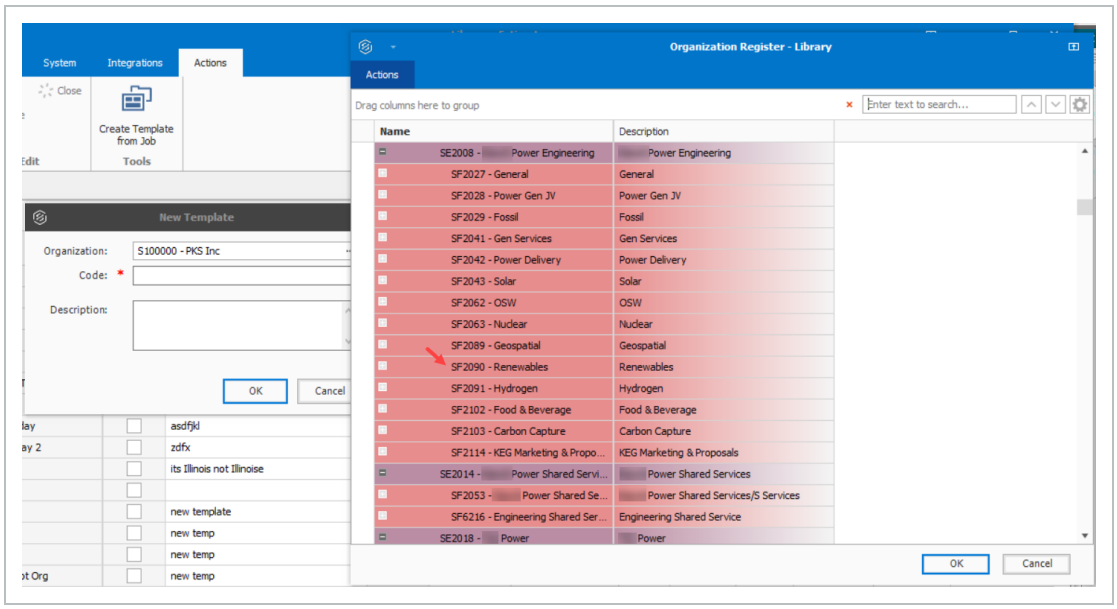


4. Click the **ellipsis** to the right of the Organization field.



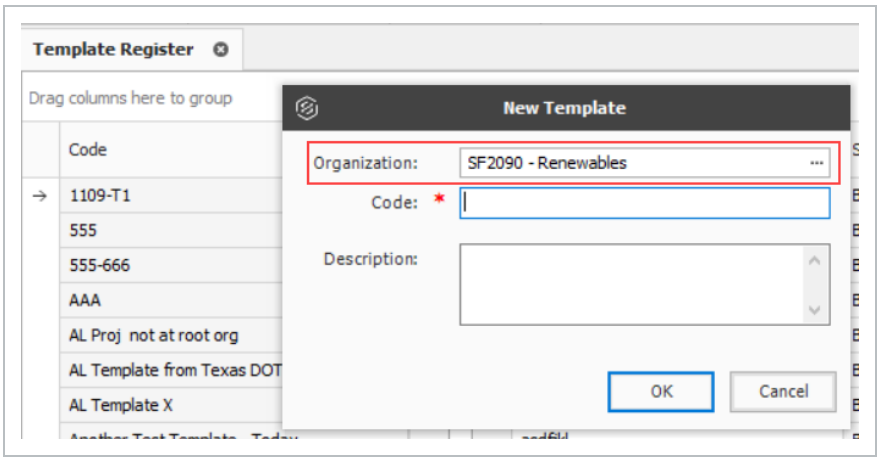
The Organization Register Library opens.

5. In the Organization Register Library, select **SF2090-Renewables**, and then click **OK**.



The new template will be set at the SF2090-Renewables node in the OBS. Users assigned to the SF2090-Renewables level or above in the OBS will be permitted to use this template when creating estimates.

6. The next step will be to create a new template code and a description to complete the new template creation process.



What's next: After the template is created you can start to create estimates using a template.

10.3 BID WIZARD

InEight Estimate's Bid Wizard is a powerful tool that can help automate the process of setting up estimates by copying information that already exists in other InEight Estimate job folders. The Bid Wizard can be used to create new projects, create a new job from an existing template, or to add to projects that are already underway.

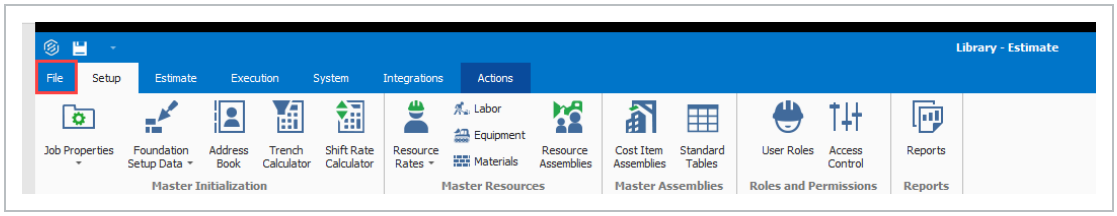
Rather than copying every part of an existing job, the Bid Wizard gives you more flexibility and control over which parts of a job you want to duplicate, e.g., pay items or cost items or both.

In most cases you will be copying cost items, but if you have a project with pay items that are commonly used, you can copy them into a new project. If you select pay items, you will be able to select cost items as well.

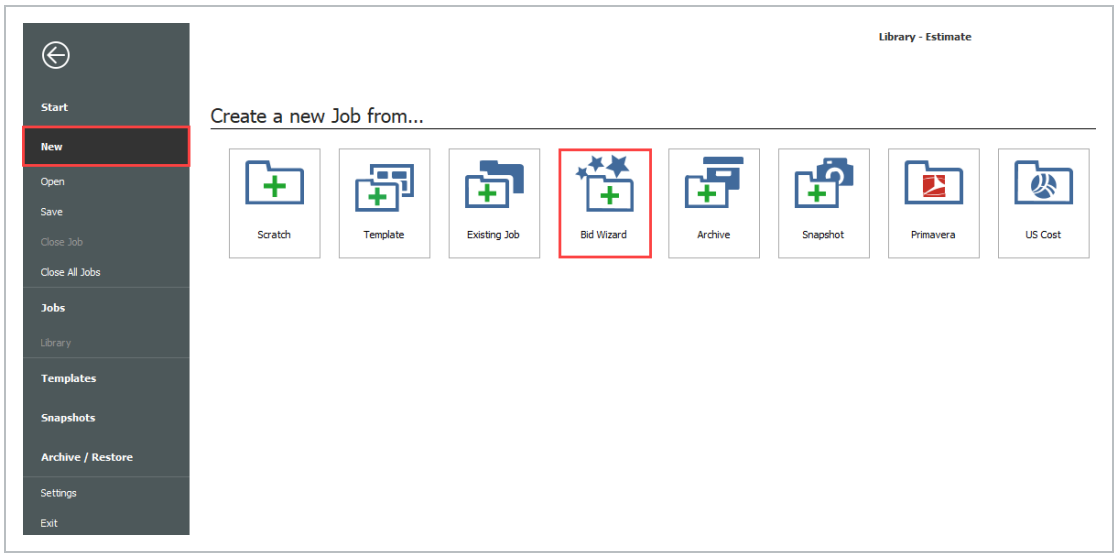
The following Step by Step walks you through how you can use the Bid Wizard to create a new job by importing pay items and their associated costs from an existing job.

STEP BY STEP – USE THE BID WIZARD

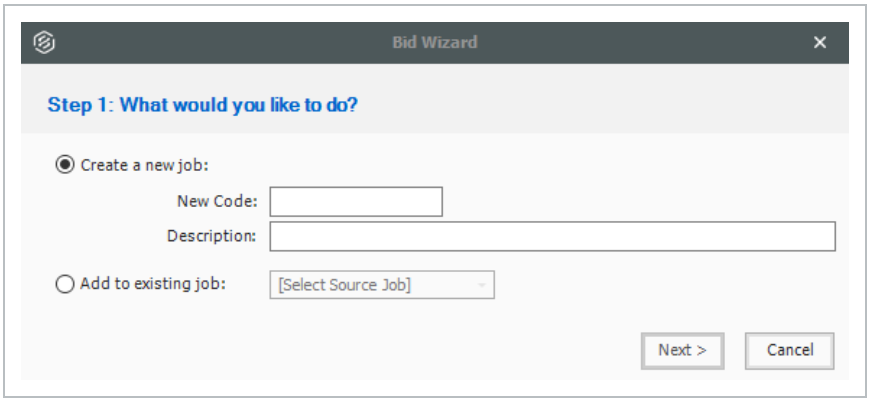
1. To open the Bid Wizard, click the **File** tab on the Estimate landing page.



2. From the left side panel, select **New**, then select **Bid Wizard**.

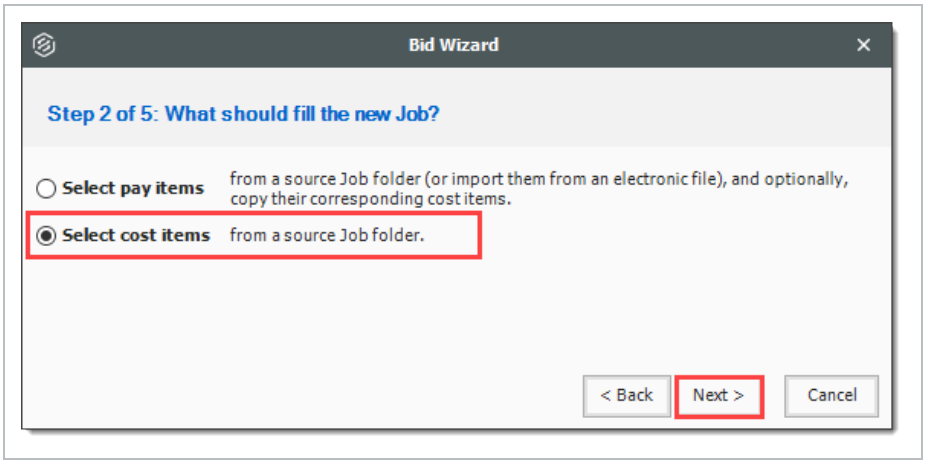


- The Bid Wizard – Step 1 dialog displays



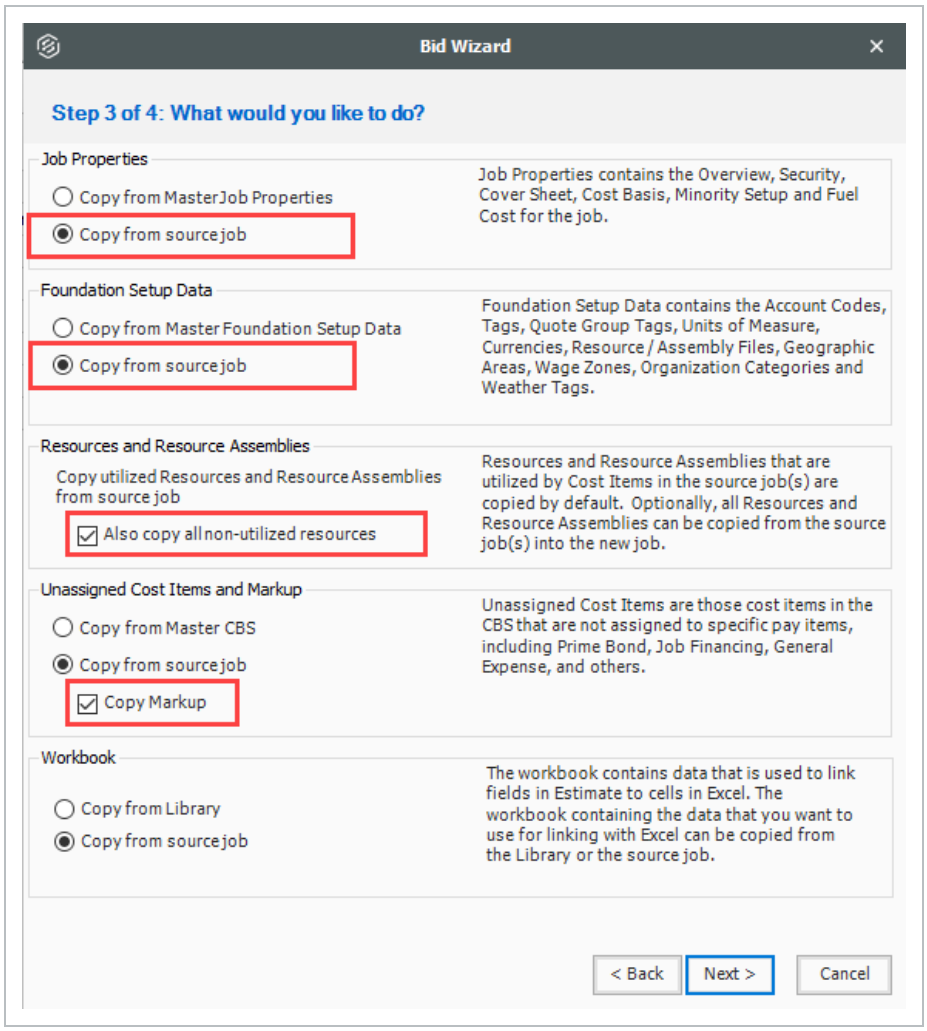
TIP Notice that you can either create a new project or add to an existing project.

3. Type **E101 Bid Wizard** (with your initials) in the New Code field.
4. Type **Bid Wizard Example** in the Description field.
5. Click the **Next** button.
    - The Bid Wizard – Step 2 dialog displays
6. Choose **Select cost items** and click **Next**.

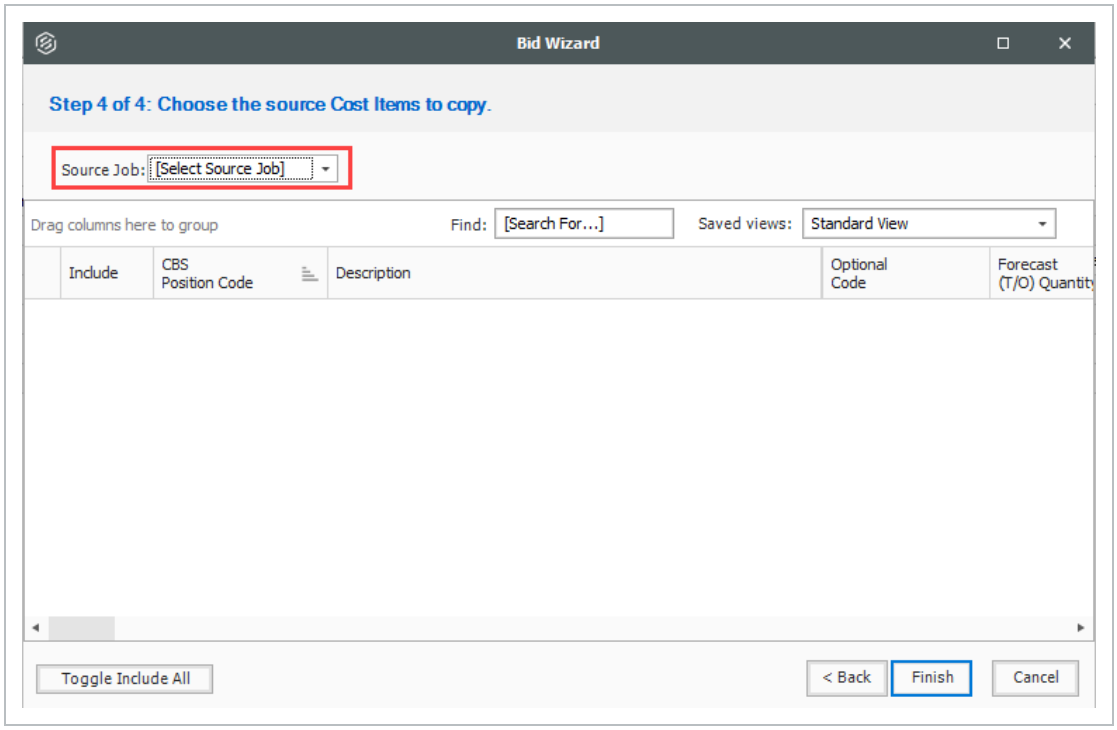


- The Bid Wizard – Step 3 of 4 dialog displays
- You use this step to indicate which source you want to pull your setup data from (the library or your source job)

7. For all selections, select **Copy from source job**.
8. Check the **Also copy all non-utilized resources** checkbox.
9. Select **Copy from source job** under Unassigned Cost Items and Markup, and the **Copy Markup** box is automatically selected.

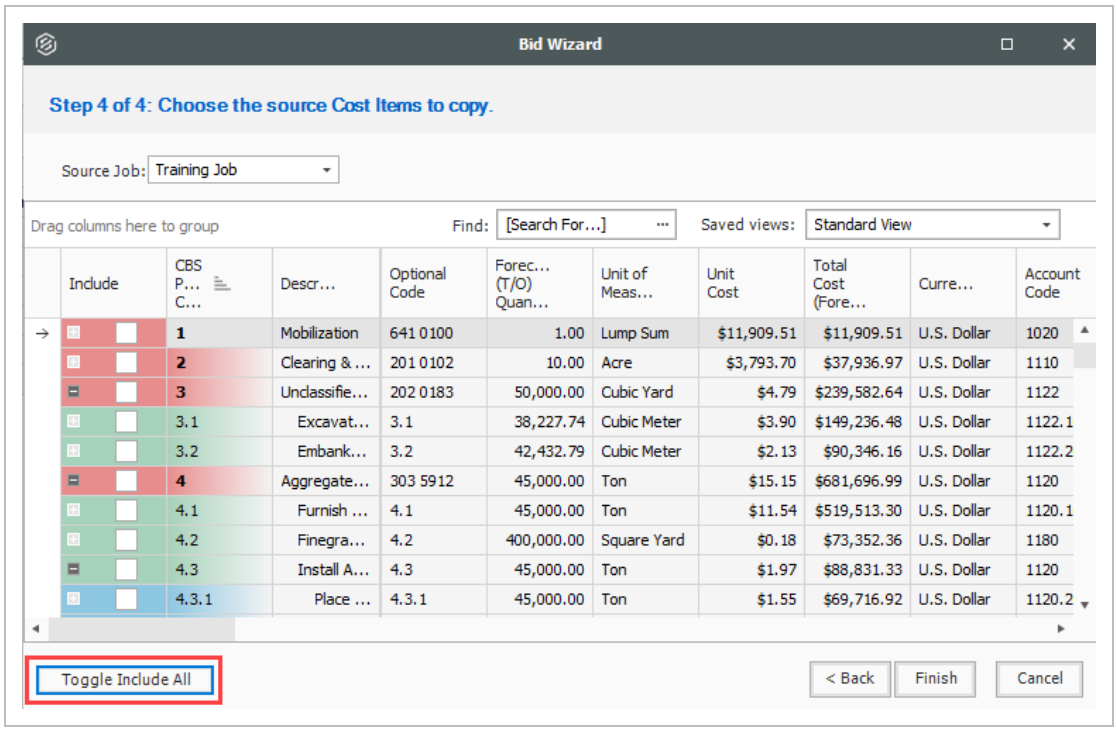


10. Click **Next**.
    - The Bid Wizard – Step 4 of 4 dialog displays
11. Click the **Source Job** drop-down arrow.



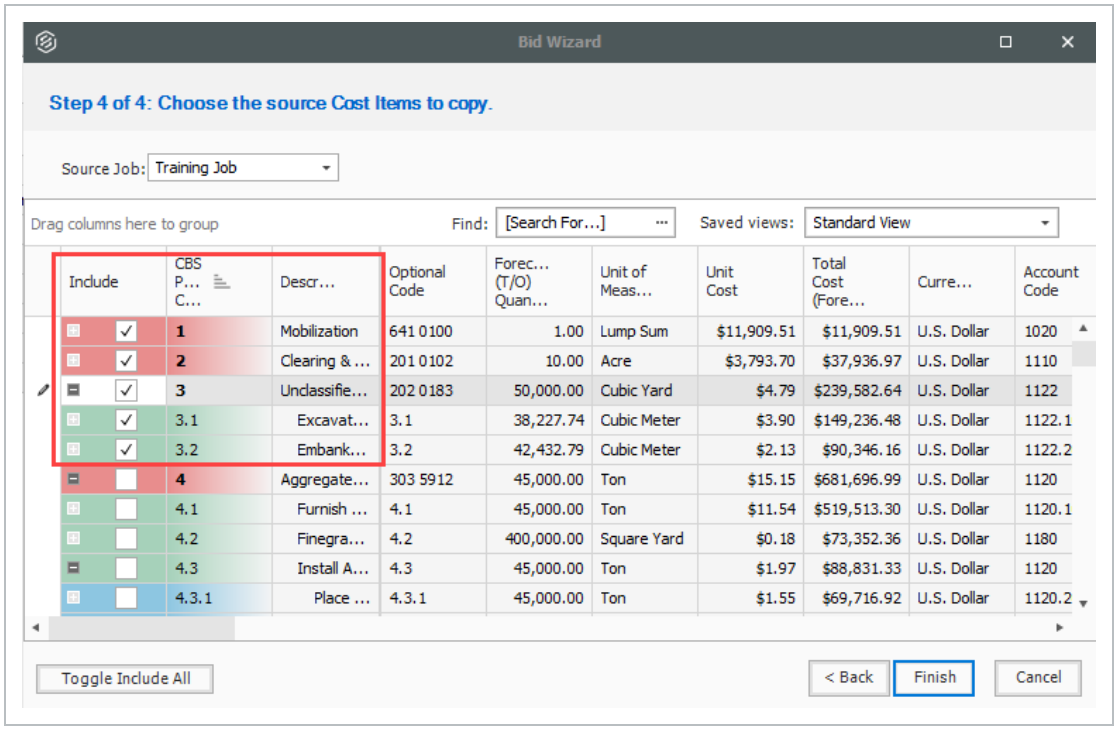
- The Job Register opens

12. Find and select **Training Job.**
13. Click **OK**.
    - This screen displays the cost items of the source job (Training Job). All items are automatically selected
14. Use the **Toggle Include All** button to exclude all selections.



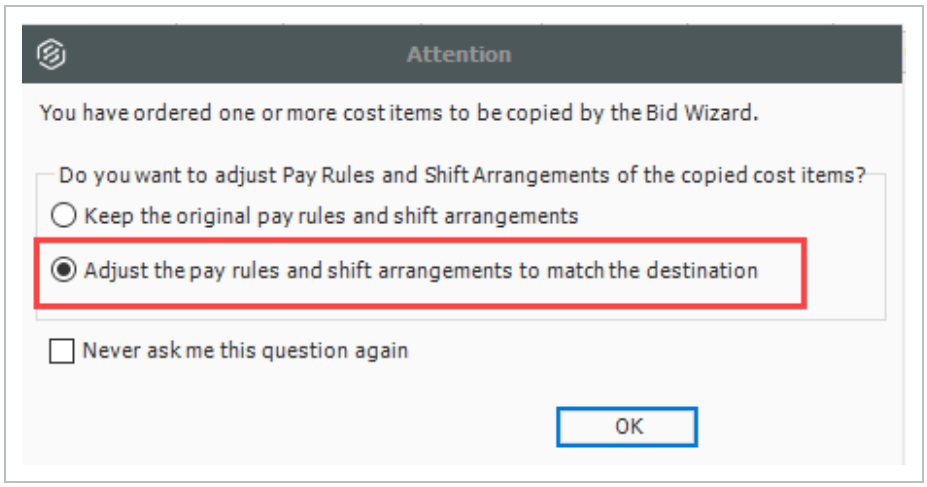
Include	CBS P... C...	Descr...	Optional Code	Forec... (T/O) Quan...	Unit of Meas...	Unit Cost	Total Cost (Fore...	Curre...	Account Code
	1	Mobilization	641 0100	1.00	Lump Sum	$11,909.51	$11,909.51	U.S. Dollar	1020
	2	Clearing & ...	201 0102	10.00	Acre	$3,793.70	$37,936.97	U.S. Dollar	1110
	3	Unclassifie...	202 0183	50,000.00	Cubic Yard	$4.79	$239,582.64	U.S. Dollar	1122
	3.1	Excavat...	3.1	38,227.74	Cubic Meter	$3.90	$149,236.48	U.S. Dollar	1122.1
	3.2	Embank...	3.2	42,432.79	Cubic Meter	$2.13	$90,346.16	U.S. Dollar	1122.2
	4	Aggregate...	303 5912	45,000.00	Ton	$15.15	$681,696.99	U.S. Dollar	1120
	4.1	Furnish ...	4.1	45,000.00	Ton	$11.54	$519,513.30	U.S. Dollar	1120.1
	4.2	Finegra...	4.2	400,000.00	Square Yard	$0.18	$73,352.36	U.S. Dollar	1180
	4.3	Install A...	4.3	45,000.00	Ton	$1.97	$88,831.33	U.S. Dollar	1120
	4.3.1	Place ...	4.3.1	45,000.00	Ton	$1.55	$69,716.92	U.S. Dollar	1120.2

15. Select the checkboxes to include **Mobilization**, **Clearing & Grubbing**, and **Unclassified Excavation**.
16. Notice that when selecting Unclassified Excavation, that cost item's subordinates are automatically selected



Include	CBS P... C...	Descr...	Optional Code	Forec... (T/O) Quan...	Unit of Meas...	Unit Cost	Total Cost (Fore...	Curre...	Account Code
✓	1	Mobilization	641 0100	1.00	Lump Sum	$11,909.51	$11,909.51	U.S. Dollar	1020
✓	2	Clearing & ...	201 0102	10.00	Acre	$3,793.70	$37,936.97	U.S. Dollar	1110
✓	3	Unclassifie...	202 0183	50,000.00	Cubic Yard	$4.79	$239,582.64	U.S. Dollar	1122
✓	3.1	Excavat...	3.1	38,227.74	Cubic Meter	$3.90	$149,236.48	U.S. Dollar	1122.1
✓	3.2	Embank...	3.2	42,432.79	Cubic Meter	$2.13	$90,346.16	U.S. Dollar	1122.2
	4	Aggregate...	303 5912	45,000.00	Ton	$15.15	$681,696.99	U.S. Dollar	1120
	4.1	Furnish ...	4.1	45,000.00	Ton	$11.54	$519,513.30	U.S. Dollar	1120.1
	4.2	Finegra...	4.2	400,000.00	Square Yard	$0.18	$73,352.36	U.S. Dollar	1180
	4.3	Install A...	4.3	45,000.00	Ton	$1.97	$88,831.33	U.S. Dollar	1120
	4.3.1	Place ...	4.3.1	45,000.00	Ton	$1.55	$69,716.92	U.S. Dollar	1120.2

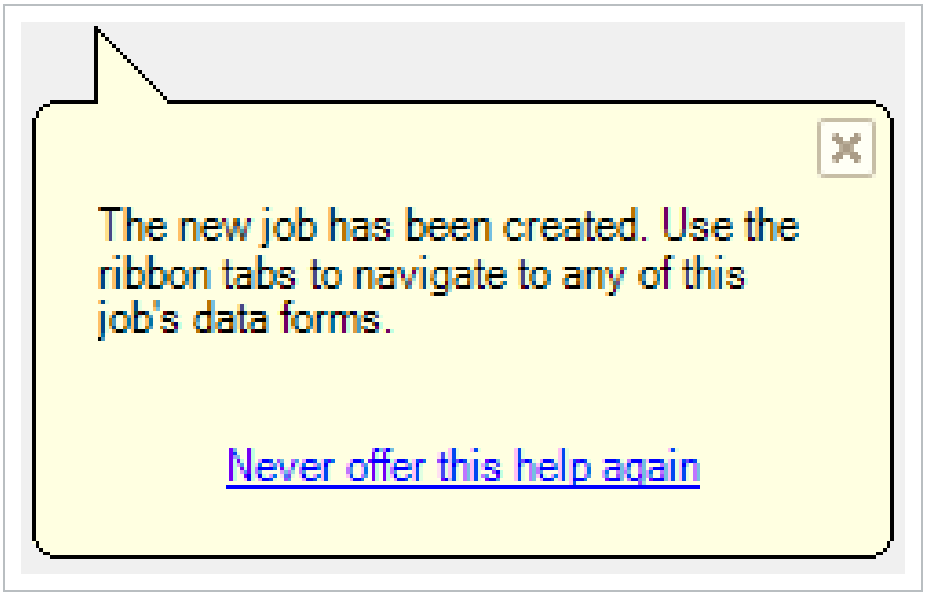
17. Click **Finish** to add the new job.
    - An Attention prompt appears asking, “Do you want to adjust Pay Rules and Shift Arrangements of the copied cost items?”
    - Typically, you will want to use the shifts and payment rules of your new destination job.
18. Select **Adjust the pay rules and shift arrangements to match the destination**.



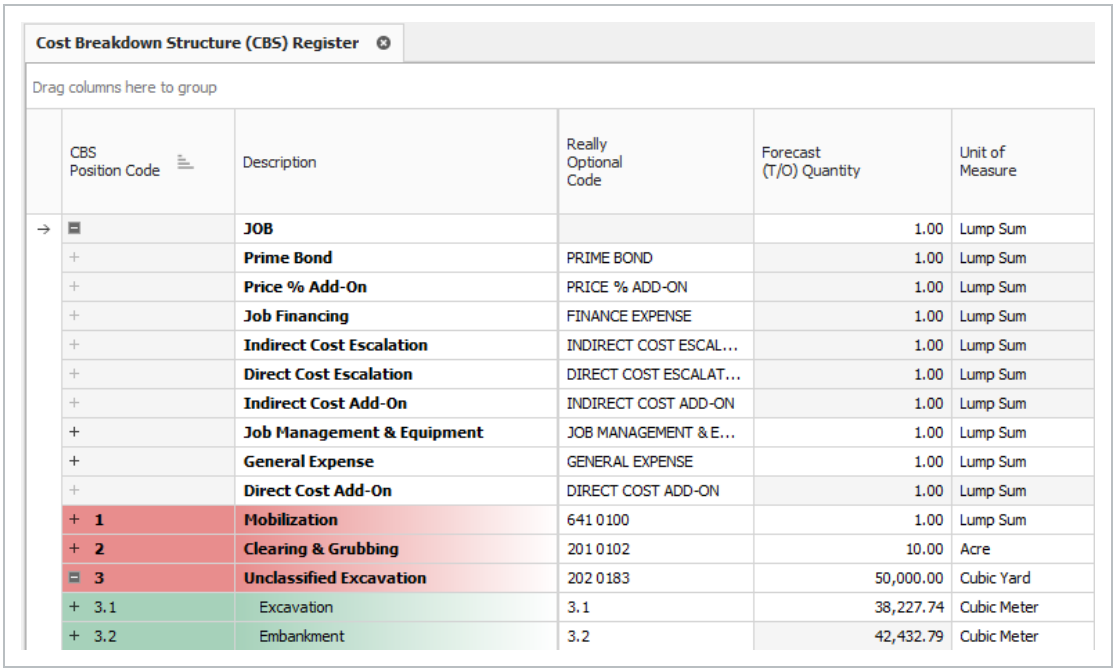
19. Click **OK**.

- A help bubble appears letting you know the job has been created, and that you can use the ribbon tabs on the Estimate landing page to open any form

20. Close the help bubble by selecting the **X** in the upper right corner.



21. Open the **Estimate > CBS** to see the three cost items that were brought in.



Cost Breakdown Structure (CBS) Register

Drag columns here to group

CBS Position Code	Description	Really Optional Code	Forecast (T/O) Quantity	Unit of Measure
	JOB		1.00	Lump Sum
	Prime Bond	PRIME BOND	1.00	Lump Sum
	Price % Add-On	PRICE % ADD-ON	1.00	Lump Sum
	Job Financing	FINANCE EXPENSE	1.00	Lump Sum
	Indirect Cost Escalation	INDIRECT COST ESCAL...	1.00	Lump Sum
	Direct Cost Escalation	DIRECT COST ESCALAT...	1.00	Lump Sum
	Indirect Cost Add-On	INDIRECT COST ADD-ON	1.00	Lump Sum
	Job Management & Equipment	JOB MANAGEMENT & E...	1.00	Lump Sum
	General Expense	GENERAL EXPENSE	1.00	Lump Sum
	Direct Cost Add-On	DIRECT COST ADD-ON	1.00	Lump Sum
1	**Mobilization**	641 0100	1.00	Lump Sum
2	**Clearing & Grubbing**	201 0102	10.00	Acre
3	**Unclassified Excavation**	202 0183	50,000.00	Cubic Yard
3.1	Excavation	3.1	38,227.74	Cubic Meter
3.2	Embankment	3.2	42,432.79	Cubic Meter

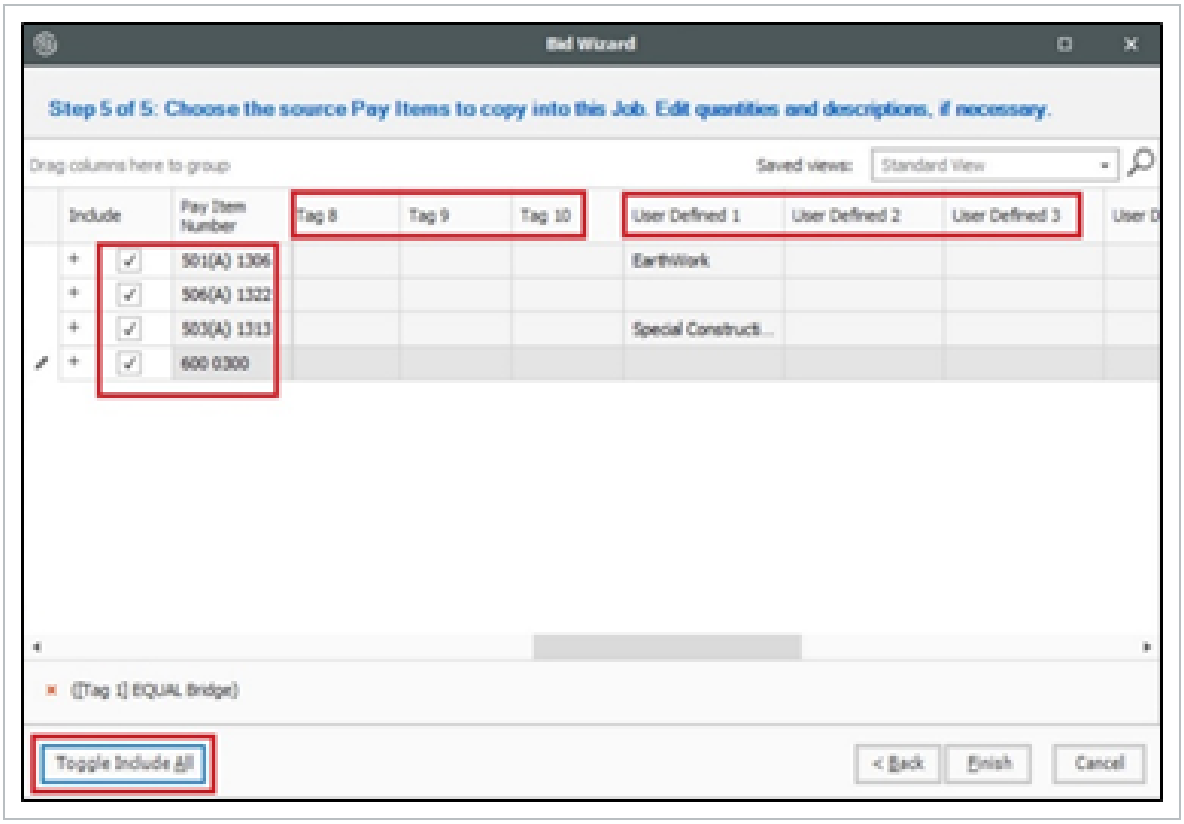
10.3.1 BID WIZARD UPDATES

While using the Bid Wizard, the Include option is left unchecked by default. A filter is applied to bring in pay items when using the Bid Wizard. The Toggle Include All button only selects the filtered list of items instead of all items.

When the filter criteria is modified, the selected items remain checked even if some of the items might not be visible in the view. When the view is changed, the selected items remain checked.

Tags and UDF fields are included in the **Bid Wizard Selection** register for the cost items and Pay Item & Proposal selection registers. This lets you filter the list of cost items based on a tag or UDF.

When you select the **Toggle Select All** button, only filtered items are included which allow you to include scopes of work relevant to your estimate without having to manually select all items needed.



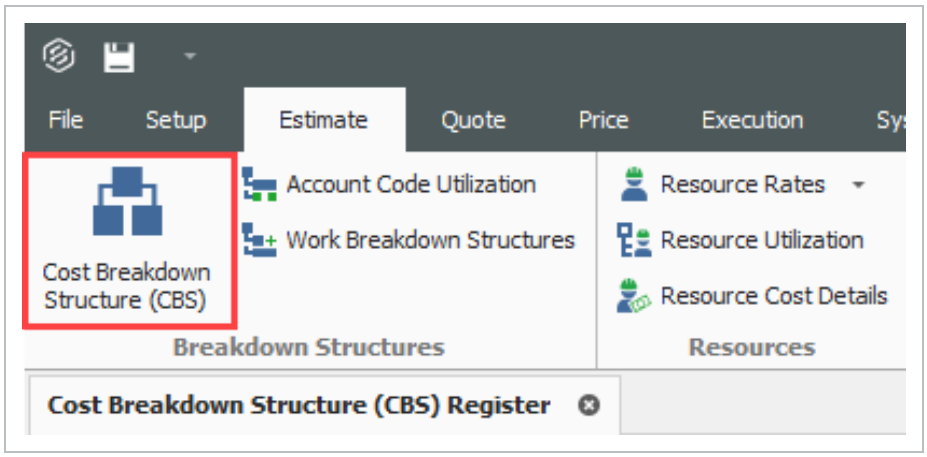
10.4 COPY ESTIMATE DATA USING EDIT COMMANDS

While the Bid Wizard is an efficient way to copy cost history into new projects, you may prefer to use edit commands such as copy and paste to bring cost history into your estimate.

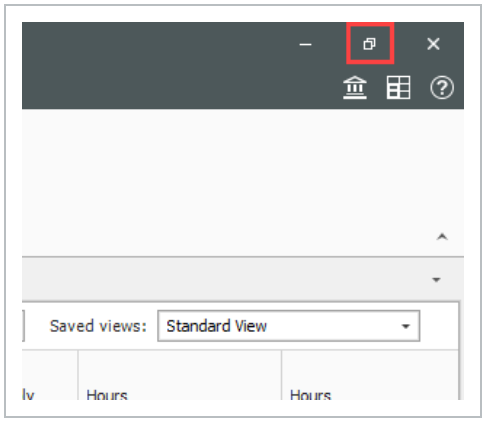
To copy and paste cost history from one job to another, it is beneficial to see the jobs side by side. The following steps walk you through the process.

STEP BY STEP – COPY ESTIMATE DATA USING EDIT COMMANDS

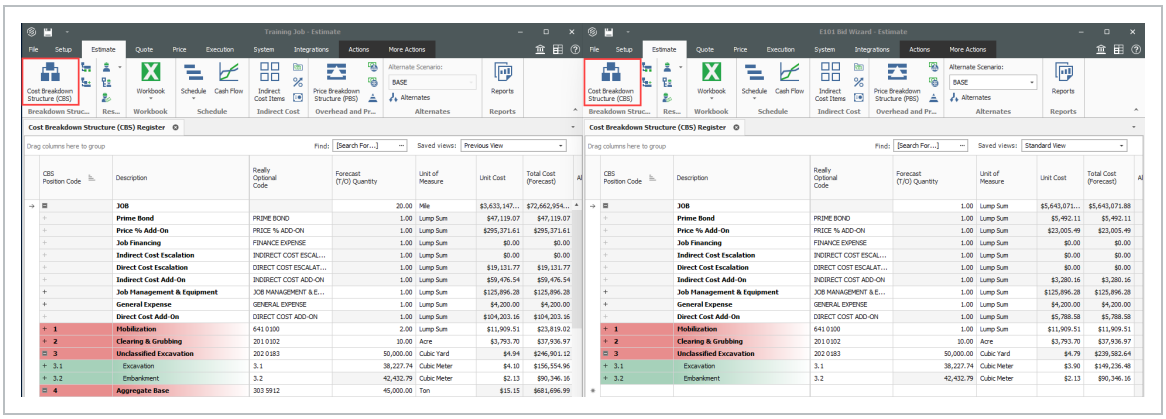
1. Click the **File** tab from the Estimate landing page and open the **E101 Bid Wizard** job you just created.
2. Open the **Training Job** (if you do not still have it open).
3. Make sure the CBS is open for both jobs by going to the Estimate menu and selecting **Cost Breakdown Structure (CBS)**.



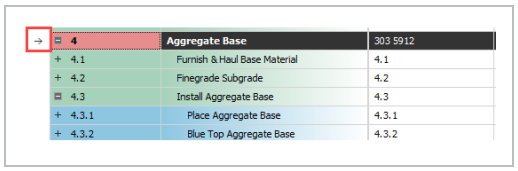
4. Since you have both jobs open and they are in their own application window, align them to be side by side by using the **minimize icons** of each job or utilizing Windows align functionality.



- Note that the window caption identifies the CBS Register for each job



5. On the CBS of the Training Job, click the row header on cost item **4 – Aggregate Base** and press **Ctrl+C** to copy the cost item.

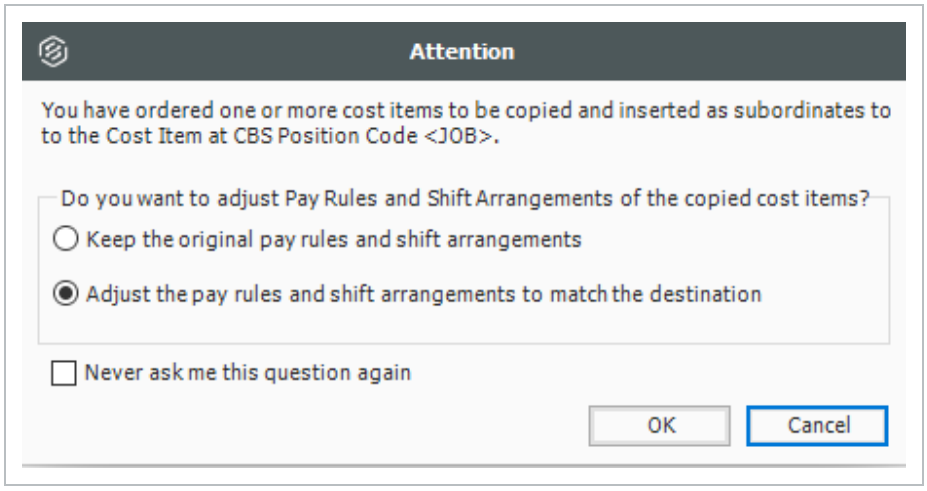


TIP When you copy a superior cost item, all of its subordinates are automatically copied.

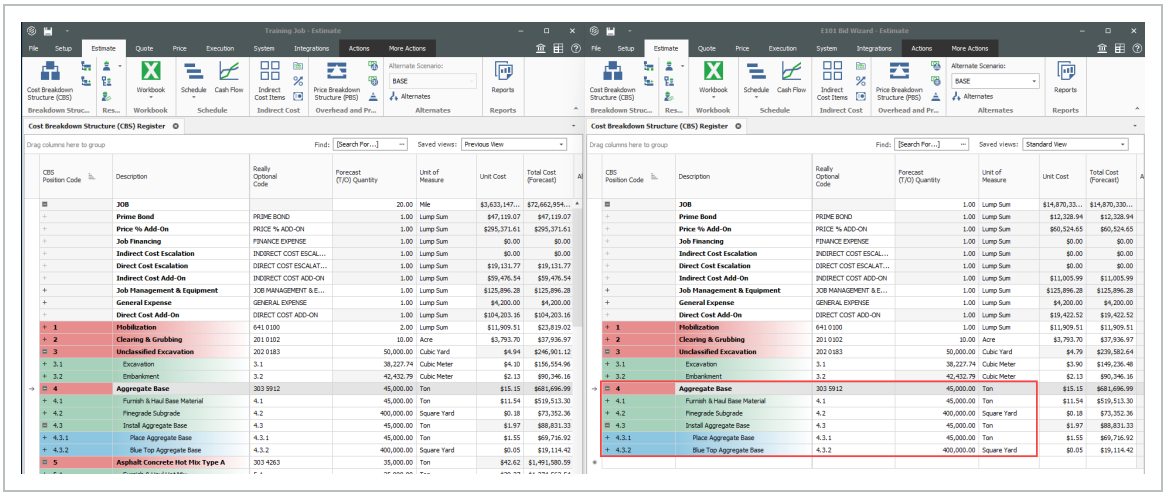
6. On the CBS of the E101 Bid Wizard job, click the row header on the first blank register row, and press **Ctrl+V** to paste the cost item.

+ 1	**Mobilization**	641 0100	1.00	Lump Sum
+ 2	**Clearing & Grubbing**	201 0102	10.00	Acre
− 3	**Unclassified Excavation**	202 0183	50,000.00	Cubic Yard
+ 3.1	Excavation	3.1	38,227.74	Cubic Meter
+ 3.2	Embankment	3.2	42,432.79	Cubic Meter

7. On the Attention dialog, select **Adjust the pay rules and shift arrangements to match the destination** and click **OK**.



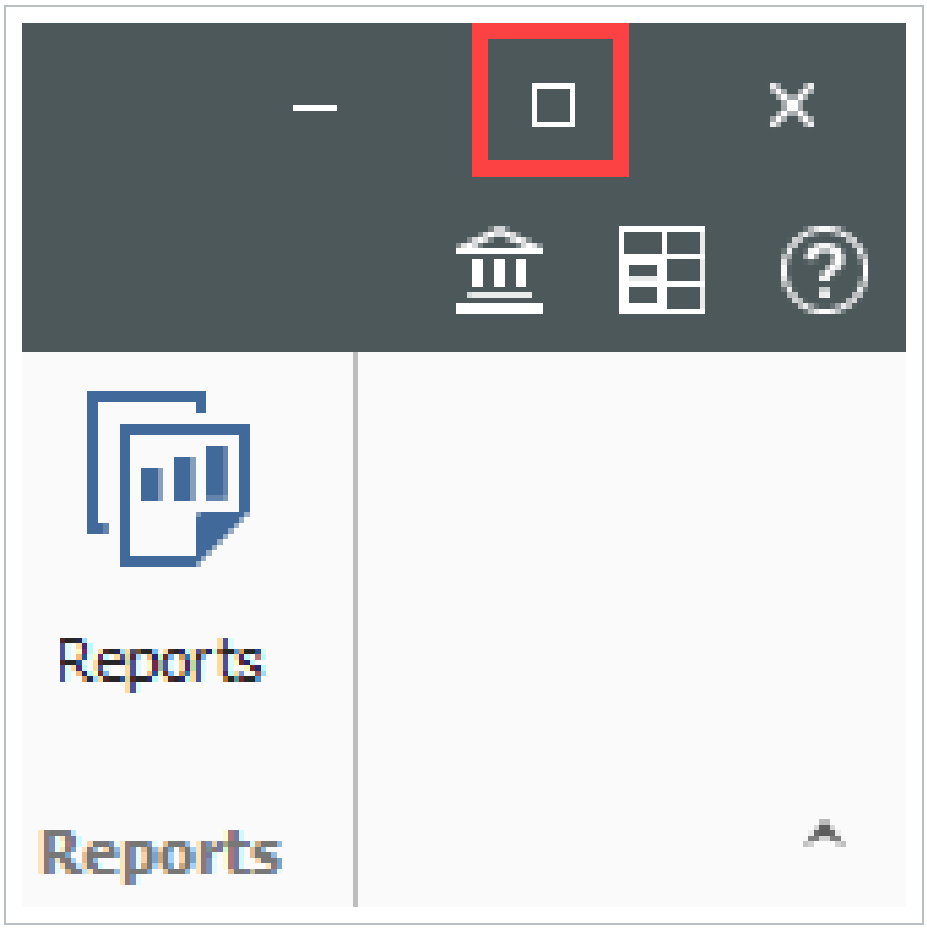
- You can see in the destination job's CBS that you've added the Aggregate Base cost item, along with its subordinate cost items and all cost and productivity detail



TIP	You can also drag and drop cost items from one CBS to another instead of copying and pasting.

TIP	Copied cost items are considered Job Overhead until they are assigned to a pay item

8. To go back to your full screen view of the E101 Bid Wizard job, select the maximize icon.

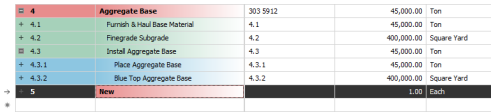


10.5 CBS BID WIZARD

You can also use the Bid Wizard to add cost items while you are in the CBS Register. The following steps walk through using the CBS Bid Wizard.

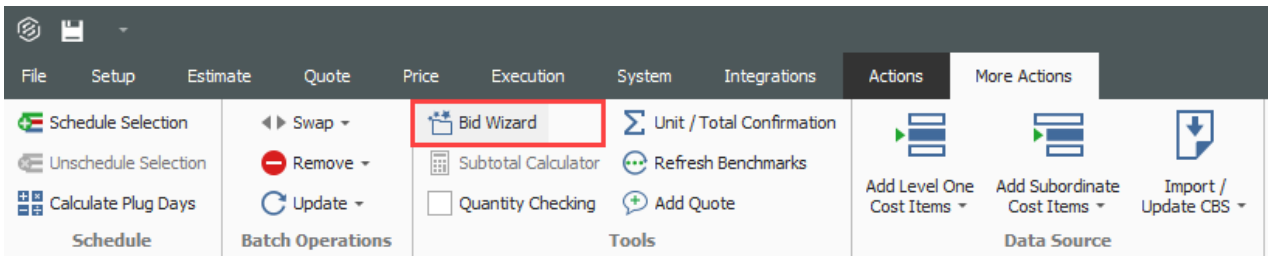
STEP BY STEP – USE THE CBS BID WIZARD

1. Click the **File** tab from the Estimate landing page and open the **E101 Bid Wizard** job you created.
2. From the **Estimate** tab, select **Cost Breakdown Structure (CBS)**.
3. Create a new cost item by typing **New** in the Description column on the bottom row of the CBS
4. Highlight the **New** row.



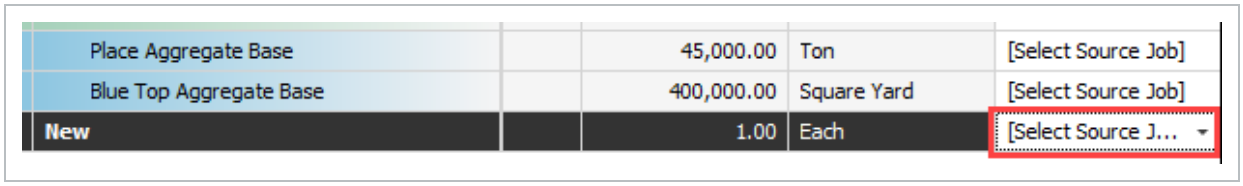
4	Aggregate Base	303 5912	45,000.00	Ton
4.1	Furnish & Haul Base Material	4.1	45,000.00	Ton
4.2	Finegrade Subgrade	4.2	400,000.00	Square Yard
4.3	Install Aggregate Base	4.3	45,000.00	Ton
4.3.1	Place Aggregate Base	4.3.1	45,000.00	Ton
4.3.2	Blue Top Aggregate Base	4.3.2	400,000.00	Square Yard
5	New		1.00	Each

5. To open the CBS Bid Wizard, click the **Bid Wizard** icon on the **More Actions** tab.



- The Bid Wizard window opens

6. Click in the **Source Job** column on the New cost item row.



Place Aggregate Base		45,000.00	Ton	[Select Source Job]
Blue Top Aggregate Base		400,000.00	Square Yard	[Select Source Job]
New		1.00	Each	[Select Source J...

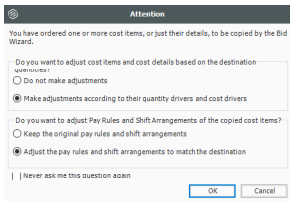
7. From the Source Job drop-down list, select **Training Job**.
8. Scroll to the right of the Source Job column and click in the **Source CBS Position Code** column on the New Cost item row.
   - A source CBS Register window appears
9. Select CBS position code **5 – Asphalt Concrete Hot Mix Type A** from the register.

Drag columns here to group Find: [Search For...] Saved views: Previous View

CBS Position Code	Description	Really Optional Code	Unit of Measure	Forecast (T/O) Quantity
4.2	Finegrade Subgrade	4.2	Square Yard	
4.3	Install Aggregate Base	4.3	Ton	
4.3.1	Place Aggregate Base	4.3.1	Ton	
4.3.2	Blue Top Aggregate Base	4.3.2	Square Yard	
5	**Asphalt Concrete Hot Mix Type A**	303 4263	Ton	
5.1	Furnish & Haul Hot Mix	5.1	Ton	
5.2	Install Hot Mix Type A	5.2	Ton	
6	**36 Inch RCP Culvert Class III**	413(B) 0464	Linear Feet	
6.1	Furnish RCP Materials	6.1	Linear Feet	
6.2	Excavate RCP Trench	6.2	Cubic Yard	
6.3	Install RCP Pipe	6.3	Linear Feet	
6.4	Backfill RCP Pipe	6.4	Cubic Yard	

OK Cancel

10. Click **OK**.
11. Click **Finish** on the Bid Wizard.
    - An Attention prompt displays, asking if you want to make adjustments
    - Keep the default options selected: **Make Adjustments according to their quantity drivers and cost drivers** and **Adjust the pay rules and shift arrangements to match the destination**
12. Click **OK**.



- You can see that cost item 5 and its subordinates are now imported into your existing job.
- You could choose a new name for the cost item, or name it **Asphalt Concrete Hot Mix Type A** to match the original cost item

4.3	Install Aggregate Base	4.3	45,000.00	Ton
4.3.1	Place Aggregate Base	4.3.1	45,000.00	Ton
4.3.2	Blue Top Aggregate Base	4.3.2	400,000.00	Square Yard
5	**Asphalt Concrete Hot Mix Type A**		1.00	Each
5.1	Furnish & Haul Hot Mix	5.1	1.00	Ton
5.2	Install Hot Mix Type A	5.2	1.00	Ton

10.6 SNAPSHOTS

A job snapshot is a copy of an estimate that provides read-only access to the job as it existed at a specific point in time. You can now filter the Snapshot register to jobs containing snapshots.

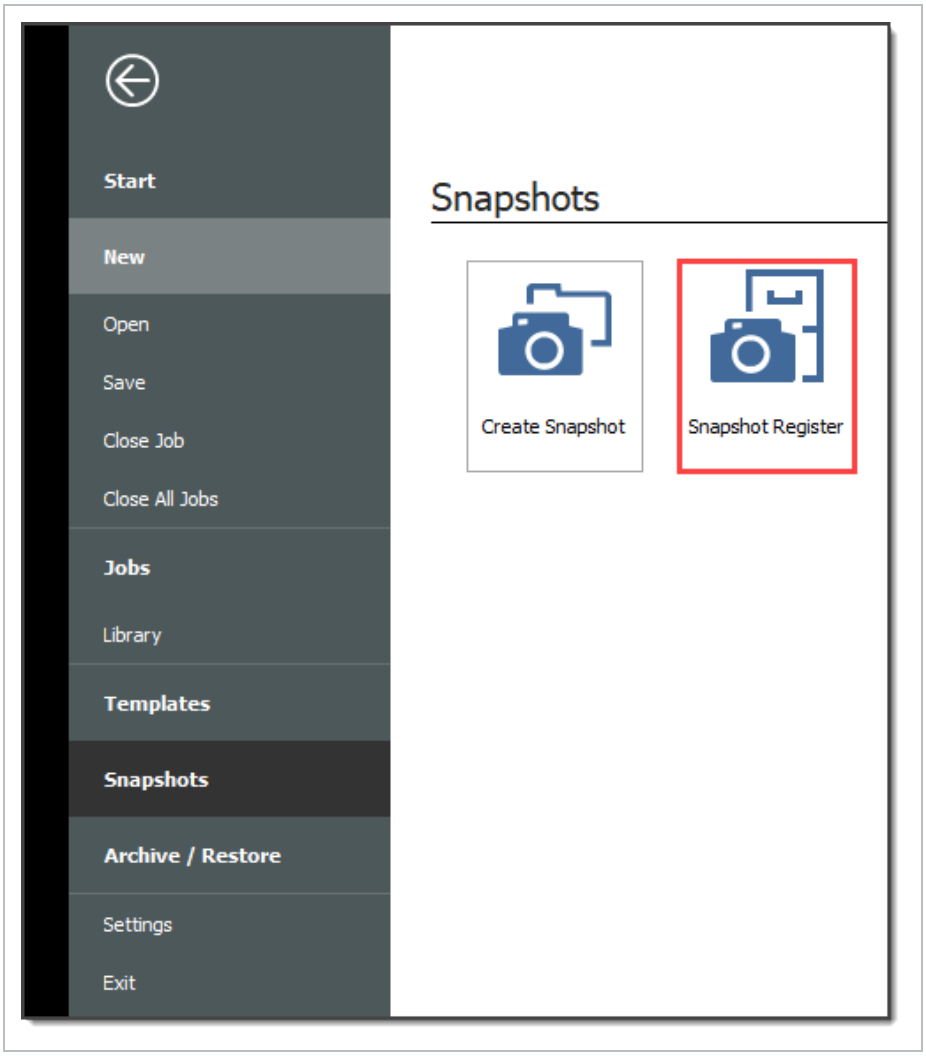
The Snapshot register has some additional columns as well. In addition to the Code, Description, Last Saved, and Version column, the Snapshot register contains all fields that are present on the Jobs register that provides you with an easier way to group, sort, filter, and find the jobs you need.

10.6.1 SNAPSHOT REGISTER

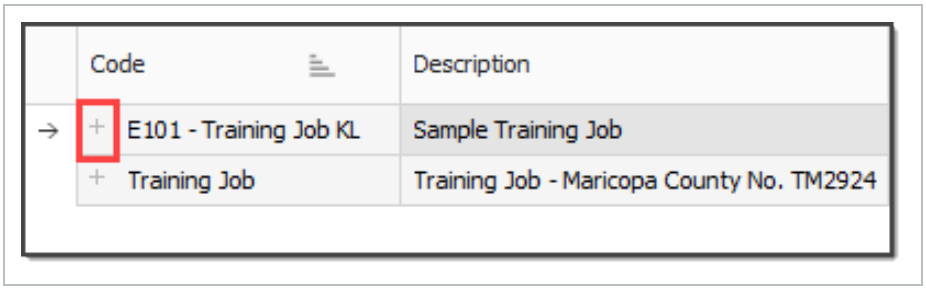
The Snapshot Register is where you will view individual snapshots for specific jobs.

STEP BY STEP – SNAPSHOT REGISTER

1. Click the**File** tab to open the Backstage View. In the panel, select **Snapshots**.
2. From the Snapshots form, select the **Snapshot Register** tab.



3. To view individual snapshots for specific jobs, click the icon next to the desired job to display the list of snapshots.

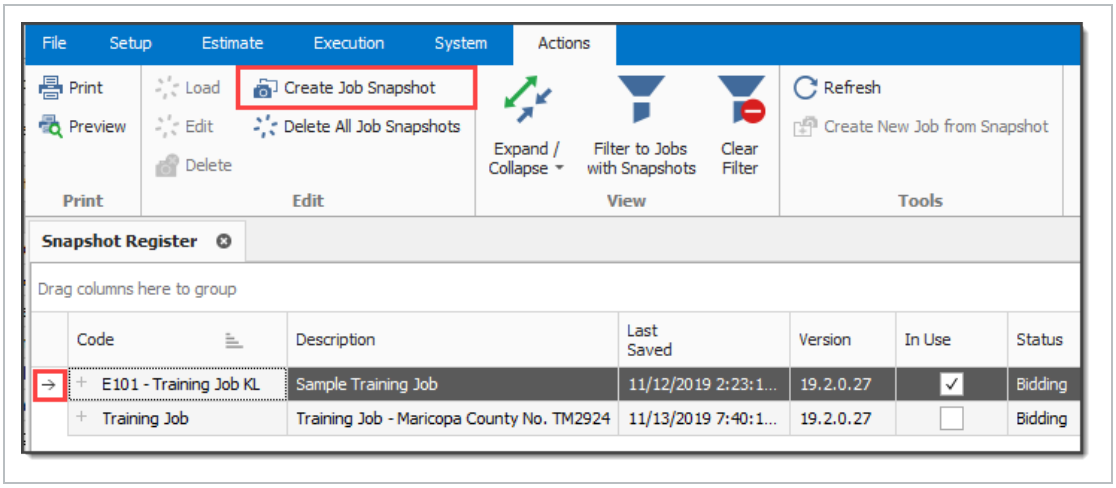


10.6.2 CREATING A NEW JOB SNAPSHOT

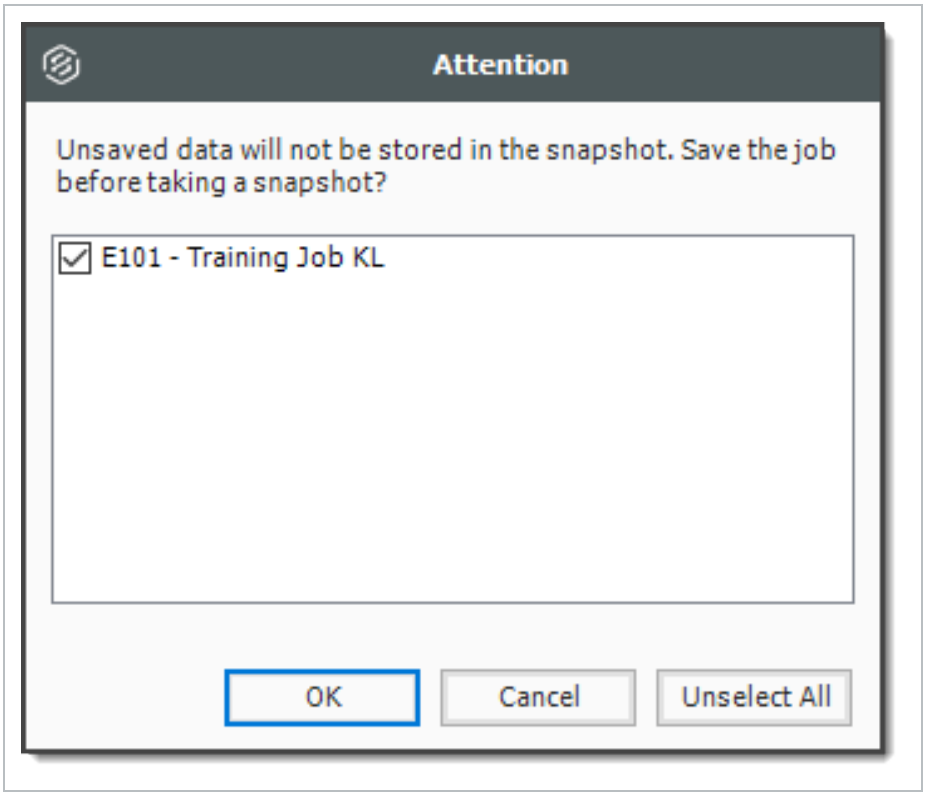
STEP BY STEP – CREATE A NEW JOB SNAPSHOT

You can create a Job Snapshot from an existing Job.

1. From the Snapshots form, select the **Create Snapshot** tab.

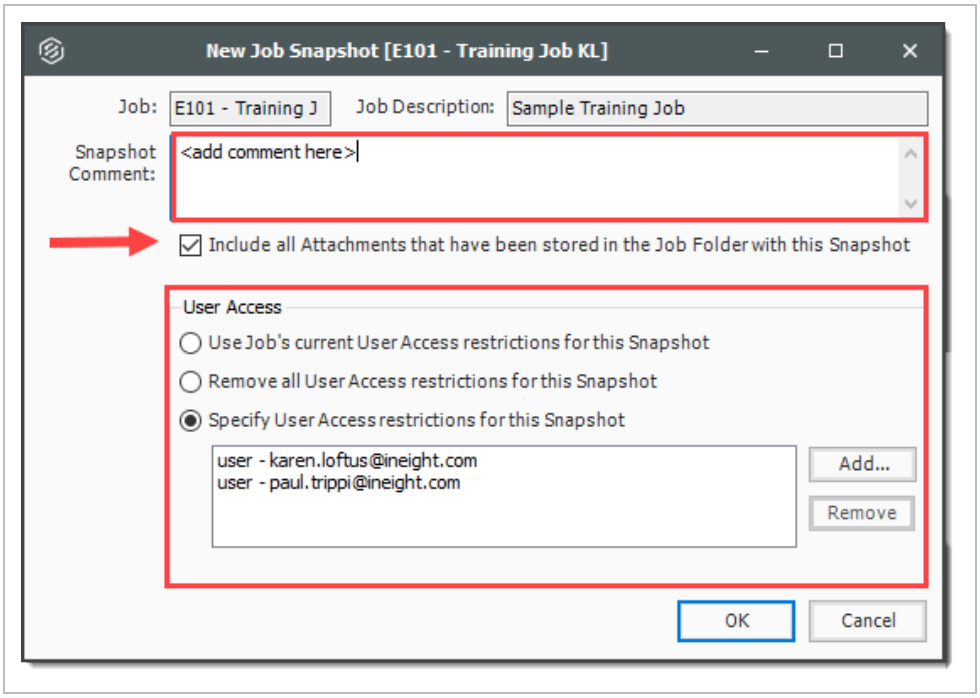


2. If an existing job is open select **Save**, if you haven't already done so.

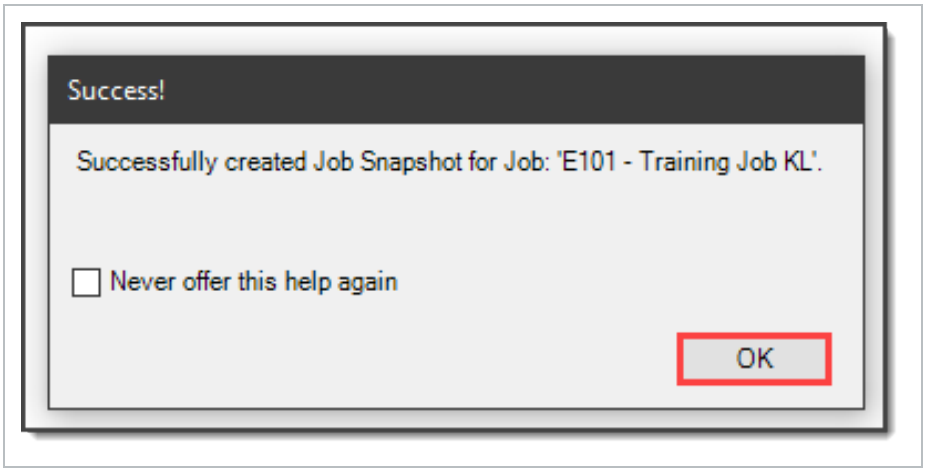


3. A New Job Snapshot [Job Code Here] dialog box appears. From there, you can add a Snapshot comment.
    - If you want to Include all Attachments that have been stored in the Job Folder with this Snapshot, select the check box, otherwise uncheck the box.
    - If you want to Use Job's current User Access restrictions for this Snapshot, select this radio button.
    - If you want to Remove User Access restrictions for this Snapshot and allow read-only access to all users, select this radio button
    - If you want to Specify User Access restrictions for this Snapshot (default selection), select this option
        - Then use the Add and Remove buttons to specify user access using Active Directory.

(Users with current access to the job default onto the list.)



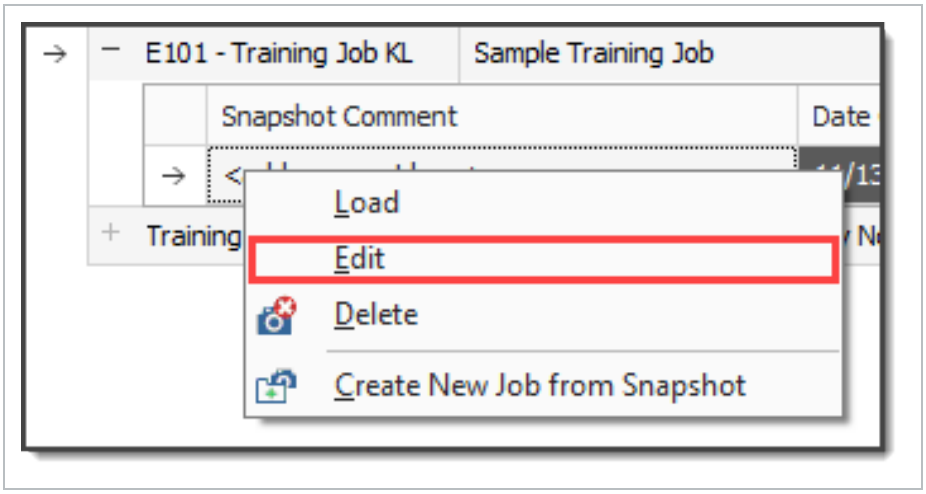
4. Click OK to create the snapshot.
5. A pop-up indicates when the snapshot has been created.



10.6.3 EDITING A JOB SNAPSHOT

STEP BY STEP – EDIT A JOB SNAPSHOT

1. From the Snapshot Register, click the icon next to the desired job to display snapshots.
2. Right-click on the individual snapshot you want to edit and select **Edit**.

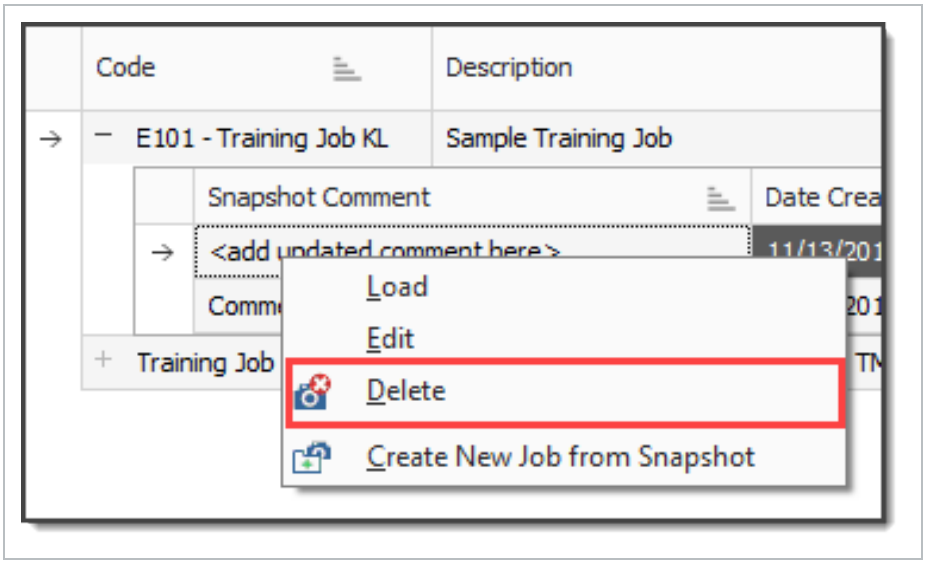


3. The same sort of dialog box opens up as when you created the Snapshot. In this case, from the Edit Job Snapshot [Job Code Here] dialog box, modify the Snapshot Comment and the User Access options as needed.
   - If you want to Include all Attachments that have been stored in the Job Folder with this Snapshot, select the check box. Otherwise, uncheck the box
   - If you want to Use Job's current User Access restrictions for this Snapshot, select this radio button
   - If you want to Remove User Access restrictions for this Snapshot and allow read-only access to all users, select this radio button
   - If you want to Specify User Access restrictions for this Snapshot (default selection), select this option
     - Then use the Add and Remove buttons to specify user access using Active Directory. (Users with current access to the job default onto the list.)
4. Click **OK** to update the snapshot.

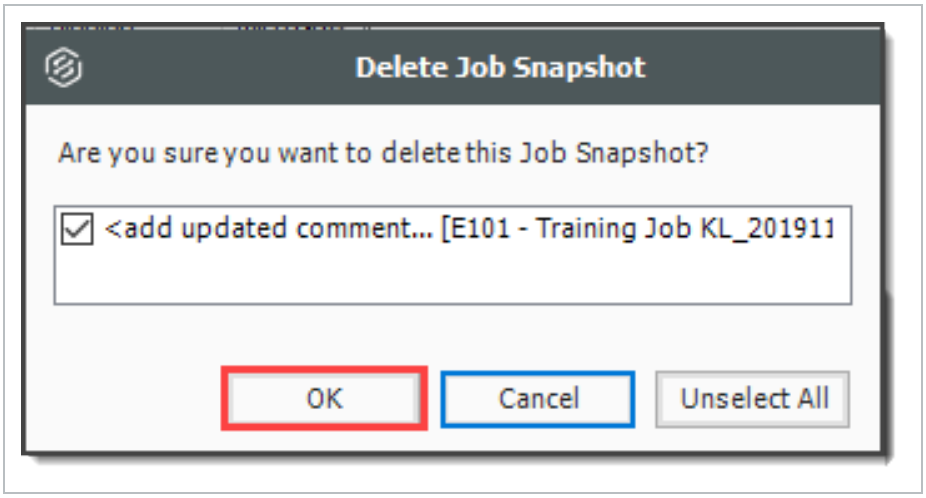
10.6.4 DELETING A JOB SNAPSHOT

STEP BY STEP – DELETE A JOB SNAPSHOT

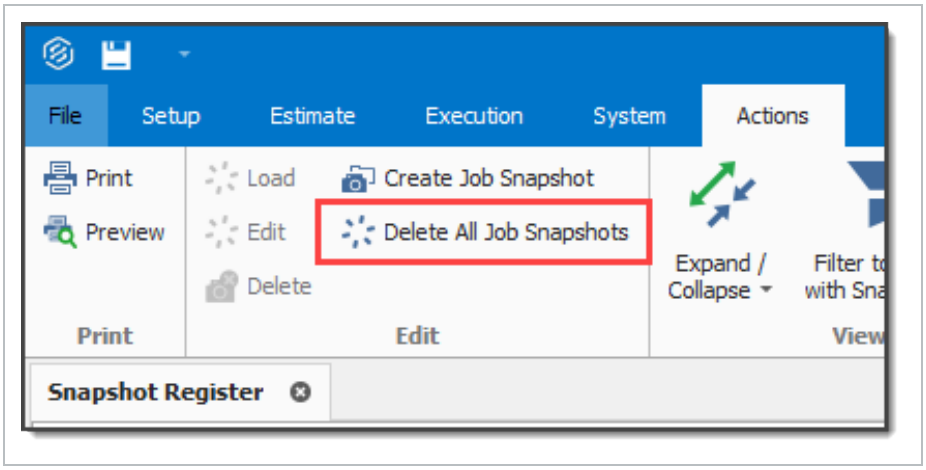
1. From the Snapshot Register, click the icon next to the desired job to display snapshots.
2. Right-click on the individual snapshot you want to delete snapshots from and select **Delete**.



3. Click **OK**



Alternatively, you can delete all Job Snapshots by clicking **Delete All Job Snapshots** from the Actions tab.

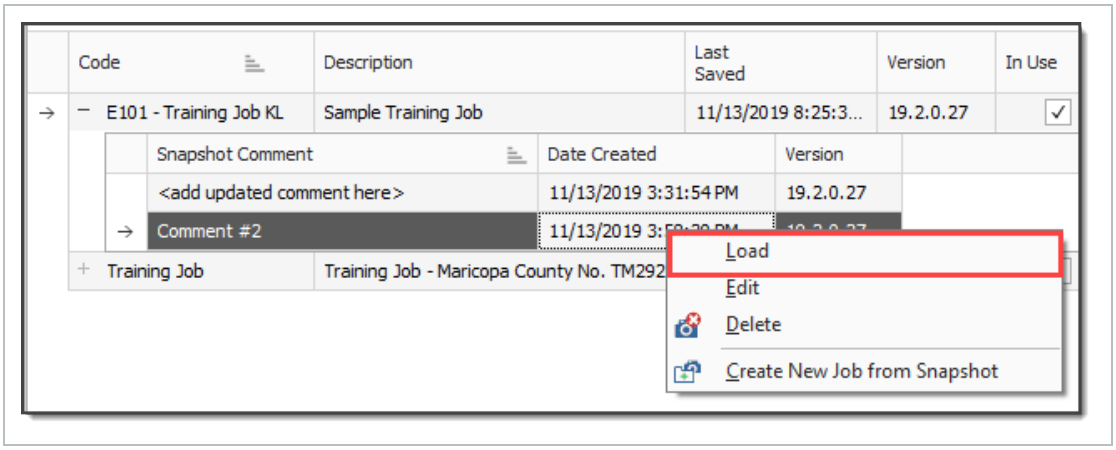


10.6.5 LOADING A JOB SNAPSHOT

When you load an existing Snapshot, it loads into Estimate as any other job.

STEP BY STEP – LOAD A JOB SNAPSHOT

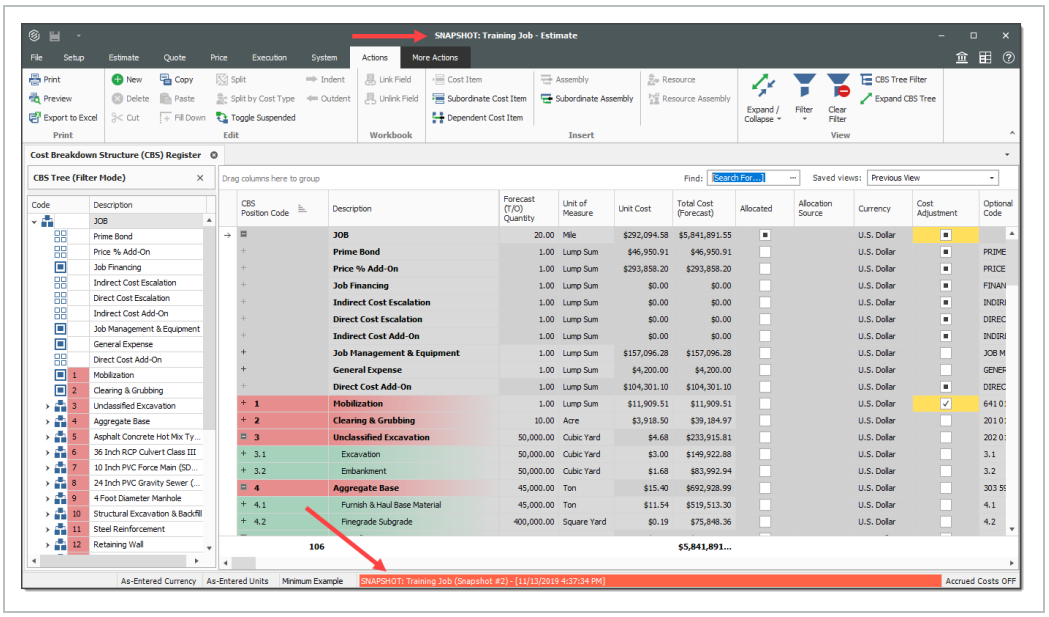
1. Click the File tab to open the Backstage View, then select **Snapshots**.
2. From the Snapshots form, select the **Snapshot Register** tab.
3. On the Snapshot Register, click the icon next to the desired job to display the list of snapshots.
4. Right-click on the individual snapshot you want to load and select **Load**.



To identify a snapshot in Estimate as a read-only snapshot:

- The job name is preceded by the label SNAPSHOT: centered on the top of the toolbar
- A red banner shows the specific snapshot information at the bottom of the screen

> **NOTE** A snapshot can be modified, but it cannot be saved as it is read-only.



EXERCISE 10.1 – DATA REPRODUCTION

Now that you have learned how to utilize the Bid Wizard, complete the following steps using the Bid Wizard and Copy & Paste features.

1. Open the Bid Wizard by clicking the **Bid Wizard** icon from the **More Actions** tab.
2. Choose the **Create a new job** radio button.
3. Type **BW Exercise** (with your initials) in the **New Code** field and type **Exercise** in the Description field.
4. Choose **Select cost items.**
5. For all selections, choose **Copy from source job**.
6. Select the **Also copy all non-utilized resources** checkbox.
7. Select **Copy from source job** under Unassigned Cost Items and Markup, and the Copy Markup box is automatically selected.
8. Find and select **Training Job** and click **OK**.
9. Use the **Toggle Include All** button to exclude all selections.
10. Select the checkboxes to include **Cost Items 4-7**.
11. Click **Finish** to add the new job.
12. Select **Adjust the pay rules and shift arrangements to match the destination**.
13. Open the **CBS** to see the cost items that were brought in.

14. Open the **Infra Job Copy** with your initials that you created earlier in this lesson.

15. Copy **Cost items 8 and 9** and paste them into the BW Exercise job.

You should end up with the following results

CBS Position Code	Description	Optional Code	Forecast (T/O) Quantity	Unit of Measure
+	**Indirect Cost Escalation**	INDIRECT COST ESCAL...	1.00	Lump Sum
+	**Direct Cost Escalation**	DIRECT COST ESCALAT...	1.00	Lump Sum
+	**Indirect Cost Add-On**	INDIRECT COST ADD-ON	1.00	Lump Sum
+	**Job Management & Equipment**	JOB MANAGEMENT & E...	1.00	Lump Sum
+	**General Expense**	GENERAL EXPENSE	1.00	Lump Sum
+	**Direct Cost Add-On**	DIRECT COST ADD-ON	1.00	Lump Sum
− 1	**Aggregate Base**	303 5912	45,000.00	Ton
+ 1.1	Furnish & Haul Base Material	4.1	45,000.00	Ton
+ 1.2	Finegrade Subgrade	4.2	400,000.00	Square Yard
− 1.3	Install Aggregate Base	4.3	45,000.00	Ton
+ 1.3.1	Place Aggregate Base	4.3.1	45,000.00	Ton
+ 1.3.2	Blue Top Aggregate Base	4.3.2	400,000.00	Square Yard
− 2	**Asphalt Concrete Hot Mix Type A**	303 4263	35,000.00	Ton
+ 2.1	Furnish & Haul Hot Mix	5.1	35,000.00	Ton
+ 2.2	Install Hot Mix Type A	5.2	35,000.00	Ton
− 3	**36 Inch RCP Culvert Class III**	413(B) 0464	1,024.00	Linear Feet
+ 3.1	Furnish RCP Materials	6.1	1,024.00	Linear Feet
+ 3.2	Excavate RCP Trench	6.2	1,858.56	Cubic Yard
+ 3.3	Install RCP Pipe	6.3	1,024.00	Linear Feet
+ 3.4	Backfill RCP Pipe	6.4	1,587.20	Cubic Yard
− 4	**10 Inch PVC Force Main (SDR21)**	800 0220	12,000.00	Linear Feet
+ 4.1	Furnish 10 Inch PVC Materials	7.1	12,000.00	Linear Feet
+ 4.2	Excavate-Install-Backfill 10 Inch PVC	7.2	12,000.00	Linear Feet
− 5	**24 Inch PVC Gravity Sewer (SDR35)**	800 0330	3,000.00	Linear Feet
− 5.1	Excavate 24 Inch PVC	8.1	3,000.00	Linear Feet
+ 5.1.1	Excavate 24 Inch PVC 0-6 ft Depth	8.1.1	1,390.00	Cubic Yard
+ 5.1.2	Excavate 24 Inch PVC 6-10 ft Depth	8.1.2	3,610.00	Cubic Yard
+ 5.2	Furnish & Install 24 Inch PVC	8.2	3,000.00	Linear Feet
+ 5.3	Backfill 24 Inch PVC	8.3	4,520.00	Cubic Yard
− 6	**4 Foot Diameter Manhole**	800 0400	16.00	Each
+ 6.1	Furnish 4 ft Manhole Materials	9.1	16.00	Each
+ 6.2	Excavate-Install-Backfill Manhole	9.2	16.00	Each

Congratulations, you have completed this exercise!

LESSON 10 REVIEW

1. From the New option on the Backstage View, which of the following options are available for creating a new job? (Select all that apply)
   a. Scratch
   b. Template
   c. Import
   d. Existing Job
   e. Historic
   f. Bid Wizard

---

2. Which of the following job reproduction options lets you pick and choose which cost items you want to import into your new job?
   a. Template
   b. Bid Wizard
   c. Existing Job
   d. Archive

---

3. Which of the following options allows you to add cost items from another project when working in the CBS Register?
   a. Bid Wizard
   b. CBS Bid Wizard
   c. Template
   d. Existing Job

LESSON 10 SUMMARY

As a result of this lesson, you can:

- Create a job from an existing job or template
- Create a template

- Reproduce estimate data using the Bid Wizard
- Reproduce estimate data using copy/paste
- Add cost items to a job using the CBS Bid Wizard
- Utilize the Snapshot function

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CHAPTER 11 – SPREADSHEET INTEGRATION

11.1 EXPORT TO EXCEL

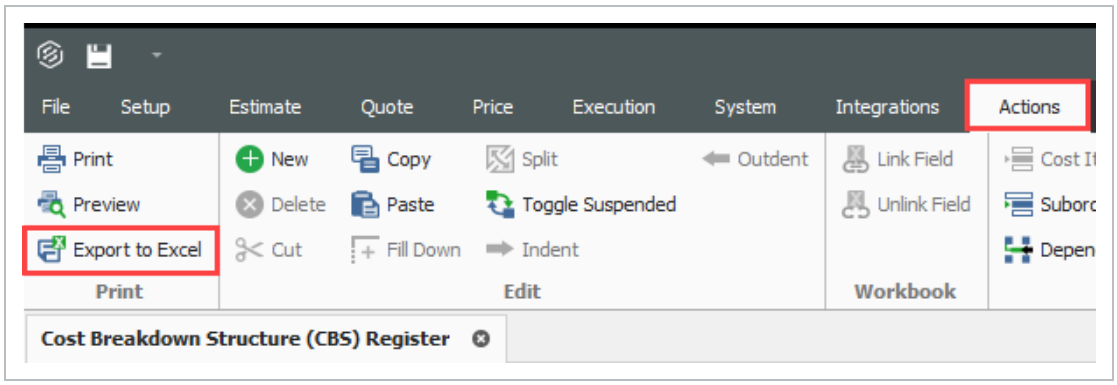
InEight Estimate's integration with Microsoft Excel includes a two-way integration that allows you to update register fields in InEight Estimate with data contained in an Excel workbook, and update Excel cells with data contained in a register column in InEight Estimate.

InEight Estimate includes a workbook export that makes it easy to transfer data out of InEight Estimate register forms to Microsoft Excel spreadsheets. This feature makes it faster and easier to send data from an InEight Estimate register to a spreadsheet, analyze it, modify it, and customize it for any other uses.

The Export to Excel feature is available on all register forms in the system and allows you to export the data currently displayed on a register form to an Excel worksheet.

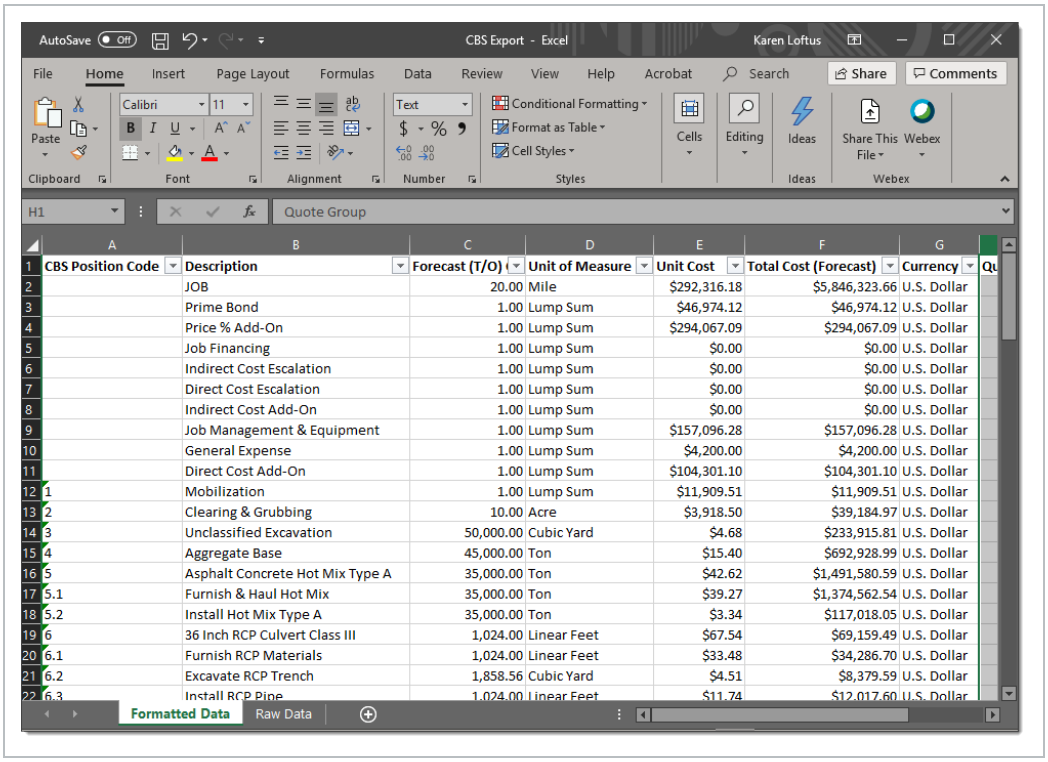
STEP BY STEP – EXPORT DATA TO AN EXCEL WORKBOOK

1. Open the **Training** Job and from the Estimate tab, open the **CBS Register**.
2. From the Actions tab, select **Export to Excel**.



3. On the Export spreadsheet to... dialog, browse to the location (folder) in your system where you want to save the workbook, enter **CBS Export** in the File name field, and click **Save**.
    - The workbook is saved to that location with the specified file name, and Excel automatically launches and displays the workbook

- Notice that the columns are formatted, with column headers and filtering turned on



CBS Position Code	Description	Forecast (T/O)	Unit of Measure	Unit Cost	Total Cost (Forecast)	Currency
	JOB	20.00	Mile	$292,316.18	$5,846,323.66	U.S. Dollar
	Prime Bond	1.00	Lump Sum	$46,974.12	$46,974.12	U.S. Dollar
	Price % Add-On	1.00	Lump Sum	$294,067.09	$294,067.09	U.S. Dollar
	Job Financing	1.00	Lump Sum	$0.00	$0.00	U.S. Dollar
	Indirect Cost Escalation	1.00	Lump Sum	$0.00	$0.00	U.S. Dollar
	Direct Cost Escalation	1.00	Lump Sum	$0.00	$0.00	U.S. Dollar
	Indirect Cost Add-On	1.00	Lump Sum	$0.00	$0.00	U.S. Dollar
	Job Management & Equipment	1.00	Lump Sum	$157,096.28	$157,096.28	U.S. Dollar
	General Expense	1.00	Lump Sum	$4,200.00	$4,200.00	U.S. Dollar
	Direct Cost Add-On	1.00	Lump Sum	$104,301.10	$104,301.10	U.S. Dollar
1	Mobilization	1.00	Lump Sum	$11,909.51	$11,909.51	U.S. Dollar
2	Clearing & Grubbing	10.00	Acre	$3,918.50	$39,184.97	U.S. Dollar
3	Unclassified Excavation	50,000.00	Cubic Yard	$4.68	$233,915.81	U.S. Dollar
4	Aggregate Base	45,000.00	Ton	$15.40	$692,928.99	U.S. Dollar
5	Asphalt Concrete Hot Mix Type A	35,000.00	Ton	$42.62	$1,491,580.59	U.S. Dollar
5.1	Furnish & Haul Hot Mix	35,000.00	Ton	$39.27	$1,374,562.54	U.S. Dollar
5.2	Install Hot Mix Type A	35,000.00	Ton	$3.34	$117,018.05	U.S. Dollar
6	36 Inch RCP Culvert Class III	1,024.00	Linear Feet	$67.54	$69,159.49	U.S. Dollar
6.1	Furnish RCP Materials	1,024.00	Linear Feet	$33.48	$34,286.70	U.S. Dollar
6.2	Excavate RCP Trench	1,858.56	Cubic Yard	$4.51	$8,379.59	U.S. Dollar
6.3	Install RCP Pipe	1,024.00	Linear Feet	$11.74	$12,017.60	U.S. Dollar

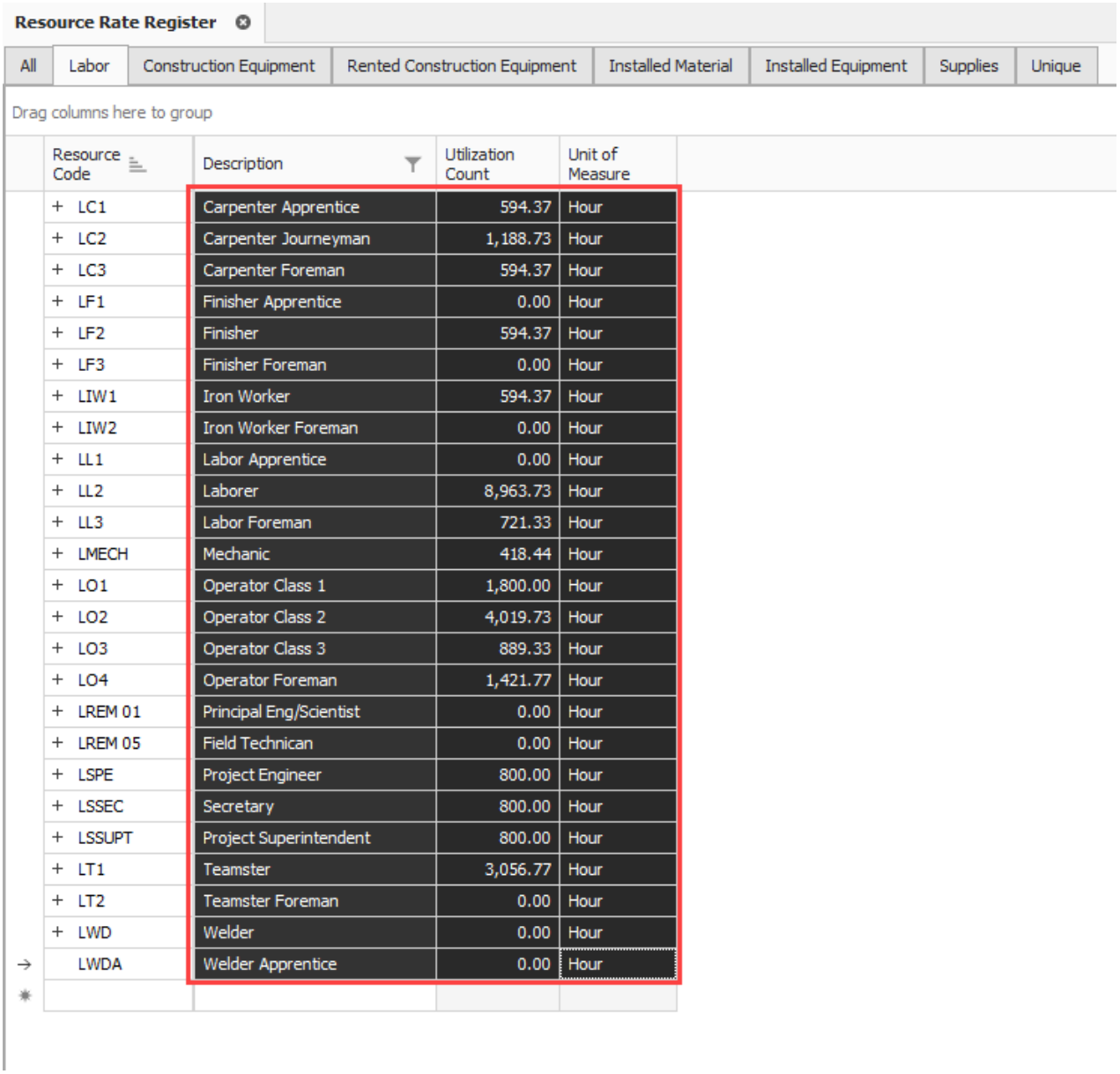
11.1.1 CELL SELECT

To copy and paste data in InEight Estimate or to Excel, you can use a feature called Cell Select. Walk through the following steps to learn how to copy specific fields in InEight Estimate to an Excel Spreadsheet.

STEP BY STEP – CELL SELECT

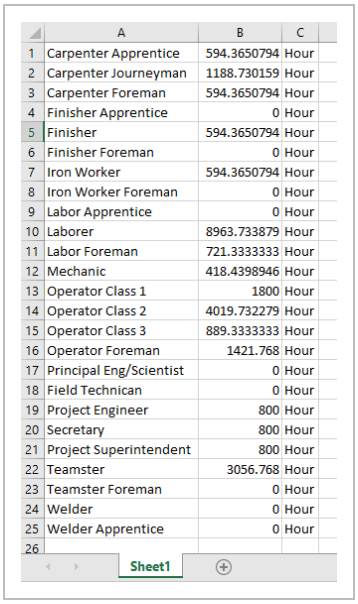
1. Open the **Training** Job and from the Setup tab, open the **Resource Rate Register**.
2. Select the **Labor** tab.
3. Select **Print View for Summary** from your Saved Views drop-down menu.
4. From the top-right corner, select the **Cell Select** icon, (next to the Help icon). This puts you in *Cell Select* mode, so you can select cells to copy in the same way you would in Excel.

5. With the Cell Select icon active, highlight all information in the **Description**, **Utilization Count** and **Unit of Measurecolumns** for all Labor resources.



Resource Code	Description	Utilization Count	Unit of Measure
LC1	Carpenter Apprentice	594.37	Hour
LC2	Carpenter Journeyman	1,188.73	Hour
LC3	Carpenter Foreman	594.37	Hour
LF1	Finisher Apprentice	0.00	Hour
LF2	Finisher	594.37	Hour
LF3	Finisher Foreman	0.00	Hour
LIW1	Iron Worker	594.37	Hour
LIW2	Iron Worker Foreman	0.00	Hour
LL1	Labor Apprentice	0.00	Hour
LL2	Laborer	8,963.73	Hour
LL3	Labor Foreman	721.33	Hour
LMECH	Mechanic	418.44	Hour
LO1	Operator Class 1	1,800.00	Hour
LO2	Operator Class 2	4,019.73	Hour
LO3	Operator Class 3	889.33	Hour
LO4	Operator Foreman	1,421.77	Hour
LREM 01	Principal Eng/Scientist	0.00	Hour
LREM 05	Field Technican	0.00	Hour
LSPE	Project Engineer	800.00	Hour
LSSEC	Secretary	800.00	Hour
LSSUPT	Project Superintendent	800.00	Hour
LT1	Teamster	3,056.77	Hour
LT2	Teamster Foreman	0.00	Hour
LWD	Welder	0.00	Hour
LWDA	Welder Apprentice	0.00	Hour

6. Right click on the selection and select **Copy**.
7. Open an Excel spreadsheet, right click in the **A1** field and select **Paste Special,** choosing **CSV** as the Source.
8. Click **OK**. The fields you copied from InEight Estimate paste into the spreadsheet.



	A	B	C
1	Carpenter Apprentice	594.3650794	Hour
2	Carpenter Journeyman	1188.730159	Hour
3	Carpenter Foreman	594.3650794	Hour
4	Finisher Apprentice	0	Hour
5	Finisher	594.3650794	Hour
6	Finisher Foreman	0	Hour
7	Iron Worker	594.3650794	Hour
8	Iron Worker Foreman	0	Hour
9	Labor Apprentice	0	Hour
10	Laborer	8963.733879	Hour
11	Labor Foreman	721.3333333	Hour
12	Mechanic	418.4398946	Hour
13	Operator Class 1	1800	Hour
14	Operator Class 2	4019.732279	Hour
15	Operator Class 3	889.3333333	Hour
16	Operator Foreman	1421.768	Hour
17	Principal Eng/Scientist	0	Hour
18	Field Technican	0	Hour
19	Project Engineer	800	Hour
20	Secretary	800	Hour
21	Project Superintendent	800	Hour
22	Teamster	3056.768	Hour
23	Teamster Foreman	0	Hour
24	Welder	0	Hour
25	Welder Apprentice	0	Hour
26			

Sheet1

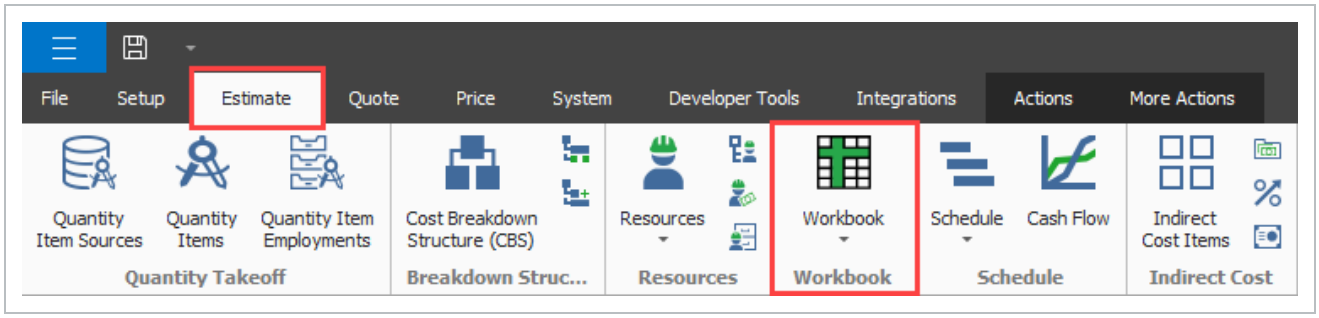
To turn off the Cell Select, simply click the Cell Select Icon again and it deselects

11.2 LINKING TO THE JOB WORKBOOK

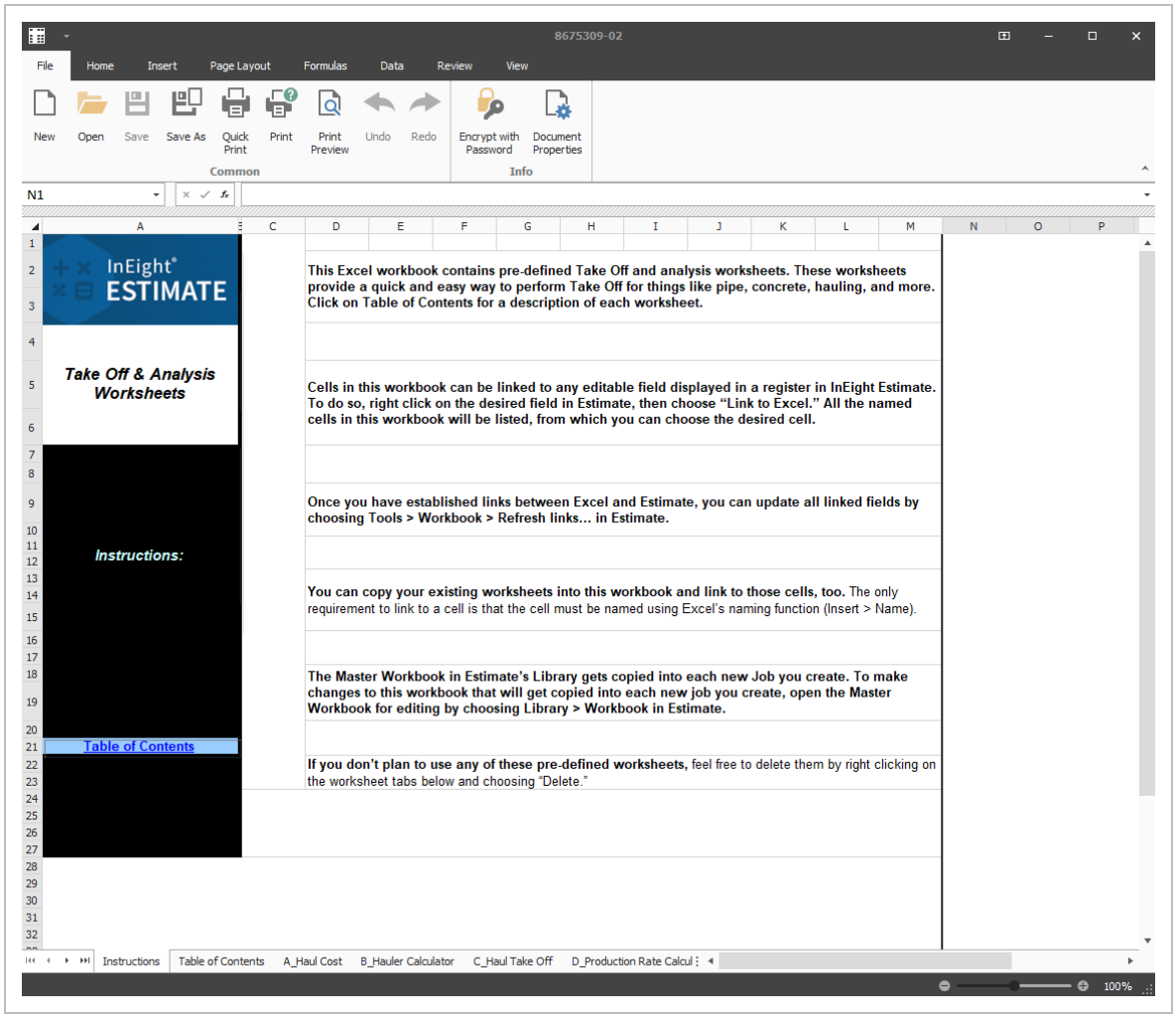
11.2.1 INEIGHT ESTIMATE WORKBOOK

Every job has its own workbook embedded within it for doing side calculations and take-offs. You can link your calculations to fields in InEight Estimate to automatically update them into your estimate. When you create a new job from scratch, the Library Master Workbook is copied to create a new embedded workbook for the job.

The job workbook comes with some pre-defined take-off and analysis worksheets, or you can create your own. Simply open the appropriate job worksheet, plug in your values, and the worksheet will calculate your results. To open your job's workbook, select the **Estimate** tab, and then click on the **Workbook** icon in the Workbook section.



The embedded job workbook for the job opens.



11.2.2 LINKING TO AND FROM THE WORKBOOK

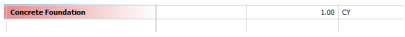
InEight Estimate's linking capabilities with the job workbook can be done in one of two ways. A field in InEight Estimate can be populated with a value from the job workbook, or a cell in the worksheet can be populated with the data from an InEight Estimate field. This two-way linking functionality lets you to make quick work of complex chores to perform workbook-based take-off or formula-driven analysis.

− 6	36 Inch RCP Culvert Class III	413(B) 0464	1,024.00	Linear Feet
+ 6.1	Furnish RCP Materials	6.1	1,024.00	Linear Feet
+ 6.2	Excavate RCP Trench	6.2	1,858.56	Cubic Yard

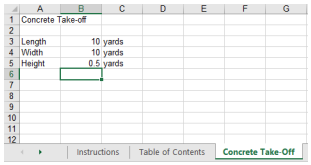
The following example walks through how to link a simple take-off calculation into InEight Estimate from the job workbook. It is a take-off to determine the size of a concrete foundation.

STEP BY STEP – LINK ESTIMATE TO THE JOB'S WORKBOOK

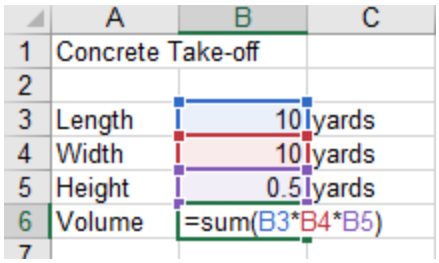
1. Open the **Training** Job and from the Estimate tab, open the **CBS Register**.
2. For this example, create a new cost item in the blank row at the bottom of the CBS register and name it **Concrete Foundation**.



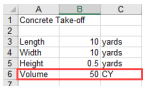
3. Open the job's workbook from the Estimate tab, by selecting the **Workbook** icon.
4. In the job's embedded workbook, create a new worksheet named **Concrete Take-off** and enter the following fields:



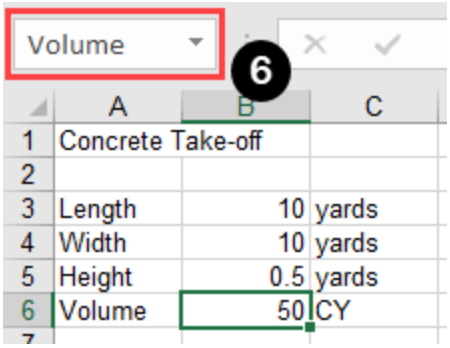
5. Create a new row to calculate the total cubic yards by factoring the length, width, and height quantities.



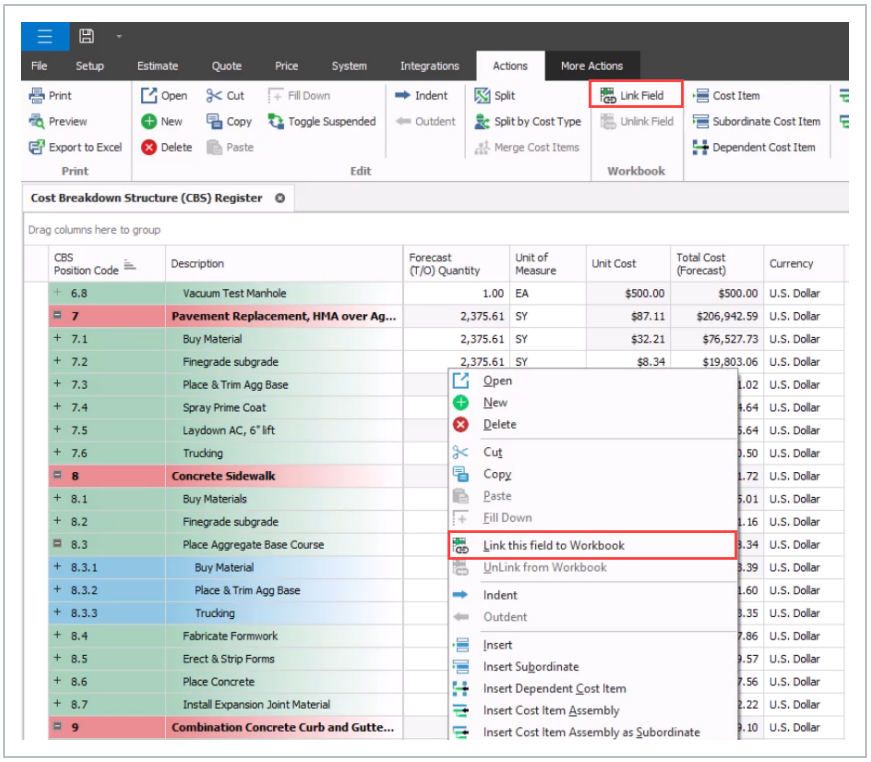
- Your Volume Total should be 50 cubic yards



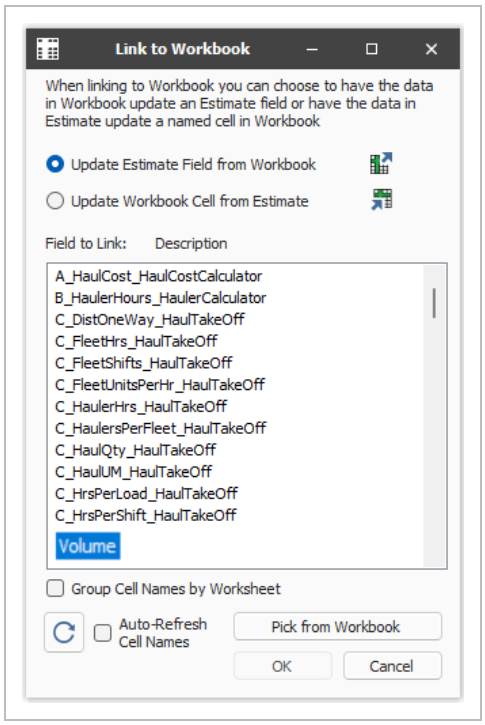
6. InEight Estimate will only link to named fields in the worksheet. Click in the field you want to name (B6), then click in the Field Name window and type **Volume**.



7. Go back to the CBS register and right click on the Concrete Foundation cost item **Forecast (T/O) Quantity** field.
8. From the resulting right click menu, select **Link this field to Workbook**.
   - You can also link the field by selecting the field and then selecting **Link Field** from the Actions tab



9. On the Link to Workbook dialog, select the **Update Estimate Field from Workbook** radio button.
10. In the Field to link window, select **Volume** (you may need to click the Refresh button for the field name to display).



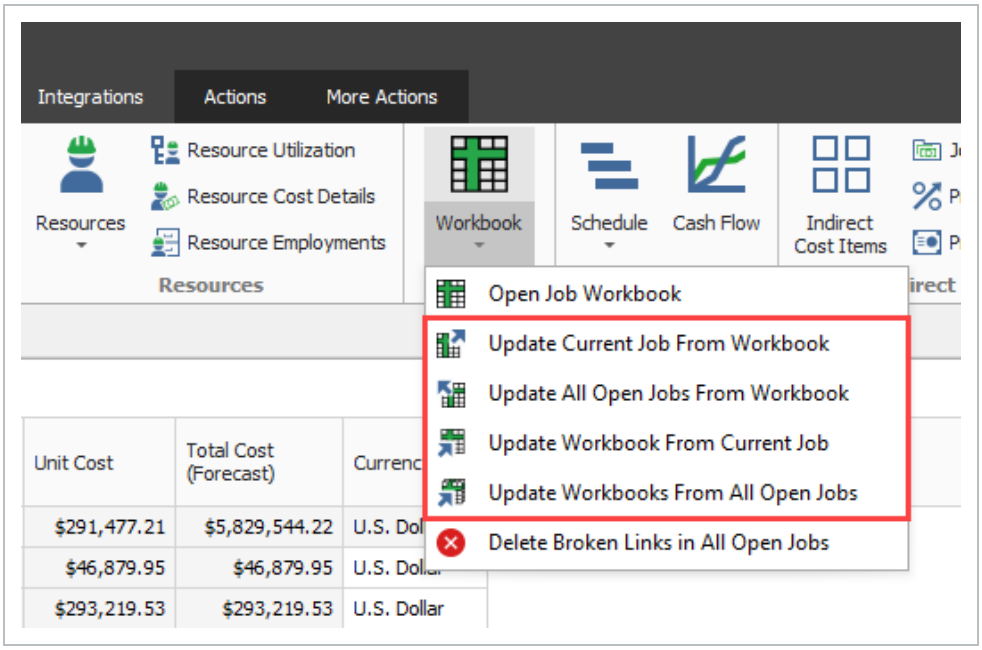
11. Click **OK**.

- The Forecast Quantity field for Concrete now is linked to the Volume field in the worksheet and populates with the take-off quantity (50)

CBS Position Code	Description	Forecast (T/O) Quantity	Unit of Measure
26	**Concrete Foundation**	50.00	CY

11.2.3 UPDATE LINKS

When data in InEight Estimate or the job workbook changes, you can quickly update all links, in just the currently active job or in all open jobs. Simply select one of the following options from the Workbook drop-down list on the Estimate tab.


Integrations
Actions
More Actions
Resources
Resource Utilization
Resource Cost Details
Resource Employments
Resources
Workbook
Schedule
Cash Flow
Indirect Cost Items
Open Job Workbook
Update Current Job From Workbook
Update All Open Jobs From Workbook
Update Workbook From Current Job
Update Workbooks From All Open Jobs
Delete Broken Links in All Open Jobs
Unit Cost
Total Cost (Forecast)
$291,477.21
$5,829,544.22
$46,879.95
$46,879.95
$293,219.53
$293,219.53
U.S. Dollar

LESSON 11 REVIEW

1. The Export to Excel feature is available on all register forms in the system and allows you to export the data currently displayed on a register form to an Excel worksheet.
   a. True
   b. False

---

2. In order to link an Excel field to InEight Estimate, the Excel field must be:
   a. Named
   b. Highlighted
   c. Tagged
   d. Selected

LESSON 11 SUMMARY

As a result of this lesson, you can:

- Export data from InEight Estimate to Excel
- Link a field in InEight Estimate to Excel
- Update a linked InEight Estimate field with Excel data

LESSON 12 – SCHEDULE INTEGRATION

LESSON DURATION: 45 MINUTES

LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Set up scheduling options
- Update schedule from InEight Estimate
- Update InEight Estimate from schedule
- Manage changes between estimate and schedule

12.1 MICROSOFT PROJECT

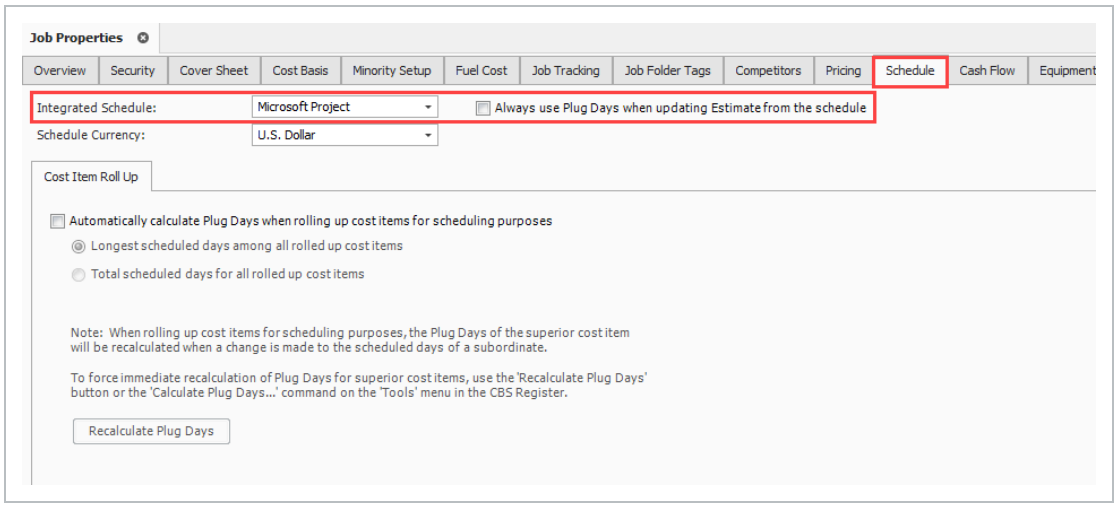
12.1.1 SET UP SCHEDULING OPTIONS

Prior to sending information from InEight Estimate to Microsoft Project, you need to make sure the proper settings are in place.

12.1.1.1 JOB PROPERTIES SCHEDULE TAB

Microsoft Project scheduling options are configured on the Schedule tab of the Job Properties form.

- At the top of the Schedule tab, the Integrated Schedule must be set to **Microsoft Project**
- As a default, the **Always use Plug Days when updating InEight Estimate from the schedule** checkbox is not selected (on a job by job basis, this box can be checked later for jobs in which an estimator does not want updates from Microsoft Project to change the duration and therefore the cost of your cost items in InEight Estimate)



12.1.2 SCHEDULE COST ITEMS

Before you can integrate with Microsoft Project, your cost items need to be marked as Scheduled in InEight Estimate. This is done on the Cost Breakdown Structure (CBS) Register. From your Saved Views drop-down list in the CBS, the Schedule Setup View displays all of your schedule-related columns. There are a couple to keep in mind when you schedule your items:

- **Scheduled**: This column tells you which of your items are selected to be included in your Microsoft Project schedule.
- **Roll Up Schedule**: This column lets you check a box to roll up your estimate to the selected level when it imports into Microsoft Project.

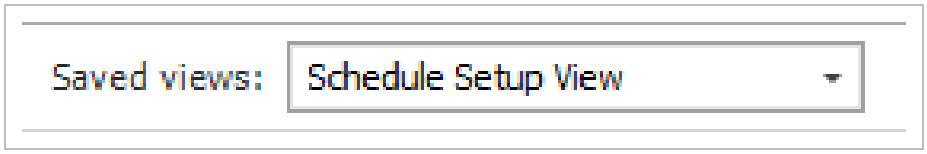
In the below example, notice that all of the cost items are scheduled, but the subordinates for Unclassified Excavation will be rolled up to the superior level.

CBS Position Code	Description	Scheduled	Roll Up Schedule
+ 1	**Mobilization**	✓	
+ 2	**Clearing & Grubbing**	✓	
− 3	**Unclassified Excavation**	✓	✓
+ 3.1	Excavation	■	
+ 3.2	Embankment	■	
− 4	**Aggregate Base**	✓	
+ 4.1	Furnish & Haul Base Material	✓	
+ 4.2	Finegrade Subgrade	✓	
− 4.3	Install Aggregate Base	✓	

The following steps walk you through scheduling your cost items.

STEP BY STEP – SCHEDULE A COST ITEM IN INEIGHT ESTIMATE

1. In the **Training Job**, from the Estimate tab, select **Cost Breakdown Structure**.
2. In the Saved Views drop-down list, select **Schedule Setup View**.



- In the Scheduled column, you can select the checkbox for each cost item that you want to schedule
- If a cost item has subordinate cost items below it, you will only be able to check the superior cost item, which will automatically schedule the subordinate cost items along with it

3. Select the **Mobilization**, **Clearing & Grubbing**, and **Unclassified Excavation** cost items, then press **Tab**.

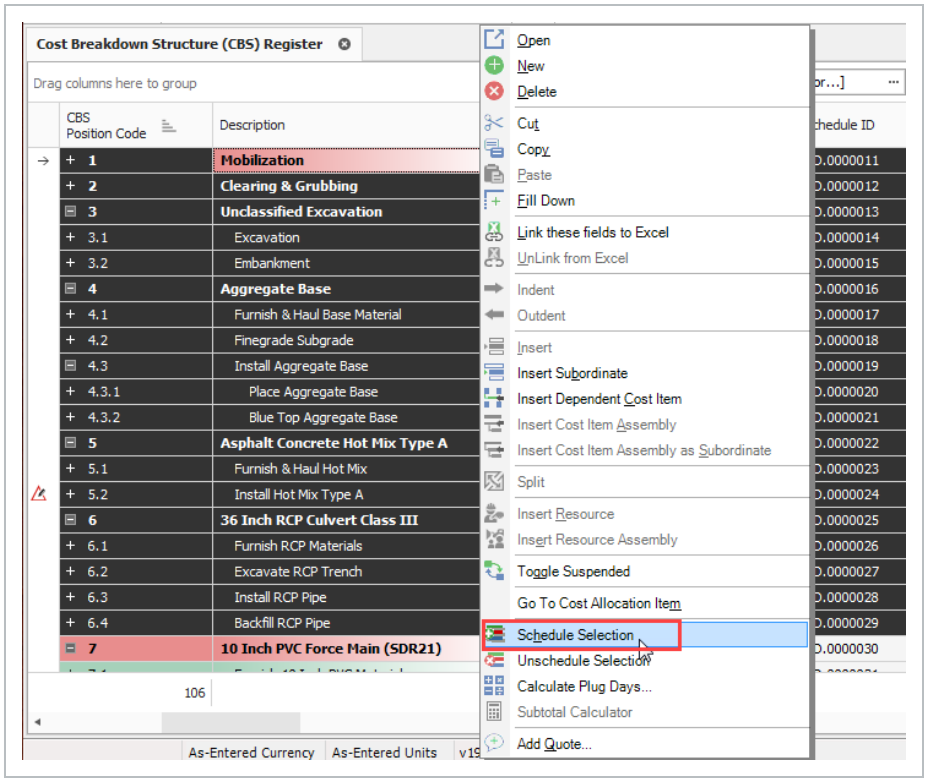
CBS Position Code	Description	Scheduled	Roll Up Schedule
	JOB	✓	
	Prime Bond		
	Price % Add-On		
	Job Financing		
	Indirect Cost Escalation		
	Direct Cost Escalation		
	Indirect Cost Add-On		
	Job Management & Equipment		
	General Expense		
	Direct Cost Add-On		
1	**Mobilization**	✓	
2	**Clearing & Grubbing**	✓	
3	**Unclassified Excavation**	✓	
3.1	Excavation	✓	
3.2	Embankment	✓	
4	**Aggregate Base**		
4.1	Furnish & Haul Base Material		
4.2	Finegrade Subgrade		

STEP BY STEP – SCHEDULE A GROUP OF COST ITEMS IN INEIGHT ESTIMATE

1. In the **Training Job**, from the Estimate tab, select **Cost Breakdown Structure**.
2. From the Saved Views drop-down list, select **Schedule Setup View**.
   - To schedule multiple cost items, you can highlight the row for each cost item that you want to schedule, using the Shift and Ctrl keys to select multiple rows.
3. Select additional cost items **4-Aggregate base**, **5- Asphalt Concrete Hot Mix**, and **6- 36-inch RCP Culvert Class.**

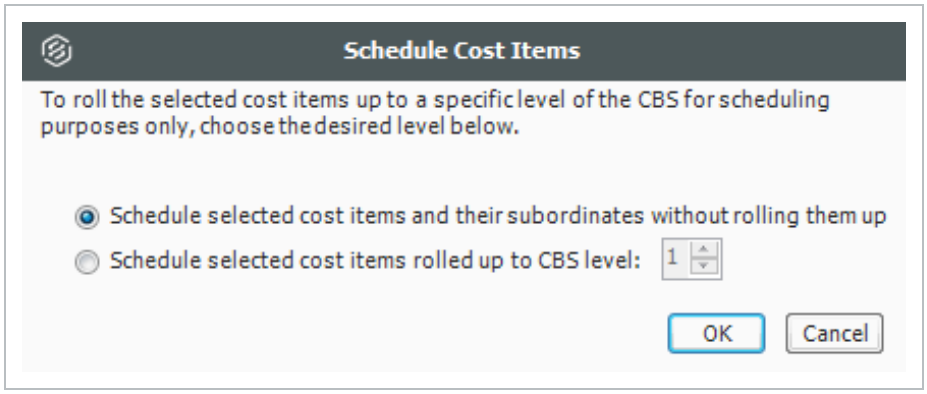
TIP To schedule all cost items, highlight the JOB row

4. Right click on the selected rows and select **Schedule Selection**.



- On the Schedule Cost Items dialog, you can select whether or not you want to roll up the selected cost items to a specific level of the CBS for scheduling purposes

5. Select **Schedule selected cost items and their subordinates without rolling them up**, then click **OK**.



- Your scheduled cost items will import into Microsoft Project the next time you update Microsoft Project from InEight Estimate.

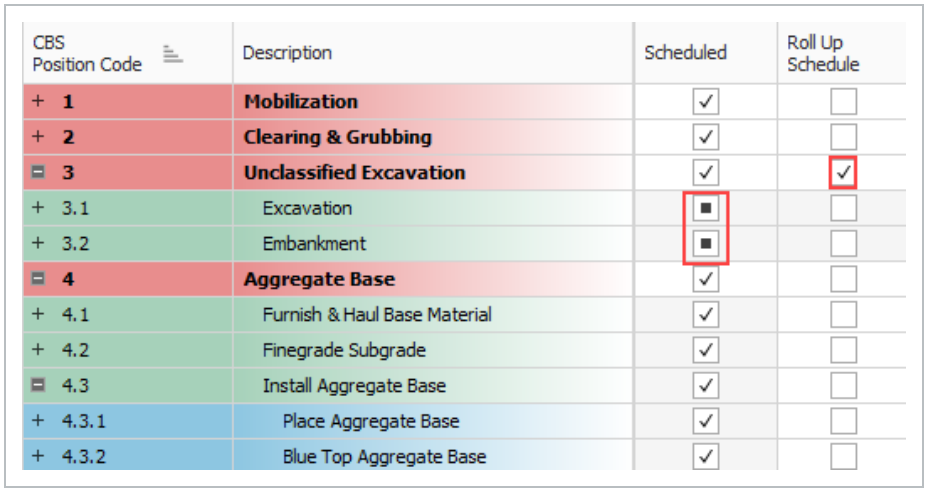
12.1.2.2 ROLL UP SCHEDULE

For cost item 3 – Unclassified Excavation, your scheduler does not need all of your estimate details and wants to roll up your cost items to a higher level when they import into the Microsoft Project schedule.

Follow the steps below to learn how to roll up your cost items for the schedule.

STEP BY STEP – ROLL UP SCHEDULE

1. In the **Training Job**, from the Estimate tab select **Cost Breakdown Structure**.
2. From the Saved Views drop-down list, select **Schedule Setup View**.
   - Review your cost items to decide which cost items need to be rolled up
3. Select the **Roll Up Schedule** checkbox on the Unclassified Excavation cost item.



CBS Position Code	Description	Scheduled	Roll Up Schedule
+ 1	**Mobilization**	✓	
+ 2	**Clearing & Grubbing**	✓	
− 3	**Unclassified Excavation**	✓	✓
+ 3.1	Excavation	■	
+ 3.2	Embankment	■	
− 4	**Aggregate Base**	✓	
+ 4.1	Furnish & Haul Base Material	✓	
+ 4.2	Finegrade Subgrade	✓	
− 4.3	Install Aggregate Base	✓	
+ 4.3.1	Place Aggregate Base	✓	
+ 4.3.2	Blue Top Aggregate Base	✓	

12.1.3 UPDATE MICROSOFT PROJECT FROM INEIGHT ESTIMATE

Now that you have set up your schedule to integrate with Microsoft Project in Job Properties and scheduled your cost items in the CBS, you are ready to send your project information to Microsoft Project.

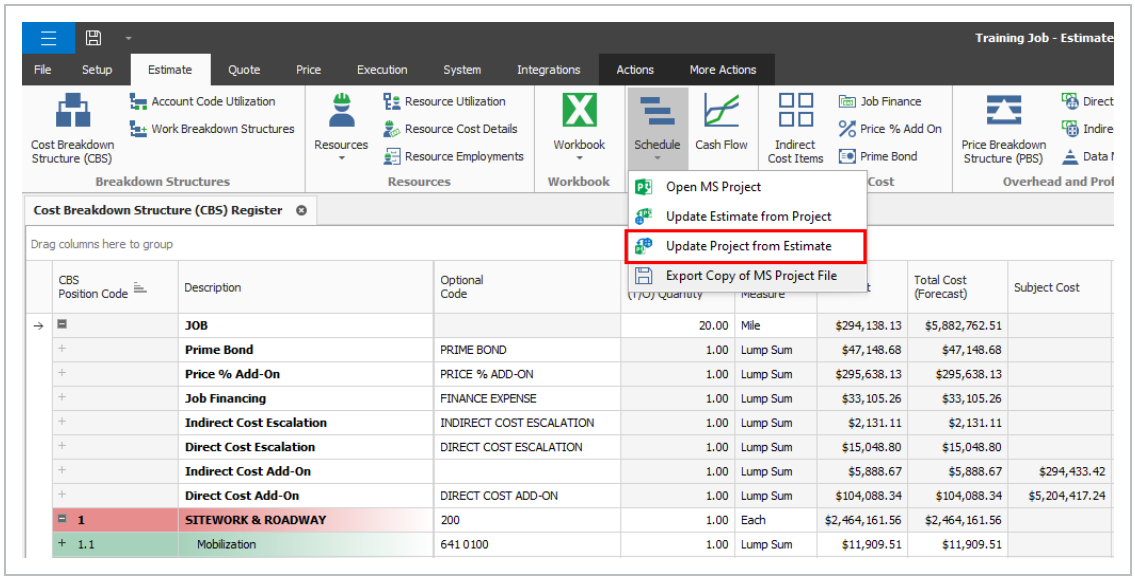
When you first update Microsoft Project from InEight Estimate, Microsoft Project will create a new project automatically and load it with the following information from InEight Estimate:

Data Sent from InEight Estimate to Microsoft Project		
Data Type	InEight Estimate	Microsoft Project
Project Data	Job Code	Project Name
Activity Data	CBS Position Code	01 - CBS Position Code
	Description	Description
	Days (Duration Driven)	Duration
Cost Data	Cost Category Total Cost	Cost Category (custom text columns)

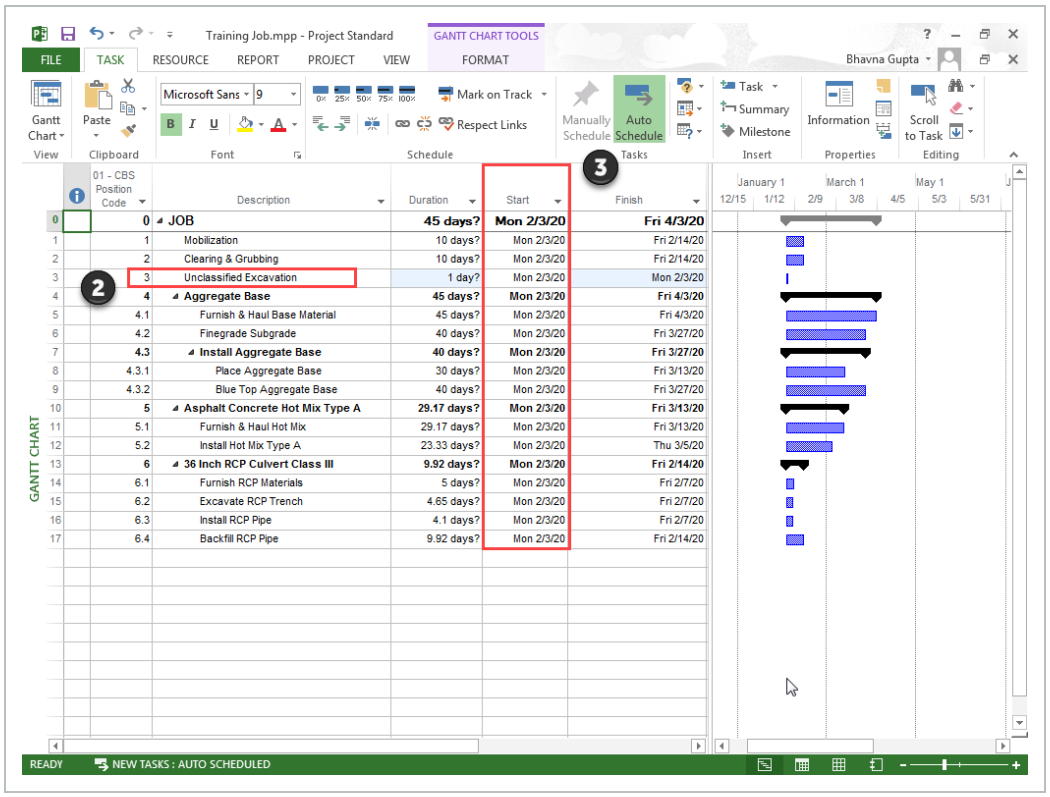
The following steps walk you through updating Microsoft Project from InEight Estimate to create a new schedule.

STEP BY STEP – UPDATE MS PROJECT FROM INEIGHT ESTIMATE

1. From the Estimate tab, select **Schedule>Update Project from InEight Estimate**.



- Your job automatically opens in Microsoft Project
- The Work Breakdown Structure Layout displays for the project
- You can see the breakdown structure imported from InEight Estimate with durations, rolled up as specified by the Roll Up Schedule option in InEight Estimate
- Initially, the start date for your activities is the start date defined on the Job Properties > Cover Sheet tab (these will change as activity relationships are defined)



12.1.4 UPDATE INEIGHT ESTIMATE FROM MICROSOFT PROJECT

You can also bring information back from Microsoft Project into InEight Estimate. When you update InEight Estimate from Microsoft Project, the following information updates:

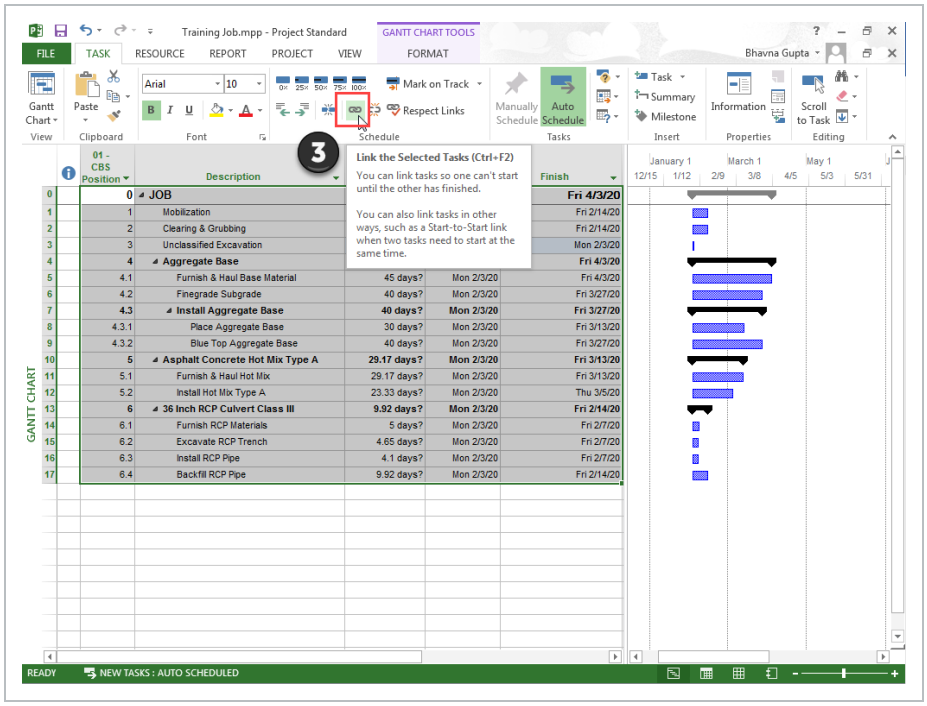
Update InEight Estimate from Microsoft Project		
Data Type	Microsoft Project	InEight Estimate

Update InEight Estimate from Microsoft Project		
Activity Data	Start Dates	Start Dates
	Finish Dates	Finish Dates
	Hours	Hours

Walk through the following steps to practice updating InEight Estimate from Microsoft Project. You will create a scheduling relationship in Microsoft Project and then import the updated dates and relationships into InEight Estimate.

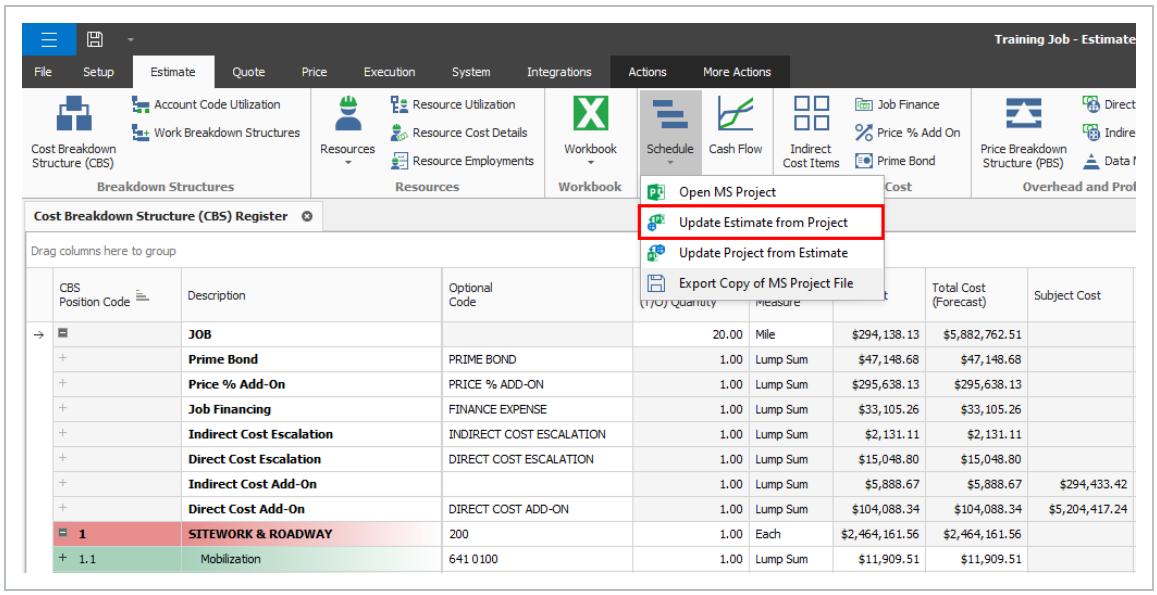
STEP BY STEP – UPDATE INEIGHT ESTIMATE FROM MS PROJECT

1. Open your version of the **Training Job** project in Microsoft Project.
    - In the real world, it is likely that you would have overlapping activities or your activities would be out of order, however for this example you will link all activities from finish to start
2. Click on the **Link Tasks** icon to link all activities.

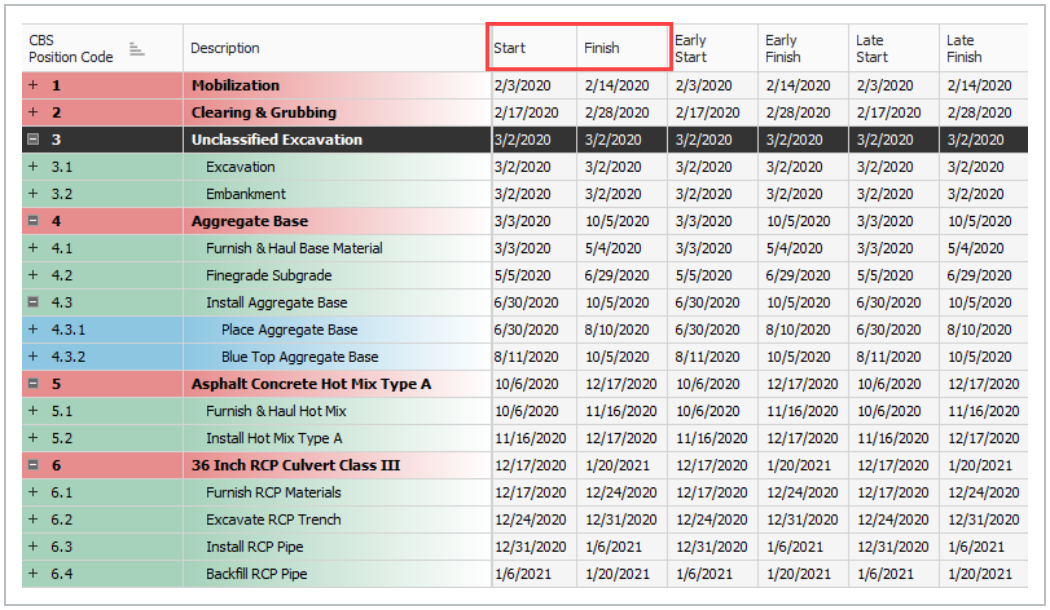


- Ensure the **Auto Schedule** button is selected

3. To update InEight Estimate with this change, go back to InEight Estimate and from the Estimate tab, select **Schedule>Update InEight Estimate from Project**.



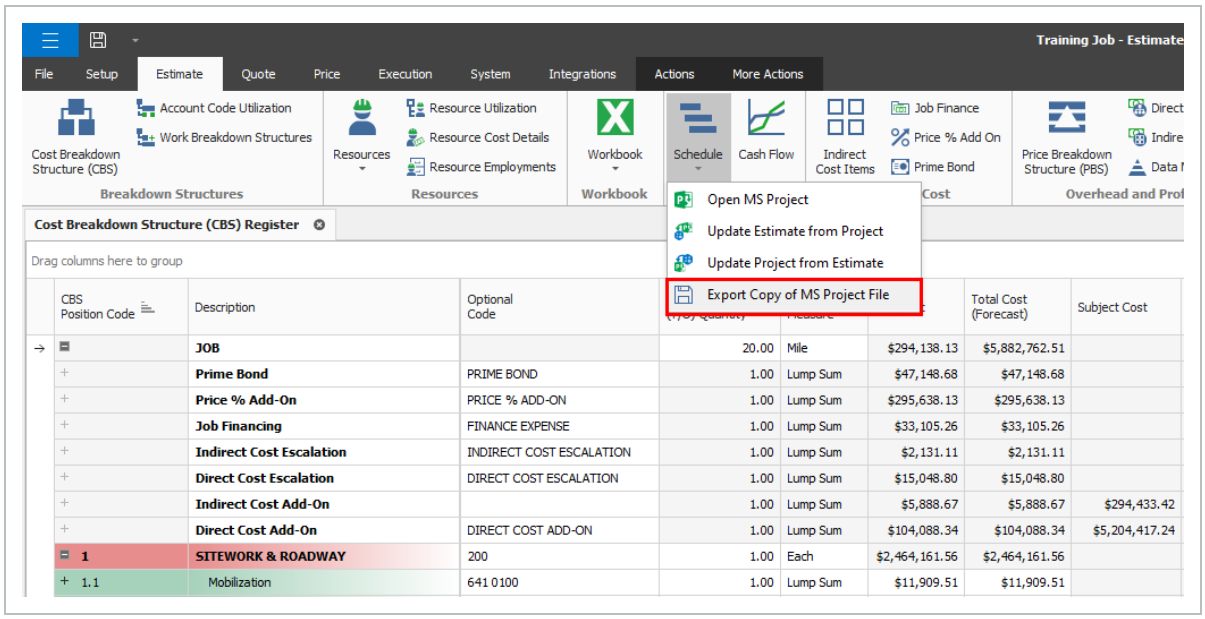
- On the Schedule Setup View, you can see the Start and Finish dates updated from MS Project.



CBS Position Code	Description	Start	Finish	Early Start	Early Finish	Late Start	Late Finish
1	Mobilization	2/3/2020	2/14/2020	2/3/2020	2/14/2020	2/3/2020	2/14/2020
2	Clearing & Grubbing	2/17/2020	2/28/2020	2/17/2020	2/28/2020	2/17/2020	2/28/2020
3	Unclassified Excavation	3/2/2020	3/2/2020	3/2/2020	3/2/2020	3/2/2020	3/2/2020
3.1	Excavation	3/2/2020	3/2/2020	3/2/2020	3/2/2020	3/2/2020	3/2/2020
3.2	Embankment	3/2/2020	3/2/2020	3/2/2020	3/2/2020	3/2/2020	3/2/2020
4	Aggregate Base	3/3/2020	10/5/2020	3/3/2020	10/5/2020	3/3/2020	10/5/2020
4.1	Furnish & Haul Base Material	3/3/2020	5/4/2020	3/3/2020	5/4/2020	3/3/2020	5/4/2020
4.2	Finegrade Subgrade	5/5/2020	6/29/2020	5/5/2020	6/29/2020	5/5/2020	6/29/2020
4.3	Install Aggregate Base	6/30/2020	10/5/2020	6/30/2020	10/5/2020	6/30/2020	10/5/2020
4.3.1	Place Aggregate Base	6/30/2020	8/10/2020	6/30/2020	8/10/2020	6/30/2020	8/10/2020
4.3.2	Blue Top Aggregate Base	8/11/2020	10/5/2020	8/11/2020	10/5/2020	8/11/2020	10/5/2020
5	Asphalt Concrete Hot Mix Type A	10/6/2020	12/17/2020	10/6/2020	12/17/2020	10/6/2020	12/17/2020
5.1	Furnish & Haul Hot Mix	10/6/2020	11/16/2020	10/6/2020	11/16/2020	10/6/2020	11/16/2020
5.2	Install Hot Mix Type A	11/16/2020	12/17/2020	11/16/2020	12/17/2020	11/16/2020	12/17/2020
6	36 Inch RCP Culvert Class III	12/17/2020	1/20/2021	12/17/2020	1/20/2021	12/17/2020	1/20/2021
6.1	Furnish RCP Materials	12/17/2020	12/24/2020	12/17/2020	12/24/2020	12/17/2020	12/24/2020
6.2	Excavate RCP Trench	12/24/2020	12/31/2020	12/24/2020	12/31/2020	12/24/2020	12/31/2020
6.3	Install RCP Pipe	12/31/2020	1/6/2021	12/31/2020	1/6/2021	12/31/2020	1/6/2021
6.4	Backfill RCP Pipe	1/6/2021	1/20/2021	1/6/2021	1/20/2021	1/6/2021	1/20/2021

12.1.5 EXPORT COPY OF MS PROJECT FILE

If your project's schedule is integrated with MS Project, you can export a copy of your MS Project file. This can be advantageous if a preliminary schedule is needed for a starting point schedule, as the project goes into execution. Recreating the schedule from scratch can be time consuming and error prone, as the existing schedule details might not be properly captured in the beginning stages.



12.1.6 MANAGE CHANGES BETWEEN ESTIMATE AND SCHEDULE

As changes to scope, resources, and costs come up in your estimate, and changes to relationships and dates occur in the schedule, you can continue updating your estimate and schedule as needed.

12.1.6.3 PLUG DAYS

The Schedule Plug Days option allows you to define the duration in the schedule separate from the duration defined for your cost items on the Production tab. For example, your 10" PVC Pipe activity may have extra days in the schedule due to the delivery date of the pipe material, but you don't want those extra days to drive the costs in your estimate, since your crews won't be working on the activity on those extra days.

TIP	All superior cost items are hard-coded to use Schedule Plug Days.

STEP BY STEP – SCHEDULE PLUG DAYS

1. Look at the Days (Duration driven) column in the CBS where it shows 4.65 days for Excavate RCP Trench.
2. Make sure the **Schedule Plug Days** checkbox is selected on the Excavate RCP Trench cost item, and then enter a Plug Days duration for the number of days the item will be scheduled in Microsoft Project (**7** days).

CBS Position Code	Description	Days (Duration driven)	Schedule Plug Days	Plug Days
6	**36 Inch RCP Culvert Class III**	18.66	✓	26.01
6.1	Furnish RCP Materials	0.00	✓	5.00
6.2	Excavate RCP Trench	4.65	✓	7.00
6.3	Install RCP Pipe	4.10		4.10
6.4	Backfill RCP Pipe	9.92		9.92

- This allows you to maintain your duration of 4.65 days in the estimate and 7 days in the schedule.

  Any duration changes made in Project will import into InEight Estimate as Plug Days automatically so that they can be reviewed by the estimator before making any changes to production in InEight Estimate.

12.1.6.4 UPDATE MICROSOFT PROJECT WITH INEIGHT ESTIMATE CHANGES

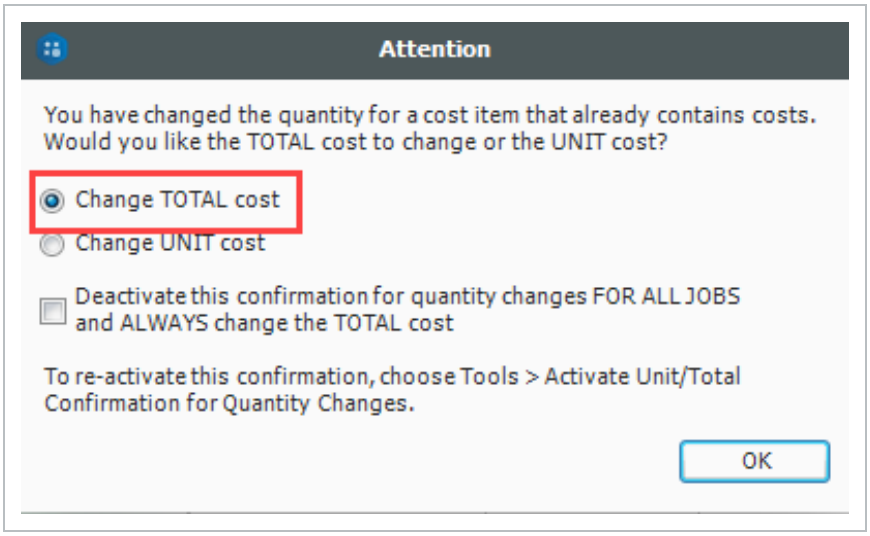
The following steps will walk you through updating the schedule with a scope change in your estimate.

STEP BY STEP – UPDATE MS PROJECT WITH INEIGHT ESTIMATE CHANGES

1. In the InEight Estimate **Training Job**, from the Estimate tab, select **Cost Breakdown Structure**.
   - In this scenario, there is a scope change for your Excavation requiring you to change all of your quantities
2. Change the quantity in the Forecast (T/O) Quantity field in the CBS as specified below.

Quantity Change for Cost Item			
CBS Code	Description	Old Quantity	New Quantity
5	Asphalt Concrete Hot Mix Type A	35,000	25,000

- As you make your changes, take note of how your duration changes in the **Days (Duration driven)** column for these items.
- If prompted about changing Total or Unit Cost, select **Change TOTAL cost**, so that your unit costs stay intact



3. From the Estimate tab, select **Schedule>Update Projectfrom InEight Estimate** to send the changed hours to Microsoft Project.
4. Go back to the **Training Job** in Microsoft Project.
   - The Microsoft Project scheduled duration should have changed from 4.65 days to 7 days to match the updated duration in InEight Estimate for Excavate RCP Trench
   - You can also see that the days for Asphalt Concrete Hot Mix Type A and its subordinates

adjusted because you adjusted the Forecast T/O Quantity in InEight Estimate

	01 - CBS Position Code	Description	Duration	Start	Finish
0	0	JOB	239.51 days?	Mon 2/3/20	Fri 1/1/21
1	1	Mobilization	10 days?	Mon 2/3/20	Fri 2/14/20
2	2	Clearing & Grubbing	10 days?	Mon 2/17/20	Fri 2/28/20
3	3	Unclassified Excavation	1 day?	Mon 3/2/20	Mon 3/2/20
4	4	Aggregate Base	155 days?	Tue 3/3/20	Mon 10/5/20
5	4.1	Furnish & Haul Base Material	45 days?	Tue 3/3/20	Mon 5/4/20
6	4.2	Finegrade Subgrade	40 days?	Tue 5/5/20	Mon 6/29/20
7	4.3	Install Aggregate Base	70 days?	Tue 6/30/20	Mon 10/5/20
8	4.3.1	Place Aggregate Base	30 days?	Tue 6/30/20	Mon 8/10/20
9	4.3.2	Blue Top Aggregate Base	40 days?	Tue 8/11/20	Mon 10/5/20
10	5	Asphalt Concrete Hot Mix Type A	37.5 days?	Tue 10/6/20	Thu 11/26/20
11	5.1	Furnish & Haul Hot Mix	20.83 days?	Tue 10/6/20	Tue 11/3/20
12	5.2	Install Hot Mix Type A	16.67 days?	Tue 11/3/20	Thu 11/26/20
13	6	36 Inch RCP Culvert Class III	26.01 days?	Thu 11/26/20	Fri 1/1/21
14	6.1	Furnish RCP Materials	5 days?	Thu 11/26/20	Thu 12/3/20
15	6.2	Excavate RCP Trench	7 days?	Thu 12/3/20	Mon 12/14/20
16	6.3	Install RCP Pipe	4.1 days?	Mon 12/14/20	Fri 12/18/20
17	6.4	Backfill RCP Pipe	9.92 days?	Fri 12/18/20	Fri 1/1/21

5. Your Start and Finish dates are different now. In InEight Estimate, from the Estimate tab, select **Schedule >Update InEight Estimate from Project** to update InEight Estimate with the new dates.

CBS Position Code	Description	Start	Finish	Early Start	Early Finish	Late Start	Late Finish
+ 2	Clearing & Grubbing	2/17/2020	2/28/2020	2/17/2020	2/28/2020	2/17/2020	2/28/2020
− 3	Unclassified Excavation	3/2/2020	3/2/2020	3/2/2020	3/2/2020	3/2/2020	3/2/2020
+ 3.1	Excavation	3/2/2020	3/2/2020	3/2/2020	3/2/2020	3/2/2020	3/2/2020
+ 3.2	Embankment	3/2/2020	3/2/2020	3/2/2020	3/2/2020	3/2/2020	3/2/2020
− 4	Aggregate Base	3/3/2020	10/5/2020	3/3/2020	10/5/2020	3/3/2020	10/5/2020
+ 4.1	Furnish & Haul Base Material	3/3/2020	5/4/2020	3/3/2020	5/4/2020	3/3/2020	5/4/2020
+ 4.2	Finegrade Subgrade	5/5/2020	6/29/2020	5/5/2020	6/29/2020	5/5/2020	6/29/2020
− 4.3	Install Aggregate Base	6/30/2020	10/5/2020	6/30/2020	10/5/2020	6/30/2020	10/5/2020
+ 4.3.1	Place Aggregate Base	6/30/2020	8/10/2020	6/30/2020	8/10/2020	6/30/2020	8/10/2020
+ 4.3.2	Blue Top Aggregate Base	8/11/2020	10/5/2020	8/11/2020	10/5/2020	8/11/2020	10/5/2020
− 5	Asphalt Concrete Hot Mix Type A	10/6/2020	11/26/2020	10/6/2020	11/26/2020	10/6/2020	11/26/2020
+ 5.1	Furnish & Haul Hot Mix	10/6/2020	11/3/2020	10/6/2020	11/3/2020	10/6/2020	11/3/2020
+ 5.2	Install Hot Mix Type A	11/3/2020	11/26/2020	11/3/2020	11/26/2020	11/3/2020	11/26/2020
− 6	36 Inch RCP Culvert Class III	11/26/2020	1/1/2021	11/26/2020	1/1/2021	11/26/2020	1/1/2021
+ 6.1	Furnish RCP Materials	11/26/2020	12/3/2020	11/26/2020	12/3/2020	11/26/2020	12/3/2020
+ 6.2	Excavate RCP Trench	12/3/2020	12/14/2020	12/3/2020	12/14/2020	12/3/2020	12/14/2020
+ 6.3	Install RCP Pipe	12/14/2020	12/18/2020	12/14/2020	12/18/2020	12/14/2020	12/18/2020
+ 6.4	Backfill RCP Pipe	12/18/2020	1/1/2021	12/18/2020	1/1/2021	12/18/2020	1/1/2021

LESSON 12 REVIEW

1. Under the Job Properties > Schedule tab, which setting can be enabled to account for plugged costs (e.g., for subcontractors)?
   a. Resource price/unit
   b. Expense Costs
   c. Schedule ID
   d. Actuals

---

2. For InEight Estimate schedule integration with Primavera, which of the following can be sent from your estimate to the schedule? (Select all that apply)
   a. Activity data
   b. Cash Flow graphs
   c. Resource data
   d. Cost data
   e. Price data

---

3. The Schedule Plug Days option allows you to define the duration in the schedule separate from the duration defined for your cost items on the Production tab.
   a. True
   b. False

LESSON 12 SUMMARY

As a result of this lesson, you can:

- Set up scheduling options
- Update Schedule from InEight Estimate
- Update InEight Estimate from Schedule
- Manage changes between estimate and schedule

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LESSON 13 – CASH FLOW

LESSON DURATION: 25 MINUTES

LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Interpret cash flow and resource utilization on the Cash Flow graph
- Select Cash Flow Options
- Change Cash Flow Display Settings

13.1 CASH FLOW OVERVIEW

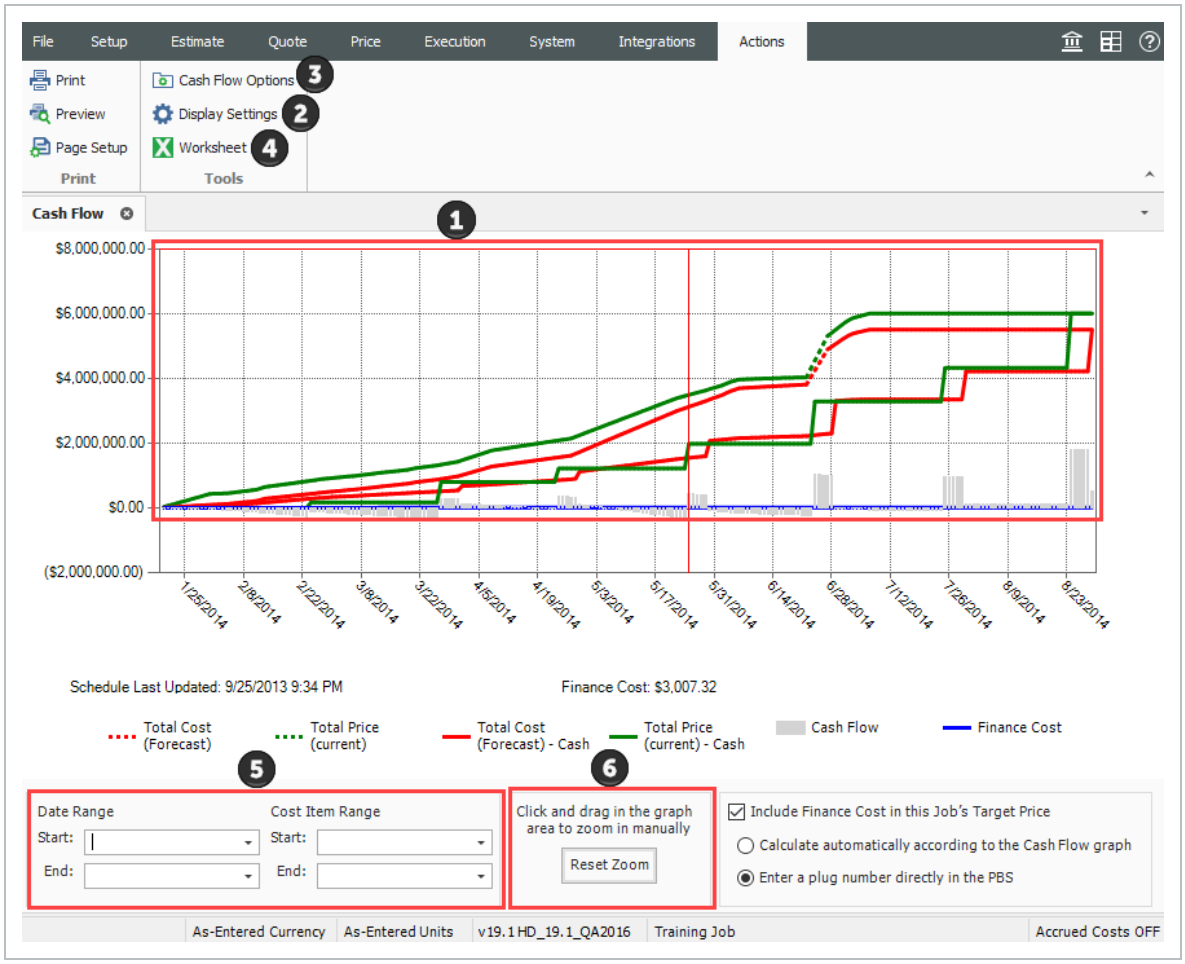
The Cash Flow form provides a graphical representation of the cash flow and resource utilization of your project, so you can quickly assess financing and resource needs.

You can open the Cash Flow form by selecting the **Estimate** tab from the Estimate landing page, then selecting **Cash Flow** from the Schedule section.

In order to generate a cash flow curve the estimate must be populated with schedule dates either directly from integration with Primavera, Microsoft project, or input manually.

Overview - Cash Flow Form

Section	Description
1	The graph displays the projected cash flow of your project, along with job financing expense, individual cost category costs and resource utilization. • The x-axis measures time • The left y-axis measures amounts • The right y-axis measures quantities (when resource utilization is displayed) • All graphs depicted on the Cash Flow form can be displayed based on Pay Quantity or Forecast (T/O) Quantity
2	Click on the **Display Settings** icon to indicate what to display on the graph. • You can display total costs and price or specific cost categories • You can also set the display settings to report on Resource Utilization
3	Click on the **Cash Flow Options** icon to specify revenue timing, cost timing, and cost of money.
4	Click the **Excel** icon to export the numerical data represented on the graph into an Excel spreadsheet where you can run additional analysis.
5	You can filter the Cash Flow graph by date range or by a range of cost items.
6	Click and drag over the graph to zoom in on a particular section. Click the **Reset Zoom** button to restore the graph to its original state.



13.2 CASH FLOW OPTIONS

The Cash Flow Options are used to define the cash flow rules (revenue timing, cost timing, cost of money, and quantities) needed to calculate the finance expense and cash flow for your project.

Cash flow rules (revenue timing, cost timing, cost of money, and quantities) describe how cash flow occurs between a contractor and a client, and between contractors or owners and vendors/subcontractors. Cash flow is then calculated based on both the earning and payment terms you specify, and the job's schedule and pay item prices.

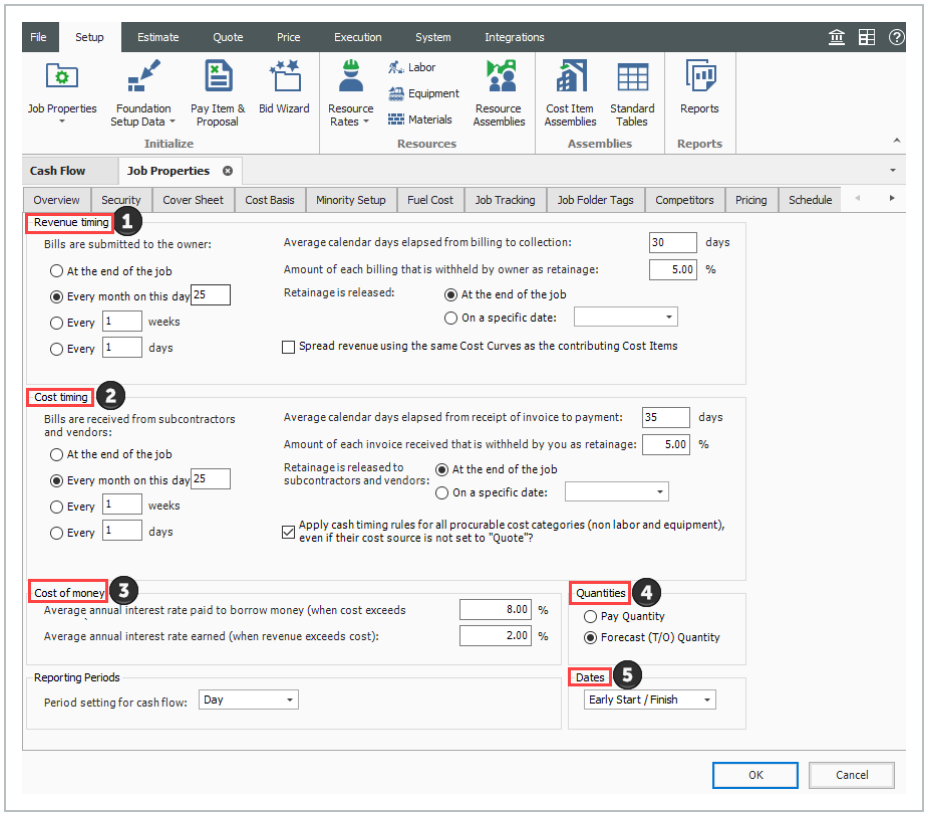
To open the Cash Flow Options, click on the **Cash Flow Options** icon in the Tools section of the Actions tab.

TIP	You can also access Cash Flow Options from the Setup > Job Properties > Cash Flow tab.

1. **Revenue timing**: Revenue is the amount of money actually paid to a contractor by the client for the completion of project deliverables. This section contains options to specify when and how often payment is recieved.
2. **Cost Timing**: Cost is the amount of money expended to complete the scope of the project. This section contains options to specify when and how often you pay contractors, subcontractors and vendors.

   NOTE To include any of your costs in your cash flow (including indirect costs), they need to be scheduled

3. **Cost of Money:** Represents the financing cost to fund the project. This section contains fields to specify interest rates you pay for the money you borrow, and interest rates you earn for money invested, to determine a total Finance Cost.
4. **Quantities:** Allows you to calculate cash flow based on pay quantities or forecast (T/O) quantities.
5. **Dates:** By default, the scheduled Early Start and Early Finish dates of each cost item (and its resource employments) as listed in the CBS Register, provide the timing of the expenses, revenue, and costs that show up on the Cash Flow graph. You have the option to base cash flow timing on Start/Finish dates or Late Start/Finish dates.

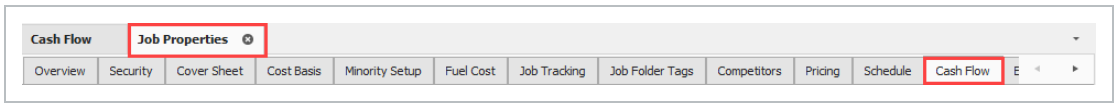


13.2.0.1 CASH FLOW OPTIONS SET UP

The following steps walk you defining settings on the Cash Flow Options form.

STEP BY STEP – CASH FLOW OPTIONS SETUP

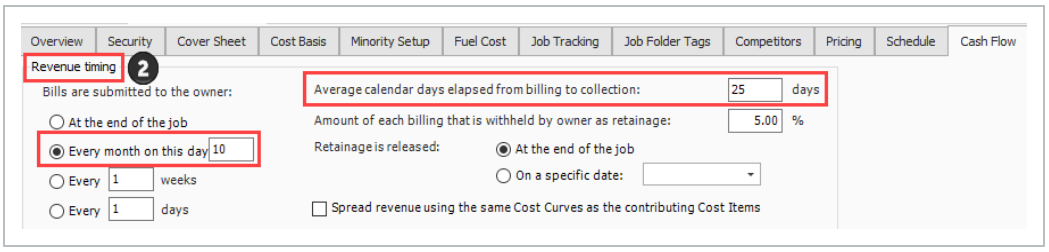
1. In the **E101 – Training Job**, from the Estimate tab, select **Setup >Job Properties >Cash Flow**.



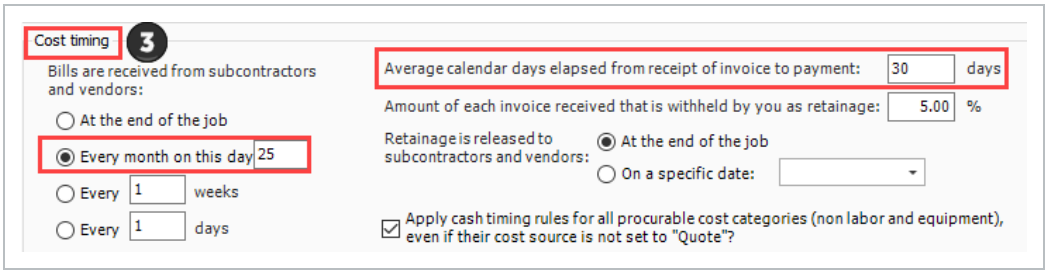
   - You will see the default options already there
   - You will adjust a few of those options

2. Change your Revenue timing to **Every month on the 10th**.

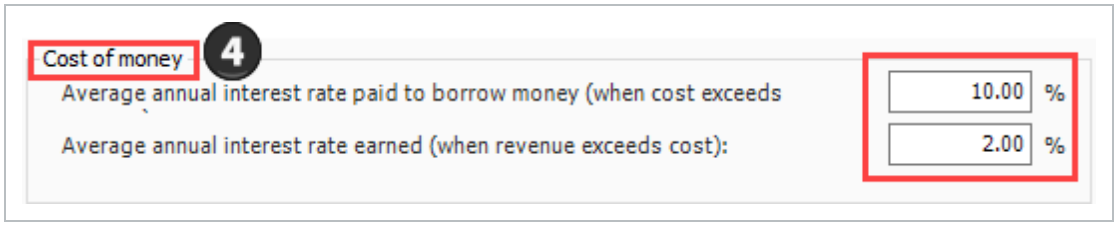
- The average calendar days from billing to collection should be set to 25 days



3. For Cost timing, bills are received from subcontractors and vendors **Every month on the 25th.**
   - Average calendar days elapsed from receipt of invoice to payment should be set to 30 days



4. For Cost of money, enter **10%** for the Average annual interest rate paid to borrow money (when cost exceeds revenue) and **2%** for Average annual interest rate earned (when revenue exceeds cost).



5. Leave all remaining options as originally defaulted.

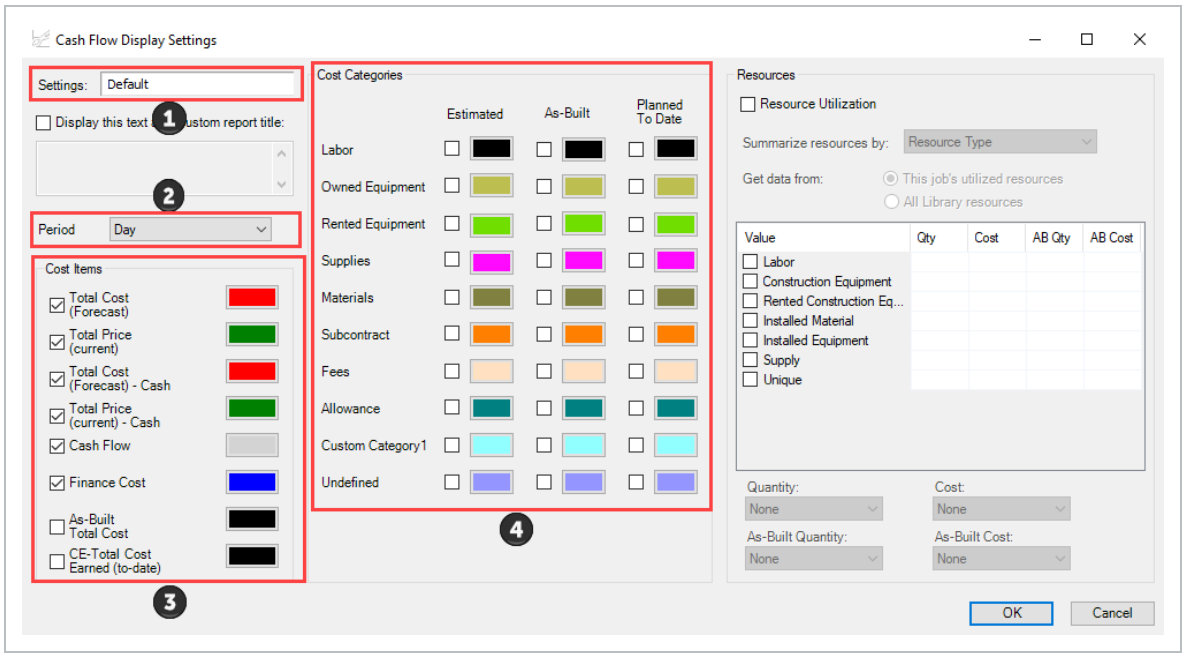
13.3 CASH FLOW DISPLAY SETTINGS

13.3.1 COST ITEMS AND COST CATEGORIES

The Cash Flow Display Settings allow you to control what information displays on the Cash Flow graph. To open the Display Settings click on the **Actions > Display Settings** icon in the Tools section.

Overview - Cash Flow Display Settings - Cost Items and Cost Categories

Section	Description
1	You can save your display settings for future use.
2	Select how the graph measures the timing of your cash flow. Options include: Day, Week, Month, Quarter, and Year.
3	Under the Cost Items section, you can select: • **Total Cost (Forecast)**: The total cost of your scheduled cost items, based on when your costs are accrued (when your cost items are scheduled). This is displayed as a dashed line on the graph • **Total Price (current)**: The total revenue of your pay items, based on when the revenue is earned (when your cost items are scheduled). This is displayed as a dashed line on the graph • **Total Cost (Forecast) - Cash**: The total cost of your scheduled cost items, reflecting the cost timing you specify in the Cash Flow Options. This is displayed as a solid line on the graph • **Total Price (current) - Cash**: The total revenue of the pay items, reflecting the revenue timing you specify in the Cash Flow Options. This is displayed as a solid line on the graph • **Cash Flow**: Displays the difference between your Total Cost - Cash and Total Price - Cash values, so you can see if you are making or losing money • **Finance Cost**: Displays the Cost of Money amount calculated from the settings you specify in the Cash Flow Options
4	You can check the Estimated box for any specific cost categories you need to display. • The other check boxes are used for InEight Estimate Performance



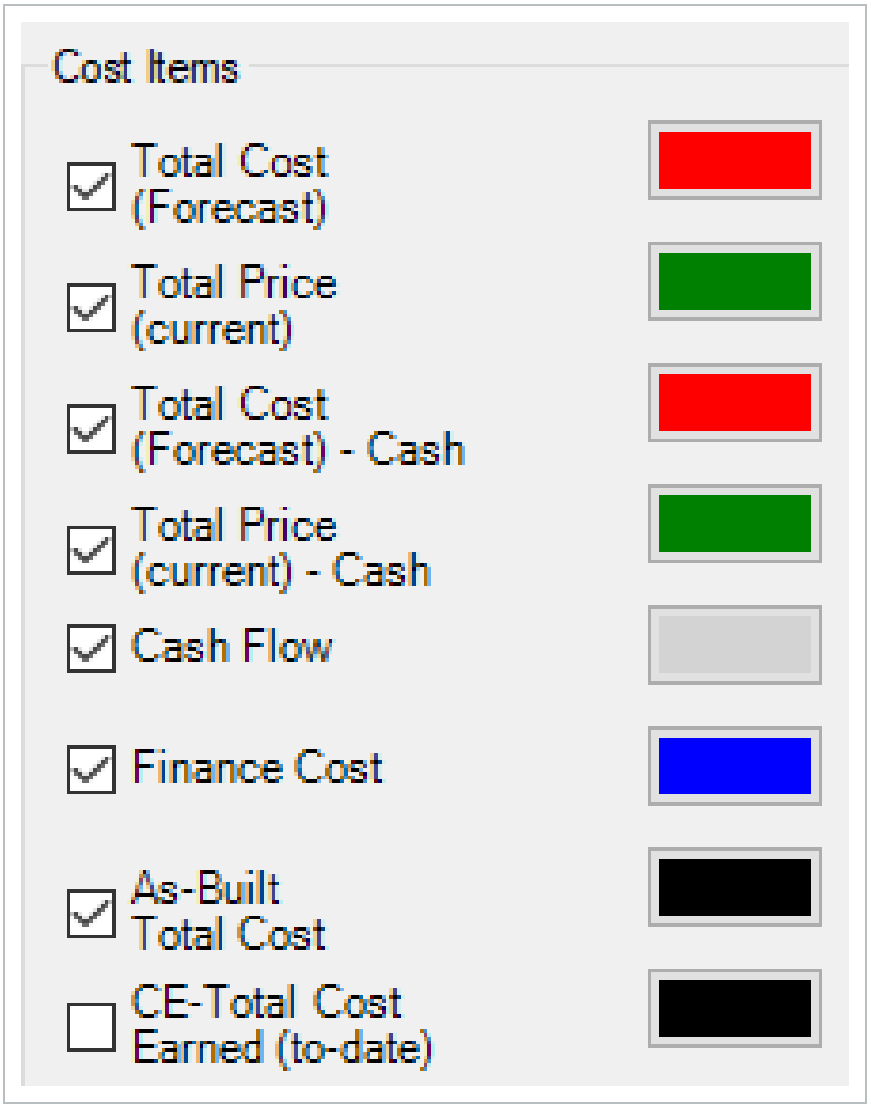
13.3.1.1 CASH FLOW DISPLAY SET UP

The following steps walk you through setting up your Cash Flow Display Settings.

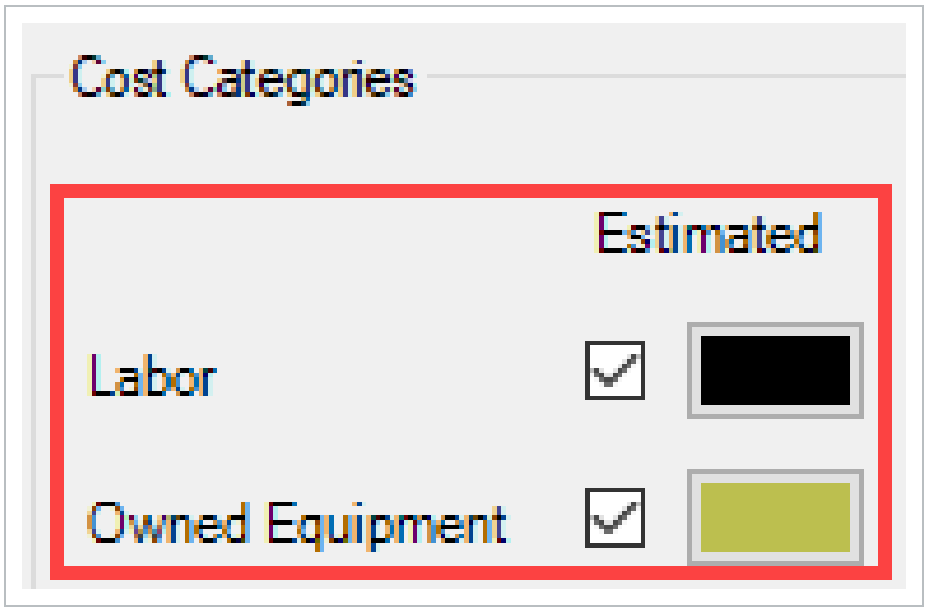
STEP BY STEP – CASH FLOW DISPLAY SETTINGS SET UP

1. In the **E101 – Training Job**, from the Estimate tab, select **Cash Flow** from the Schedule section.
2. On the **Actions** tab, select **Display Settings** to open the Display Settings window**.**
3. From the Period drop-down list, select **Week**.
4. Under the Cost Items section, make sure the following are selected:
    - Total Cost (Forecast)
    - Total Price (Forecast)
    - Total Cost (Forecast) – Cash
    - Total Price (Forecast) – Cash
    - Cash Flow

- Finance Cost

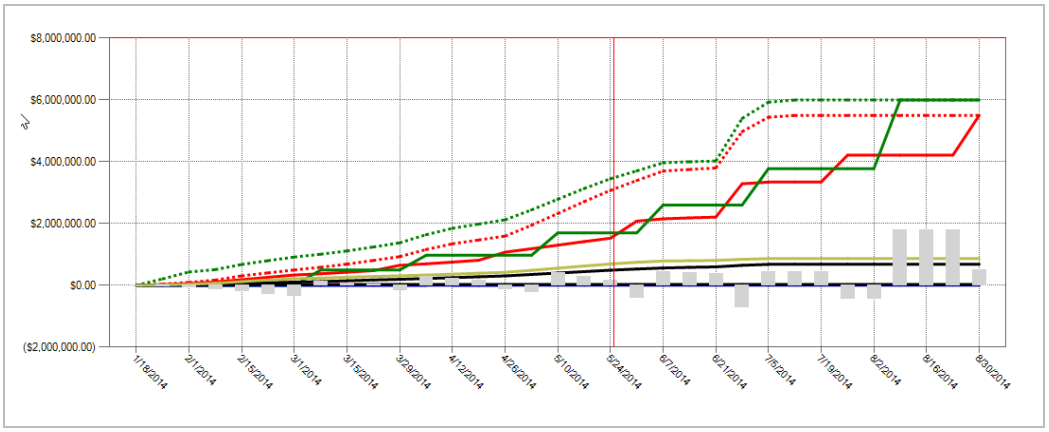


5. Under the **Cost Categories** section, check the **Estimated** checkbox for the Labor and Owned Equipment categories.

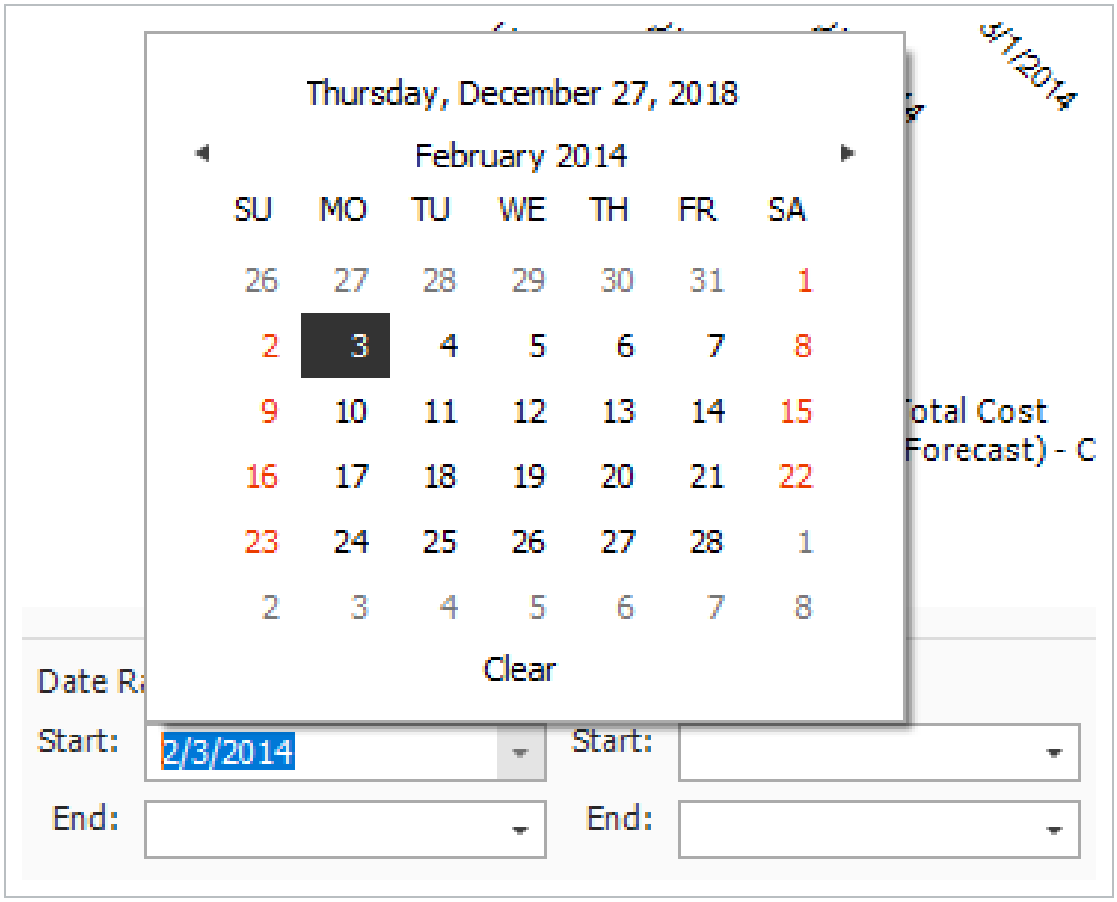


6. Click **OK** to close the Display Settings window.
    - Your Total Cost (Forecast) displays as a dashed red line, indicating your accrued costs based on when your cost items are scheduled and the assigned cost curves for each cost item.
    - Your Total Price (current) displays as a dashed green line, indicating the revenue you've earned, based on the timing of your pay items
    - Your Total Cost (Forecast) – Cash displays as a solid red line, indicating your costs, based on when your cost items are scheduled *and* the cost timing defined in Cash Flow Options
    - Your Total Price (current) – Cash displays as a solid green line, indicating your revenue, based on the timing of your pay items *and* the revenue timing defined in Cash Flow Options
    - Your Cash Flow displays grey bars indicating when your cash flow is negative or positive

- Your Finance Cost displays as a blue line on the graph



7. To filter your graph by date range, click on the **Start** drop-down arrow and select a start date of your date range filter.



8. Click on the **End** drop-down arrow and select an end date of your date range filter.

    - Your graph now only includes your cost items that fall within the specified date range
9. To remove the filter, click in the **Start** field and press the **Backspace** key.
10. Do the same for the End field.

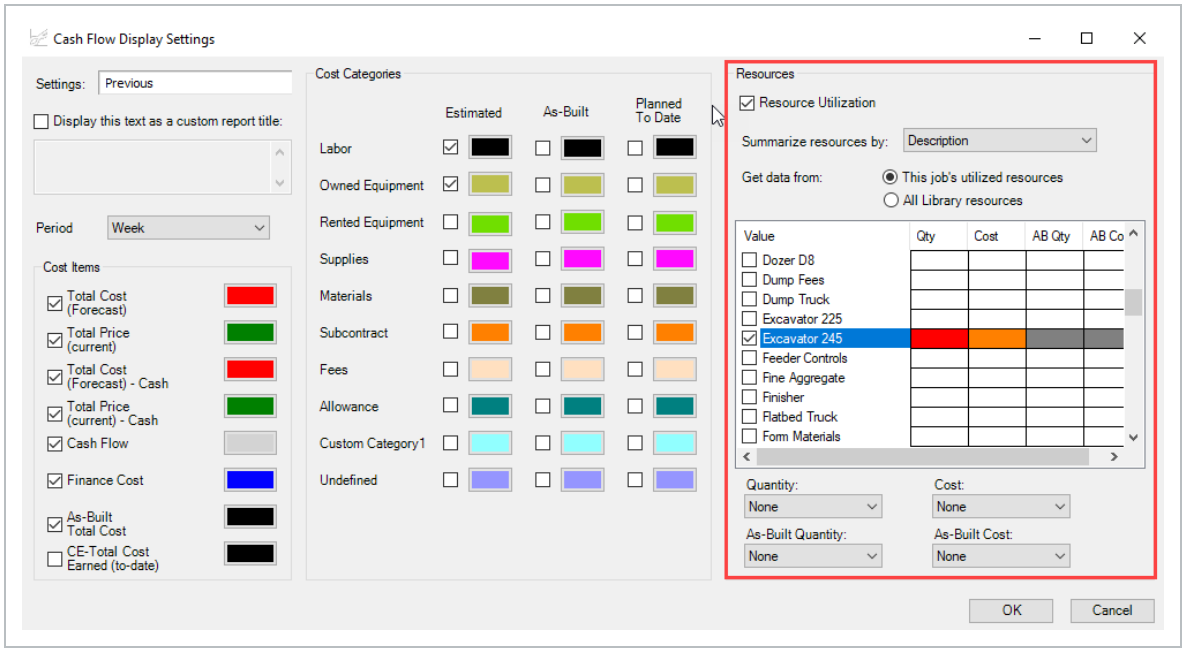
13.3.2 RESOURCE UTILIZATION

You can also use the Cash Flow graph to report on resource utilization. For example, you may want to run a report that displays a work hours curve for a particular labor trade or to see the peak usage times for a particular piece of heavy equipment.

You can run resource utilization graphs based off of any of the following:

- Resource Type
- Resource Code
- Description
- Organizational Category
- Tag 1, 2, and 3
- Quote Group
- Account Code and Cost Item Account Code
- Fuel Type

You set up your resource utilization settings from the same Display Settings window you use for setting up Cash Flow, **Display Settings** in the Tools section of the Actions menu.

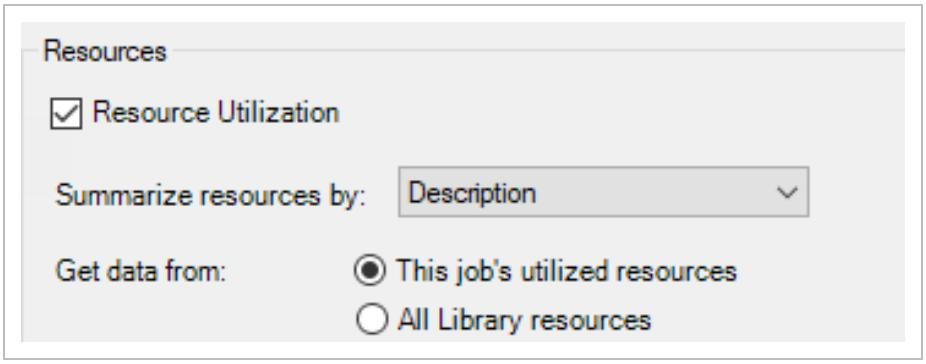


13.3.2.2 RESOURCE UTILIZATION DISPLAY SET UP

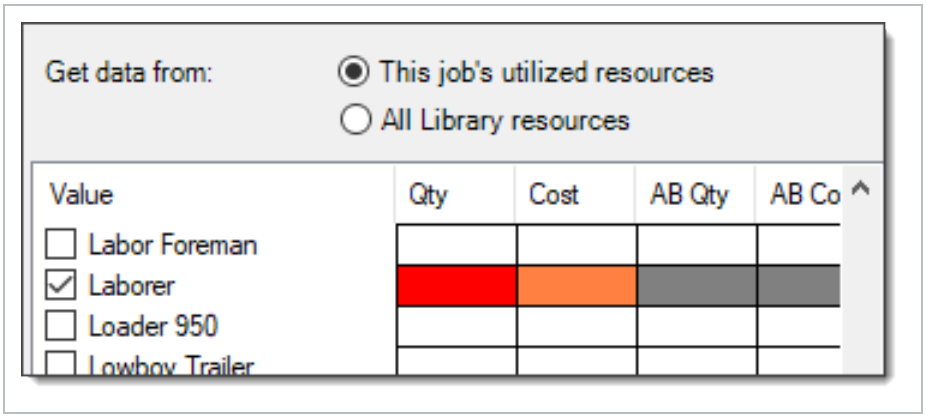
The following steps walk you through setting up your Cash Flow graph to report on Resource Utilization.

STEP BY STEP – RESOURCE UTILIZATION DISPLAY SETUP

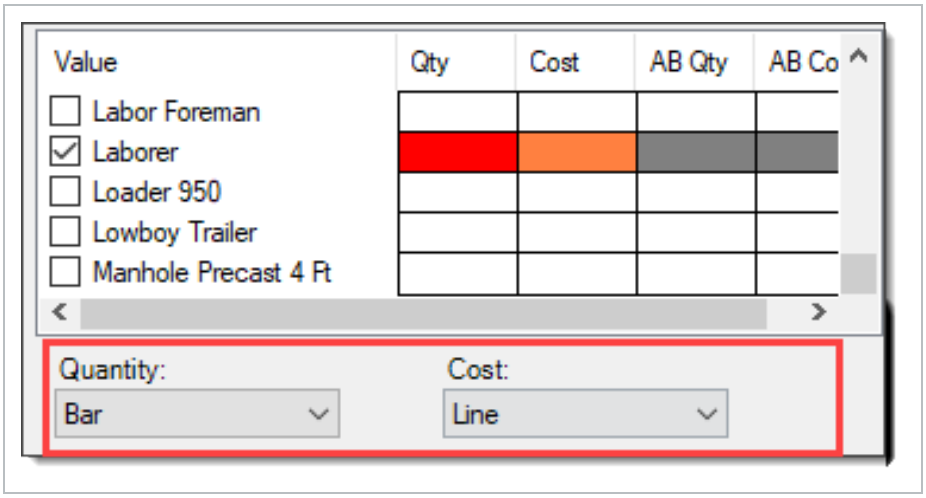
1. In the **E101 – Training Job**, from the Estimate tab, select **CashFlow** from the Schedule section.
2. On the Actions tab, select **Display Settings** to open the Display Settings window**.**
3. Make sure the all checkboxes are unchecked under the Cost Items and Cost Categories sections.
4. Under the Resources section, check the **Resource Utilization** checkbox.
5. From the Summarize resources by drop-down list, select **Description**.



6. From the resulting list of Values, select **Laborer**.
7. Click in the **Qty** field for the selected value and select a color of your choice.
    - In this case the Qty represents the work hours for your Laborer resource
8. Click in the **Cost** field for the selected value and select a different color of your choice.

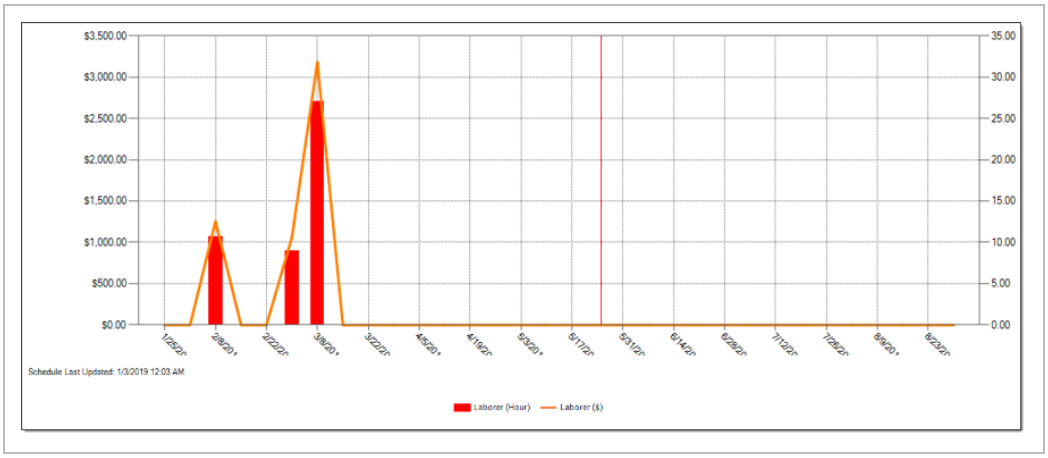


9. From the **Quantity and Cost** drop down lists, you can select how your quantities and costs will display on the graph. In this case select the Quantity to display as a **Bar** and Cost to display as a **Line**.



10. Click **OK** to close the Display Settings window.

- The graph now displays the utilization of your Laborer resource, showing the work hours and costs used over time



The graphs displayed on the Cash Flow form are based on the estimated cost of each cost item and its resource employments (in the case of resource utilization).

LESSON 13 REVIEW

1. Under what cash flow form can you set up your revenue and cost timing?
   a. Cash Flow Options
   b. Display Settings
   c. Worksheet
   d. Page Setup

---

2. By default, the red dashed line on the Cash Flow graph represents the:
   a. Total Cost (Forecast)
   b. Total Price (current)
   c. Total Cost (Forecast) – Cash
   d. Total Price (current) - Cash

---

3. In the Cash Flow Display Settings, Resource Utilization allows you to view a graphical summarization of your resources by which of the following? (Select all that apply)
   a. Resource File Description
   b. Resource Type
   c. Resource Code
   d. Description
   e. Wage Zone
   f. Organizational Category

LESSON 13 SUMMARY

As a result of this lesson, you can:

- Interpret cash flow and resource utilization on the Cash Flow graph
- Select Cash Flow Options
- Change Cash Flow Display Settings

LESSON 14 – INEIGHT ESTIMATE CALCULATORS

LESSON DURATION: 20 MINUTES

LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Use the Haul Calculator
- Use the Trench Calculator
- Use the In-Field Calculator

14.1 HAUL CALCULATOR

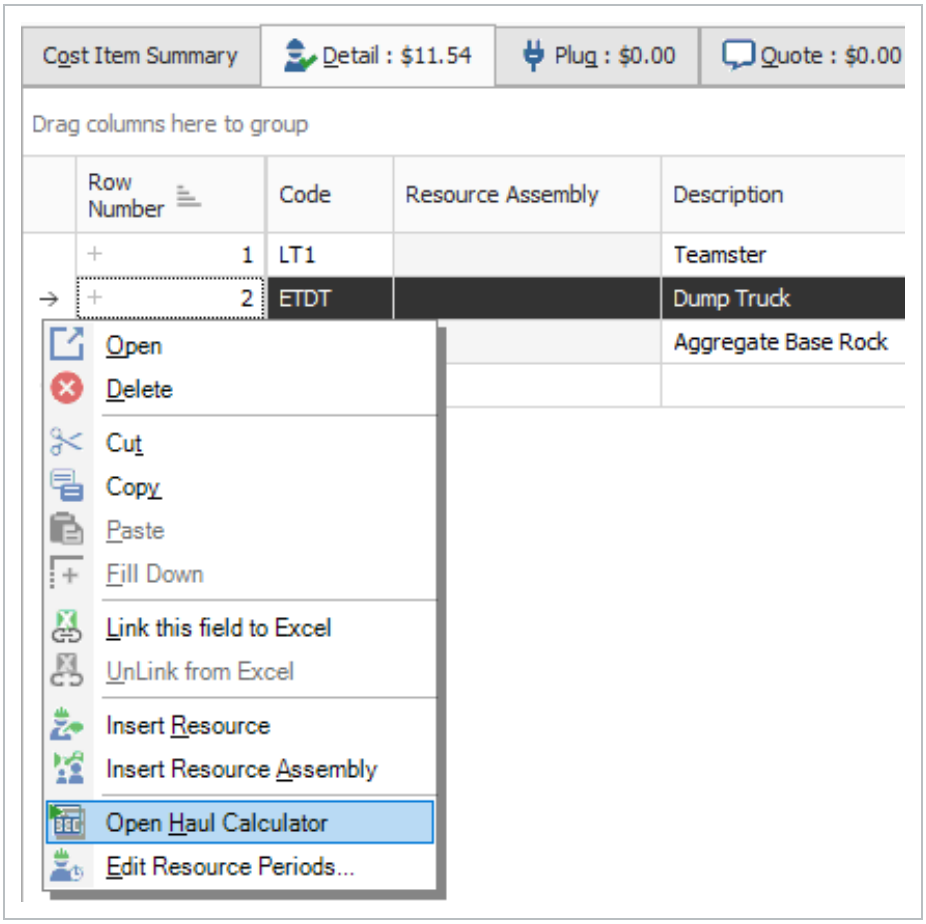
The **Haul Calculator** allows you to enter the specifics of up to three haul routes (distance, travel speed, etc.). Once entered, you can either:

- Calculate the number of trucks required to complete the haul in a set amount of time, or
- Calculate how long it will take to complete the haul with a set number of trucks

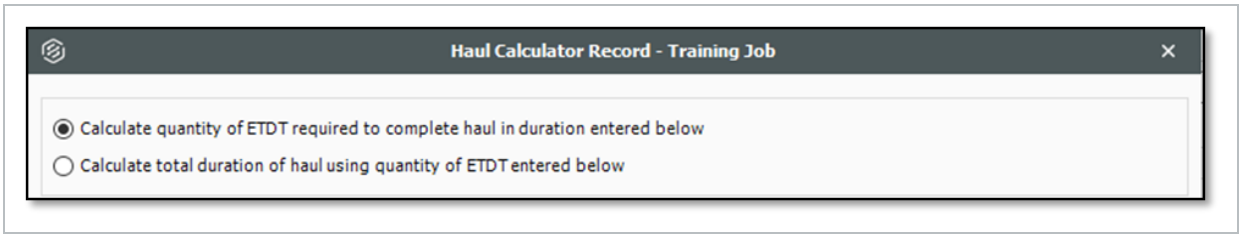
The following activity walks step by step through using the Haul Calculator to calculate the number of trucks needed for a cost item.

STEP BY STEP – HAUL CALCULATOR - CALCULATE QUANTITY OF TRUCKS

1. Open the **Training Job** and from the Estimate tab, select **Cost Breakdown Structure**.
2. Open cost item **4.1 – Furnish & Haul Base Material**.
3. On the Cost Item Record, click the **Detail tab**.
4. Right click on the **ETDT – Dump Truck** row header and select **Open Haul Calculator**.



5. On the Haul Calculator, select the **Calculate quantity of ETDT required to complete haul in duration entered below** radio button. (ETDT is the resource code for the Dump Truck you selected.)



6. For the **Haul Distance**, type **5**.
7. Enter an **Average Payload (Ton)** of **30**.
8. For **Load Time (Minutes)**, type **3**.
9. Enter a **Travel Speed Full** of **35** Mile/Hour.
10. For **Dump Time (Minutes)**, type **2**.

11. Enter a **Travel Speed Empty** of **45** Mile/Hour. Notice this calculates a cycle time of 20.24.
12. Enter a **Work Efficiency** of **90 percent**.

	Route 1
Quantity (Ton)	45,000.00
Haul Distance - One Way (Mile)	5.00
Average Payload (Ton)	30.00
Total Loads	1,500.00
Load Time (Minutes)	3.00
Travel Speed Full (Mile/Hour)	35.00
Dump Time (Minutes)	2.00
Travel Speed Empty (Mile/Hour)	45.00
Cycle Time (Minutes)	20.24
Work Efficiency (%)	90.00
Total Hauler Hours	562.17
Hours Per Shift	8.00

- The calculator shows a result of 1.56 concurrent haulers

Results

Quantity of resource ETDT	1.56	0.00	0.00	**1.56**	Concurrent Haulers
Total duration (Hours)	0.00	0.00	0.00	**360.00**	Hours

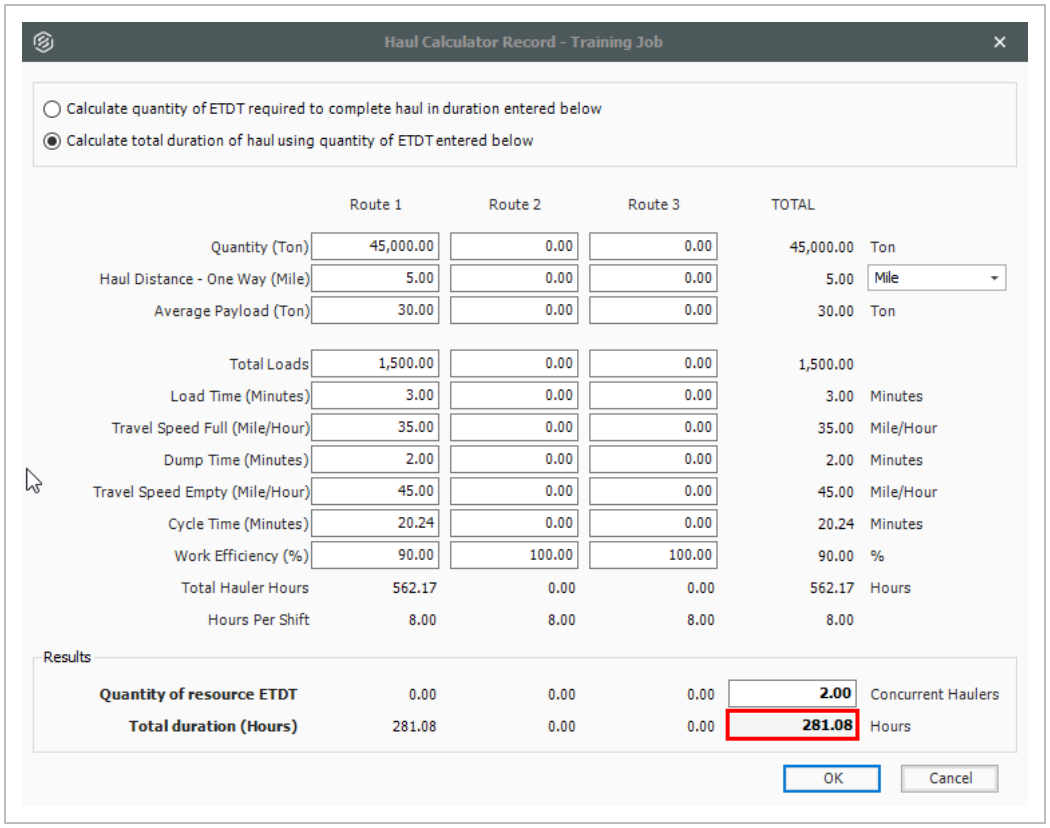
OK Cancel

13. Click **OK**.
14. Your cost item now shows a quantity of 1.56. Round up the Quantity to **2**. Also, adjust the Teamster Quantity to **2** (if needed).

Row Number	Code	Resource Assembly	Description	Quantity (Less Waste)	Waste % Add-on	Quantity	Unit of Measure
1	LT1		Teamster			2.00	Each
2	ETDT		Dump Truck			2.00	Each
3	MBR		Aggregate Base Rock	45,500.00	5.00	47,775.00	Ton

STEP BY STEP – HAUL CALCULATOR - CALCULATE TOTAL DURATION

1. Open the **Training Job** and from the Estimate tab, select **Cost Breakdown Structure**.
2. Open cost item **4.1 – Furnish & Haul Base Material**.
3. On the Cost Item Record, click the **Detail** tab.
4. Change your Teamster and Dump Truck quantities back to **2 each**.
5. Right click on the **ETDT – Dump Truck** row header and select **Open Haul Calculator**.
6. On the Haul Calculator, select the **Calculate total duration of haul using quantity of ETDT entered below** radio button.
    - With the previous information you entered still there, the calculator calculates a total duration of 281.08 hours



7. Click **OK**.
    - The Hours field on the Production tab updated to 281.08
    - Your ETDT Dump Truck quantity remains at 2

14.2 TRENCH CALCULATOR

The **Trench Calculator** allows you to quickly calculate trench, pipe, and bedding values. You can perform pipe-related take-off by defining the details of the trench (e.g., length, depth, width, hinge elevation, backslope, and swell factor), the pipe (diameter, elevation, and waste factor), and up to four beddings.

With this information, the Trench Calculator can automatically calculate:

- Total excavation volume (neat-line)
- Total excavation volume (including swell/shrinkage)

- Total pipe to purchase
- Lift Volume (for up to four beddings)
- Lift Weight (for up to four beddings)

You can use these calculations to define certain cost item setup data:

- You can use the Total Excavation Volume that is calculated as the quantity of the cost item
- You can use the Total pipe to purchase calculation as the quantity of a resource (e.g., pipe) that has been employed to the cost item
- You can use the Lift Volume or Lift Weight that is calculated as the quantity of a resource employed to the cost item in either cubic yards or tons
- You can click the Toggle English / Metric button at the bottom of the dialog to switch between the English and Metric systems for entering data

TIP	You can access the Trench Calculator from the Actions tab of a Cost Item Record

NOTE	When copying cost items in a job or from job to job, the Trench Calculator variable data is included with the data being copied. When a cost item is copied to the clipboard, Trench Calculator variable data is also included.

14.2.1 TRENCH CALCULATOR - TRENCH TAB

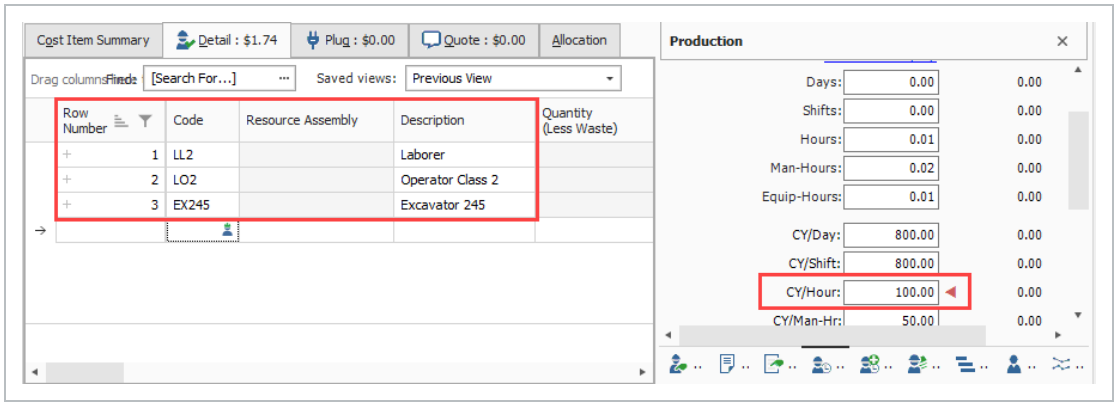
The following steps walk through using the Trench Calculator to take-off excavation volume.

STEP BY STEP – TRENCH CALCULATOR - TRENCH

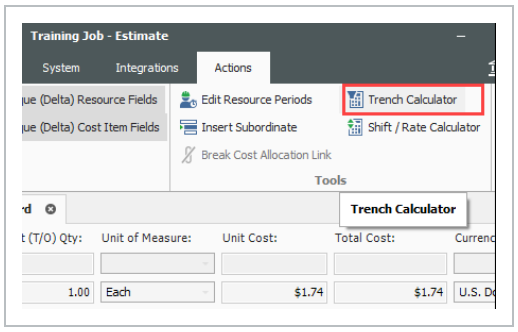
1. Open the **Training Job** and from the Estimate tab, select **Cost Breakdown Structure**.
2. Create a new cost item from the bottom row of your CBS and call it **24" Pipe**.
3. Add the following three subordinates and update their Units of Measure:
    - Excavate Trench: **CY**
    - Install Pipe: **LF**
    - Backfill Trench: **CY**
4. Open the **Excavate Trench** Cost Item Record. Add the following resources:

- **LL2 Laborer – 1**
- **LO2 Operator Class 2 – 1**
- **EX245 Excavator 245 – 1**

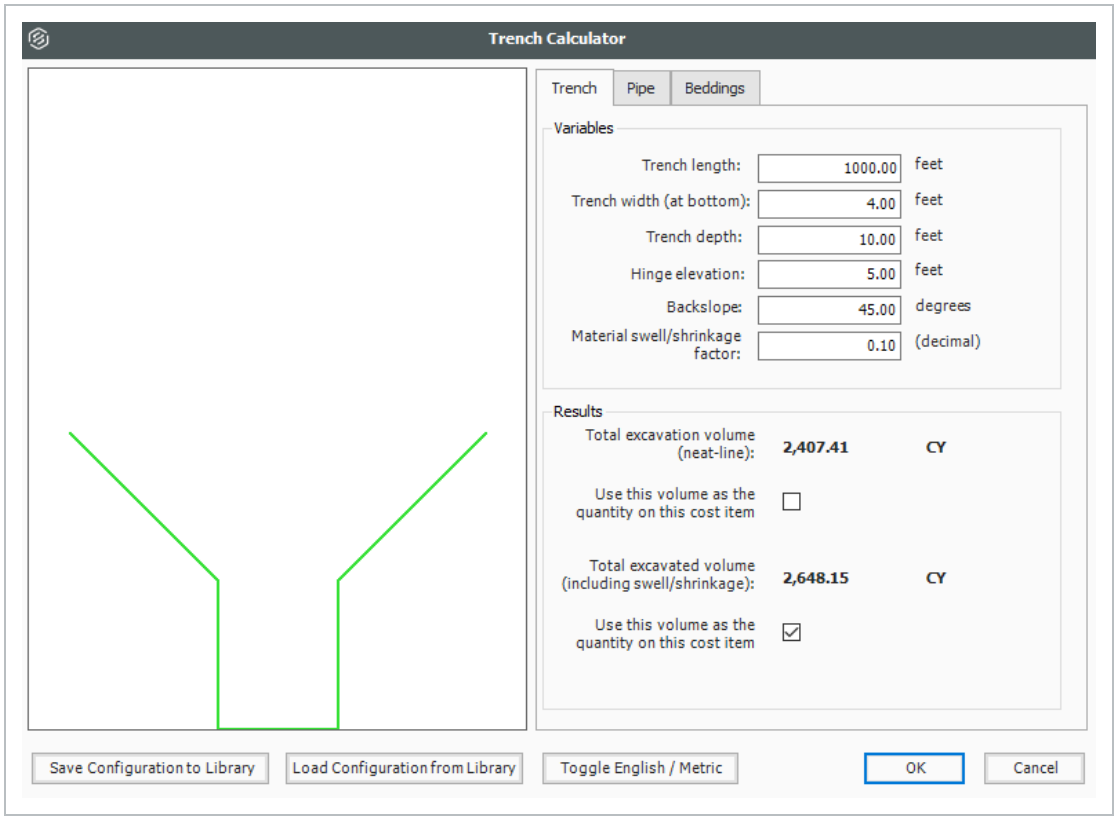
5. Adjust the Production to: **100 CY/Hour**.



6. On the Cost Item Record's Actions tab, select **Trench Calculator**.



7. For **Trench Length**, type **1000.00** feet.
8. For **Trench Width** (at the bottom) type **4.00** feet.
9. Enter a **Trench Depth** of **10.00** feet.
10. Enter a **Hinge Elevation** of **5.00** feet.
11. Enter a **Backslope** of **45** degrees.
12. Define the **Material Swell/Shrinkage Factor** (fraction expressed as a decimal) at **.10**.
    - You can select either a "neat-line" total volume or include swell/shrinkage
13. Select the "Total excavated volume (including swell/shrinkage)" checkbox.



14. Click **Save Configuration to Library** and save the Trench calculator as **Trench Example** with your initials.
15. Click **OK**.

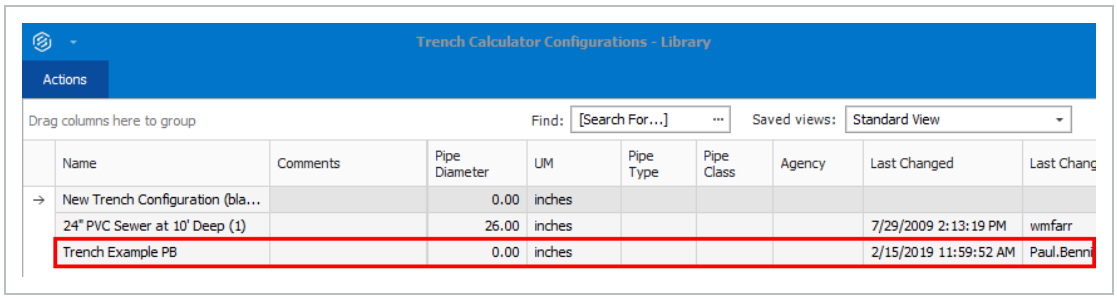
14.2.2 TRENCH CALCULATOR - PIPE TAB

You can also use the Trench Calculator to take off how much piping and bedding you need for the trench.

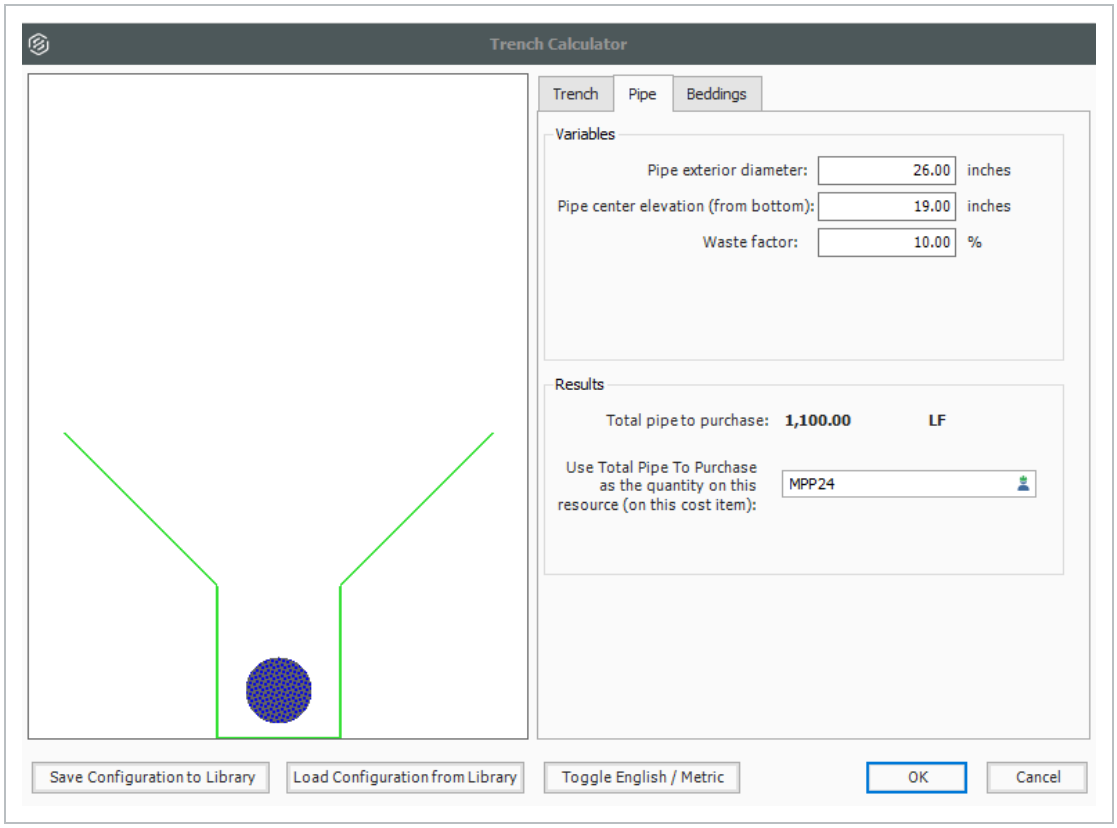
STEP BY STEP – TRENCH CALCULATOR - PIPE

1. On the CBS Register, adjust the Forecast T/O Quantity for the Install Pipe cost item to **1000** LF.
    - Assume this quantity is based off manual take-off calculations you already did
2. Open the **Install Pipe** Cost Item Record.
3. Add the Resource Assembly of **CPIPE - Pipe Crew** and adjust the production to **300** LF / Day.

4. On the Cost Item Record's Actions tab, select **Trench Calculator**.
5. Select **Load Configuration from Library**.
6. Select **Trench Example** (with your initials).



7. Click **OK**.
8. On the Trench Calculator, select the **Pipe** tab.
9. Enter the following for the size and position of the pipe:
   - Pipe exterior diameter: **26.00** inches
   - Pipe center elevation (from bottom): **19.00** inches
   - Waste factor: **10**%
10. Click on the resource icon to pull up the Resource Rate Register.
11. Select the Installed Material tab.
12. Select **MPP24 Pipe 24" PVC SDR35**, then click **OK**.
    - The Pipe variables you entered should match the following image:



13. Click **Save Configuration to Library** and save the Trench calculator as **Trench Example** with your initials.
14. When prompted to overwrite the existing saved file, click **Yes**.
15. Click **OK** to close the Trench Calculator.

14.2.3 TRENCH CALCULATOR - BEDDINGS TAB

The following steps walk you using the Trench Calculator to calculate bedding take-offs.

STEP BY STEP – TRENCH CALCULATOR - BEDDINGS

1. Back on the CBS Register, adjust the Forecast T/O Quantity for **Backfill Trench** to **2300** CY, based on manual calculations.
2. Open the **Backfill Trench** Cost Item Record.
3. Add the following resources:

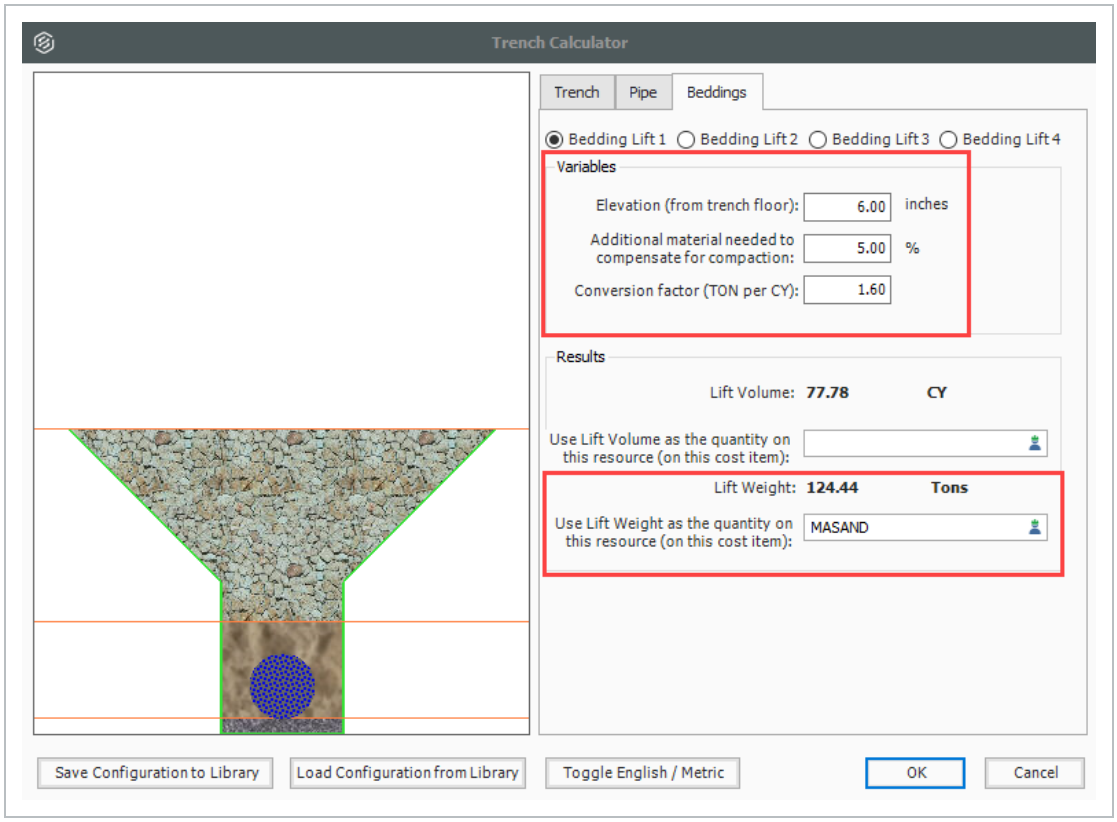
- **LL2 Laborer – 3**
- **LO2 Operator Class 2 – 1**
- **RPC Plate Compactor – 1**
- **EL950 Loader 950 – 1**

4. Adjust the Production to **160** CY/Day.
5. From the Cost Item Record's Actions tab, select **Trench Calculator**.
6. Select **Load Configuration from Library**
7. Select **Trench Example** (with your initials), then click **OK**.
8. On the Trench Calculator, select the **Beddings** tab.
9. On the Beddings tab, you can define up to four beddings to backfill the trench
   - The variables you enter will determine how much bedding you need
10. Enter the following variables for each bedding:

	Bedding Lift 1	Bedding Lift 2	Bedding Lift 3
Elevation (from trench floor)	6.00	38.00	76.00
Additional material needed	5.00	5.00	5.00
Conversion factor	1.60	1.70	1.60

   - Under Results, you can match each of the Bedding Lifts with a material resource, by selecting the **resource** icon and selecting the resource you want to employ from the Material tab
11. Selecting the resource from the Tons selection field, select the following materials for each bedding:

	Resource Code	Resource Description
Bedding Lift 1	MASAND	Sand
Bedding Lift 2	MAFA	Fine Aggregate
Bedding Lift 3	MACA1-1/2	Coarse Aggregate



12. Click **OK**.

- Note that the pipe and bedding materials are added to the cost item with their quantities

Row Number	Code	Resource Assembly	Description	Quantity (Less Waste)	Waste % Add-on	Quantity	Unit of Measure
1	LL2		Laborer			3.00	Each
2	LO2		Operator Class 2			1.00	Each
3	RPC		Plate Compactor			1.00	Each
4	EL950		Loader 950			1.00	Each
5	MASAND		Sand	124.44	0.00	124.44	Ton
6	MAFA		Fine Aggregate	593.66	0.00	593.66	Ton
7	MACA1...		Coarse Aggregate ...	3,327.59	0.00	3,327.59	Ton

EXERCISE 14.1 – TRENCH CALCULATOR

In this exercise, you will practice using the Trench Calculator to take-off piping and bedding materials. Complete the following steps:

1. In the **Training Job**, create a new cost item called **Underground Pipe**.

2. Give the cost item a quantity and unit of measure of **1640 Linear Feet**.

3. Open the new cost item and open the **Trench Calculator**.

4. On the **Trench tab**, enter the variables for the trench:

Trench length	1000 feet
Trench width (at bottom)	4 feet
Trench depth	10 feet
Hinge elevation	5 feet
Backslope	45 degrees
Material swell/shrinkage factor	0.10 (decimal)

   - Do NOT check the box to bring in volume shrinkage.

5. Select the **MPR36** material resource from the drop-down Results list.

6. On the **Beddings** tab, enter bedding variables.

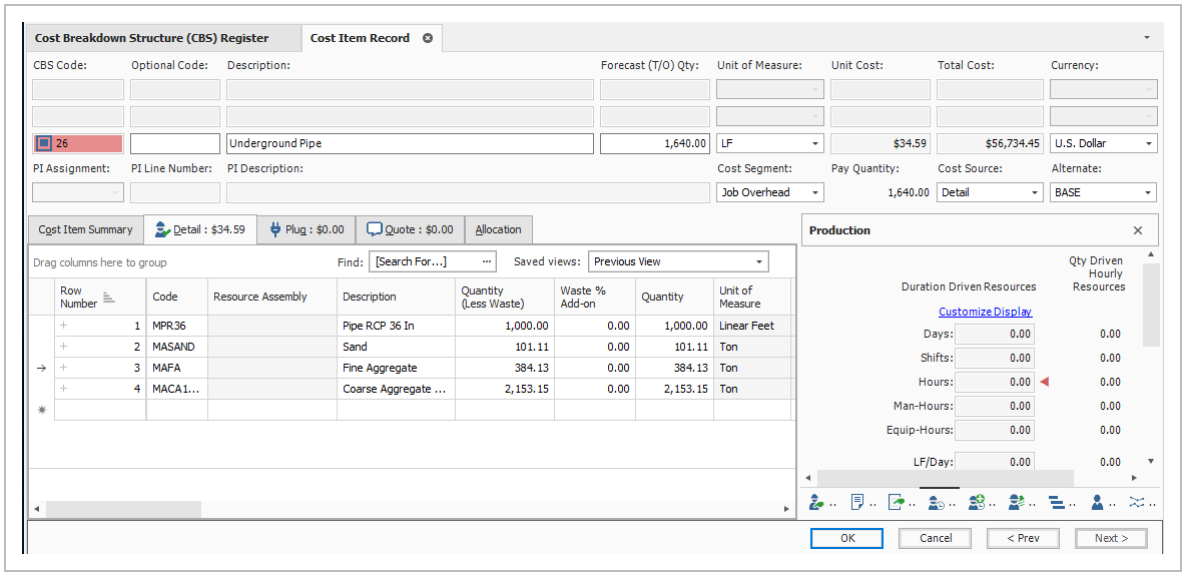
Bedding lift 1	
Elevation (from trench floor)	6 inches
Additional material needed to compensate for compaction	5.00%
Conversions factor (Ton per CY)	1.3
Bedding material resource (Tons)	MASAND

Bedding lift 2	
Elevation (from trench floor)	38 inches
Additional material needed to compensate for compaction	5.00%
Conversions factor (Ton per CY)	1.1
Bedding material resource (Tons)	MAFA

Bedding lift 3	
Elevation (from trench floor)	76 inches
Additional material needed to compensate for compaction	5.00%
Conversions factor (Ton per CY)	1.1
Bedding material resource (Tons)	MACA1-1/2

7. Select **OK** and confirm that the pipe material and bedding materials populated the cost item.

You should end up with the following results



Congratulations, you have completed this exercise!

14.3 IN-FIELD CALCULATOR

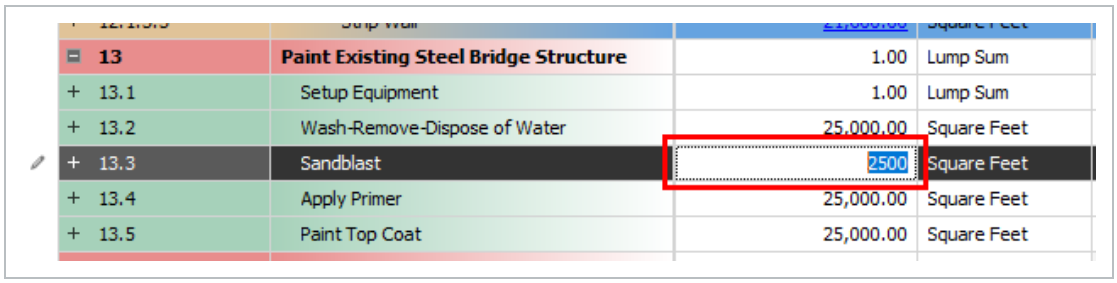
You can use the In-field Calculator to do simple mathematical calculations in any numeric field on records, registers, and tree lists. You use this calculator much like an Excel workbook field, by inserting the cursor in the field where you want to perform a calculation, then pressing the "=" key, followed by a valid arithmetic expression. To display the calculated result, you press the tab key. The resulting value is stored without the arithmetic expression used to calculate the value.

The following steps walk through using the In-field Calculator to calculate the area of how much sandblasting is needed for painting the steel bridge structure specified in the Training Job.

> **NOTE** The resulting field value is stored without the arithmetic expression used to calculate the value.

STEP BY STEP – IN-FIELD CALCULATOR

1. Open the **Training Job** and from the Estimate tab, select **Cost Breakdown Structure**.
2. Scroll to find cost item **13.3 Sandblast**.
3. Click in the **Forecast (T/O) Quantity** field.



13	**Paint Existing Steel Bridge Structure**	1.00	Lump Sum
13.1	Setup Equipment	1.00	Lump Sum
13.2	Wash-Remove-Dispose of Water	25,000.00	Square Feet
13.3	Sandblast	2500	Square Feet
13.4	Apply Primer	25,000.00	Square Feet
13.5	Paint Top Coat	25,000.00	Square Feet

4. Press the **=** key, then type **10*250**.

− 13	**Paint Existing Steel Bridge Structure**	1.00	Lump Sum
+ 13.1	Setup Equipment	1.00	Lump Sum
+ 13.2	Wash-Remove-Dispose of Water	25,000.00	Square Feet
+ 13.3	Sandblast	=10*250	Square Feet
+ 13.4	Apply Primer	25,000.00	Square Feet

5. Press the **Tab** key and it calculates the result.

LESSON 14 REVIEW

1. The Haul calculator allows you to:
   a. Calculate the number of trucks required to complete the haul in a set amount of time
   b. Calculate how long it will take to complete the haul with a set number of trucks
   c. Neither
   d. Both

---

2. The Trench Calculator allows you to quickly calculate _____ values.
   a. Trench
   b. Pipe
   c. Bedding
   d. All of the above

---

3. For the in-field calculator, what symbol needs to be at the beginning of the math equation for it to calculate?
   a. +
   b. –
   c. =
   d. (

LESSON 14 SUMMARY

As a result of this lesson, you can:

- Use the Haul Calculator
- Use the Trench Calculator
- Use the In-Field Calculator

LESSON 15 – ADVANCED PRICING

LESSON DURATION: 40 MINUTES

LESSON OBJECTIVES

After completing this lesson, you will be able to:

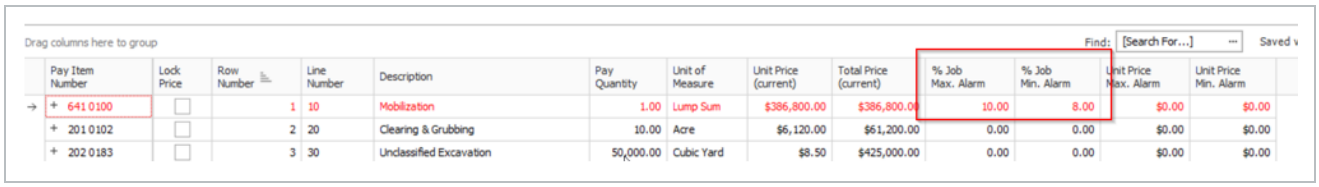
- Use advanced pricing options including: alarm limits, subtotals, rounding precision, and Fixed Final Price
- Create and compare alternates for cost items and pay items
- Use Billing Rates

15.1 ALARM LIMITS

The Alarm Limits lets you establish limits to specific pay items to make sure the pricing is within certain limits, i.e. percentage or unit price. The Alarm Limits do not do any calculations. It informs you if either of the limit types are outside the range. If outside the limits, the row is then colored red.

For example, when pricing Mobilization, there can be limits as to the amount that can be entered and how soon to receive payment. In the screen shot below, you can enter up to 10% of the contract price and receive that amount when 5 or 10% of the work is completed.

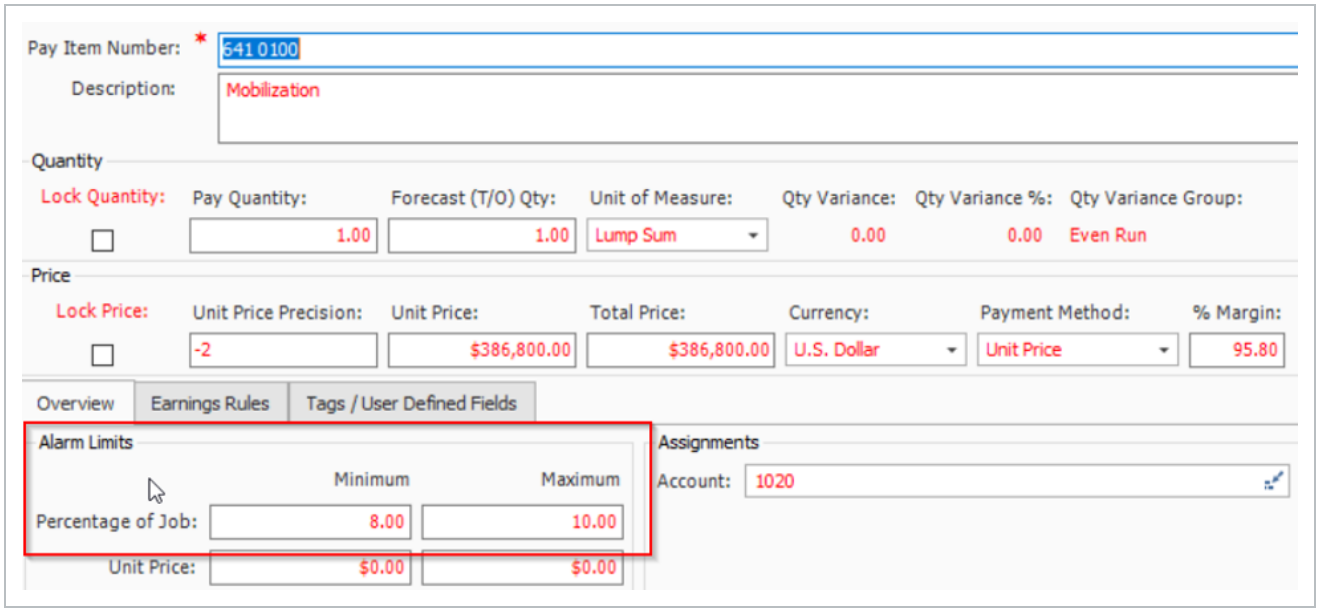
Pay Item and Proposal register:



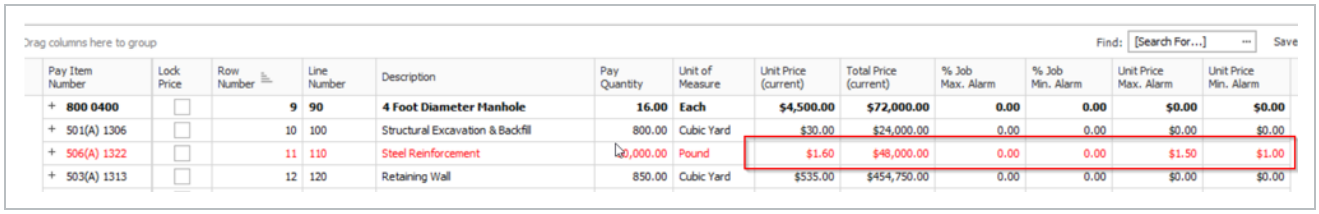
Pay Item Number	Lock Price	Row Number	Line Number	Description	Pay Quantity	Unit of Measure	Unit Price (current)	Total Price (current)	% Job Max. Alarm	% Job Min. Alarm	Unit Price Max. Alarm	Unit Price Min. Alarm
641 0100		1	10	Mobilization	1.00	Lump Sum	$386,800.00	$386,800.00	10.00	8.00	$0.00	$0.00
201 0102		2	20	Clearing & Grubbing	10.00	Acre	$6,120.00	$61,200.00	0.00	0.00	$0.00	$0.00
202 0183		3	30	Unclassified Excavation	50,000.00	Cubic Yard	$8.50	$425,000.00	0.00	0.00	$0.00	$0.00

In this case, the limits are between 8 and 10%. The row is colored red to indicate that the Unit Price is not within the percentage limits.

The screen shot below is the record view for Mobilization.



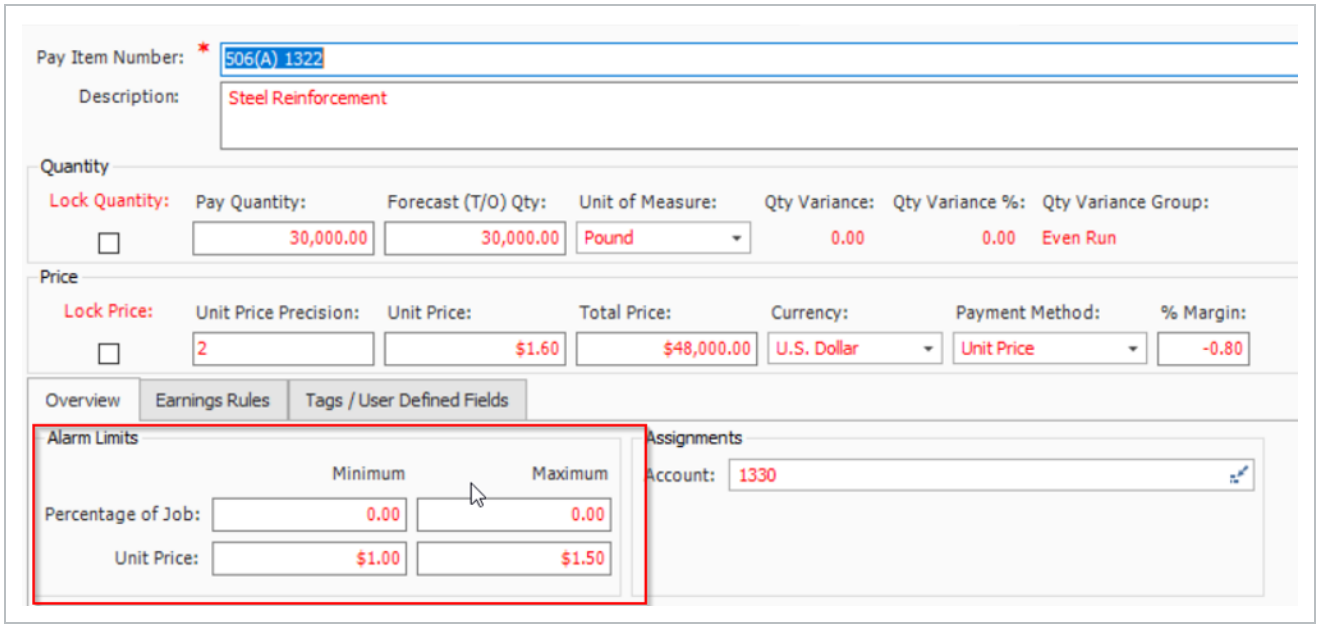
The following is an example for Steel Reinforcement as a Unit Price range.



Pay Item Number	Lock Price	Row Number	Line Number	Description	Pay Quantity	Unit of Measure	Unit Price (current)	Total Price (current)	% Job Max. Alarm	% Job Min. Alarm	Unit Price Max. Alarm	Unit Price Min. Alarm
800 0400		9	90	4 Foot Diameter Manhole	16.00	Each	$4,500.00	$72,000.00	0.00	0.00	$0.00	$0.00
501(A) 1306		10	100	Structural Excavation & Backfill	800.00	Cubic Yard	$30.00	$24,000.00	0.00	0.00	$0.00	$0.00
506(A) 1322		11	110	Steel Reinforcement	30,000.00	Pound	$1.60	$48,000.00	0.00	0.00	$1.50	$1.00
503(A) 1313		12	120	Retaining Wall	850.00	Cubic Yard	$535.00	$454,750.00	0.00	0.00	$0.00	$0.00

Based on the screen shots, the Unit Price is not within the $1.00 to $1.50 range. It is $1.60.

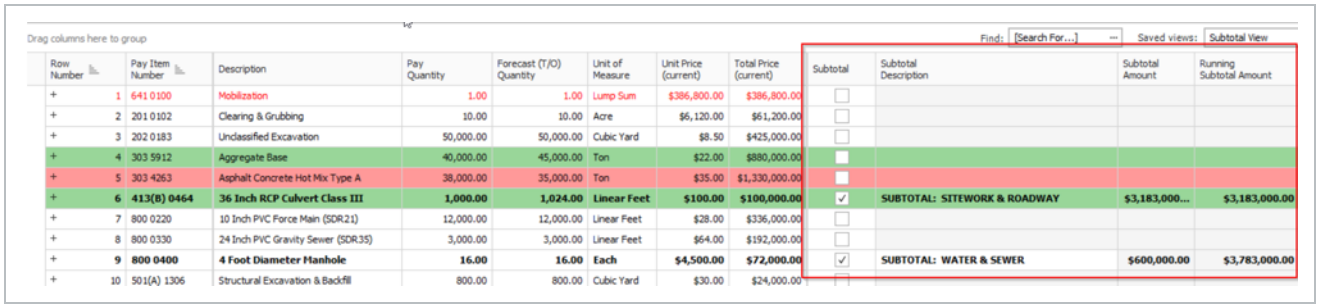
The record view is now shown.



15.2 SUBTOTALS

The subtotal feature is for situations where the Owner wanted subtotals on the proposal form of pay item groups.

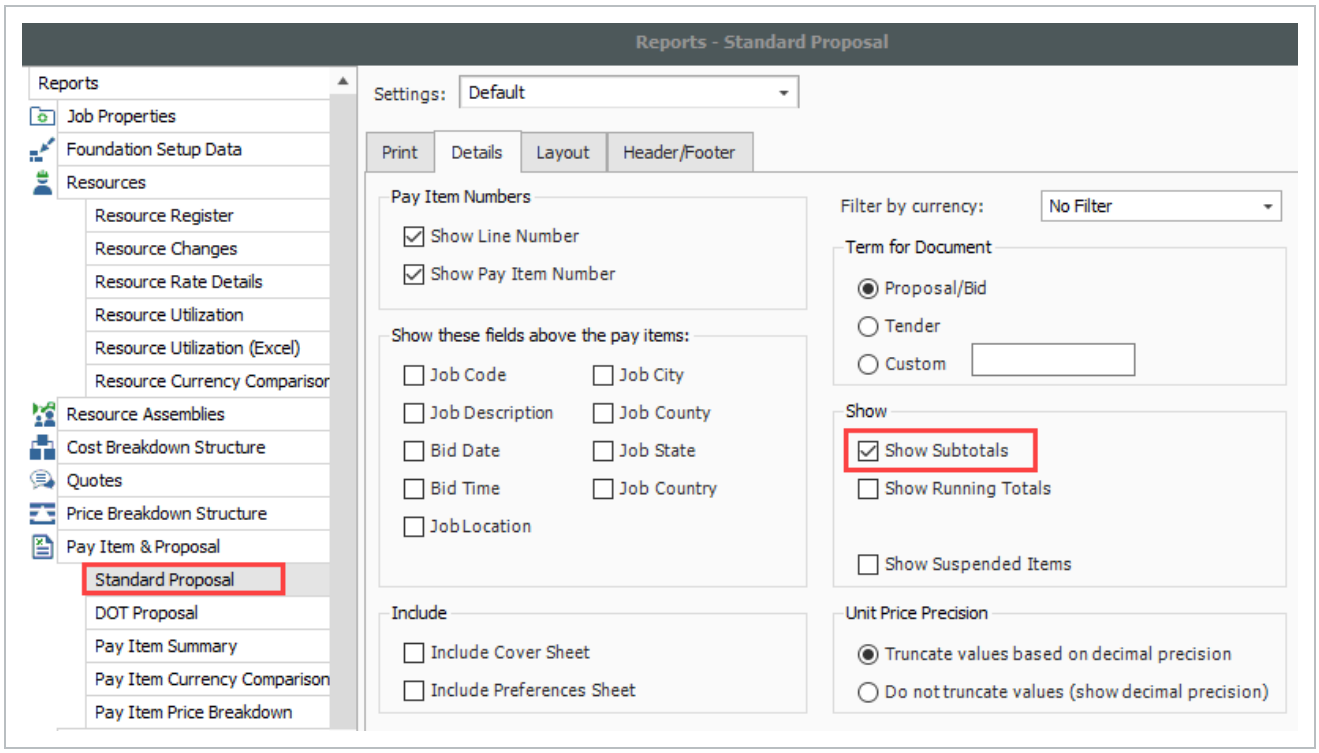
The following screen shot is using the supplied Subtotal register view:



Row Number	Pay Item Number	Description	Pay Quantity	Forecast (T/O) Quantity	Unit of Measure	Unit Price (current)	Total Price (current)	Subtotal	Subtotal Description	Subtotal Amount	Running Subtotal Amount
1	641 0100	Mobilization	1.00	1.00	Lump Sum	$386,800.00	$386,800.00				
2	201 0102	Clearing & Grubbing	10.00	10.00	Acre	$6,120.00	$61,200.00				
3	202 0183	Unclassified Excavation	50,000.00	50,000.00	Cubic Yard	$8.50	$425,000.00				
4	303 5912	Aggregate Base	40,000.00	45,000.00	Ton	$22.00	$880,000.00				
5	303 4263	Asphalt Concrete Hot Mix Type A	38,000.00	35,000.00	Ton	$35.00	$1,330,000.00				
6	413(B) 0464	36 Inch RCP Culvert Class III	1,000.00	1,024.00	Linear Feet	$100.00	$100,000.00	✓	SUBTOTAL: SITEWORK & ROADWAY	$3,183,000...	$3,183,000.00
7	800 0220	10 Inch PVC Force Main (SDR21)	12,000.00	12,000.00	Linear Feet	$28.00	$336,000.00				
8	800 0330	24 Inch PVC Gravity Sewer (SDR35)	3,000.00	3,000.00	Linear Feet	$64.00	$192,000.00				
9	800 0400	4 Foot Diameter Manhole	16.00	16.00	Each	$4,500.00	$72,000.00	✓	SUBTOTAL: WATER & SEWER	$600,000.00	$3,783,000.00
10	501(A) 1306	Structural Excavation & Backfill	800.00	800.00	Cubic Yard	$30.00	$24,000.00				

From the Subtotal column, the last item in the subtotal group is where the box is checked. Once the box is checked, then a description may be entered. After the box is checked, the **Subtotal Amount** and **Running Subtotal Amounts** are then displayed in a bold font.

In our standard Proposal Report, there is an option to printout the subtotals.



EXERCISE 15.1 – SUBTOTAL VIEW

Go to the Pay Item & Proposal Subtotal view to view subtotals.

1. In the Training Job, add an additional subtotal on the pricing page of your estimate to appear after Unclassified Excavation.

2. Add the subtotal with the description "SUBTOTAL: EARTHWORK" in the Pay Item & Proposal register.

3. Run the Standard Proposal report with subtotals showing.

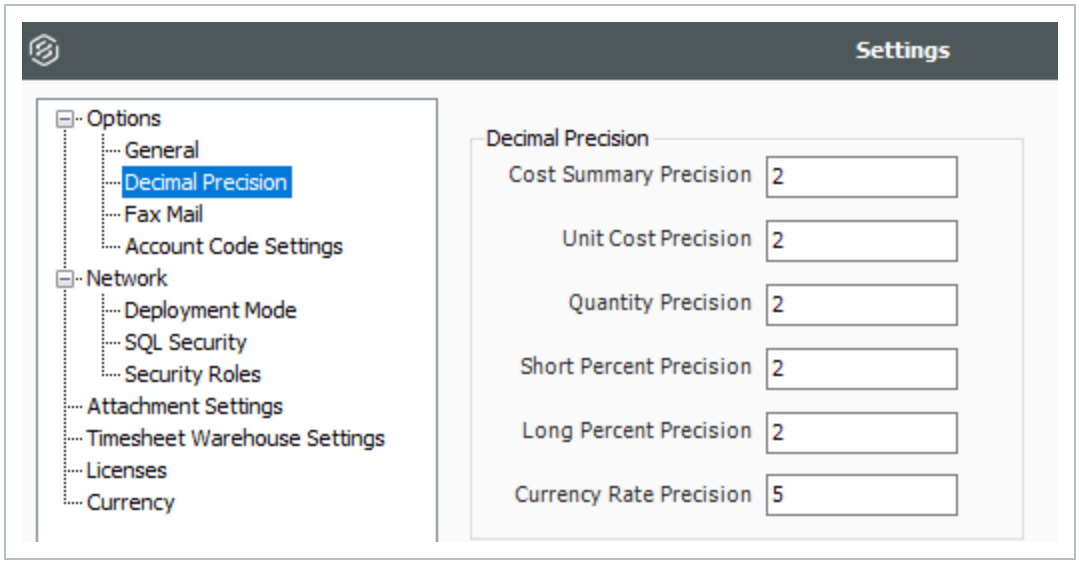
Congratulations, you have completed this exercise!

15.3 ROUNDING PRECISION

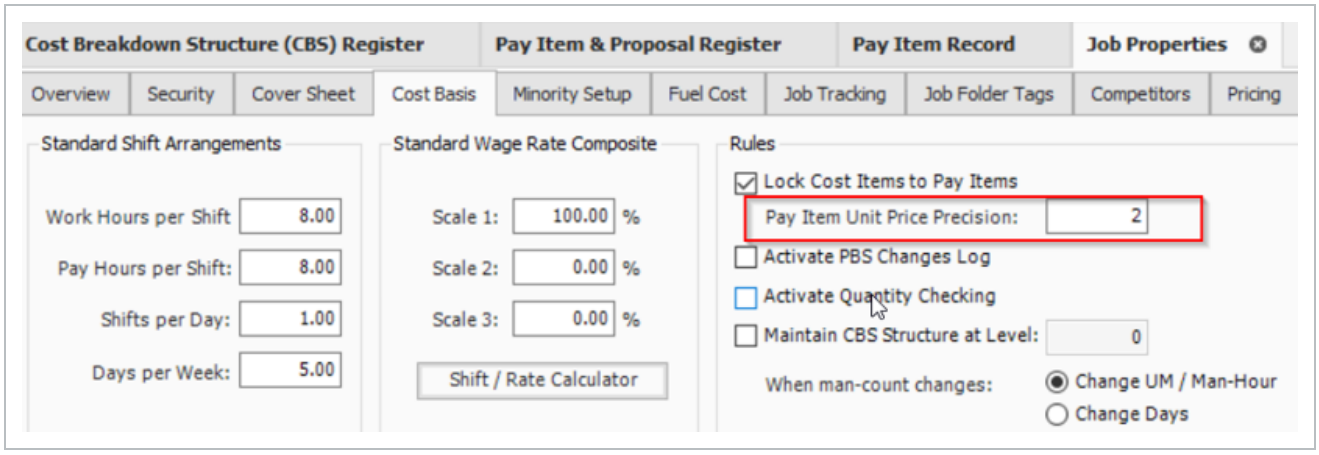
Rounding Precision lets you change the decimal position of the Unit Prices instead of manually entering the values.

You can preset the Unit Price decimals, then using this feature, round up or down the decimals. The job's default Unit Price decimal is set to 2.

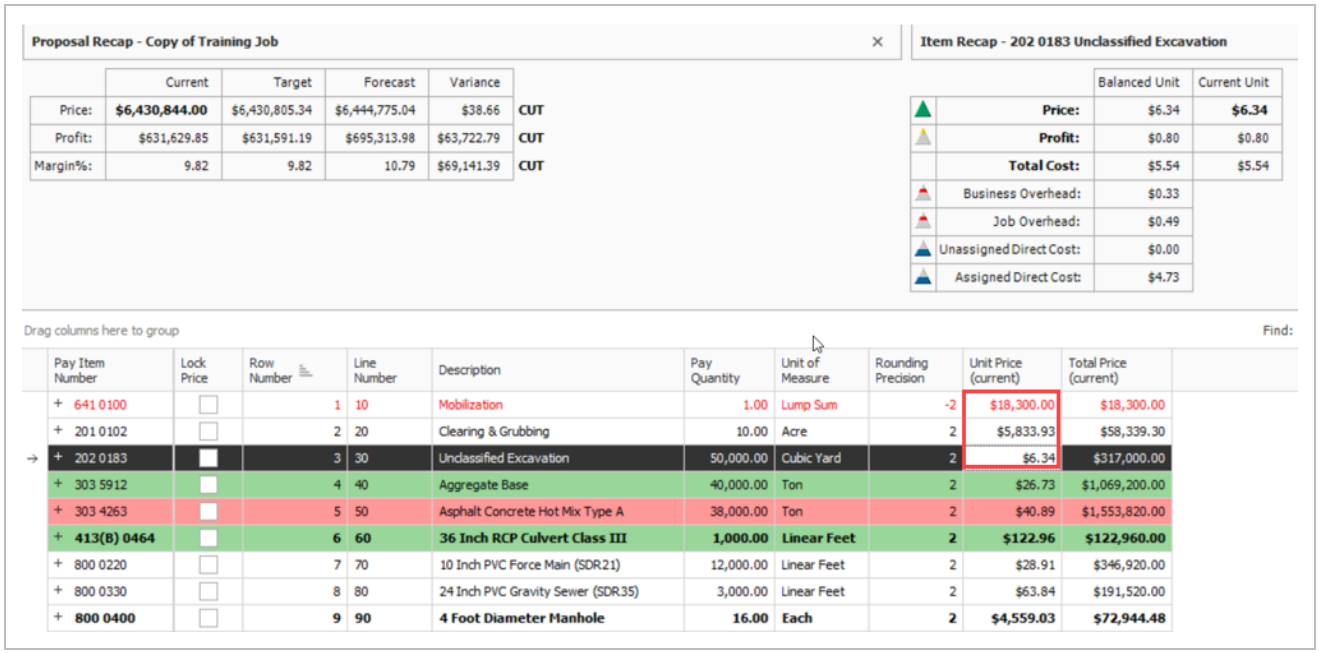
There are two decimal selections to understand. In the **Settings** form from the Backstage View, Decimal Precision lets you to calculate how many decimals to display.



In the **Cost Basis** form from Job Properties, use the Unit Price decimal to calculate the Total Price.



In the following screen shot, the Rounding Precision column is set to 2 for each pay item with the exception of Mobilization, which was changed to **-2**. The **-2** means to the nearest $100.

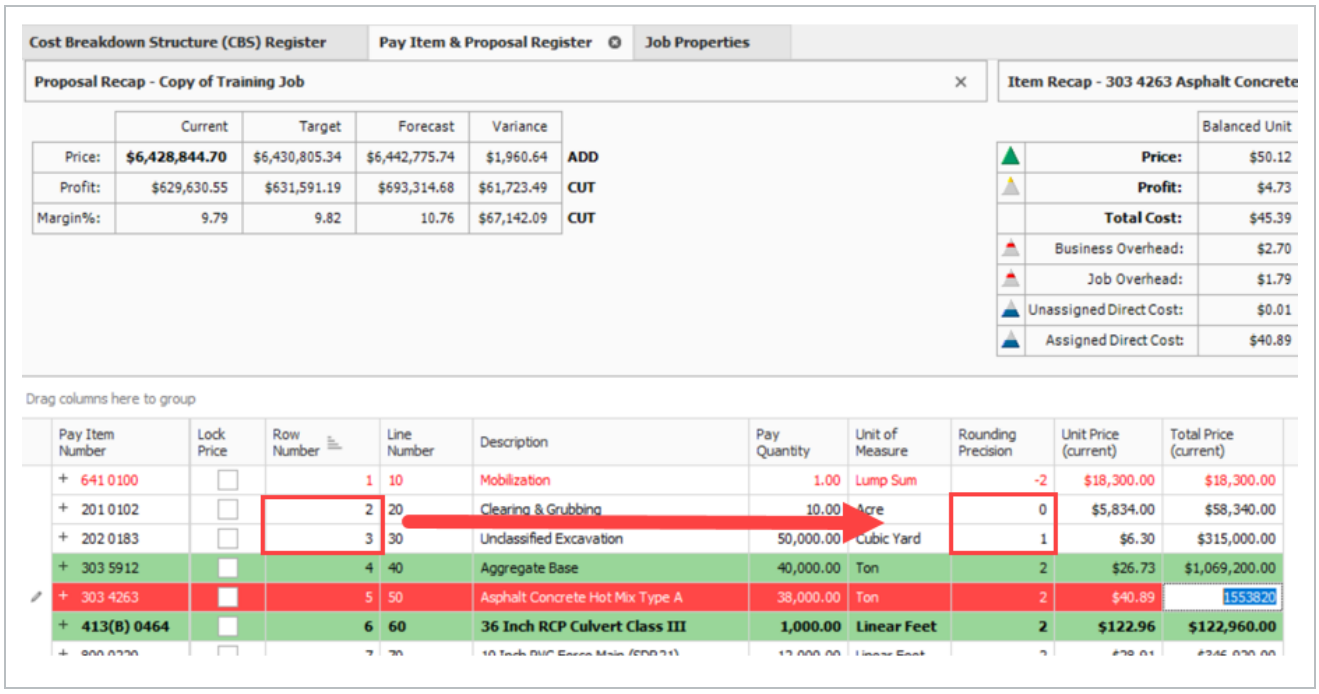


	Current	Target	Forecast	Variance	
Price:	**$6,430,844.00**	$6,430,805.34	$6,444,775.04	$38.66	CUT
Profit:	$631,629.85	$631,591.19	$695,313.98	$63,722.79	CUT
Margin%:	9.82	9.82	10.79	$69,141.39	CUT

	Balanced Unit	Current Unit
Price:	$6.34	**$6.34**
Profit:	$0.80	$0.80
Total Cost:	$5.54	$5.54
Business Overhead:	$0.33	
Job Overhead:	$0.49	
Unassigned Direct Cost:	$0.00	
Assigned Direct Cost:	$4.73	

Pay Item Number	Lock Price	Row Number	Line Number	Description	Pay Quantity	Unit of Measure	Rounding Precision	Unit Price (current)	Total Price (current)
641 0100		1	10	Mobilization	1.00	Lump Sum	-2	$18,300.00	$18,300.00
201 0102		2	20	Clearing & Grubbing	10.00	Acre	2	$5,833.93	$58,339.30
202 0183		3	30	Unclassified Excavation	50,000.00	Cubic Yard	2	$6.34	$317,000.00
303 5912		4	40	Aggregate Base	40,000.00	Ton	2	$26.73	$1,069,200.00
303 4263		5	50	Asphalt Concrete Hot Mix Type A	38,000.00	Ton	2	$40.89	$1,553,820.00
413(B) 0464		**6**	**60**	**36 Inch RCP Culvert Class III**	**1,000.00**	**Linear Feet**	**2**	**$122.96**	**$122,960.00**
800 0220		7	70	10 Inch PVC Force Main (SDR21)	12,000.00	Linear Feet	2	$28.91	$346,920.00
800 0330		8	80	24 Inch PVC Gravity Sewer (SDR35)	3,000.00	Linear Feet	2	$63.84	$191,520.00
800 0400		**9**	**90**	**4 Foot Diameter Manhole**	**16.00**	**Each**	**2**	**$4,559.03**	**$72,944.48**

Change the 2 and 3 pay item row's Rounding Precision to 0 and 1. The Unit Price changed accordingly. In doing so, you are moving the decimal to show tenth, zero, ten dollars, or in the Mobilizations case to the nearest $100.



	Current	Target	Forecast	Variance	
Price:	**$6,428,844.70**	$6,430,805.34	$6,442,775.74	$1,960.64	ADD
Profit:	$629,630.55	$631,591.19	$693,314.68	$61,723.49	CUT
Margin%:	9.79	9.82	10.76	$67,142.09	CUT

	Balanced Unit
Price:	$50.12
Profit:	$4.73
Total Cost:	$45.39
Business Overhead:	$2.70
Job Overhead:	$1.79
Unassigned Direct Cost:	$0.01
Assigned Direct Cost:	$40.89

Pay Item Number	Lock Price	Row Number	Line Number	Description	Pay Quantity	Unit of Measure	Rounding Precision	Unit Price (current)	Total Price (current)
641 0100		1	10	Mobilization	1.00	Lump Sum	-2	$18,300.00	$18,300.00
201 0102		2	20	Clearing & Grubbing	10.00	Acre	0	$5,834.00	$58,340.00
202 0183		3	30	Unclassified Excavation	50,000.00	Cubic Yard	1	$6.30	$315,000.00
303 5912		4	40	Aggregate Base	40,000.00	Ton	2	$26.73	$1,069,200.00
303 4263		5	50	Asphalt Concrete Hot Mix Type A	38,000.00	Ton	2	$40.89	1553820
413(B) 0464		**6**	**60**	**36 Inch RCP Culvert Class III**	**1,000.00**	**Linear Feet**	**2**	**$122.96**	**$122,960.00**

EXERCISE 15.2 – ADVANCED PRICING

SCENARIO: Using the Training Job, do the following to get ready for your bid closeout meeting with your manger:

1. Set up rounding precision so all prices round to whole numbers (no decimals).

2. Add subtotals based on the owner's specifications.

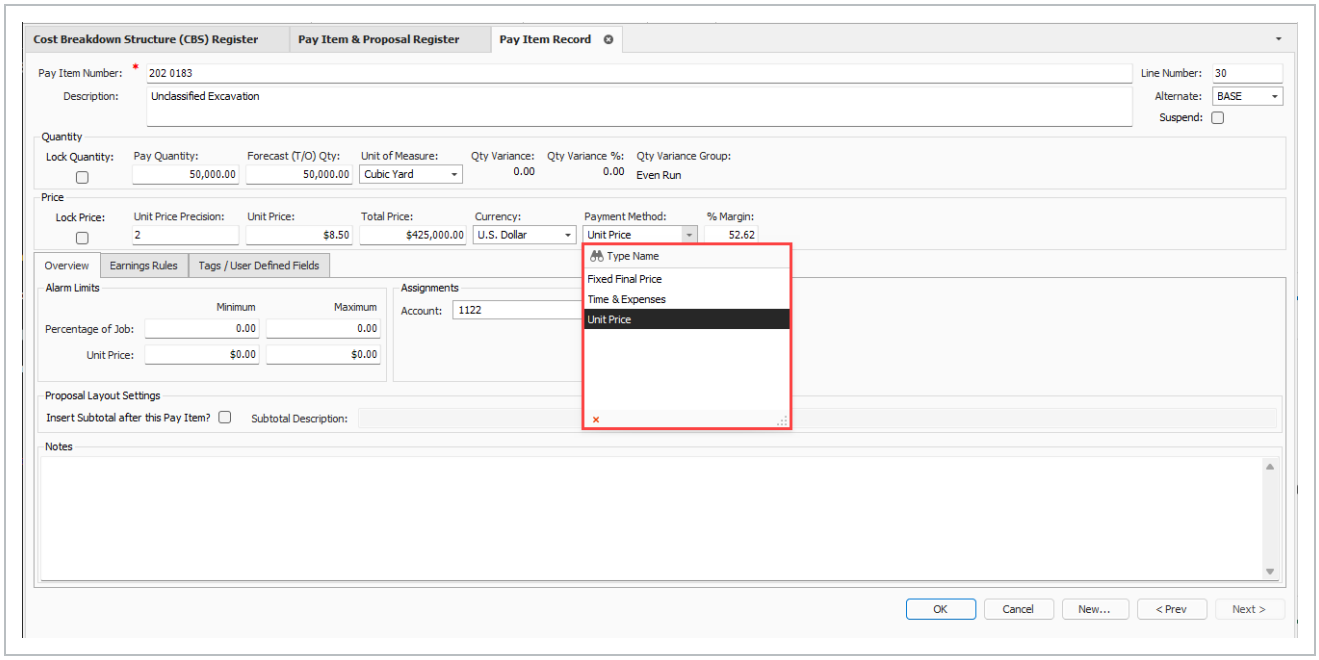
3. Add an indicator to show if your unit price for Unclassified Excavation goes over $18/cubic yard.

Congratulations, you have completed this exercise!

15.4 PAYMENT METHODS

There are three types of payment methods to choose from:

- Unit Price
- Fixed Final Pay
- Time and Expense



15.4.1 UNIT PRICE

Unit Price is the default payment method. This option multiplies the unit price with the pay quantity to calculate the total price.

15.4.2 FIXED FINAL PRICE

Fixed Final Price has two applications:

- Include a price for Allowance type pay items.
- Accurately calculate the over/under run pay items that are paid as if they were lump sum items.

15.4.2.1 ALLOWANCE TYPE PAY ITEMS

Allowance type pay items, sometimes referred to as contingency items, is where the owner provides a pay item and includes their own price for the item to be used by the contractor when completing the bid form. The pay item value becomes part of the proposal where the price for this item is included in the total bid amount and is frequently used by the owner as an allowance for scopes of work that might or might not be used, enabling owners to include in the total value of those items in their budget/contract amount for the project.

To identify a pay item as an allowance item, select **Fixed Final Pay** , and then enter the allowance amount of the pay item, for example $10,000.

Pay Item Number	Lock Price	Row Number	Line Number	Description	Pay Quantity	Unit of Measure	Unit Price (current)	Total Price (current)	Payment Method
+ 503(A) 1313		12	120	Retaining Wall	850.00	Cubic Yard	$539.91	$458,923.50	Unit Price
+ **600 0300**		**13**	**130**	**Paint Existing Steel Bridge Structure**	**1.00**	**Lump Sum**	**$102,683.94**	**$102,683.94**	**Unit Price**
+ 700		14	140	Process Equipment	1.00	Each	$1,920,341.67	$1,920,341.67	Unit Price
+ 1000		15	150	Removal of Underground Storage Tanks	2.00	Each	$12,504.82	$25,009.64	Unit Price
+ **1010**		**16**	**160**	**Disposal of Contaminated Soil**	**800.00**	**Cubic Yard**	**$25.96**	**$20,768.00**	**Unit Price**
+ **1200 0100**		**17**	**170**	**Toll Booth**	**1.00**	**Each**	**$29,665.47**	**$29,665.47**	**Unit Price**
+ 1500 0100		18	180	Guardrail Type 2	1,000.00	Linear Feet	$27.29	$27,290.00	Unit Price
→ + 1500 0200		19	190	Guardrail Type 3A	200.00	Linear Feet	$35.25	$7,050.00	Unit Price
+ **1600 0230**		**20**	**200**	**Type 4 Signs**	**1,000.00**	**Square Feet**	**$14.78**	**$14,780.00**	**Unit Price**
+ 11		21	21	Contingency Pay item	1.00	Each	$10,000.00	$10,000.00	Fixed Final Price

You can then lock the $10,000 pay item so its value does not change when auto-pricing the proposal. Note that the issue now is having a pay item with $10,000 of price and no assigned costs. Assuming you did not want to add any overhead and profit dollars to the $10,000 pay item, in the CBS create and assign a cost item to this pay item and then enter a plug cost of $10,000. The cost category used should be a category that will not be used in a direct or indirect cost markup item, so the markup can be calculated on the other costs in the job. The price of $10,000 is included in the proposal but is offset by the $10,000 of cost in a cost category that will not be used in any markup for overhead or profit.

15.4.2.2 CALCULATION OF OVER/UNDER RUN PAY ITEMS USING FIXED FINAL PAY METHOD

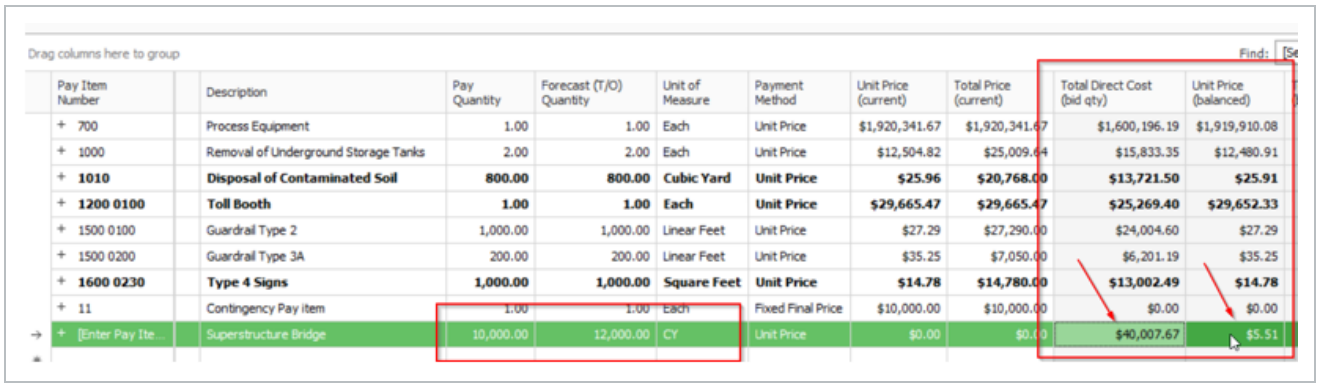
The Fixed Final Pay method is used to accurately calculate the over/under run pay items that are paid as if they were lump sum items. An issue occurs where a pay item is provided with a quantity (i.e., Superstructure Bridge of 10,000 CY) and you must enter a unit price against the 10,000 CY.

However, if the specifications states that this pay item will not be measured for payment and must be paid as if it were a lump sum item, but your quantity takeoff reveals that you will actually install more

or less than the 10,000 CY. For example, your takeoff came to 12,000 CY and you entered the Forecast (TO) Quantity with the 12,000 CY.

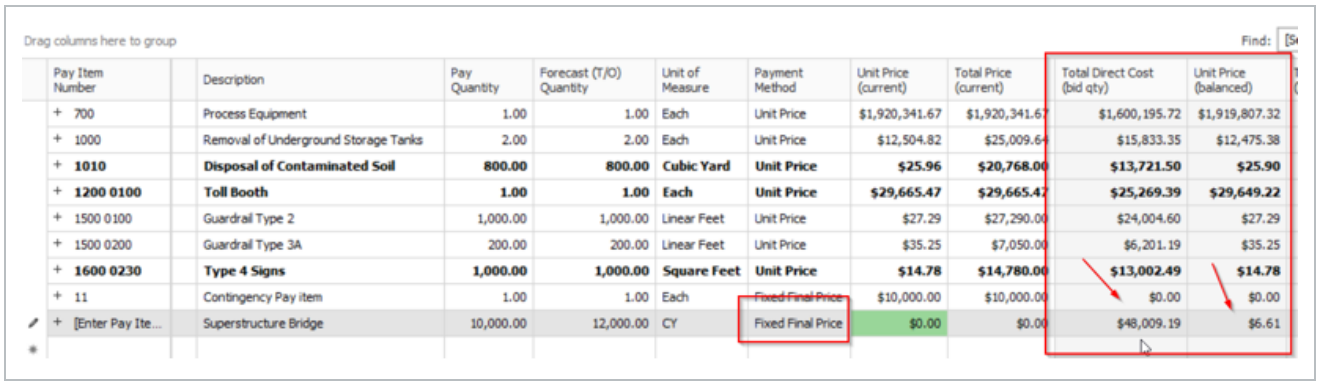
In the CBS, the cost of this work is calculated based on the 12,000 CY. Typically, in a quantity underrun/overrun situation, Estimate can help you decide how best to price out these items. In this case, you cannot take advantage of the overrun situation. Using the Fixed Final Pay method with a quantity variance, Estimate can prorate the unit price of the item that will be paid for 10,000 CY, while still accounting for the cost to install all 12,000 CY

The following example shows where you have an overrun normally. It shows that you have the CBS direct cost as $4.00 times 12000 CY for $48,000. Notice the direct costs of $40,000 and the balanced unit of $5.51. This is the normal calculation if this was a true overrun pay item.



Pay Item Number	Description	Pay Quantity	Forecast (T/O) Quantity	Unit of Measure	Payment Method	Unit Price (current)	Total Price (current)	Total Direct Cost (bid qty)	Unit Price (balanced)
700	Process Equipment	1.00	1.00	Each	Unit Price	$1,920,341.67	$1,920,341.67	$1,600,196.19	$1,919,910.08
1000	Removal of Underground Storage Tanks	2.00	2.00	Each	Unit Price	$12,504.82	$25,009.64	$15,833.35	$12,480.91
1010	**Disposal of Contaminated Soil**	**800.00**	**800.00**	**Cubic Yard**	**Unit Price**	**$25.96**	**$20,768.00**	**$13,721.50**	**$25.91**
1200 0100	**Toll Booth**	**1.00**	**1.00**	**Each**	**Unit Price**	**$29,665.47**	**$29,665.47**	**$25,269.40**	**$29,652.33**
1500 0100	Guardrail Type 2	1,000.00	1,000.00	Linear Feet	Unit Price	$27.29	$27,290.00	$24,004.60	$27.29
1500 0200	Guardrail Type 3A	200.00	200.00	Linear Feet	Unit Price	$35.25	$7,050.00	$6,201.19	$35.25
1600 0230	**Type 4 Signs**	**1,000.00**	**1,000.00**	**Square Feet**	**Unit Price**	**$14.78**	**$14,780.00**	**$13,002.49**	**$14.78**
11	Contingency Pay item	1.00	1.00	Each	Fixed Final Price	$10,000.00	$10,000.00	$0.00	$0.00
[Enter Pay Ite...	Superstructure Bridge	10,000.00	12,000.00	CY	Unit Price	$0.00	$0.00	$40,007.67	$5.51

When you change the payment method to **Fixed Final Price**, the CBS cost of $48,000 now shows. Then when you price out the pay item, you get a $48,000 return.



Pay Item Number	Description	Pay Quantity	Forecast (T/O) Quantity	Unit of Measure	Payment Method	Unit Price (current)	Total Price (current)	Total Direct Cost (bid qty)	Unit Price (balanced)
700	Process Equipment	1.00	1.00	Each	Unit Price	$1,920,341.67	$1,920,341.67	$1,600,195.72	$1,919,807.32
1000	Removal of Underground Storage Tanks	2.00	2.00	Each	Unit Price	$12,504.82	$25,009.64	$15,833.35	$12,475.38
1010	**Disposal of Contaminated Soil**	**800.00**	**800.00**	**Cubic Yard**	**Unit Price**	**$25.96**	**$20,768.00**	**$13,721.50**	**$25.90**
1200 0100	**Toll Booth**	**1.00**	**1.00**	**Each**	**Unit Price**	**$29,665.47**	**$29,665.47**	**$25,269.39**	**$29,649.22**
1500 0100	Guardrail Type 2	1,000.00	1,000.00	Linear Feet	Unit Price	$27.29	$27,290.00	$24,004.60	$27.29
1500 0200	Guardrail Type 3A	200.00	200.00	Linear Feet	Unit Price	$35.25	$7,050.00	$6,201.19	$35.25
1600 0230	**Type 4 Signs**	**1,000.00**	**1,000.00**	**Square Feet**	**Unit Price**	**$14.78**	**$14,780.00**	**$13,002.49**	**$14.78**
11	Contingency Pay item	1.00	1.00	Each	Fixed Final Price	$10,000.00	$10,000.00	$0.00	$0.00
[Enter Pay Ite...	Superstructure Bridge	10,000.00	12,000.00	CY	Fixed Final Price	$0.00	$0.00	$48,009.19	$6.61

15.4.3 TIME AND EXPENSE

The Time and Expense payment method is used to designate pay items that should be Cost plus pay items when the estimate is published to InEight Control. When the estimate is published to Control, the Time and Expense payment items become Cost plus pay items in Control.

15.4.3.3 CRITICAL THINKING - FIXED FINAL PRICE

SCENARIO: You are estimating a reinforced concrete bridge job. For the "Superstructure Concrete" pay item, the owner provides a quantity of 1000 cubic yards, but in the fine print you read "This pay item will be paid as if it were a lump sum item; there will be no measurement of the cubic yards."

You have already done the takeoff and measured 1200 cubic yards for the Superstructure Concrete and estimated the unit cost, but you know, based on the owner's fine print, you will only get paid based on the 1000 cubic yards the owner specified, leaving 200 cubic yards on the table that you won't get paid for.

If this were a unit price item, normally you would get paid based on your pay item price, by taking the unit cost from the CBS, adding overhead and profit, then multiplying that unit price by the quantity. But since this is being treated like a lump sum, you will only get paid based on the 1000 cubic yards instead of the 1200 you measured.

HOW CAN YOU STILL GET PAID BASED ON THE TOTAL COST YOU DEVELOPED FOR THIS ITEM IN THE CBS?

A. Add more profit to the pay item to cover the loss in cost.

B. Come up with the pay item's total price, based on the total cost you determined from 1200 cubic yards, then divide it by the pay quantity (1000 cubic yards) to come up with the unit price.

C. Come up with the pay item's unit price, then multiply it by the forecast quantity (1200 cubic yards) to come up with the total price.

View the following page for feedback

15.4.3.4 CRITICAL THINKING - FIXED FINAL PRICE

FEEDBACK

HOW CAN YOU STILL GET PAID BASED ON THE TOTAL COST YOU DEVELOPED FOR THIS ITEM IN THE CBS?

A. Add more profit to the pay item to cover the loss in cost.

You could do this, but it would make less profit available for other items.

B. Come up with the pay item's total price, based on the total cost you determined from 1200 cubic yards, then divide it by the pay quantity (1000 cubic yards) to come up with the unit price.

This is a great approach. This ensures you account for all the cost you came up with in the CBS. When you divide it by the pay quantity, you will have a higher unit price that covers the overruning quantity you measured.

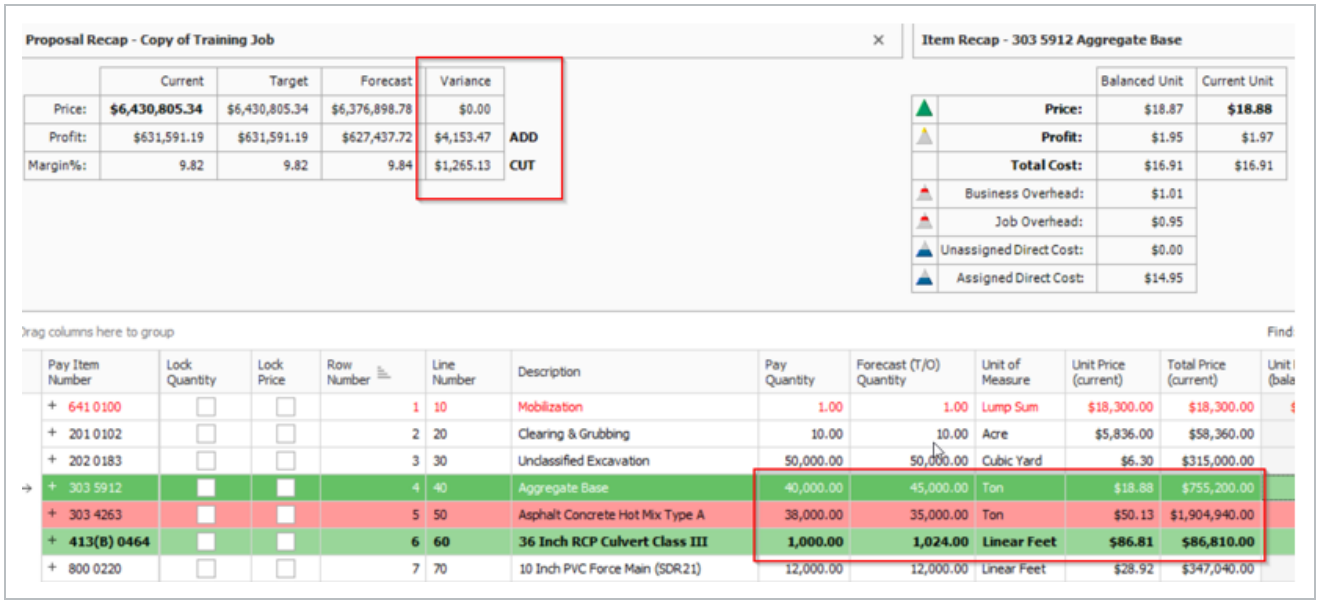
C. Come up with the pay item's unit price, then multiply it by the forecast quantity (1200 cubic yards) to come up with the total price.

This is exactly what would occur if this were a normal unit price item and the owner had agreed to pay you based on the measured quantity. Since the owner is treating this like a lump sun, you will only get paid based on 1000 cubic yards and miss out on 200 cubic yards' worth of cost.

15.5 UNBALANCED PRICING

The pay items are provided along with the Pay Quantities. If the pay items are to be measured and paid on the final measured quantity, then we can provide information to price the pay items to maximize the return. Some specifications are written that if an over/under pay item runs a certain percent, then the Unit Price is negotiated. Now, understanding this,you can forecast the final revenue result.

The following screen shot shows a typical over and under run situation. The overrun quantities are shown in green and the underrun is shown in red. I have balanced priced the job where all pay items are using their Balanced Unit Price. In the Variance box, the Profit row, there is an ADD of $4153 dollars.



Proposal Recap - Copy of Training Job

	Current	Target	Forecast	Variance	
Price:	$6,430,805.34	$6,430,805.34	$6,376,898.78	$0.00	
Profit:	$631,591.19	$631,591.19	$627,437.72	$4,153.47	ADD
Margin%:	9.82	9.82	9.84	$1,265.13	CUT

Item Recap - 303 5912 Aggregate Base

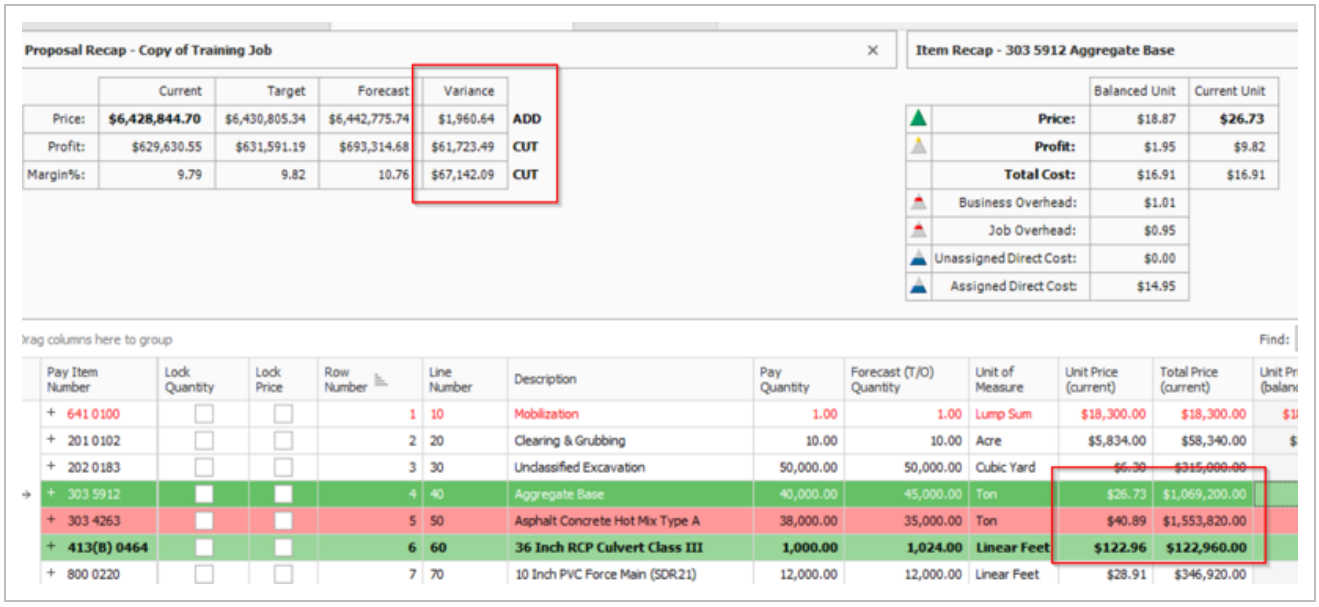
	Balanced Unit	Current Unit
Price:	$18.87	$18.88
Profit:	$1.95	$1.97
Total Cost:	$16.91	$16.91
Business Overhead:	$1.01	
Job Overhead:	$0.95	
Unassigned Direct Cost:	$0.00	
Assigned Direct Cost:	$14.95	

Drag columns here to group

Pay Item Number	Lock Quantity	Lock Price	Row Number	Line Number	Description	Pay Quantity	Forecast (T/O) Quantity	Unit of Measure	Unit Price (current)	Total Price (current)
641 0100			1	10	Mobilization	1.00	1.00	Lump Sum	$18,300.00	$18,300.00
201 0102			2	20	Clearing & Grubbing	10.00	10.00	Acre	$5,836.00	$58,360.00
202 0183			3	30	Unclassified Excavation	50,000.00	50,000.00	Cubic Yard	$6.30	$315,000.00
303 5912			4	40	Aggregate Base	40,000.00	45,000.00	Ton	$18.88	$755,200.00
303 4263			5	50	Asphalt Concrete Hot Mix Type A	38,000.00	35,000.00	Ton	$50.13	$1,904,940.00
413(B) 0464			6	60	36 Inch RCP Culvert Class III	1,000.00	1,024.00	Linear Feet	$86.81	$86,810.00
800 0220			7	70	10 Inch PVC Force Main (SDR21)	12,000.00	12,000.00	Linear Feet	$28.92	$347,040.00

This means that if your Forecast Quantities become the final measure amount, I lose the $4153 dollars. This is the difference between the Target Profit and the Forecast Profit. The issue is the underrun quantity is priced at its Balanced Price, meaning there is 3000 Ton that I will not be paid for if my 35000 Ton is what I am expecting.

Now, I will use the system's Unbalanced feature to price all the pay items. See the following screen shot.



Proposal Recap - Copy of Training Job

	Current	Target	Forecast	Variance	
Price:	$6,428,844.70	$6,430,805.34	$6,442,775.74	$1,960.64	ADD
Profit:	$629,630.55	$631,591.19	$693,314.68	$61,723.49	CUT
Margin%:	9.79	9.82	10.76	$67,142.09	CUT

Item Recap - 303 5912 Aggregate Base

	Balanced Unit	Current Unit
Price:	$18.87	$26.73
Profit:	$1.95	$9.82
Total Cost:	$16.91	$16.91
Business Overhead:	$1.01	
Job Overhead:	$0.95	
Unassigned Direct Cost:	$0.00	
Assigned Direct Cost:	$14.95	

Drag columns here to group

Find:

Pay Item Number	Lock Quantity	Lock Price	Row Number	Line Number	Description	Pay Quantity	Forecast (T/O) Quantity	Unit of Measure	Unit Price (current)	Total Price (current)	Unit Pr (balan
641 0100			1	10	Mobilization	1.00	1.00	Lump Sum	$18,300.00	$18,300.00	$1
201 0102			2	20	Clearing & Grubbing	10.00	10.00	Acre	$5,834.00	$58,340.00	$
202 0183			3	30	Unclassified Excavation	50,000.00	50,000.00	Cubic Yard	~~$6.30~~	~~$315,000.00~~	
303 5912			4	40	Aggregate Base	40,000.00	45,000.00	Ton	$26.73	$1,069,200.00	
303 4263			5	50	Asphalt Concrete Hot Mix Type A	38,000.00	35,000.00	Ton	$40.89	$1,553,820.00	
413(B) 0464			6	60	36 Inch RCP Culvert Class III	1,000.00	1,024.00	Linear Feet	$122.96	$122,960.00	
800 0220			7	70	10 Inch PVC Force Main (SDR21)	12,000.00	12,000.00	Linear Feet	$28.91	$346,920.00	

What the Unbalanced Autoprice did was to price out the underrun with it's Direct Cost only. The overhead and profit share of the underrun was spread proportionately to the overrun items. The underrun was priced lower than normal and the Overrun items were price higher than normal.

Now look at the Variance block and see the Profit row where it now says CUT, meaning if my forecast quantities in up being the final measured quantities, I will pick up an additional $61,723 dollars in profit.

The CUT simple allows you to decide if you want to keep the final Proposal price as shown, or to CUT the $61,000 OR ANY PORTION of it from the final Proposal amount to get the job believing your Forecast Quantities is the final measured quantities. Of course you can enter any preferred Unit Price.

15.6 EARNINGS RULES

The Earnings Rules let you decide how much can be paid where certain work is completed. The cost items assigned to the pay items are where you can decide when to ask for payment.

The application is used in the Job Tracking form. The Earnings Rules also determine how the Cash Flow curve is generated.

In the following screen shot, the record for 36 inch RCP Culvert Class III from the Training Job is open.

Pay Item Number: * 413(B) 0464

Description: 36 Inch RCP Culvert Class III

Quantity

Lock Quantity:	Pay Quantity:	Forecast (T/O) Qty:	Unit of Measure:	Qty Variance:	Qty Variance %:	Qty Variance Group:
☐	1,000.00	1,024.00	Linear Feet	24.00	2.40	Over Run

Price

Lock Price:	Unit Price Precision:	Unit Price:	Total Price:	Currency:	Payment Method:	% Margin:
☐	2	$100.00	$100,000.00	U.S. Dollar	Unit Price	22.83

Overview | Earnings Rules | Tags / User Defined Fields

Use Default Earnings Rules? ☑

Assigned Earnings (Forecast) %	Assigned Earnings (Forecast) Amount:	Unassigned Earnings (Forecast) %	Unassigned Earnings (Forecast) Amount:
100.00	$102,400.00	0.00	$0.00

Drag columns here to group

CBS Position Code	Description	Optional Code	Forecast (T/O) Quantity	Unit of Measure	Earnings %	Earnings Timing
6	36 Inch RCP Culvert Class III	413(B) 0464	1,024.00	Linear Feet	100.00	Percent Complete
6.1	Furnish RCP Materials	6.1	1,024.00	Linear Feet	49.58	Percent Complete
6.2	Excavate RCP Trench	6.2	1,858.56	Cubic Yard	12.12	Percent Complete
6.3	Install RCP Pipe	6.3	1,024.00	Linear Feet	17.38	Percent Complete
6.4	Backfill RCP Pipe	6.4	1,587.20	Cubic Yard	20.93	Percent Complete

By default, the cost items in the Earnings % column are calculated based on the cost distribution. In this case where all the Materials are furnished and completed the Excavatzion, you have earned $49.58 and $12.12 for a total of 61.7% revenue.

There may be times when you can only receive revenue when you have only completed the Backfill of the Pipe. In that case I can uncheck the **Use Default Earnings Rules** box, as seen in the previous screen shot, and enter 100%. You can then decide when to account for the revenue by changing the **Earnings Timing**.

The following screen shot show this option.

Cost Breakdown Structure (CBS) Register | Pay Item & Proposal Register | Pay Item Record

Pay Item Number: * 413(B) 0464

Description: 36 Inch RCP Culvert Class III

Quantity

Lock Quantity:	Pay Quantity:	Forecast (T/O) Qty:	Unit of Measure:	Qty Variance:	Qty Variance %:	Qty Variance Group:
☐	1,000.00	1,024.00	Linear Feet	24.00	2.40	Over Run

Price

Lock Price:	Unit Price Precision:	Unit Price:	Total Price:	Currency:	Payment Method:	% Margin:
☐	2	$100.00	$100,000.00	U.S. Dollar	Unit Price	22.83

Overview | Earnings Rules | Tags / User Defined Fields

Use Default Earnings Rules? ☐

Assigned Earnings (Forecast)

%	Amount:
100.00	$102,400.00

Unassigned Earnings (Forecast)

%	Amount:
0.00	$0.00

Drag columns here to group

CBS Position Code	Description	Optional Code	Forecast (T/O) Quantity	Unit of Measure	Earnings %	Earnings Timing	Earnings Amount (Forecast)
6.1	Furnish RCP Materials	6.1	1,024.00	Linear Feet	0.00	Percent Complete	$0.00
6.2	Excavate RCP Trench	6.2	1,858.56	Cubic Yard	0.00	Percent Complete	$0.00
6.3	Install RCP Pipe	6.3	1,024.00	Linear Feet	0.00	Percent Complete	$0.00
6.4	Backfill RCP Pipe	6.4	1,587.20	Cubic Yard	100.00	Finish	$102,400.00

Another example is when you can get full payment for material on hand, such as Precast Girders. Then you can choose the start for the Earnings Timing. This way, the Cash Flow shows costs and revenue occurring at the start of the item.

15.7 ALTERNATE SCENARIOS

The Alternate scenarios feature allows a contractor to effectively evaluate multiple approaches to an estimate, and quickly identify the most cost efficient way of performing the proposed work. Both owners and contractors need more visibility to see the impact of changes made to the assumption made on the cost model.

For example, a contractor might want to estimate the cost of hauling excavation material using a scraper hauling machine(s). Alternatively, a contractor may want to compare the cost of loading and hauling that same excavation material with a loader truck(s). You should be able to estimate both approaches quickly and switch between various scenarios.

Owners are increasingly requiring contractors to provide alternative items within the bid proposal. Contractors should consider the cost impact of alternative estimate approaches, while also contemplating how to effectively price their work.

The primary purpose for using Alternate Scenarios is to create 'What If' type of scenarios to gain a better view of estimating 'like' situations. By defining Alternates, you have the ability to compare multiple scenarios within an estimate, in which you can suspend or unsuspend various records.

TIP	Manually suspending and unsuspending items can be time consuming and error prone, and can require maintenance of several versions of the estimate. Creating Alternate Scenarios is a solution to this problem.

15.7.1 BASE ALTERNATE

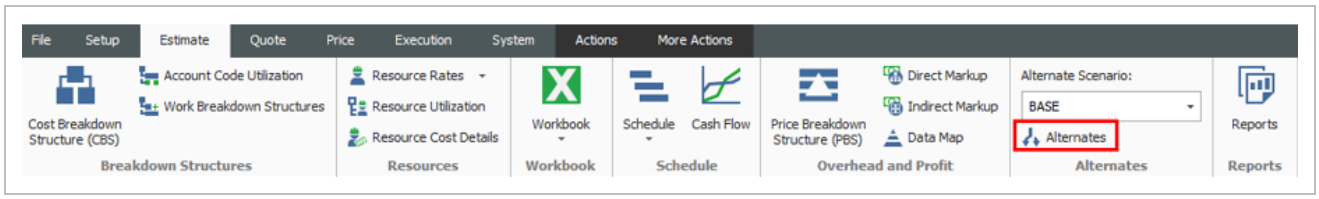
Base Alternate refers to your base or anchor estimate and is part of the estimate's cost.

CBS Pos... Code	Description	Forecast (T/O) Quantity	Unit of Mea...	Unit Cost	Total Cost (Forecast)	Alternate	Alternate Description	Suspended by Alternate	Suspend
	JOB	20.00	Mile	$298,546.40	$5,970,927.99	BASE	BASE	■	■
	Prime Bond	1.00	Lump Sum	$47,745.51	$47,745.51	BASE	BASE		
	Price % Add-On	1.00	Lump Sum	$301,009.62	$301,009.62	BASE	BASE		
	Job Financing	1.00	Lump Sum	$0.00	$0.00	BASE	BASE		
	Indirect Cost Escalat...	1.00	Lump Sum	$0.00	$0.00	BASE	BASE		
	Direct Cost Escalation	1.00	Lump Sum	$11,026.79	$11,026.79	BASE	BASE		
	Indirect Cost Add-On	1.00	Lump Sum	$0.00	$0.00	BASE	BASE		
	Job Management & ...	1.00	Lump Sum	$157,096.28	$157,096.28	BASE	BASE		
	General Expense	1.00	Lump Sum	$4,200.00	$4,200.00	BASE	BASE		
	Direct Cost Add-On	1.00	Lump Sum	$106,459.21	$106,459.21	BASE	BASE		
1	**Mobilization**	1.00	Lump Sum	$75,000.00	$75,000.00	BASE	BASE		
2	**Clearing & Grubbing**	10.00	Acre	$0.00	$0.00	BASE	BASE		
3	**Unclassified Excavati...**	50,000.00	Cubic Yard	$6.36	$317,915.81	BASE	BASE		
3.1	Excavation, scrapers	50,000.00	Cubic Yard	$3.00	$149,922.88	BASE	BASE		

15.7.2 ALTERNATES RECORDS

Alternate records are used to define alternate scenarios so that you can assess the impact of those scenarios.

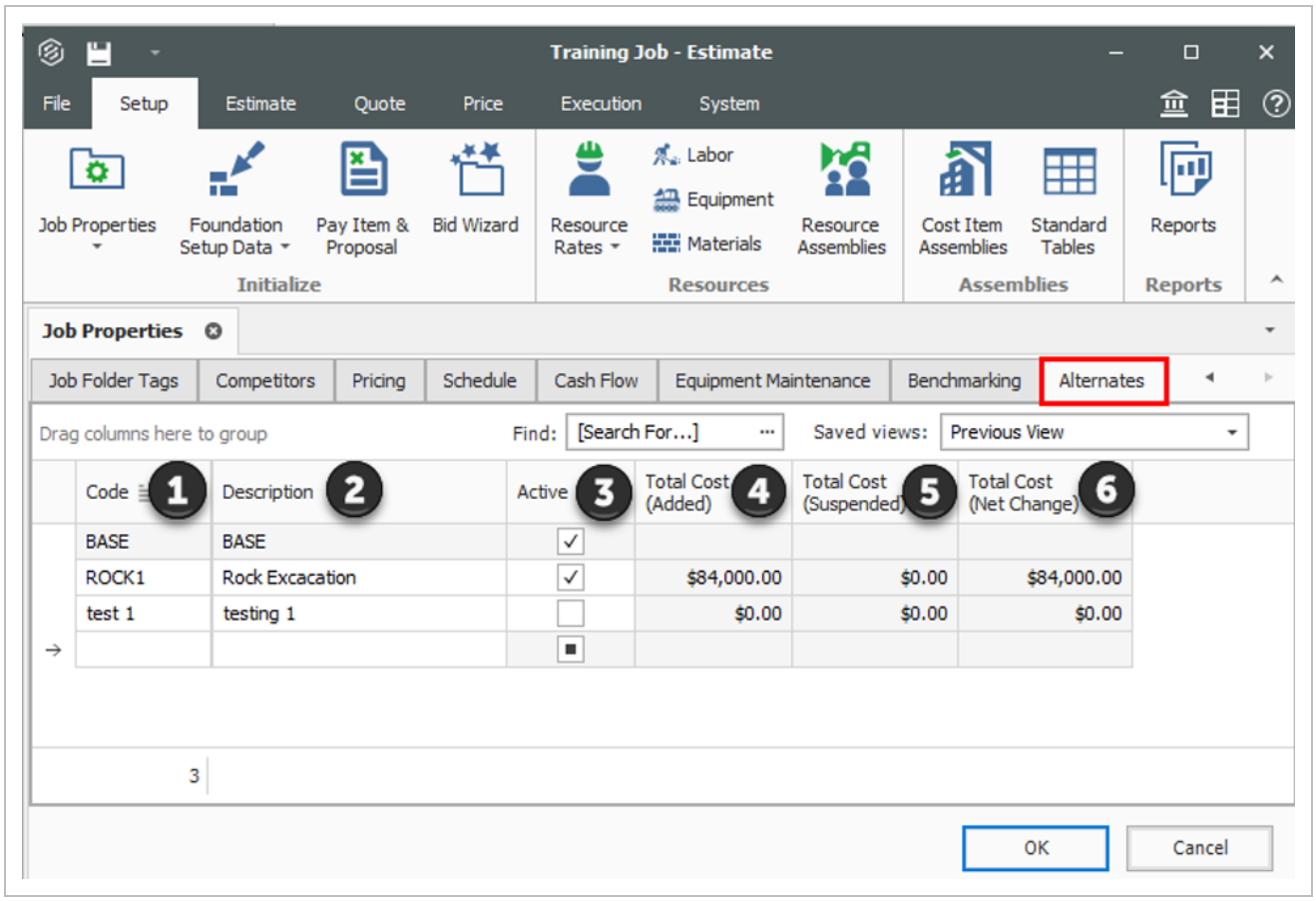
To access the Alternates form select the **Estimate** tab. Under the Alternates section, select **Alternates**.



This action opens up the **Alternate Record Details** form.

Names	Description
1. Code	Code of Alternate Scenario.
2. Description	Description of Alternate Scenario.
3. Active	Determines if Alternate Scenario is active within CBS or not.
4. Total Cost (Added)	When Alternate is set to active, it will not be suspended, and its CBS Total Cost will be added to the estimate's Total Cost Forecast. Below example shows the full $84,000 will be included in the estimate.

Names	Description
5. Total Cost (Suspended)	When Alternate is set to active, Total Cost Suspended will be $0 because alternate is active part of bid.
6. Total Cost (Net Change)	Difference between Total Cost Added and Total Cost Suspended.

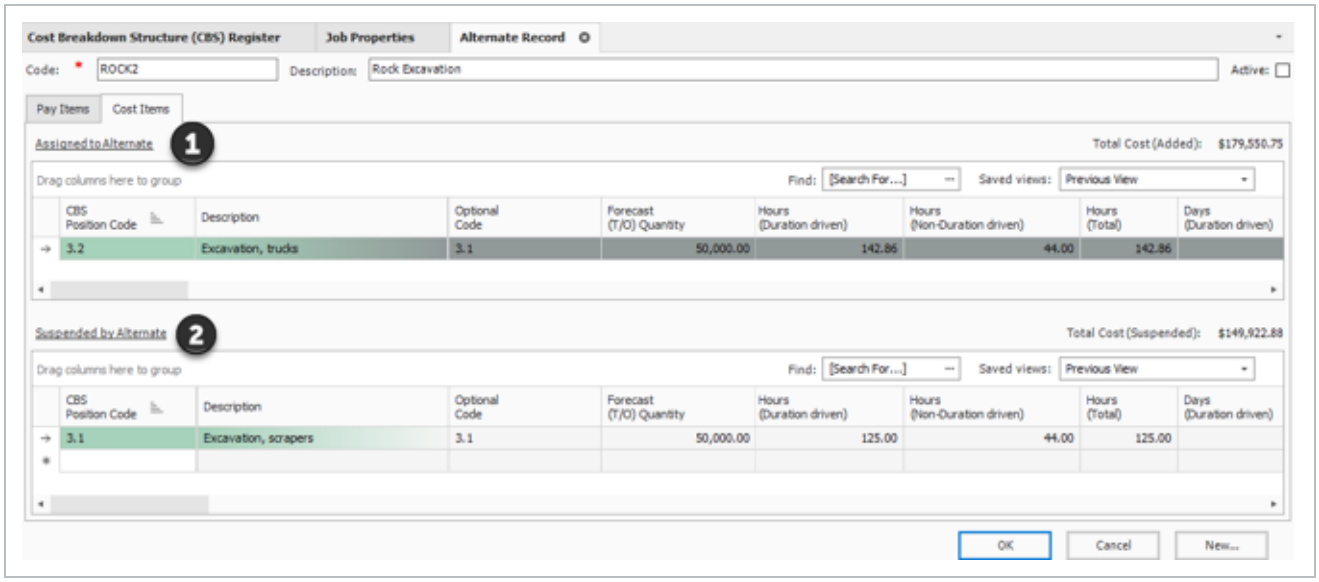


15.7.3 ALTERNATES RECORD DETAILS

Drill down into an Alternate Record to view and edit its attributes. The Alternate Record details form provides you with a way to setup rules for auto suspending and unsuspending groups of cost items.

Names	Description
1. Assigned to	Code of Alternate Scenario.

Names	Description
Alternate	
2. Suspended by Alternate	Description of Alternate Scenario.

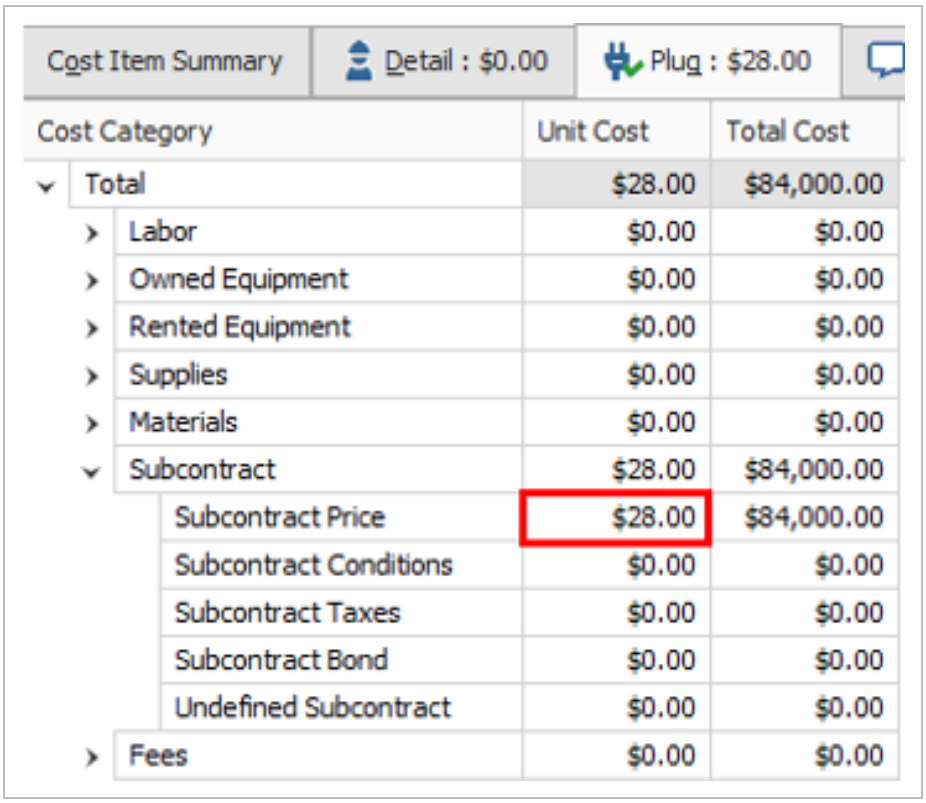


STEP BY STEP – CREATE ALTERNATE SCENARIO IN CBS

1. From the Ribbon, select the **Estimate** tab.
2. Select **Cost Breakdown Structure (CBS)**. The Cost Breakdown Structure (CBS) Register opens.
3. Using the Unclassified Excavation cost item, type in **Rock Excavation** as a new subordinate.
4. Then type in **3000** in the Forecast T/O Quantity column.
5. Under the Unit of Measure column, select **Cubic Yard**.

− 3	**Unclassified Excavation**	50,000.00	Cubic Yard
+ 3.1	Excavation	50,000.00	Cubic Yard
+ 3.2	Embankment	50,000.00	Cubic Yard
+ 3.3	Rock Excavation	3,000.00	Cubic Yard

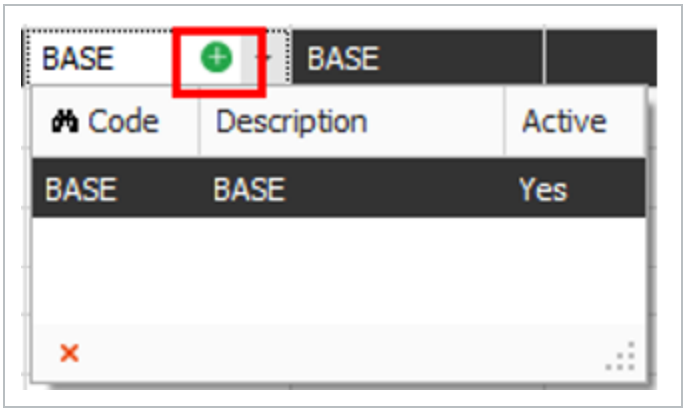
6. Double click the Rock Excavation cost item to open the cost item's record.
7. Select the **Plug** tab. Under the Subcontract section click into the Unit Cost field for the Subcontract Price.
8. Type **$28.00** in the Plug Unit Cost column for the Subcontract Price. Once done, click **OK**.



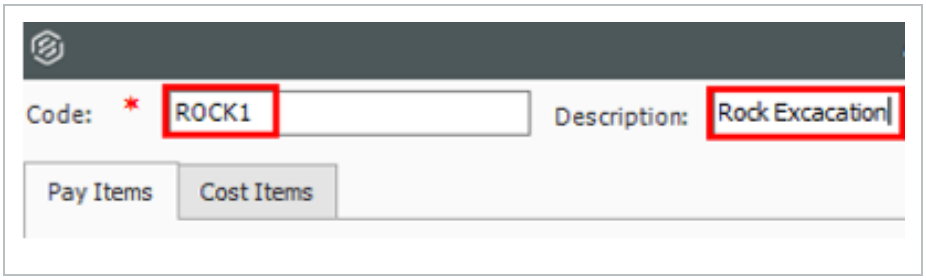
Cost Item Summary | Detail : $0.00 | Plug : $28.00

Cost Category	Unit Cost	Total Cost
Total	$28.00	$84,000.00
Labor	$0.00	$0.00
Owned Equipment	$0.00	$0.00
Rented Equipment	$0.00	$0.00
Supplies	$0.00	$0.00
Materials	$0.00	$0.00
Subcontract	$28.00	$84,000.00
Subcontract Price	$28.00	$84,000.00
Subcontract Conditions	$0.00	$0.00
Subcontract Taxes	$0.00	$0.00
Subcontract Bond	$0.00	$0.00
Undefined Subcontract	$0.00	$0.00
Fees	$0.00	$0.00

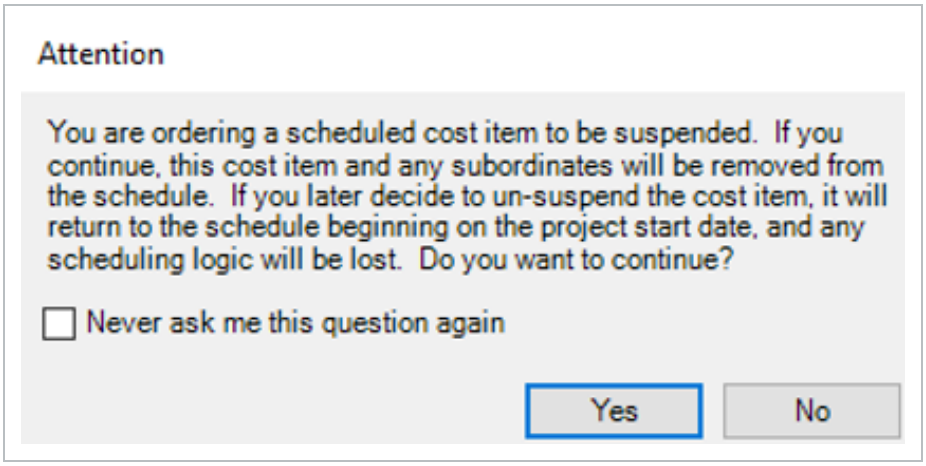
9. On the CBS Register, change your Saved Views to **Alternates View**.
10. Select the Rock Excavation cost item. Under the Alternate column, select the drop down arrow, and then select the **Add** icon. This will open up a new form to create a new Alternate record.



11. Type **ROCK1** in the Code field, and type **Rock Excavation** in the Description field. Once done, click **OK**.



12. An Attention message will appear alerting you the item will be suspended once you move off the field.

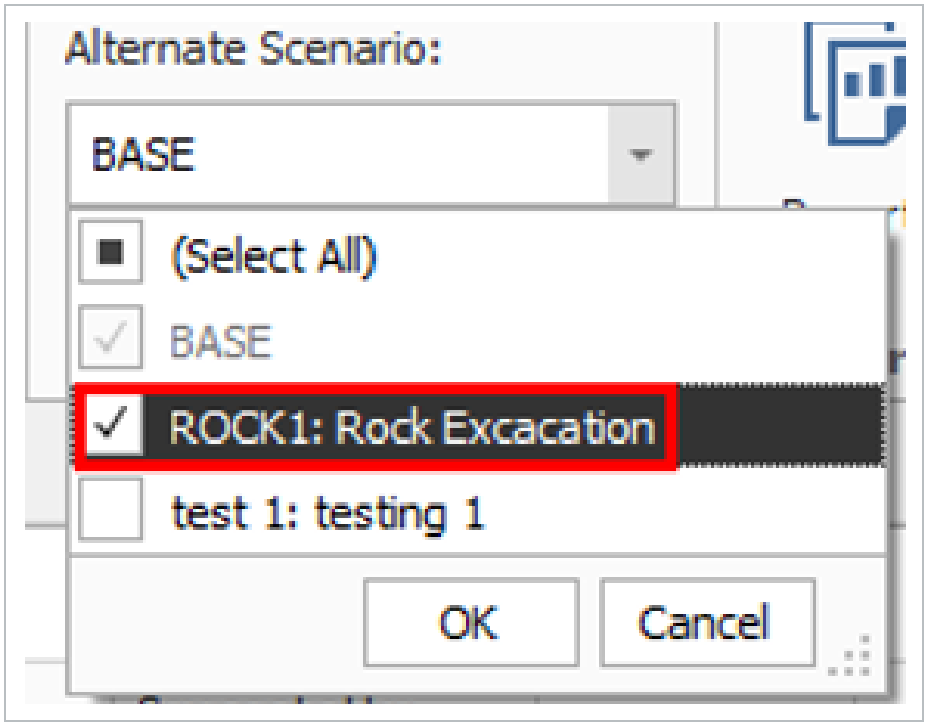


13. Select **Yes**. You see the Rock Excavation item is now in suspended status.

Description	Forecast (T/O) Quantity	Unit Cost	Total Cost (Forecast)	Currency	Alternate	Suspended by Alternate	Suspend
Rock Excavation	3,000.00	$28.00	$84,000.00	U.S. Dollar	BASE	☐	☑

NOTE Suspended status is the default status for alternate items.

14. In order to activate this alternate item, select the **Estimate** tab in the Ribbon and go the **Alternate Scenario** drop down in the Alternates section.
15. Then select the **ROCK1** scenario. Once done, click **OK**. The Suspend check box fields is no longer checked for Rock Excavation.



NOTE Alternate Scenario's BASE and ROCK1 are now both included in the Total Cost Forecast in your estimate. This is also known as additive type of alternate, meaning that when it's active it will be added to the estimate. When Alternate Scenario Base + ROCK1 are both checked, the cost item assigned to the ROCK1 alternate is included in the Total Cost (Forecast).

CBS Position Code	Description	Forecast (T/O) Quantity	Unit of Measure	Unit Cost	Total Cost (Forecast)	Currency	Alternate	Alternate Description	Suspended by Alternate	Suspend
3	Unclassified Excavation	50,000.00	Cubic Yard	$9.95	$497,466.56	U.S. Dollar	BASE	BASE		
3.1	Excavation, scrapers	50,000.00	Cubic Yard	$3.00	$149,922.88	U.S. Dollar	BASE	BASE		
3.2	Excavation, trucks	50,000.00	Cubic Yard	$3.59	$179,550.75	U.S. Dollar	BASE	BASE		
3.4	Rock Excavation	3,000.00	Cubic Yard	$28.00	$84,000.00	U.S. Dollar	ROCK1	Rock Excacat...		
4		103,000.00			$413,473.62					

16. When only the Base Alternate Scenario is checked, the cost item assigned to the ROCK1 alternate is NOT included in the Total Cost (Forecast). Only base alternates are including the estimate's cost.

CBS Position Code	Description	Forecast (T/O) Quantity	Unit Cost	Total Cost (Forecast)	Alternate	Alternate Description	Suspended by Alternate	Suspend
3	Unclassified Excavation	50,000.00	$8.27	$413,466.56	BASE	BASE		
3.1	Excavation, scrapers	50,000.00	$3.00	$149,922.88	BASE	BASE		
3.2	Excavation, trucks	50,000.00	$3.59	$179,550.75	BASE	BASE		
3.4	Rock Excavation	3,000.00	$28.00	$84,000.00	ROCK1	Rock Excacat...		✓
4		100,000.00		$329,473.62				

TIP When a cost item is assigned to an alternate, it's then considered an alternate item in the estimate and does not contribute to the job's cost until the alternate is 'activated'.

15.7.4 ASSIGNING MULTIPLE COST ITEMS TO ONE ALTERNATE

Any number of cost items can be assigned to a single alternate item. The alternate feature can be used to quickly suspend and unsuspend groups of items. Another manner in which alternates can be used would be to consider two different approaches to completing the same scope of work. In this case the activation of an alternate would replace the preselected cost items.

Imagine you are a contractor and want to assign an Alternate Scenario to your 3.2 Excavation Trucks cost item, and at the same time automatically suspend your 3.1 Excavation Scrapers cost item. You need an Alternate Scenario view showing what would happen when you suspend Excavation Scrapers, but want to keep your Excavation Trucks active. You'd like to evaluate this pricing scenario, especially your Total Cost Forecast.

STEP BY STEP – MULTIPLE COST ITEMS TO AN ALTERNATE

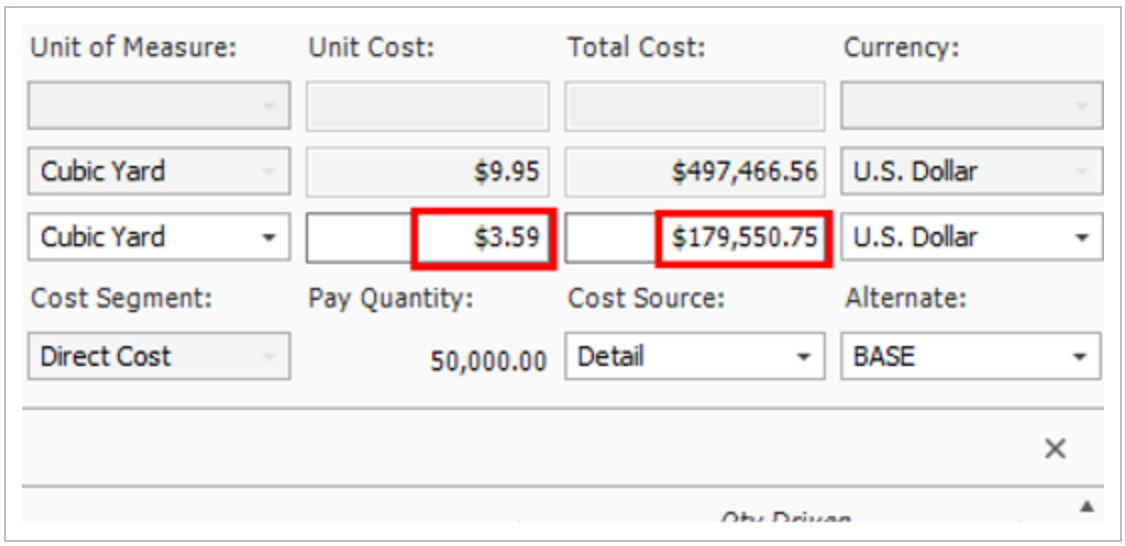
1. From the Ribbon, select the **Estimate** tab.
2. Select **Cost Breakdown Structure (CBS)**. The Cost Breakdown Structure (CBS) Register opens.
3. Create a copy of cost item Excavation and rename it **Excavation, scrapers.**
4. Rename the original Excavation cost item to **Excavation, trucks**.
5. Under the Unit of Measure column, select **Cubic Yard**.

⊟ 3	**Unclassified Excavation**	50,000.00
+ 3.1	Excavation, scrapers	50,000.00
+ 3.2	Excavation, trucks	50,000.00
+ 3.3	Embankment	50,000.00
+ 3.4	Rock Excavation	3,000.00

6. Double click to open the cost item **Excavation, trucks**.
7. Add a new Construction Equipment Resource: code **ETDT Dump Truck**, then select **OK**.
8. Add a new Construction Equipment Resource: code **EL950 Loader 950**, select **OK**.
9. Change the quantity of ETDT Dump Truck to **5**.
10. Add a new Labor Resource: code **LT1 Teamster**, then select OK.
11. Change the quantity for LT1 Teamster to **5**.
12. Remove resources **ES621 Scraper 621, ES623 Scraper 623, L01 Operator Class 1**.
13. Change the quantity for L02 Operator Class to **5**.
14. Change the Cubic Yard/Day to **2800** on the Production tab.
15. Your results should look like this:

Row Number	Code	Resource Assembly	Description	Quantity (Less Waste)	Waste % Add-on	Quantity	Unit of Measure	Productivity Factor	Work Hours	Pay Hours	Unit Cost
1	ETWT		Water Truck			1.00	Each	1.00	44.00	44.00	$29.60
2	ED8		Dozer D8			1.00	Each	1.00	142.86	142.86	$173.60
3	ECOMP1		Compactor Smooth ...			1.00	Each	1.00	142.86	142.86	$36.40
4	ECOMP2		Compactor Sheeps ...			1.00	Each	1.00	142.86	142.86	$61.60
5	LL2		Laborer			1.00	Each	1.00	142.86	142.86	$26.37
6	LO4		Operator Foreman			1.00	Each	1.00	142.86	71.43	$35.72
7	EG14G		Grader 14G			1.00	Each	1.00	142.86	142.86	$60.20
8	LO2		Operator Class 2			5.00	Each	1.00	714.29	714.29	$28.07
9	EL950		Loader 950			1.00	Each	1.00	142.86	142.86	$60.38
10	ETDT		Dump Truck			5.00	Each	1.00	714.29	714.29	$102.20
11	LT1		Teamster			5.00	Each	1.00	714.29	714.29	$30.62

16. The Unit and Total Cost are now recalculated. Once you are done with all your changes, click **OK** to return to the CBS register.

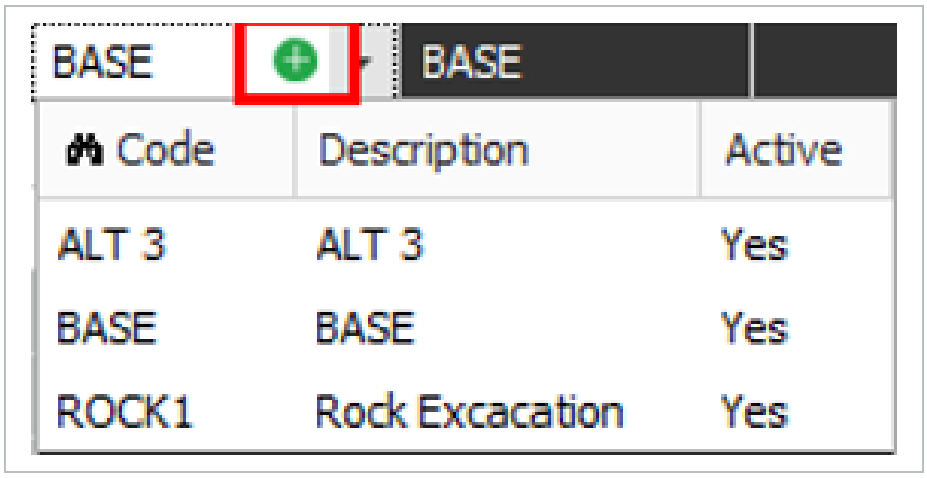


17. Your Excavation, truck cost item is now worth $3.59 a Cubic Yard, while your Excavation, scraper cost item is worth $3.00 a Cubic Yard.

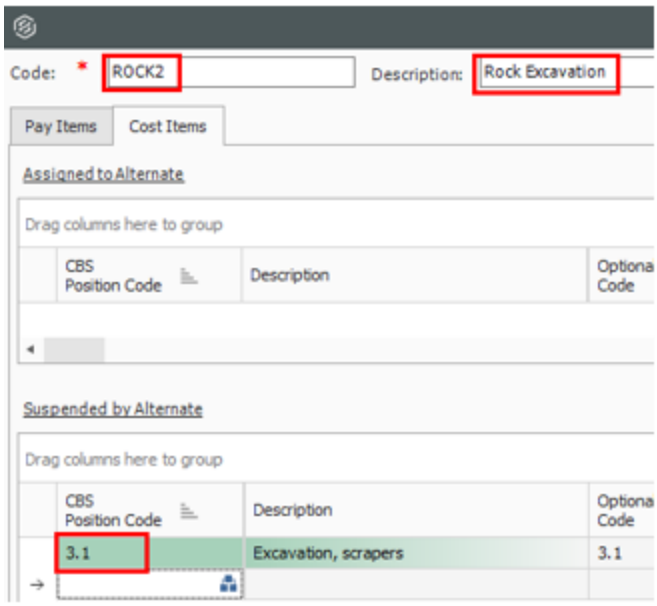
CBS Position Code	Description	Forecast (T/O) Quantity	Unit of Measure	Unit Cost	Total Cost (Forecast)	Currency
3	**Unclassified Excavation**	50,000.00	Cubic Yard	$9.95	$497,466.56	U.S. Dollar
3.1	Excavation, scrapers	50,000.00	Cubic Yard	$3.00	$149,922.88	U.S. Dollar
3.2	Excavation, trucks	50,000.00	Cubic Yard	$3.59	$179,550.75	U.S. Dollar

NOTE In order to make these two cost items mutually exclusive, meaning that you want one or the other in the bid, you can set this up via an alternate item. You can set this up so that one is automatically suspended, while the other is active

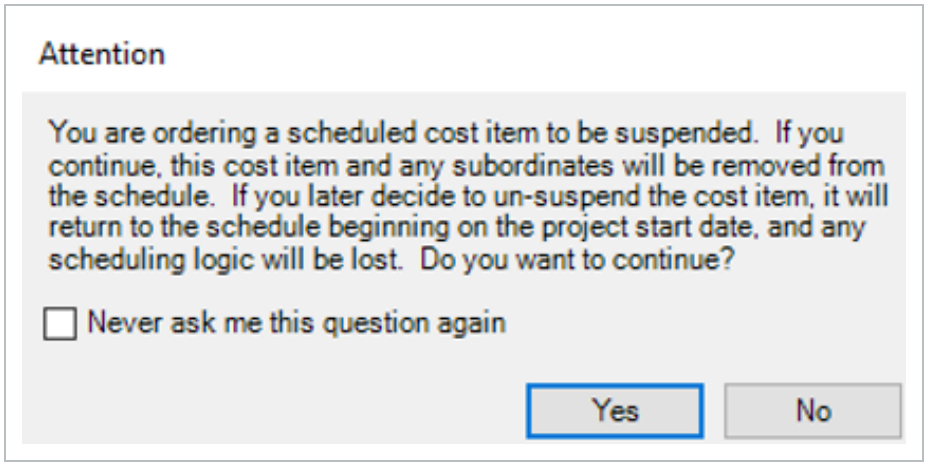
18. For **Excavation, truck**, add a new Alternate by click on the Alternate field and selecting the **new** icon.



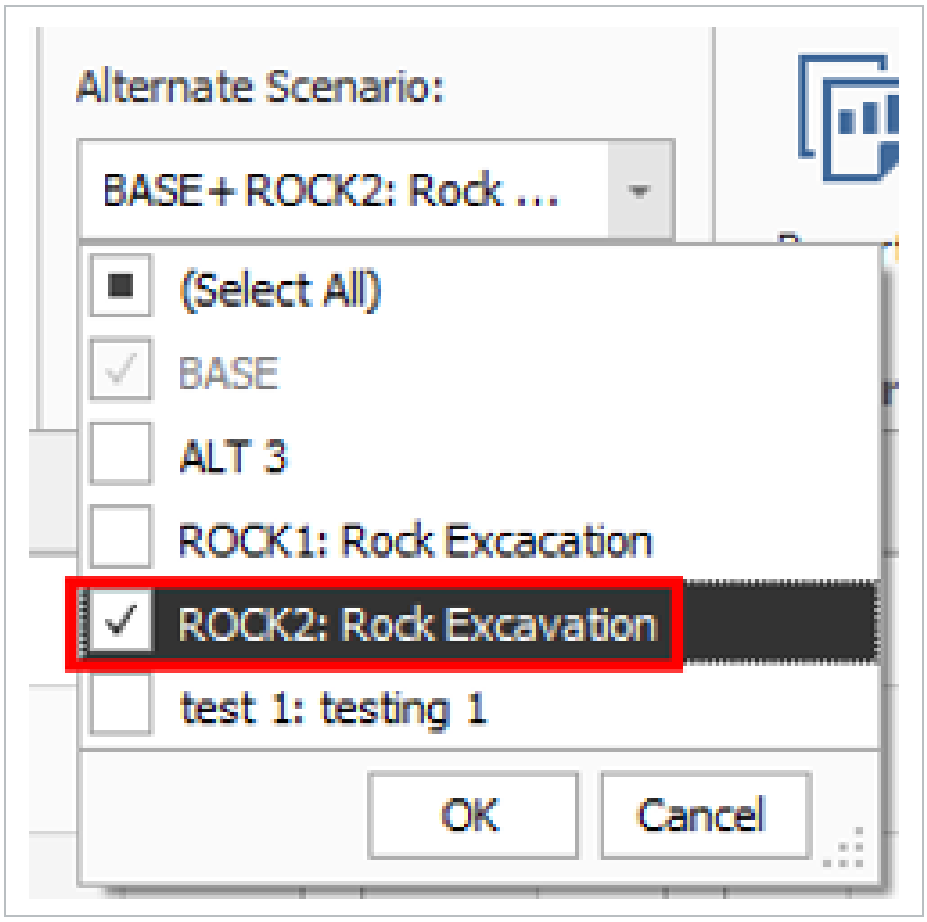
19. Type **ROCK2** in the Code.
20. Type in **Trucking Excavation** for the description.
21. Click on the Cost Items tab. In the CBS Position Code field, select the **Excavation, scrapers**. Excavation, scrapers will now be suspended when Alternate Excavation, trucks is active.



22. An Attention message will appear alerting you the item will be suspended once you move off the field. Select **Yes** to continue. On the CBS Register, you now see that **Excavation, trucks** is suspended while Excavation, scrapers is activated.



23. In order to activate this alternate item, select the **Estimate** tab in the Ribbon and go the **Alternate Scenario** drop down in the Alternates section.
24. Then select the **ROCK2** scenario. Once done, click **OK**.



25. The trucks cost item is now active and scrapers has automatically been suspended. Now the Suspended by Alternate column is checked for cost item **Excavation, trucks**.

CBS Position Code	Description	Forecast (T/O) Quantity	Unit of Measure	Unit Cost	Total Cost (Forecast)	Currency	Alternate	Alternate Description	Suspended by Alternate	Suspend
⊟ 3	**Unclassified Excavation**	50,000.00	Cubic Yard	$6.95	$347,543.68	U.S. Dollar	BASE	BASE	☐	☐
+ 3.1	Excavation, scrapers	50,000.00	Cubic Yard	$3.00	$149,922.88	U.S. Dollar	BASE	BASE	☑	☑
+ 3.2	Excavation, trucks	50,000.00	Cubic Yard	$3.59	$179,550.75	U.S. Dollar	ROCK2	Rock Excavat...	☐	☐

15.7.4.1 CRITICAL THINKING - ALTERNATE SCENARIO (OWNER)

SCENARIO: Carla, an estimator at Genco Power is developing an estimate for upcoming maintenance work at one of Genco's power plants. She wants to explore two different options for removing and replacing a feed water system.

In one approach, she assumes that crews will be able to increase access to the work area by cutting a large access way through the wall of the metal building. This would allow for easier access to the feed water system that needs replacing. Parts and materials could be staged nearby outdoors and hoisted into position as they're needed. Also, crews would be able to access the work area more readily, streamlining operations.

She also uses another approach, in which Engineering won't approve plans for increased access by cutting through the building's wall. In this case, the replacement of the feed water system will be more tedious, as workers will need to wind their way through existing plant infrastructure to access the area in which they will be working. This has a pronounced effect on the crews' productivity and their ability to transport and stage materials to the area where the work will be performed.

WHICH OF THE FOLLOWING WOULD BE THE BEST WAY FOR CARLA TO ESTIMATE BOTH OPTIONS IN INEIGHT ESTIMATE?

A. Create cost items for both options and use the Suspend feature to toggle between them.

B. Use the Snapshot feature to create a second version of the estimate with the second option estimated. You can compare the original estimate to the snapshot copy of the estimate containing the alternate option.

C. Create the second option in the same estimate and assign different alternate scenario records to each option respectively. Control whether the pay item is included using the Alternate Scenario drop-down.

View the following page for feedback.

15.7.4.2 CRITICAL THINKING - ALTERNATE SCENARIO (OWNER)

FEEDBACK

WHICH OF THE FOLLOWING WOULD BE THE BEST WAY FOR CARLA TO ESTIMATE BOTH OPTIONS IN INEIGHT ESTIMATE?

A. Create cost items for both options and use the Suspend feature to toggle between them.

Suspending cost items removes it from the estimate effectively, but this process is more cumbersome, since you have to suspend each item manually and re- price each time.

B. Use the Snapshot feature to create a second version of the estimate with the second option estimated. You can compare the original estimate to the snapshot copy of the estimate containing the alternate option.

This gives you nice visibility of the two versions of the estimate side by side but is a bit laborious to develop and manage.

C. Create the second option in the same estimate and assign different alternate scenario records to each option respectively. Control whether the pay item is included using the Alternate Scenario drop-down.

This is the most efficient approach. The Alternate Scenarios drop-down makes it easy to select and de-select alternates, with a few clicks.

15.7.4.3 CRITICAL THINKING - ALTERNATE SCENARIO (CONTRACTOR)

SCENARIO: James, an estimator at ADOT, is about to send a project he estimated out for proposal when he receives word from the environmental technician that the site being developed includes contaminated soil. He decides to include “Removal of contaminated soil” as an alternate to see if he can get the cost covered by the contractor.

YOU ARE THE CONTRACTOR SEEKING TO WIN THE CONTRACT. WHICH OF THE FOLLOWING WOULD BE THE BEST OPTION FOR DEVELOPING AN ALTERNATE ESTIMATE FOR THE CONTAMINATED SOIL?

A. Add the “Removal of contaminated soil” pay item, then estimate the contaminated soil in the CBS and assign it to the pay item. Use the Suspend feature to toggle the pay item on and off, repricing the estimate each time.

B. Use the Snapshot feature to create a second version of the estimate with the “Removal of contaminated soil” pay item and estimate included. You can compare the original estimate to the snapshot copy of the estimate containing the alternate.

C. Add the “Removal of contaminated soil” pay item, then estimate the contaminated soil in the CBS and assign it to the pay item. Control whether the pay item is included using the Alternate Scenario drop-down.

View the following page for feedback.

15.7.4.4 CRITICAL THINKING - ALTERNATE SCENARIO (CONTRACTOR)

FEEDBACK

WHICH OF THE FOLLOWING WOULD BE THE BEST OPTION FOR DEVELOPING AN ALTERNATE ESTIMATE FOR THE CONTAMINATED SOIL?

A. Add the “Removal of contaminated soil” pay item, then estimate the contaminated soil in the CBS and assign it to the pay item. Use the Suspend feature to toggle the pay item on and off, repricing the estimate each time.

Suspending the pay item removes it from the estimate effectively, but this process is more cumbersome, since you have to suspend each item manually and reprice each time.

B. Use the Snapshot feature to create a second version of the estimate with the “Removal of contaminated soil” pay item and estimate included. You can compare the original estimate to the snapshot copy of the estimate containing the alternate.

This gives you nice visibility of the two versions of the estimate side by side but is a bit laborious to develop and manage.

C. Add the “Removal of contaminated soil” pay item, then estimate the contaminated soil in the CBS and assign it to the pay item. Control whether the pay item is included using the Alternate Scenario drop-down.

This is the most efficient approach. The Alternate Scenarios drop-down makes it easy to select and deselect alternates, and the pricing updates automatically. This is the easiest way to toggle between scenarios with a few clicks.

EXERCISE 15.3 – ALTERNATE SCENARIO

SCENARIO: You are a contractor estimating a job for the owner, DECK Corp. Along with the base items of the proposal, DECK Corp has decided to include a security guard toll booth as an alternate item in the award of the contract as well.

The request for the alternate, as indicated below, is more of a “would like to have”, to give DECK Corp the option if it falls within their budget.

- Using the Training Job, create an alternate scenario for the Toll Both.
- Assign the alternate scenario to your Toll Booth cost items.
- Assign the alternate scenario to your Toll Booth pay item.
- Establish pricing for your Toll Both alternative scenarios.

Congratulations, you have completed this exercise!

15.8 PAY ITEM ALTERNATES

An Alternate Scenario is a set of active Alternates that can also be used with Pay Items. It's reasonable for the owner to include pay items as alternates within a job. The owner will most likely base the bid selection criteria primarily on the base bid items, but may also include alternate items in addition.

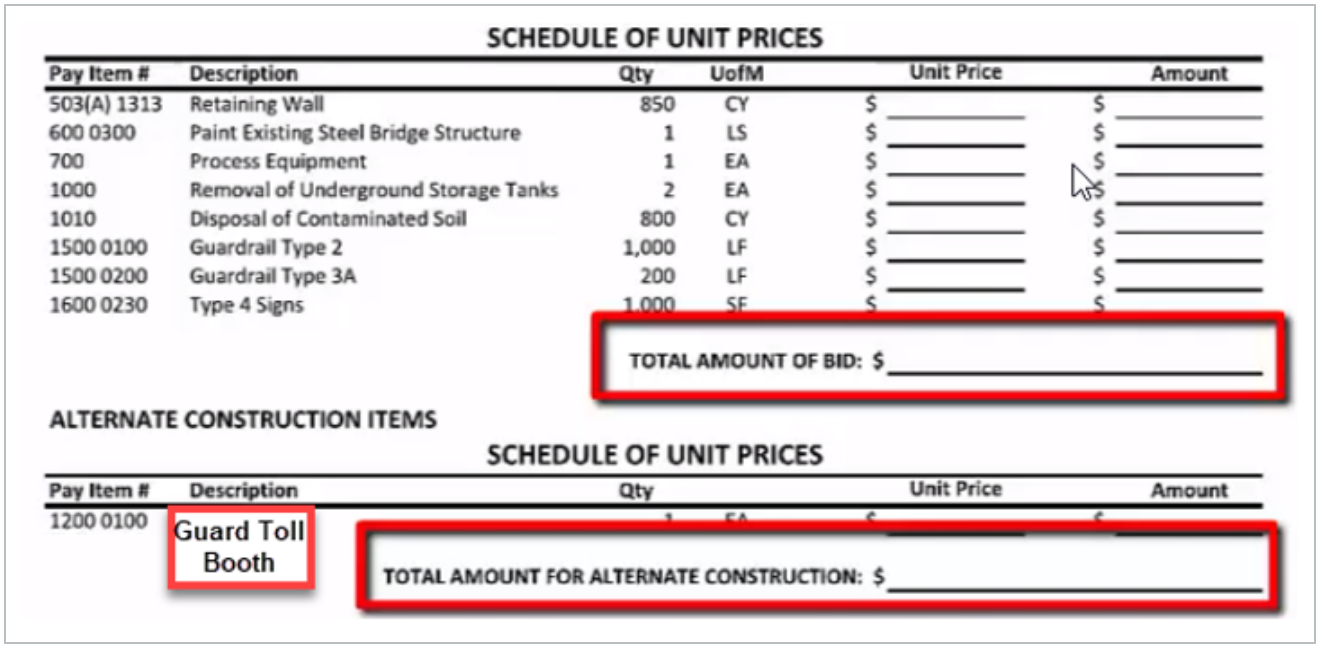
The contractor will want to understand the cost impact of an alternate if it is awarded. Contractors may not know ahead of time which combination of alternates an owner may choose to award. This feature will help the contactor understand how to spread markup to various bid item prices using different scenarios. This permits easy comparisons between different scenarios.

Imagine you are a contractor and bidding a job where the owner has included a security guard booth pay item as an alternate item in the job. The owner bases the base bid selection criteria on the base bid items, however, the owner elects to include alternate items in the award of the contract too. You as the contractor need to add the new security guard toll booth pay item to analyze the cost impact of adding this alternate, among other scenarios.

TIP	Suspending an item is the same as 'Deducting' an item.

The owner's bid could look like this below, where the first eight pay items are base pay items. The last Toll Booth pay item is the owner's Alternate. All items the owner is requesting to see in the contractor's bid.

The one Alternate Construction item below represents a bid item the owner would like to have as part of the bid as well. However, this one alternate is more of a 'would like to have'. The Alternate item(s) help to give the owner the option to accept the Alternates if it still falls within the owner's budget.



SCHEDULE OF UNIT PRICES

Pay Item #	Description	Qty	UofM	Unit Price	Amount
503(A) 1313	Retaining Wall	850	CY	$	$
600 0300	Paint Existing Steel Bridge Structure	1	LS	$	$
700	Process Equipment	1	EA	$	$
1000	Removal of Underground Storage Tanks	2	EA	$	$
1010	Disposal of Contaminated Soil	800	CY	$	$
1500 0100	Guardrail Type 2	1,000	LF	$	$
1500 0200	Guardrail Type 3A	200	LF	$	$
1600 0230	Type 4 Signs	1,000	SF	$	$

TOTAL AMOUNT OF BID: $

ALTERNATE CONSTRUCTION ITEMS

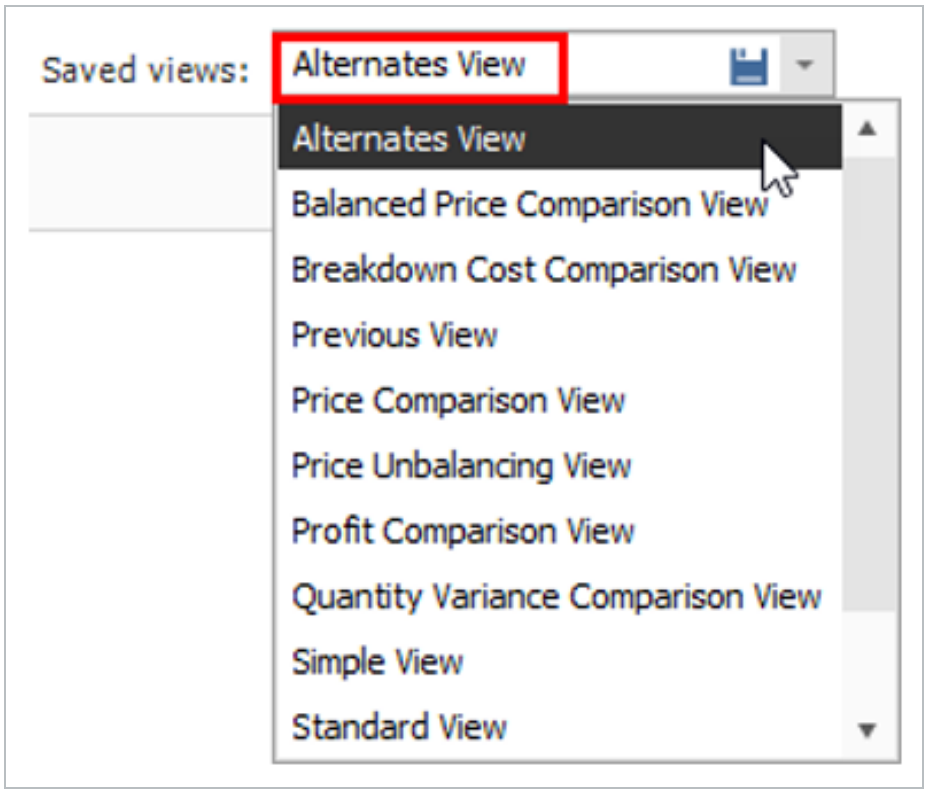
SCHEDULE OF UNIT PRICES

Pay Item #	Description	Qty	Unit Price	Amount
1200 0100	Guard Toll Booth	1 EA	$	$

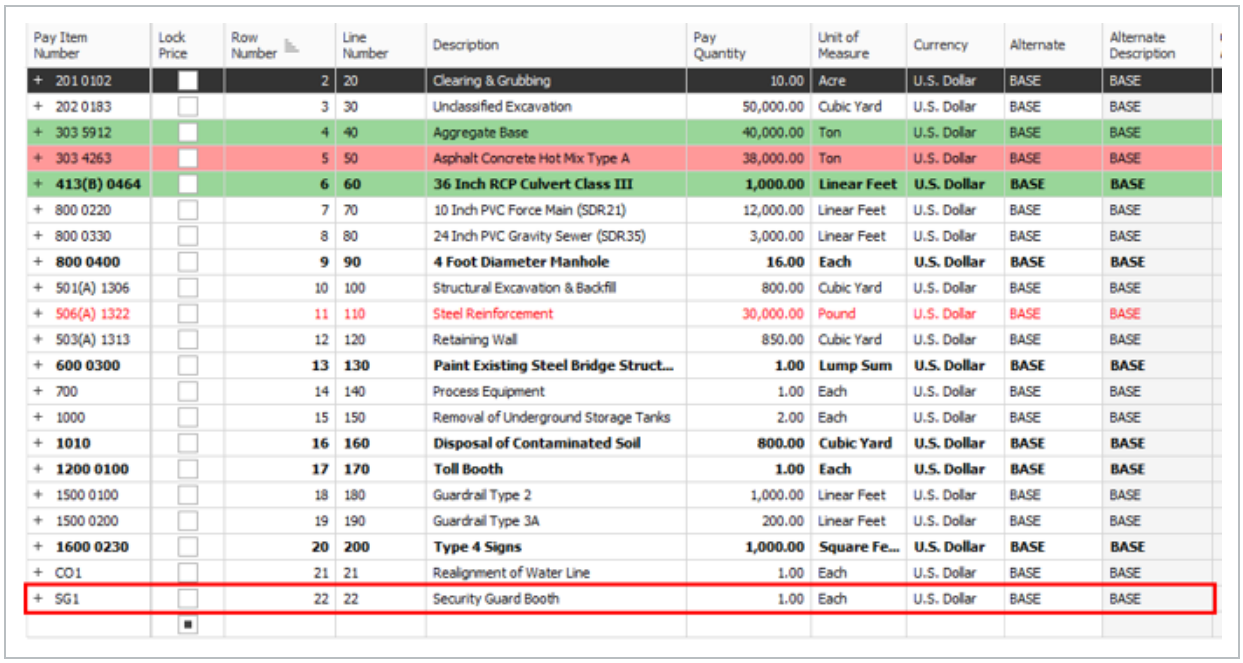
TOTAL AMOUNT FOR ALTERNATE CONSTRUCTION: $

STEP BY STEP – CREATE PAY ITEM AND PROPOSAL ALTERNATE SCENARIO

1. From the Ribbon, select the **Price** tab.
2. Under the Pay Items section, select **Pay Item & Proposal**. The Pay Item & Proposal Register opens.
3. Select the Saved Views drop down arrow and select **Alternates View**.

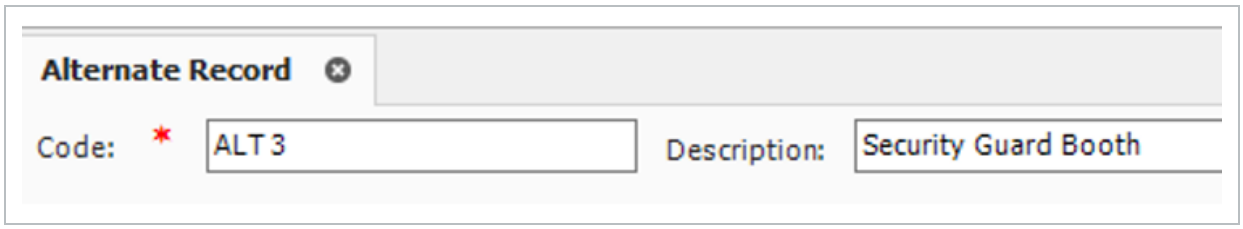


4. At the bottom of the register, create a new pay item labeled as **Security Guard Booth** in the Description field. Then in the Pay Item Number field, type in **SG1**.



Pay Item Number	Lock Price	Row Number	Line Number	Description	Pay Quantity	Unit of Measure	Currency	Alternate	Alternate Description
+ 201 0102		2	20	Clearing & Grubbing	10.00	Acre	U.S. Dollar	BASE	BASE
+ 202 0183		3	30	Unclassified Excavation	50,000.00	Cubic Yard	U.S. Dollar	BASE	BASE
+ 303 5912		4	40	Aggregate Base	40,000.00	Ton	U.S. Dollar	BASE	BASE
+ 303 4263		5	50	Asphalt Concrete Hot Mix Type A	38,000.00	Ton	U.S. Dollar	BASE	BASE
+ **413(B) 0464**		**6**	**60**	**36 Inch RCP Culvert Class III**	**1,000.00**	**Linear Feet**	**U.S. Dollar**	**BASE**	**BASE**
+ 800 0220		7	70	10 Inch PVC Force Main (SDR21)	12,000.00	Linear Feet	U.S. Dollar	BASE	BASE
+ 800 0330		8	80	24 Inch PVC Gravity Sewer (SDR35)	3,000.00	Linear Feet	U.S. Dollar	BASE	BASE
+ **800 0400**		**9**	**90**	**4 Foot Diameter Manhole**	**16.00**	**Each**	**U.S. Dollar**	**BASE**	**BASE**
+ 501(A) 1306		10	100	Structural Excavation & Backfill	800.00	Cubic Yard	U.S. Dollar	BASE	BASE
+ 506(A) 1322		11	110	Steel Reinforcement	30,000.00	Pound	U.S. Dollar	BASE	BASE
+ 503(A) 1313		12	120	Retaining Wall	850.00	Cubic Yard	U.S. Dollar	BASE	BASE
+ **600 0300**		**13**	**130**	**Paint Existing Steel Bridge Struct...**	**1.00**	**Lump Sum**	**U.S. Dollar**	**BASE**	**BASE**
+ 700		14	140	Process Equipment	1.00	Each	U.S. Dollar	BASE	BASE
+ 1000		15	150	Removal of Underground Storage Tanks	2.00	Each	U.S. Dollar	BASE	BASE
+ **1010**		**16**	**160**	**Disposal of Contaminated Soil**	**800.00**	**Cubic Yard**	**U.S. Dollar**	**BASE**	**BASE**
+ **1200 0100**		**17**	**170**	**Toll Booth**	**1.00**	**Each**	**U.S. Dollar**	**BASE**	**BASE**
+ 1500 0100		18	180	Guardrail Type 2	1,000.00	Linear Feet	U.S. Dollar	BASE	BASE
+ 1500 0200		19	190	Guardrail Type 3A	200.00	Linear Feet	U.S. Dollar	BASE	BASE
+ **1600 0230**		**20**	**200**	**Type 4 Signs**	**1,000.00**	**Square Fe...**	**U.S. Dollar**	**BASE**	**BASE**
+ CO1		21	21	Realignment of Water Line	1.00	Each	U.S. Dollar	BASE	BASE
+ SG1		22	22	Security Guard Booth	1.00	Each	U.S. Dollar	BASE	BASE

5. Now create a new Alternate for the Security Guard Booth pay item using the same steps for your new cost item.
6. Click in the Alternates field for the Security Guard Booth Alternate. Select the **add** icon. An Alternate Record opens.
7. In the Code field, type in code **ALT3**.
8. In the Description field type in **Security Guard Booth Alternate**.



9. Go into the CBS and copy all of the subordinate cost items for the existing **Toll Booth** cost item. (We will assume the same Toll Booth resources are needed for a Security Guard Booth).

− **17**	**Toll Booth**	1.00	Each	$25,264.55
+ 17.1	Site Preparation	1.00	Lump Sum	$3,664.55
+ 17.2	Concrete Reinforcement	1.00	Lump Sum	$1,500.00
+ 17.3	Cast in Place Concrete	1.00	Lump Sum	$3,500.00
+ 17.4	Concrete Masonry Units	1.00	Lump Sum	$2,900.00
+ 17.5	Paneling	1.00	Lump Sum	$2,100.00
+ 17.6	Wood Doors	1.00	Lump Sum	$1,000.00
+ 17.7	Wood Flooring	1.00	Lump Sum	$1,800.00
+ 17.8	Office Furniture	1.00	Lump Sum	$2,100.00
+ 17.9	Fire Protection Piping	1.00	Lump Sum	$3,300.00
+ 17.10	Interior Luminaires	1.00	Lump Sum	$3,400.00

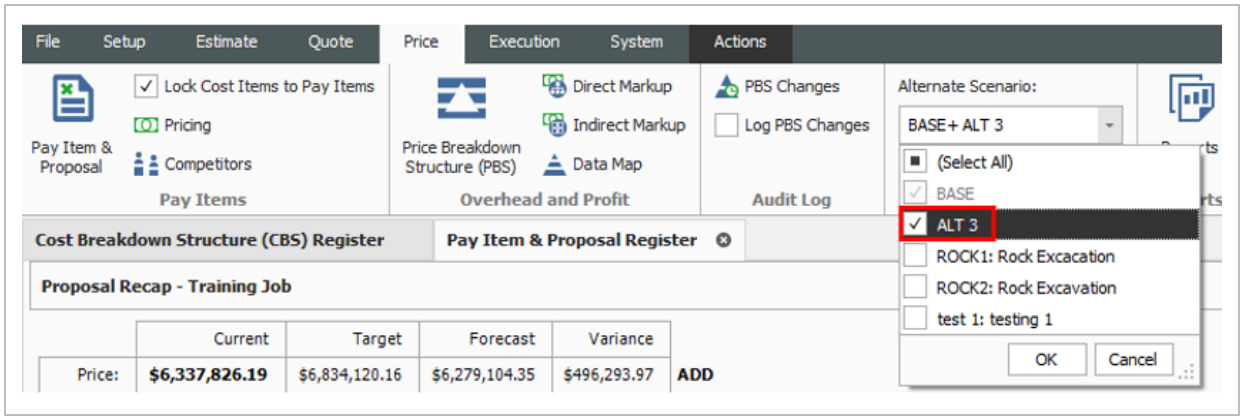
10. Paste the copied cost items into the new **Security Guard Booth** cost item you just created in the PIP.

22	**Security Guard Booth**	1.00	Each	$25,264.55
22.1	Site Preparation	1.00	Lump Sum	$3,664.55
22.2	Concrete Reinforcement	1.00	Lump Sum	$1,500.00
22.3	Cast in Place Concrete	1.00	Lump Sum	$3,500.00
22.4	Concrete Masonry Units	1.00	Lump Sum	$2,900.00
22.5	Paneling	1.00	Lump Sum	$2,100.00
22.6	Wood Doors	1.00	Lump Sum	$1,000.00
22.7	Wood Flooring	1.00	Lump Sum	$1,800.00
22.8	Office Furniture	1.00	Lump Sum	$2,100.00
22.9	Fire Protection Piping	1.00	Lump Sum	$3,300.00
22.10	Interior Luminaires	1.00	Lump Sum	$3,400.00

11. The cost items have all been automatically suspended in the CBS. This is because the Security Guard Booth pay item is suspended as well

CBS Position Code	Description	Forecast (T/O) Quantity	Unit Cost	Total Cost (Forecast)	Suspended by Alternate	Suspend
22	Security Guard Booth	1.00	$25,264.55	$25,264.55	☐	☑
22.1	Site Preparation	1.00	$3,664.55	$3,664.55	☐	☑
22.2	Concrete Reinforcement	1.00	$1,500.00	$1,500.00	☐	☑
22.3	Cast in Place Concrete	1.00	$3,500.00	$3,500.00	☐	☑
22.4	Concrete Masonry Units	1.00	$2,900.00	$2,900.00	☐	☑
22.5	Paneling	1.00	$2,100.00	$2,100.00	☐	☑
22.6	Wood Doors	1.00	$1,000.00	$1,000.00	☐	☑
22.7	Wood Flooring	1.00	$1,800.00	$1,800.00	☐	☑
22.8	Office Furniture	1.00	$2,100.00	$2,100.00	☐	☑
22.9	Fire Protection Piping	1.00	$3,300.00	$3,300.00	☐	☑
22.10	Interior Luminaires	1.00	$3,400.00	$3,400.00	☐	☑

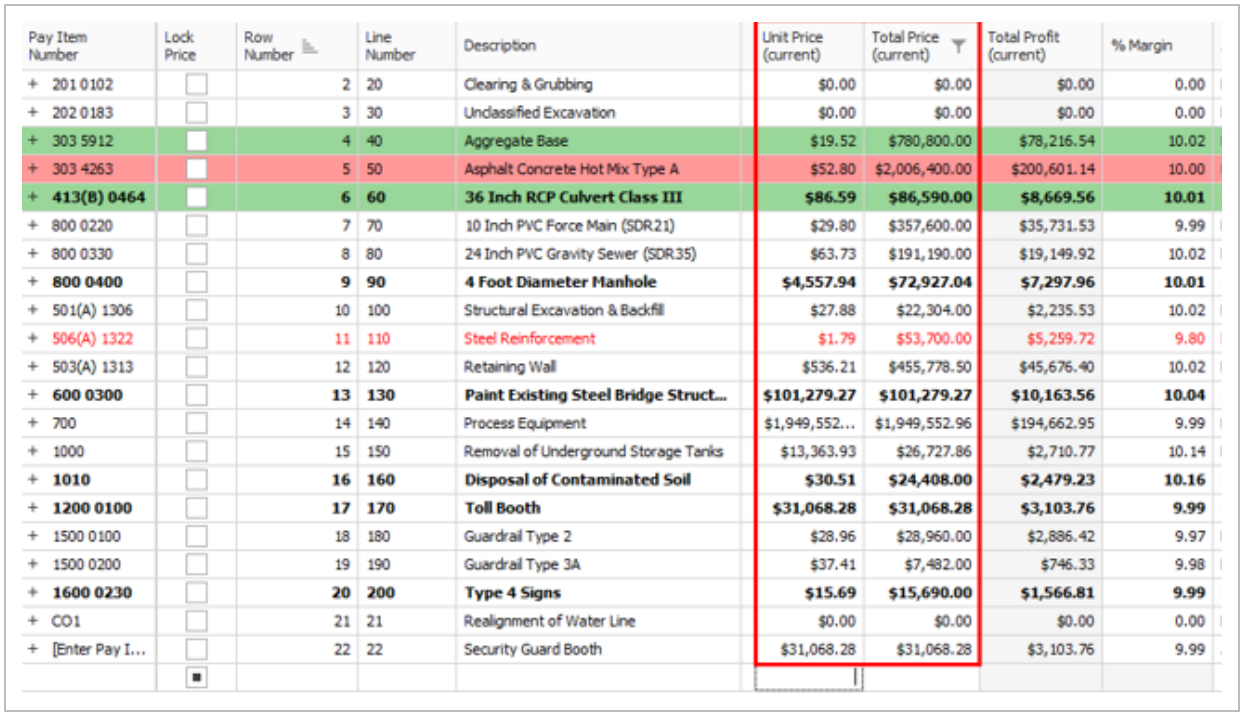
12. In the Pay Item & Proposal Register, activate alternate pay item Security Guard Booth by selecting **Alternate Scenario Base + ALT3** at that top of the form.



13. The **Security Guard Booth** is now activated. You can now see that all of the pay items have been priced including the Security Guard Booth Alternate pay item.

NOTE	You may need to establish your pay item price first if a price does not yet exist

14. From the register, select the **Actions** tab. Then under the Auto Price section, select the **Balance Bid** drop down.
15. Select the option Hit Target Goal in order to auto price the job. Now all of the pay items have been priced, including the Security Guard Booth Alternate pay item.



Pay Item Number	Lock Price	Row Number	Line Number	Description	Unit Price (current)	Total Price (current)	Total Profit (current)	% Margin
+ 201 0102		2	20	Clearing & Grubbing	$0.00	$0.00	$0.00	0.00
+ 202 0183		3	30	Unclassified Excavation	$0.00	$0.00	$0.00	0.00
+ 303 5912		4	40	Aggregate Base	$19.52	$780,800.00	$78,216.54	10.02
+ 303 4263		5	50	Asphalt Concrete Hot Mix Type A	$52.80	$2,006,400.00	$200,601.14	10.00
+ 413(B) 0464		**6**	**60**	**36 Inch RCP Culvert Class III**	**$86.59**	**$86,590.00**	**$8,669.56**	**10.01**
+ 800 0220		7	70	10 Inch PVC Force Main (SDR21)	$29.80	$357,600.00	$35,731.53	9.99
+ 800 0330		8	80	24 Inch PVC Gravity Sewer (SDR35)	$63.73	$191,190.00	$19,149.92	10.02
+ 800 0400		**9**	**90**	**4 Foot Diameter Manhole**	**$4,557.94**	**$72,927.04**	**$7,297.96**	**10.01**
+ 501(A) 1306		10	100	Structural Excavation & Backfill	$27.88	$22,304.00	$2,235.53	10.02
+ 506(A) 1322		11	110	Steel Reinforcement	$1.79	$53,700.00	$5,259.72	9.80
+ 503(A) 1313		12	120	Retaining Wall	$536.21	$455,778.50	$45,676.40	10.02
+ 600 0300		**13**	**130**	**Paint Existing Steel Bridge Struct...**	**$101,279.27**	**$101,279.27**	**$10,163.56**	**10.04**
+ 700		14	140	Process Equipment	$1,949,552...	$1,949,552.96	$194,662.95	9.99
+ 1000		15	150	Removal of Underground Storage Tanks	$13,363.93	$26,727.86	$2,710.77	10.14
+ 1010		**16**	**160**	**Disposal of Contaminated Soil**	**$30.51**	**$24,408.00**	**$2,479.23**	**10.16**
+ 1200 0100		**17**	**170**	**Toll Booth**	**$31,068.28**	**$31,068.28**	**$3,103.76**	**9.99**
+ 1500 0100		18	180	Guardrail Type 2	$28.96	$28,960.00	$2,886.42	9.97
+ 1500 0200		19	190	Guardrail Type 3A	$37.41	$7,482.00	$746.33	9.98
+ 1600 0230		**20**	**200**	**Type 4 Signs**	**$15.69**	**$15,690.00**	**$1,566.81**	**9.99**
+ CO1		21	21	Realignment of Water Line	$0.00	$0.00	$0.00	0.00
+ [Enter Pay I...		22	22	Security Guard Booth	$31,068.28	$31,068.28	$3,103.76	9.99

15.8.1 COMPARE ALTERNATE SCENARIOS

You can price and analyze the impact of each Alternate Scenario to the estimate's Total Price on the Pay Item & Proposal Register. This is after the Alternate Scenarios have been defined, assigned, and activated.

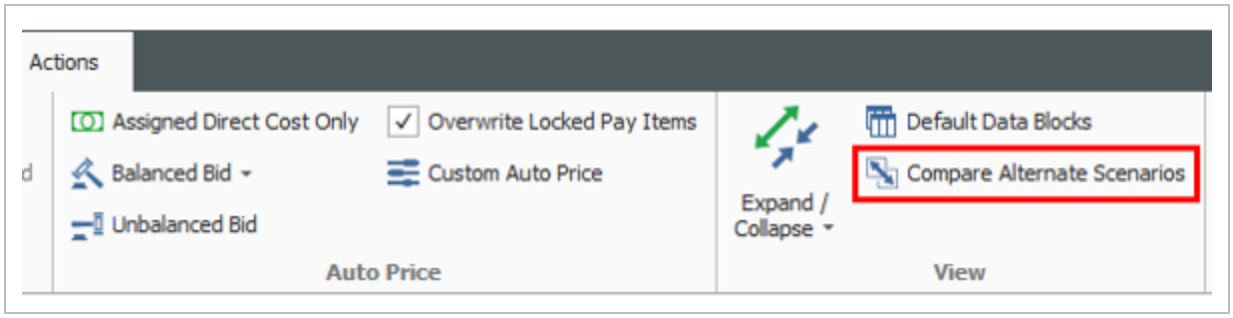
Each Alternate and combination of Alternates represents a different scenario, and prices need to be established for every scenario that you want to compare.

For example, if you have defined Alternate Scenarios 1, 2 and 3, you may wish to price each of them separately, and price any combination of them, and/or you may wish to price the combination of all three.

TIP	Be sure to establish bid prices for every alternate or combination of alternates.

STEP BY STEP – COMPARE ALTERNATE SCENARIOS

1. From the Ribbon, select the **Price** tab.
2. Under the Pay Items section, select **Pay Item & Proposal**. The Pay Item & Proposal Register opens.
3. On the Pay Item & Proposal Register, select the **Actions** tab. Under the View section, select **Compare Alternative Scenarios**. This action performs a comparison among the various Alternative Scenarios you've priced so far.



4. After selecting Compare Alternative Scenarios, new columns appear on the pay item form. These columns show a comparison of the base bid, plus Alternate Scenarios that have been priced so far.

Pay Item Number	Lock Price	Row Number	Line Number	Description	Unit Price (current)	Total Price (current)	Unit Price (BASE+ALT 3)	Total Price (BASE+ALT 3)	Total Profit (current)
+ 201 0102		2	20	Clearing & Grubbing	$0.00	$0.00	$0.00	$0.00	$0.00
+ 202 0183		3	30	Unclassified Excavation	$0.00	$0.00	$0.00	$0.00	$0.00
+ 303 5912		4	40	Aggregate Base	$19.52	$780,800.00	$19.52	$780,800.00	$78,103.35
+ 303 4263		5	50	Asphalt Concrete Hot Mix Type A	$52.80	$2,006,400.00	$52.80	$2,006,400.00	$200,421.84
+ **413(B) 0464**		**6**	**60**	**36 Inch RCP Culvert Class III**	**$86.61**	**$86,610.00**	**$86.59**	**$86,590.00**	**$8,672.35**
+ 800 0220		7	70	10 Inch PVC Force Main (SDR21)	$29.81	$357,720.00	$29.80	$357,600.00	$35,796.91
+ 800 0330		8	80	24 Inch PVC Gravity Sewer (SDR35)	$63.74	$191,220.00	$63.73	$191,190.00	$19,142.05
+ **800 0400**		**9**	**90**	**4 Foot Diameter Manhole**	**$4,558.81**	**$72,940.96**	**$4,557.94**	**$72,927.04**	**$7,299.86**
+ 501(A) 1306		10	100	Structural Excavation & Backfill	$27.88	$22,304.00	$27.88	$22,304.00	$2,231.24
+ 506(A) 1322		11	110	Steel Reinforcement	$1.79	$53,700.00	$1.79	$53,700.00	$5,257.72
+ 503(A) 1313		12	120	Retaining Wall	$536.35	$455,897.50	$536.21	$455,778.50	$45,689.19
+ **600 0300**		**13**	**130**	**Paint Existing Steel Bridge Struct...**	**$101,314.33**	**$101,314.33**	**$101,279.27**	**$101,279.27**	**$10,167.93**
+ 700		14	140	Process Equipment	$1,949,681...	$1,949,681.16	$1,949,552.96	$1,949,552.96	$194,688.74
+ 1000		15	150	Removal of Underground Storage Tanks	$13,367.94	$26,735.88	$13,363.93	$26,727.86	$2,711.80
+ **1010**		**16**	**160**	**Disposal of Contaminated Soil**	**$30.52**	**$24,416.00**	**$30.51**	**$24,408.00**	**$2,481.93**
+ **1200 0100**		**17**	**170**	**Toll Booth**	**$31,071.32**	**$31,071.32**	**$31,068.28**	**$31,068.28**	**$3,104.28**
+ 1500 0100		18	180	Guardrail Type 2	$28.97	$28,970.00	$28.96	$28,960.00	$2,895.65
+ 1500 0200		19	190	Guardrail Type 3A	$37.41	$7,482.00	$37.41	$7,482.00	$746.13
+ **1600 0230**		**20**	**200**	**Type 4 Signs**	**$15.69**	**$15,690.00**	**$15.69**	**$15,690.00**	**$1,566.40**
+ CO1		21	21	Realignment of Water Line	$0.00	$0.00	$0.00	$0.00	$0.00
+ [Enter Pay I...		22	22	Security Guard Booth	$0.00	$0.00	$31,068.28	$31,068.28	$0.00

5. The current scenario base price Total Price is $6,307,253.15, however the Alternate Price scenario for the additional Security Guard Booth is $6,337,826.19

Pay Item Number	Lock Price	Row Number	Line Number	Description	Unit Price (current)	Total Price (current)	Unit Price (BASE+ALT 3)	Total Price (BASE+ALT 3)	Total Profit (current)
+ 201 0102		2	20	Clearing & Grubbing	$0.00	$0.00	$0.00	$0.00	$0.00
+ 202 0183		3	30	Unclassified Excavation	$0.00	$0.00	$0.00	$0.00	$0.00
+ 303 5912		4	40	Aggregate Base	$19.52	$780,800.00	$19.52	$780,800.00	$78,103.35
+ 303 4263		5	50	Asphalt Concrete Hot Mix Type A	$52.80	$2,006,400.00	$52.80	$2,006,400.00	$200,421.84
+ **413(B) 0464**		**6**	**60**	**36 Inch RCP Culvert Class III**	**$86.61**	**$86,610.00**	**$86.59**	**$86,590.00**	**$8,672.35**
+ 800 0220		7	70	10 Inch PVC Force Main (SDR21)	$29.81	$357,720.00	$29.80	$357,600.00	$35,796.91
+ 800 0330		8	80	24 Inch PVC Gravity Sewer (SDR35)	$63.74	$191,220.00	$63.73	$191,190.00	$19,142.05
+ **800 0400**		**9**	**90**	**4 Foot Diameter Manhole**	**$4,558.81**	**$72,940.96**	**$4,557.94**	**$72,927.04**	**$7,299.86**
+ 501(A) 1306		10	100	Structural Excavation & Backfill	$27.88	$22,304.00	$27.88	$22,304.00	$2,231.24
+ 506(A) 1322		11	110	Steel Reinforcement	$1.79	$53,700.00	$1.79	$53,700.00	$5,257.72
+ 503(A) 1313		12	120	Retaining Wall	$536.35	$455,897.50	$536.21	$455,778.50	$45,689.19
+ **600 0300**		**13**	**130**	**Paint Existing Steel Bridge Struct...**	**$101,314.33**	**$101,314.33**	**$101,279.27**	**$101,279.27**	**$10,167.93**
+ 700		14	140	Process Equipment	$1,949,681...	$1,949,681.16	$1,949,552.96	$1,949,552.96	$194,688.74
+ 1000		15	150	Removal of Underground Storage Tanks	$13,367.94	$26,735.88	$13,363.93	$26,727.86	$2,711.80
+ **1010**		**16**	**160**	**Disposal of Contaminated Soil**	**$30.52**	**$24,416.00**	**$30.51**	**$24,408.00**	**$2,481.93**
+ **1200 0100**		**17**	**170**	**Toll Booth**	**$31,071.32**	**$31,071.32**	**$31,068.28**	**$31,068.28**	**$3,104.28**
+ 1500 0100		18	180	Guardrail Type 2	$28.97	$28,970.00	$28.96	$28,960.00	$2,895.65
+ 1500 0200		19	190	Guardrail Type 3A	$37.41	$7,482.00	$37.41	$7,482.00	$746.13
+ **1600 0230**		**20**	**200**	**Type 4 Signs**	**$15.69**	**$15,690.00**	**$15.69**	**$15,690.00**	**$1,566.40**
+ CO1		21	21	Realignment of Water Line	$0.00	$0.00	$0.00	$0.00	$0.00
+ [Enter Pay I...		22	22	Security Guard Booth	$0.00	$0.00	$31,068.28	$31,068.28	$0.00
		22				$6,307,253.15		$6,337,826.19	$630,442.67

EXERCISE 15.4 – ALTERNATE SCENARIO

SCENARIO: You are a contractor estimating a job for the owner, DECK Corp. Along with the base items of the proposal, DECK Corp has decided to include a security guard toll booth as an alternate item in the award of the contract as well.

The request for the alternate, as indicated below, is more of a “would like to have”, to give DECK Corp the option if it falls within their budget.

- Using the Training Job, create an alternate scenario for the Toll Both.
- Assign the alternate scenario to your Toll Booth cost items.
- Assign the alternate scenario to your Toll Booth pay item.
- Establish pricing for your Toll Both alternative scenarios.

Congratulations, you have completed this exercise!

15.9 BILLING RATES

In Estimate, revenue can be forecasted in multiple ways. It is common for contractors to use the Pay Item & Proposal register to assign estimated costs to pay items and submit a price by filling out the owners bid form. However, for projects that do not use pay items, such as a time and material contracts or cost reimbursable type projects, Billing Rates can be used to easily estimate the price of the work for the project owner.

A billing rate is defined as how much the Contractor is charging the client to utilize resources from the Resource Rate Register. The billing rate can also be viewed as how much money a client is expected to pay for utilizing one of the resources for a specified amount of time. It is important for you as a contractor to have a way to more quickly see your charge rate to compare against what you will ultimately bill your client, also known as your billing rate.

Contractors need a reliable method to price projects utilizing various markup strategies with clear visibility into various costs that drive the markup amounts. It is important for contractors to be able to:

- Apply various costs that drive markups.
- Apply billing rate gains (difference between contractor's cost versus billing rates/client cost).
- Have clear visibility into the true margin based on both cost and billing rates.
- Compare the cost and billing rates within the CBS.

As a result of appropriately pricing projects, contractors can now create and view a variety of Billing Rate reports such as:

- A summary of billing rates in lieu of the cost rates for a client (Estimate Summary reports).
- A cost item breakdown that shows associated cost categories, billing unit rates, and total billing amounts (Billing Rate Summary).
- An analysis of resources and their margins, utilization counts, and billing amounts, (Margin Analysis report).

EXERCISE 15.5 – BILLING RATES

SCENARIO: You are an estimator working for Hexco Civil, and your company has started work on the excavation and grading portion of a project for Health Choice hospital campus.

During this phase, the crew runs into underground storage tanks that have contaminated the soil.

Robert, the Health Choice engineer, requests "rather than detail out an estimate, we'll just do a time and materials agreement for this portion."

You agree on a 20% markup on your going rates for labor and equipment.

IN THE TRAINING JOB:

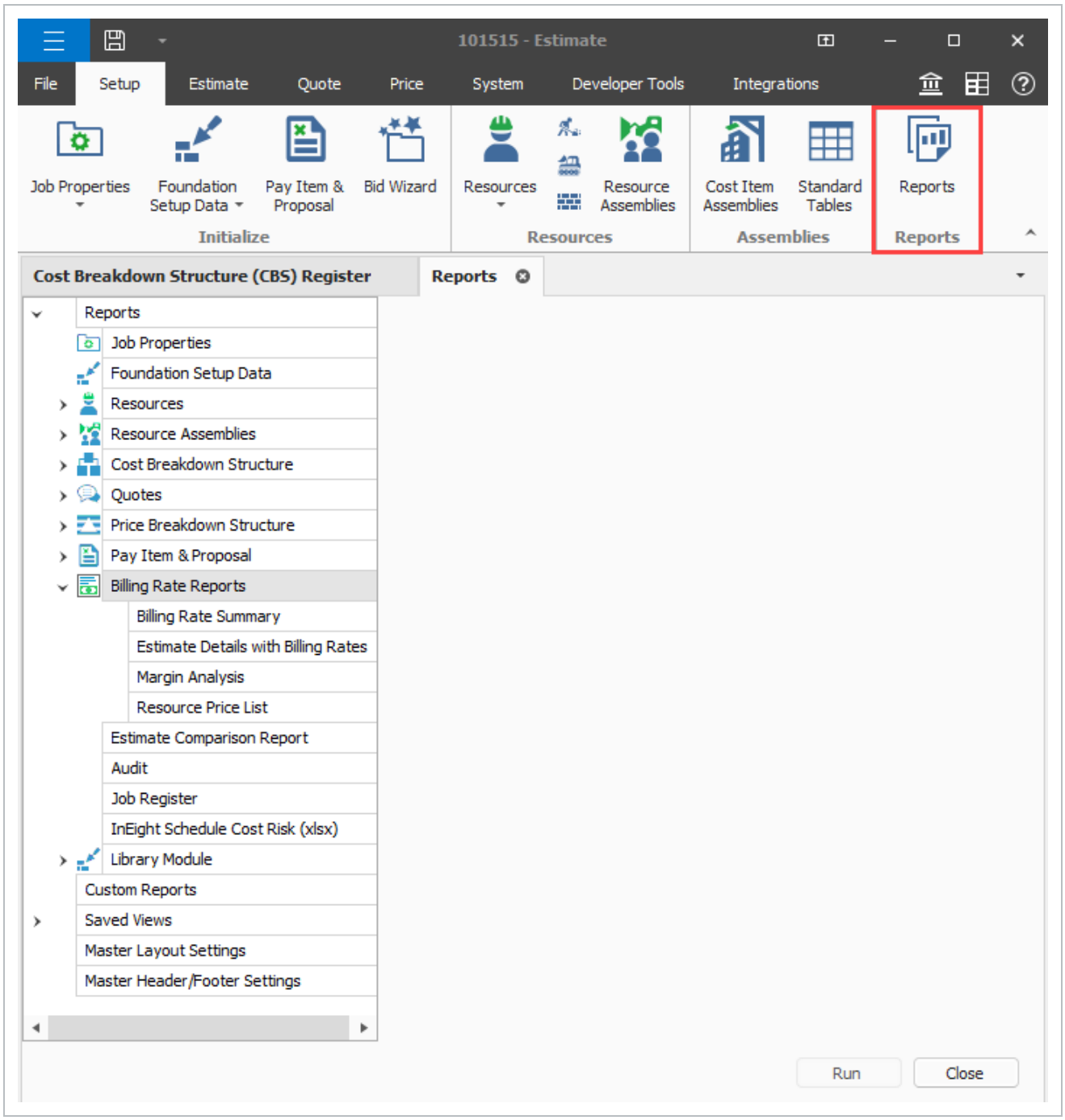
1. Make a copy of the Training Job.
2. In the new job, apply billing rates to the resources employed on the subordinates of the "Removal of Underground Storage Tanks" and "Disposal of Contaminated Soil" cost items.
3. In the PBS, select the Charge Rate and Billing rate Saved View to compare your rates.
4. In Job Properties > Pricing, change the setting to Calculate Balanced Pay Item Prices using Billing Amount.
5. In the Pay Item & Proposal Register, note that your Target Price is now based on billing rates.
6. Decide if you want to spread any addition overhead or profit to your "Removal of Underground Storage Tanks" and "Disposal of Contaminated Soil" pay items (or just leave them with their current billing rates.

Congratulations, you have completed this exercise!

15.10 BILLING RATES REPORTS OVERVIEW

There are multiple reports you can run to view resource costs, billing rates, and mark-ups that you can choose to provide to your customer. You could also use these reports to view your markup margins prior to submitting to your customer.

To locate the project reports, select the **Setup** tab, and then select **Reports**.



15.10.1 BILLING RATE SUMMARY REPORT

The Billing Rate Summary report shows cost items and include cost category details.

From the Reports window, select **Billing Rate Reports**.

Labor	Owned Equipment	Rented Equipment	Materials	Supplies	Subcontract	Fees	Allowance	Custom Category1	Billing Unit Rate	Total Billing Amount
318.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	318.75	318.75
318.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
317.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	317.74	317.74
317.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
636.49	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**636.49**

The end of the report shows a total of your Direct and Indirect cost markups and includes a **Total Billing Amount** at the bottom right.

CBS Position Code	Description	Labor	Owned Equipment	Rented Equipment	Materials	Supplies	Subcontract	Fees	Allowance	Custom Category1	Billing Unit Rate	Total Billing Amount
28	Carpenter work	318.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	318.75	318.75
		318.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
29	Fabrication Work	317.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	317.74	317.74
		317.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Indirect Total		**636.49**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**636.49**
	Direct Cost Markup	85,875.59	78,408.62	529.38	270,092.56	2,064.64	15,448.00	13,503.13	80.00	48.00		466,049.92
		85,875.59	78,408.62	529.38	270,092.56	2,064.64	15,448.00	13,503.13	80.00	48.00		
	Indirect Cost Markup	10,729.02	5,662.75	160.00	65.52	96.00	0.00	83.28	160.00	640.00		17,596.56
		10,729.02	5,662.75	160.00	65.52	96.00	0.00	83.28	160.00	640.00		
Fees Total		**96,604.60**	**84,071.37**	**689.38**	**270,158.08**	**2,160.64**	**15,448.00**	**13,586.41**	**240.00**	**688.00**		**483,646.48**
Report Total		97,241.10	84,071.37	689.38	270,158.08	2,160.64	15,448.00	13,586.41	240.00	688.00		484,282.97

15.10.2 ESTIMATE DETAILS WITH BILLING RATES REPORT

The Estimate Details with Billing Rate report shows a selection of resources with associated billing rates and utilization counts.

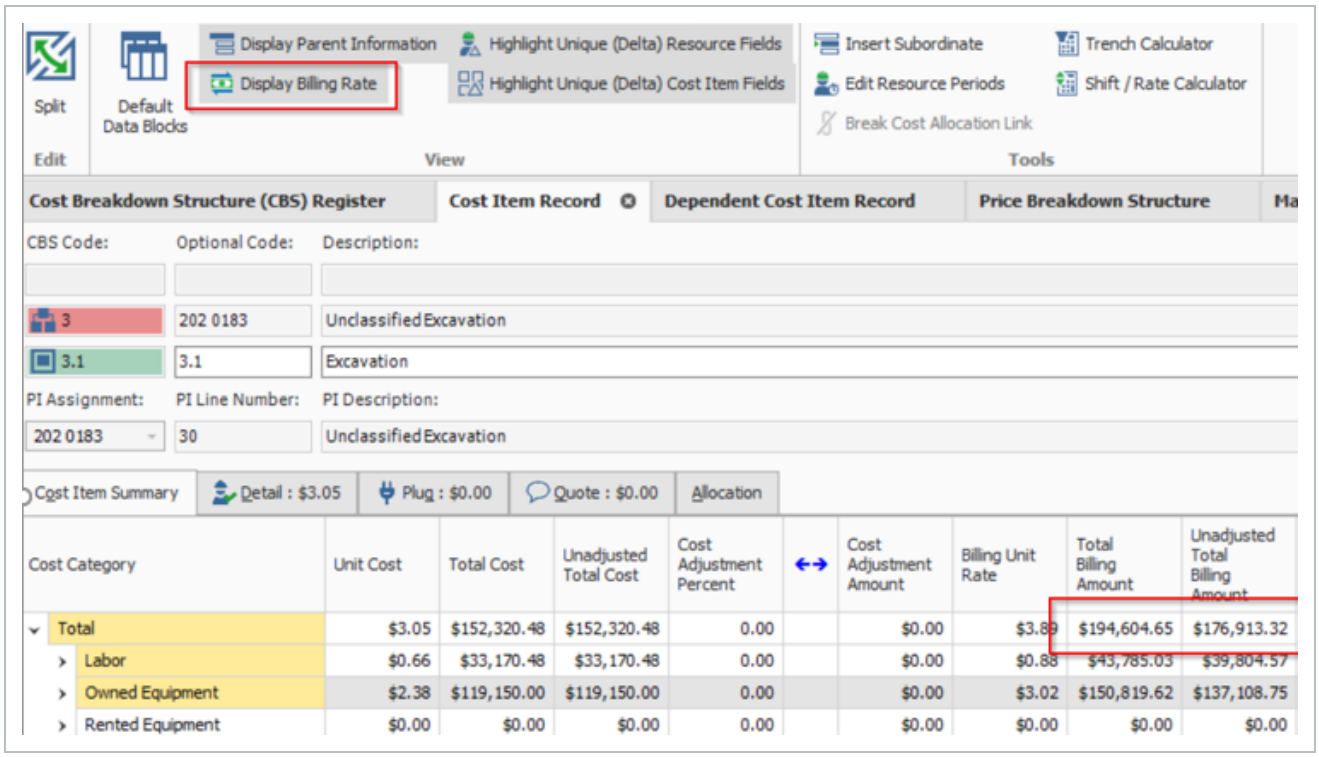
CBS Position	Resource Code	Description		Billing Unit Rate	Unit of Measure	Utilization Count	Billing Total Amount
28		Carpenter work					
	LC1	Carpenter Apprentice		$39.84	Hour	8.00	$318.75
			TOTAL			8.00	$318.75
		TOTAL - Carpenter work				8.00	$318.75
29		Fabrication Work					
	LWDA	Welder Apprentice		$39.72	Hour	8.00	$317.74
			TOTAL			8.00	$317.74
		TOTAL - Fabrication Work				8.00	$317.74
GRAND TOTAL						16.00	$636.49

15.10.2.1 COST ITEM SUMMARY DETAILS

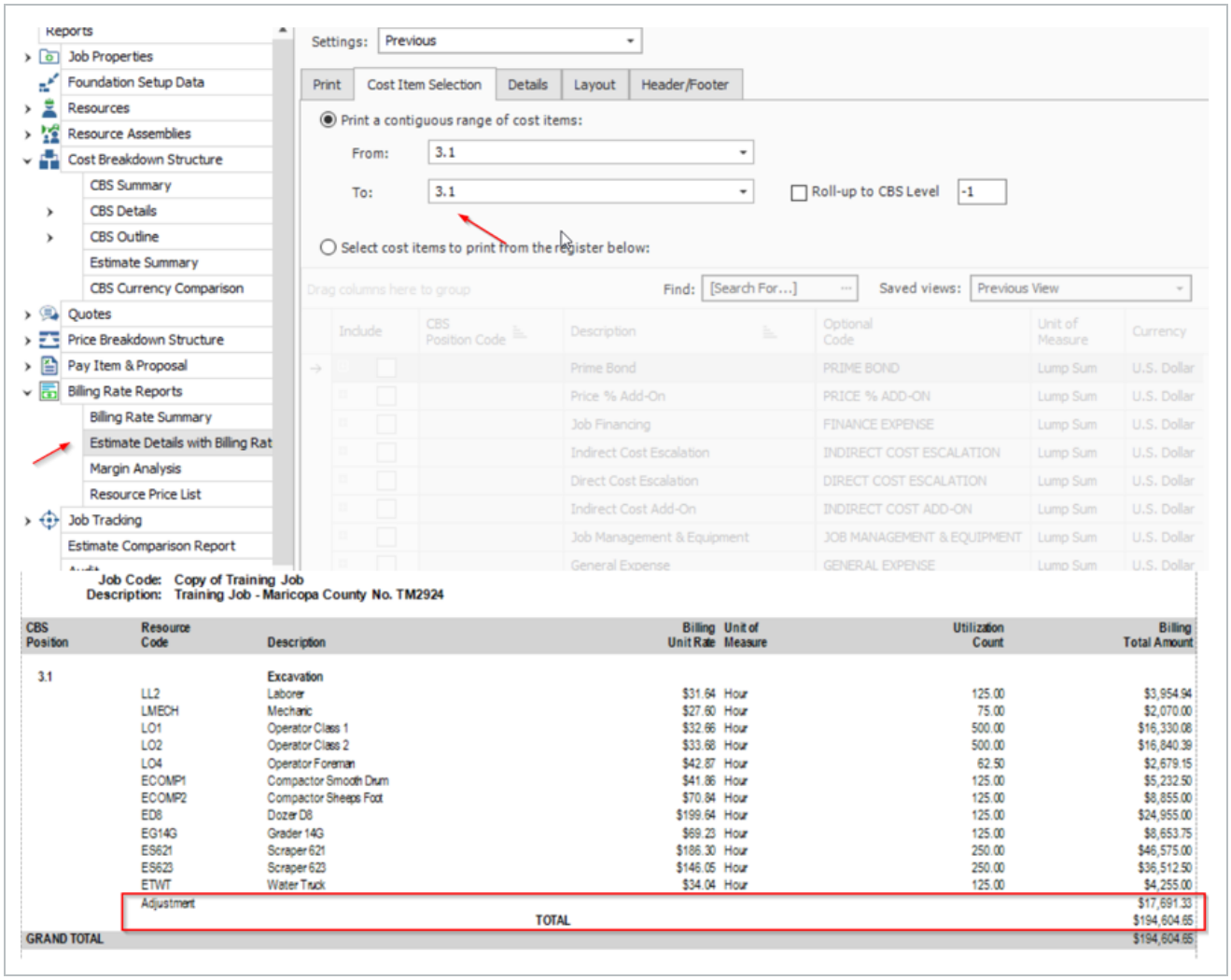
The Cost Item Summary tab in a Cost Item Record, allows the estimator to add additional costs to the Resource Billing rates by a percentage or amount. For example, there might have been extra work and a percentage of the work would apply that the owner approves. The Billing reports lists these details for the owner.

The following image shows cost item 3.1 with the adjustment. To see the adjustment, select the **Actions** tab, and then in the **View** section, set the **Display Billing Rate** toggle to show the Billing Rate columns.

Review the two columns, **Total Billing Amount** and **Unadjusted Total Billing Amount**.

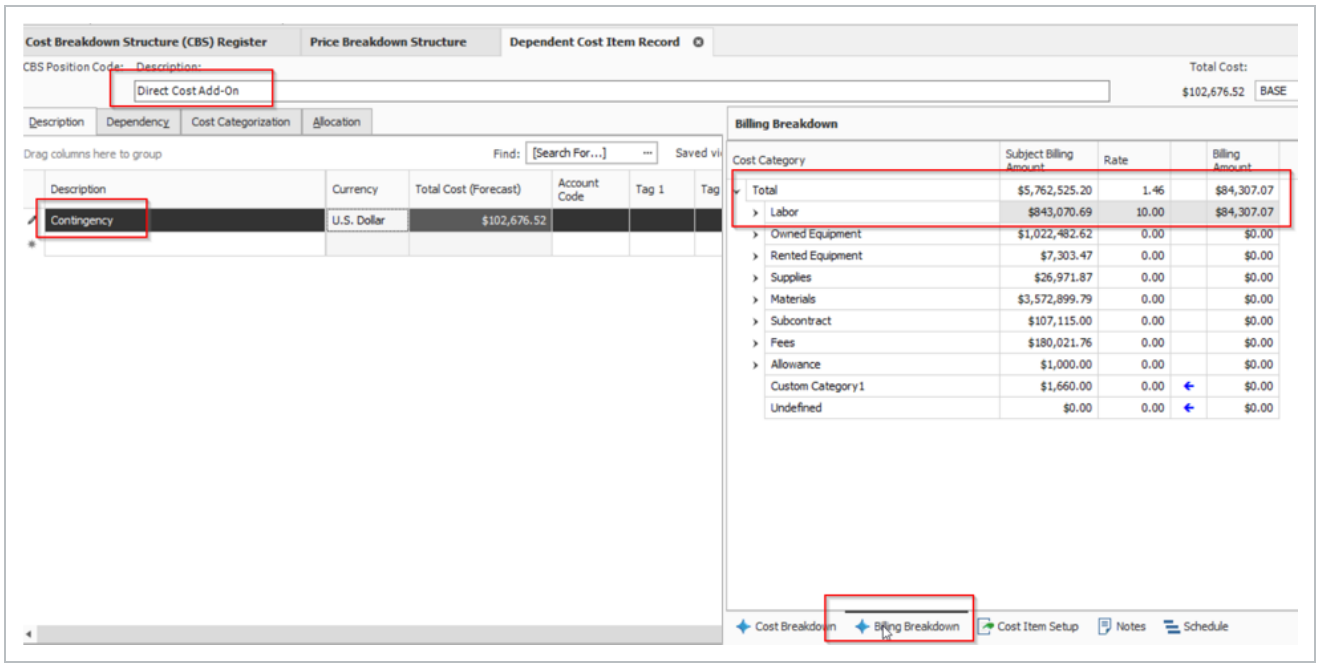


In the Billing Rates report shown at the bottom of the image, you can view the 3.1 cost item estimate details.

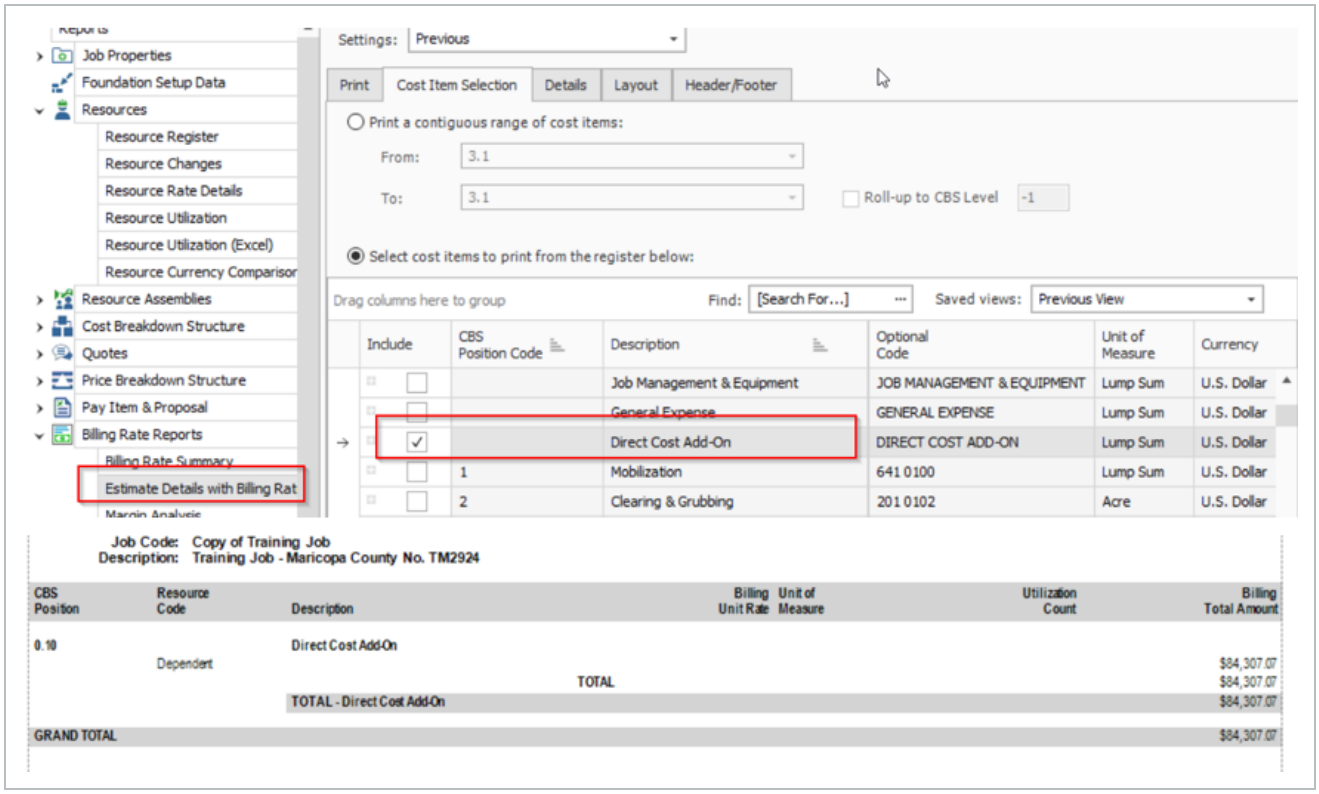


15.10.2.2 DEPENDENT COST ITEM BILLING WORK DETAILS

You can use dependent cost items with billing work. For example, the contractor might have an agreement with the owner to add additional overhead costs as a percentage of the work, or the owner allows a contingency for unknown work.



The Estimate Details with Billing Rates can include the dependent cost item with billing work.



15.10.3 MARGIN ANALYSIS REPORT

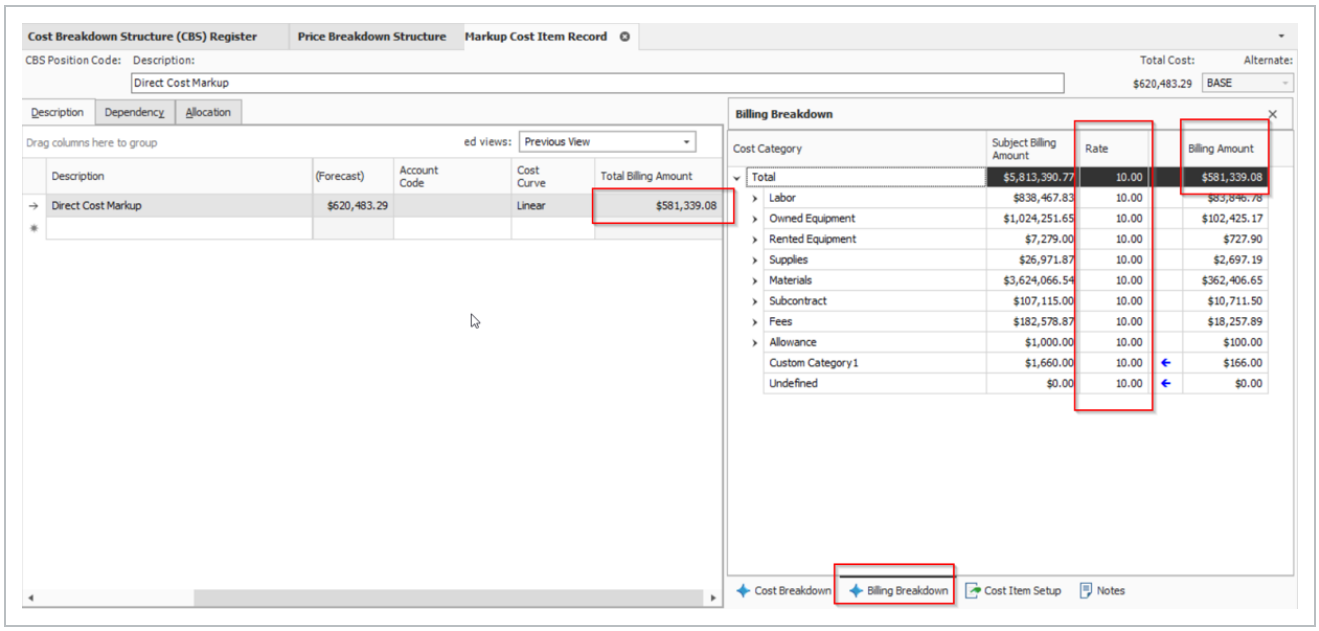
The Margin Analysis report is beneficial for showing both mark-up and margin values for selected resource rates.

CBS Position	Resource Code	Description	Unit Cost	Billing Unit Rate	Unit of Measure	Utilization Count	Total Cost	Total Billing Amount	MarkUp Amount	MarkUp %	Margin %
28		Carpenter work									
	LC1	Carpenter Apprentice	$27.48	$39.84	Hour	8.00	$219.83	$318.75	$98.92	45.00%	31.03%
		TOTAL				8.00	$219.83	$318.75	$98.92	45.00%	31.03%
		TOTAL - Carpenter work				8.00	$219.83	$318.75	$98.92	45.00%	31.03%
29		Fabrication Work									
	LWDA	Welder Apprentice	$28.37	$39.72	Hour	8.00	$226.96	$317.74	$90.78	40.00%	28.57%
		TOTAL				8.00	$226.96	$317.74	$90.78	40.00%	28.57%
		TOTAL - Fabrication Work				8.00	$226.96	$317.74	$90.78	40.00%	28.57%
GRAND TOTAL						16.00	$446.79	$636.49	$189.71	42.46%	29.80%

15.10.4 ADDITIONAL MARKUP IN THE PBS FORM

Depending how the resource billing rates are determined to accommodate the owner, a fee can be applied using the PBS form.

Markup for Direct Costs shows in the PBS form.



The fee total of the additional markup shows in the Billing Rate Summary report.

Job Code: Copy of Training Job
Description: Training Job - Maricopa No. TM2924

CBS Position Code	Description	Forecast (T/O) Quantity	Unit of Measure	Labor	Owned Equipment	Rented Equipment	Materials	Supplies	Subcontract	Fees	Allowance	Custom Category1	Billing Unit Rate	Total Billing Amount
3.1	Excavation	50,000.00	Cubic Yard	0.88	3.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.89	194,604.65
				43,785.03	150,819.62	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Direct Total				**43,785.03**	**150,819.62**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**194,604.65**
	Direct Cost Markup			83,846.78	102,425.17	727.90	362,406.65	2,697.19	10,711.50	18,257.89	100.00	166.00		581,339.08
				83,846.78	102,425.17	727.90	362,406.65	2,697.19	10,711.50	18,257.89	100.00	166.00		
Fees Total				**83,846.78**	**102,425.17**	**727.90**	**362,406.65**	**2,697.19**	**10,711.50**	**18,257.89**	**100.00**	**166.00**		**581,339.08**
Report Total				127,631.81	253,244.79	727.90	362,406.65	2,697.19	10,711.50	18,257.89	100.00	166.00		775,943.73

LESSON 15 REVIEW

1. In what form do you apply sub totals, fixed final price, and rounding precision?
   a. Pay Item & Proposal Register
   b. Cost Breakdown Structure Register
   c. Job Properties
   d. Price Breakdown Structure

2. Where do you go to activate an Alternate scenario?
   a. Customize section of the System tab
   b. Initialize section of the Setup tab
   c. Overhead and Profit section of the Estimate or Price tab
   d. Alternates section of the Estimate or Price tab

3. Where do you go to set pay items to be based on billing rates?
   a. Pay Item & Proposal Register
   b. Cost Breakdown Structure Register
   c. Job Properties
   d. Foundation Setup Data

LESSON 15 SUMMARY

As a result of this lesson, you can:

- Use advanced pricing options including: alarm limits, subtotals, rounding precision, and Fixed Final Price
- Create and compare alternates for cost items and pay items
- Use Billing Rates

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LESSON 16 – BENCHMARKING

LESSON DURATION: 40 MINUTES

LESSON OBJECTIVES

After completing this lesson, you will be able to:

- Set up and use benchmarking to compare your job to past projects

16.1 BENCHMARKING OVERVIEW

Benchmarking is used to validate an estimate's cost and productivity values by comparing them to relevant historical data, specifically as-built and as-estimated information captured from past jobs in Estimate. Unit cost and unit man-hour benchmark data points are displayed graphically in relation to the current estimate.

NOTE When using the Estimate in the Cloud benchmarking feature, it requires the installation of Connected Analytics.

16.1.1 BENCHMARKING MASTER JOB PROPERTIES FORM

The **Master Job Properties - Benchmarking** form is used to establish the historical data to be used for benchmarking the current job, and to define the default benchmark graph display and calculations.

The **Master Job Properties - Benchmarking** form includes:

- **Historical Data Source** - Select **As-Estimated** and **As-Built** data from the Data Warehouse.
- **Default Cost Item Matching Criteria**, **Default Account Code Matching Criteria** and **Default Jobs Filter** - Define which cost items, account codes and jobs should be included.
- **Benchmark Graph display Options** - Define the data to be represented on both the **X-Axis** and the **Y-Axis** of the graph.
- **Calculate "Average" as**- Define the calculation method as either **Average** or **Weighted Avg (weighted by current Qty)**.
- **Benchmark** - Select a benchmark value of **Cost per Unit**, **Man-Hours / Unit**, or **Units / Man-Hour**.
- **Flag an item's variance relative to the benchmark data when** - Define the breakpoints for low, medium and high variance ranges.
- **Don't benchmark items with fewer than <number> historical data points** - Designate the minimum number of data points needed to benchmark an item.

NOTE The data in the Master Job Properties - Benchmarking form is automatically copied to any newly created jobs. If all of the jobs that you create in Estimate will use the same rules, defining the data in the Master Job Properties form will save time when you create new job folders in Estimate.

In addition to the primary **Forecast (T/O) Quantity** and **Unit of Measure** on each cost item, **Secondary Quantity** and **Secondary Unit** fields in the Cost Item Record can be used to capture a meaningful, alternative quantity and unit on which to analyze **As-estimated** data.

You can establish the historical data to be used for benchmarking the current job, define the default benchmark graph display, and define high, low and medium variance ranges on the **Job Properties - Benchmarking** form.

STEP BY STEP – BENCHMARKING MASTER JOB PROPERTIES FORM

1. From the Backstage View, select **Library** from the left pane navigation.
2. From the Ribbon, select the **Setup** tab. Under the section Master Initialization, select **Job Properties**. The Job Properties register opens.
3. On the Job Properties form, select the **Benchmarking** tab.
4. The **Historical Data Source** defaults to Data Warehouse. Select the historical data to use: **As-Estimated**, **As-Built**, or both.
5. To define **Default Cost Item Matching Criteria**, click the **Edit** button and define your criteria for matching cost items. You can select one or many fields and relate them using AND/OR logic.
6. To define **Default Account Code Matching Criteria**, click the **Edit** button and define your criteria for matching cost items. You can select one or many fields and relate them using AND/OR logic.

   NOTE A matching benchmark data point will be excluded if its unit of measure type (e.g., area, length, etc.) is different than the unit of measure type of the matching item in the current estimate.

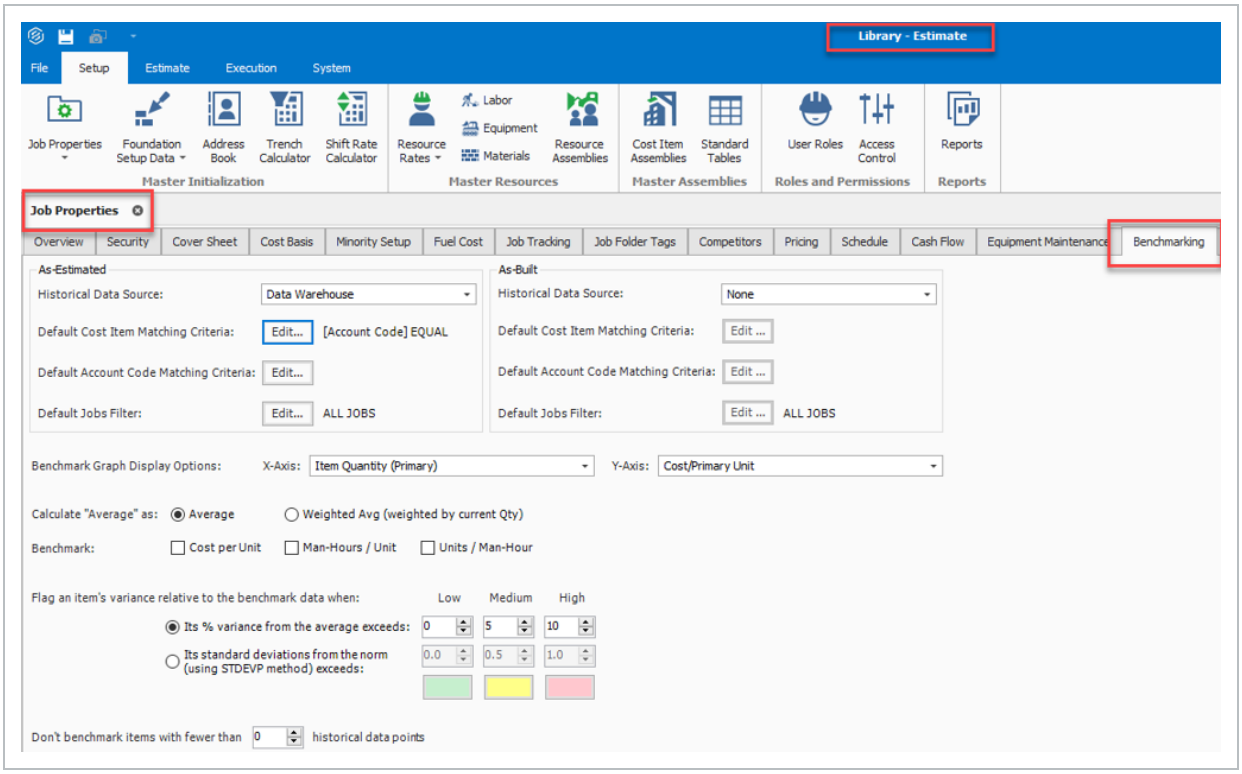
7. To filter the jobs to include, click the Edit button on the **Default Jobs Filter** and define your job filtering criteria.
8. Choose your Benchmark Graph Display Options:
   - Select the data to be represented on the X-Axis:
     - Date
     - Item Quantity (Primary)
     - Item Quantity (Secondary)
     - Ratio (Primary / Secondary)
     - Ratio (Secondary / Primary)

- Select the data to be represented on the Y-Axis:
  - $ / Primary Unit
  - Man-Hrs / Primary Unit
  - Primary Units / Man-hr
  - $ / Secondary Unit
  - Man-Hrs / Secondary Unit
  - Secondary Units / Man-hr

9. Define your average calculation method as either **Average** or **Weighted Avg (weighted by current Qty)**.
10. Define the **Benchmark** values that will be calculated from the historical data set by selecting **Cost per Unit**, **Man-Hours / Unit** and **Units / Man-Hour**.
11. Define the variance ranges to be used for flagging an item relative to the benchmark data:
    - To flag an item's variance from the average, select **Its % variance from the average exceeds** and choose the **Low**, **Medium**, and **High** percentages to flag (values are incremented by 1%).
    - To flag an item's standard deviations from the norm, select **Its standard deviations from the norm (using SSTDEVP method) exceeds** and choose the **Low**, **Medium** and **High** values to flag (values are incremented by .1).
12. To customize the display colors for the **Low**, **Medium** and **High** ranges, click on a color block and choose a different color.
13. To set a minimum number of benchmark data points required for an item to be benchmarked, select a number in the **Don't benchmark items with fewer than historical data points** field.

NOTE

NOTE: The data in the Master Job Properties form is automatically copied to any newly created jobs. If all of the jobs that you create in Estimate will use the same data, descriptive information and rules, defining the data in the Master Job Properties form will save time when you create new job folders in Estimate.



16.1.2 BENCHMARKING JOB PROPERTIES FORM

The Job Properties - Benchmarking form is used to establish the historical data to be used for benchmarking the job, and to define the default benchmark graph display and calculations.

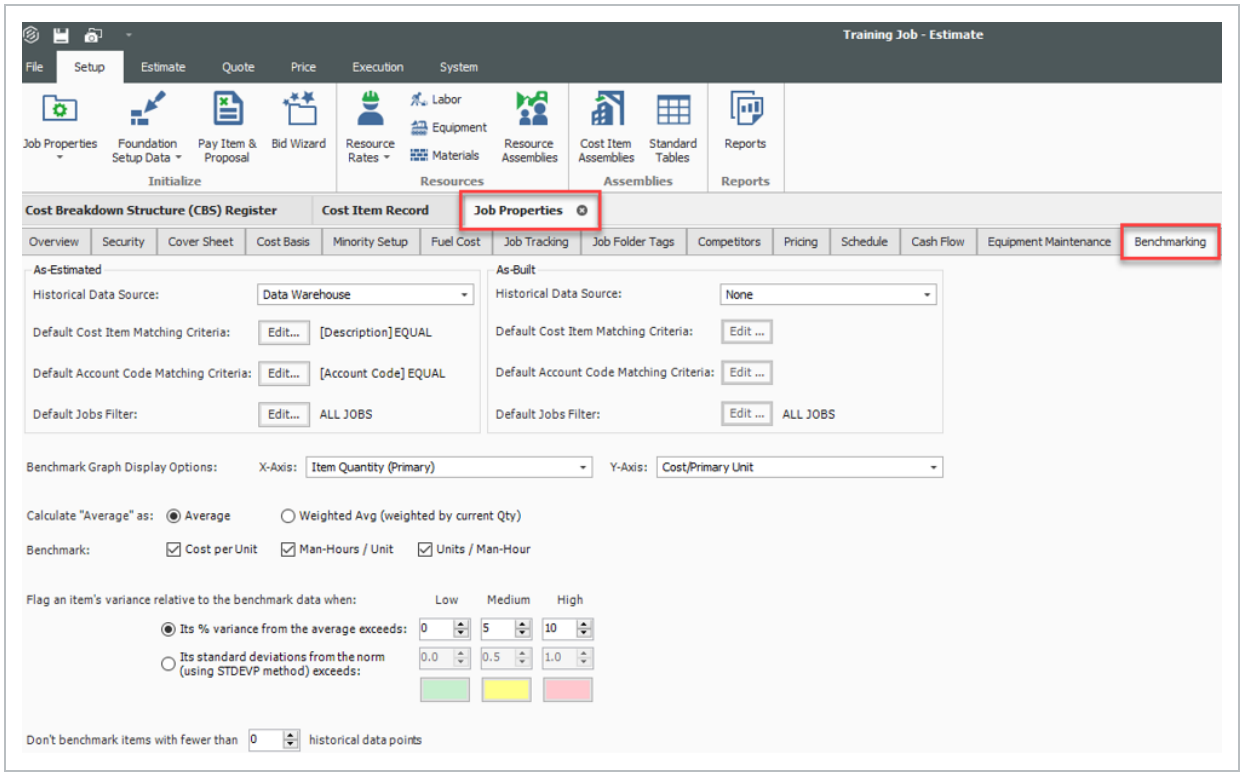
The Job Properties - Benchmarking form includes:

- Historical Data Source - Select As-Estimated and As-Built data from the Data Warehouse.
- Default Cost Item Matching Criteria, Default Account Code Matching Criteria and Default Jobs Filter - Define which cost items and which jobs should be included.
- Benchmark Graph display Options - Define the data to be represented on both the X-Axis and the Y-Axis of the graph.
- Calculate "Average" as- Define the calculation method as either Average or Weighted Avg (weighted by current Qty).
- Benchmark - Select a benchmark value of Cost per Unit, Man-Hours / Unit, or Units / Man-Hour.
- Flag an item's variance relative to the benchmark data when - Define the breakpoints for low, medium and high variance ranges.

- Don't benchmark items with fewer than <number> historical data points - Designate the minimum number of data points needed to benchmark an item.

STEP BY STEP – OPENING THE JOB PROPERTIES FORM

1. On the Ribbon, select the **Setup** tab.
2. Under the Initialize section, select the **Job Properties** drop down arrow.
3. On the drop down list, select **Benchmarking**.



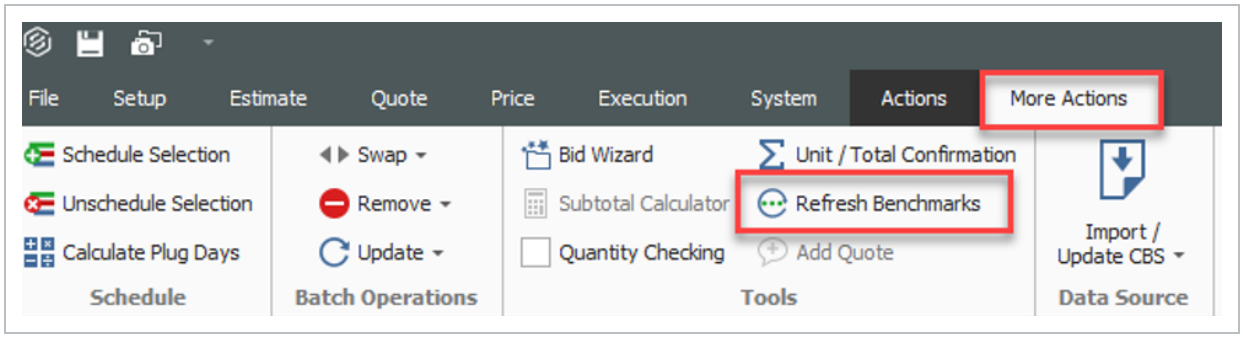
16.1.3 BENCHMARKING GRAPH

The defaults for the benchmarking graph are defined on the **Job Properties - Benchmarking** form, but on the Cost Item Record - Benchmarking form you have the ability to override the default criteria in order to expand or contract the amount of historical data being used to calculate benchmark values for a specific cost item. This way, you can filter the historical data sources to only the past jobs that are relevant to that cost item.

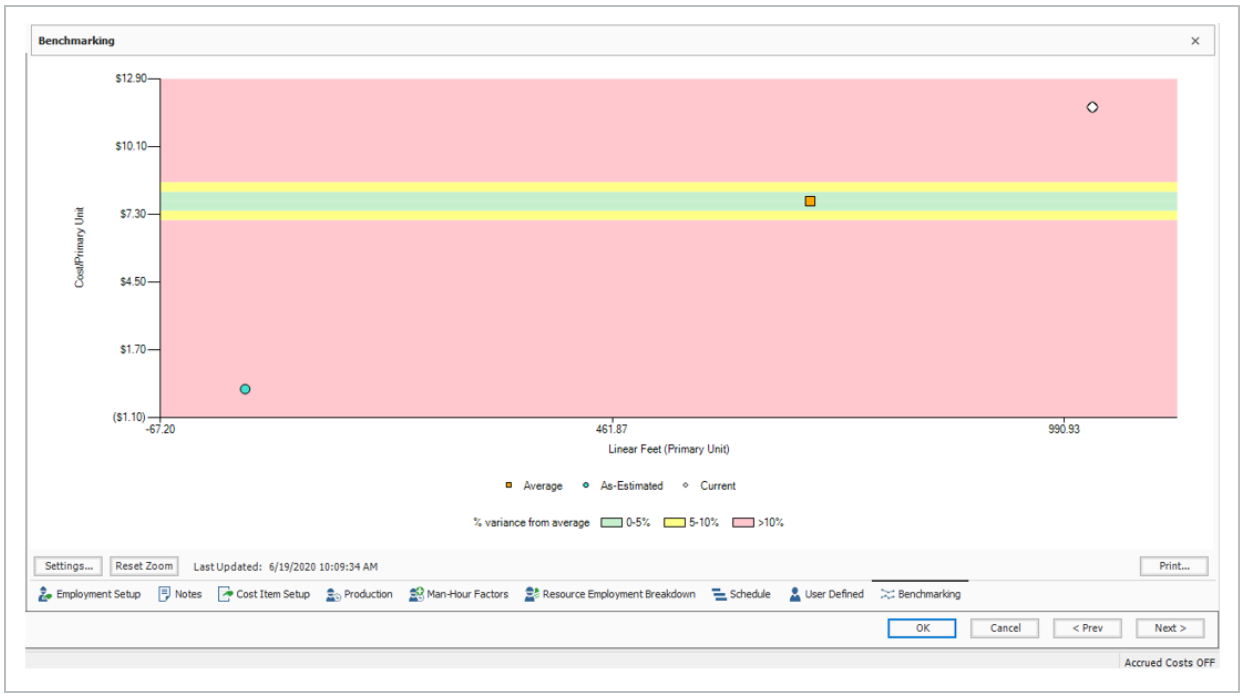
Before starting this procedure, make sure to set up your default benchmarking options, as outlined in the Benchmarking Options topic.

STEP BY STEP – BENCHMARKING GRAPH

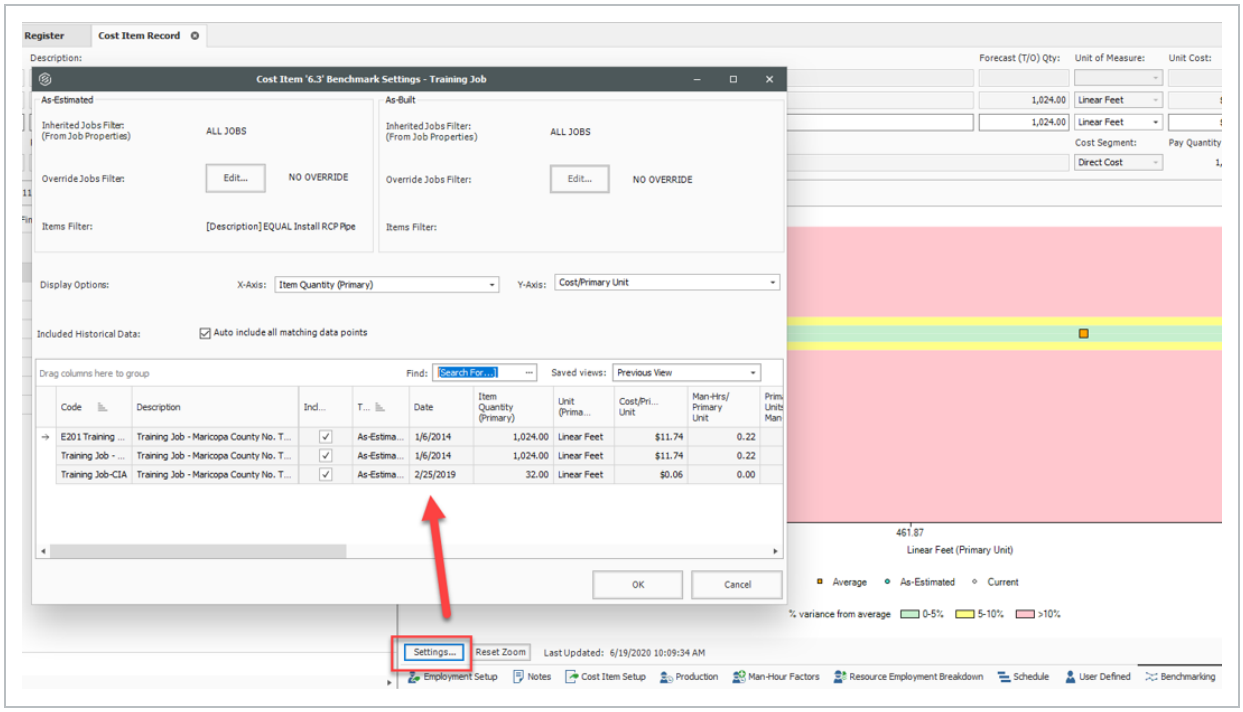
1. From the Ribbon, select the Estimate tab. Under Breakdown Structures, select **Cost Breakdown Structure (CBS)**.
2. On the Cost Breakdown Structure (CBS) Register, select the **More Actions** tab. Under the Tools section, select **Refresh Benchmarks**.



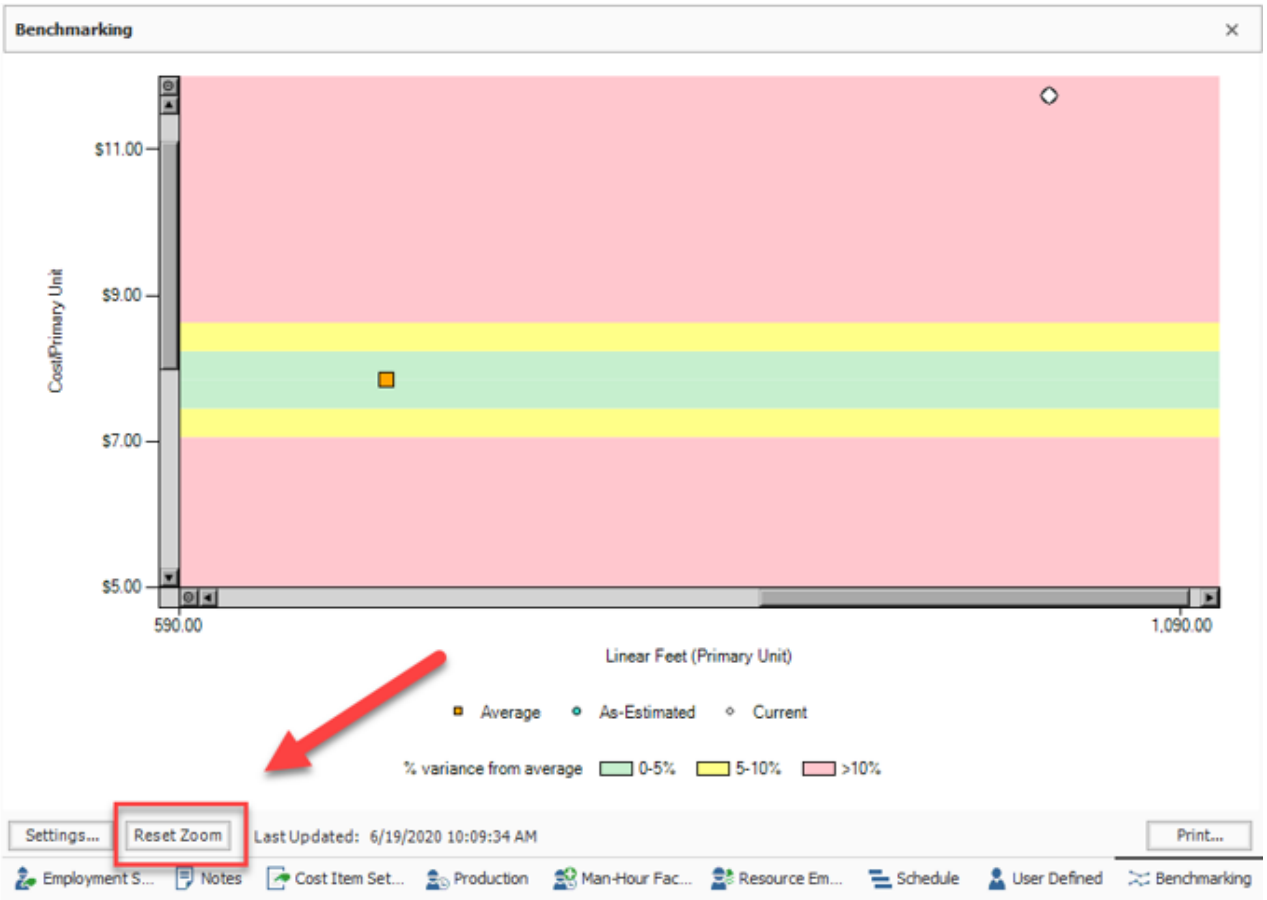
3. The Refresh Benchmarks dialog shows the Last refresh date and the number of Jobs matching filter criteria.
   - If the number of matching jobs is too large or too small, return to step 1 and expand or contract your filtering options.
   - If the number of matching jobs is acceptable, click Refresh Now to proceed.
4. Open the Cost Item Record of any preferred cost item.
5. Click on the **Benchmarking** default data block located in the lower right portion of the Cost Item Record.
6. The benchmarking graph shows the historical benchmark values for this cost item, along with the Current value, the Average value, and the variance ranges represented by each color. This information is calculated and displayed as specified on the Job Properties - Benchmarking form.



7. To refine the values that contribute to this cost item's graph, click the Settings button to display the Settings dialog:
    - To override the job filter for this cost item, click the Edit button in the Override Jobs Filter field and define the filter to use for benchmarking this cost item.
    - To override the Display Options for this cost item, select the desired values from the X-Axis and Y-Axis drop-down boxes.
    - To override the list of jobs that contribute to the Included Historical Data for this cost item, use the Auto include all matching data points toggle to include all or exclude all, and select the individual Include check boxes for the jobs you want to include.
    - When you have completed your customizations for this cost item's benchmarking, click OK to save your changes and return to the Cost Item Record - Benchmarking form.

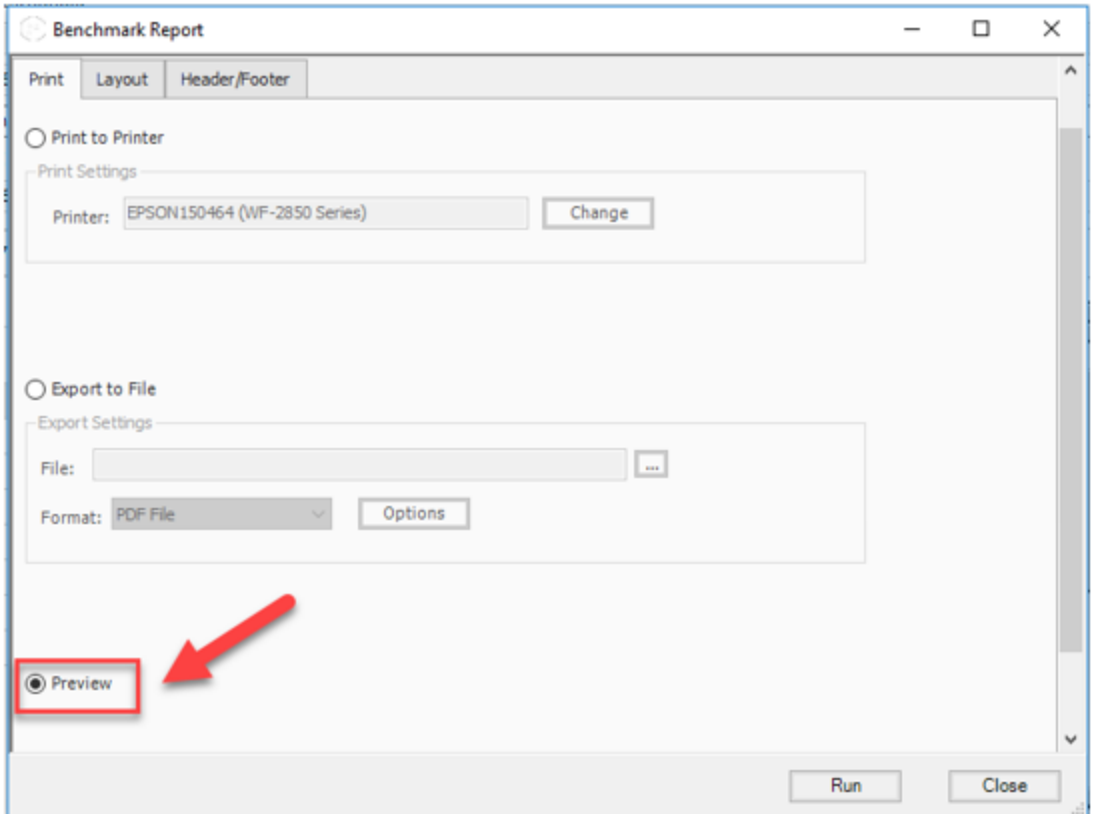


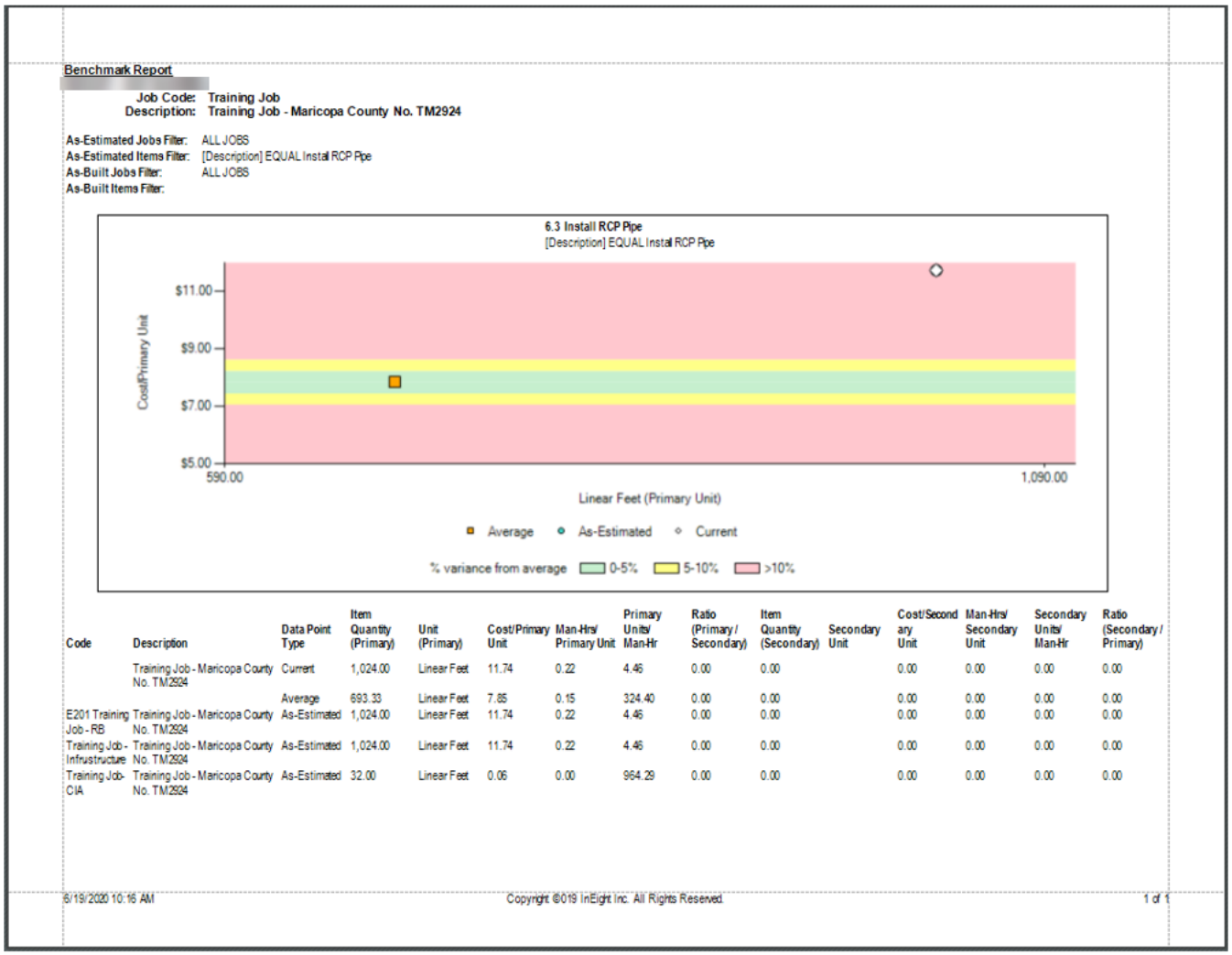
8. To zoom in on a portion of the graph, click and drag across the portion of the graph that you want to enlarge. To view the entire graph again, click Reset Zoom.



9. To print a Benchmark Report, click the Print button, change any options as necessary on the Benchmark Report dialog, and click Run.

Benchmarking
$12.90
$10.10
$7.30
$4.50
$1.70
($1.10)
Cost/Primary Unit
-67.20
461.87
990.93
Linear Feet (Primary Unit)
Average
As-Estimated
Current
% variance from average
0-5%
5-10%
>10%
Settings...
Reset Zoom
Last Updated: 6/19/2020 10:09:34 AM
Print...
Employment S...
Notes
Cost Item Set...
Production
Man-Hour Fac...
Resource Em...
Schedule
User Defined
Benchmarking


Benchmark Report
Print
Layout
Header/Footer
Print to Printer
Print Settings
Printer:
EPSON150464 (WF-2850 Series)
Change
Export to File
Export Settings
File:
Format:
PDF File
Options
Preview
Run
Close



Benchmark Report

Job Code: Training Job
Description: Training Job - Maricopa County No. TM2924

As-Estimated Jobs Filter: ALL JOBS
As-Estimated Items Filter: [Description] EQUAL Install RCP Pipe
As-Built Jobs Filter: ALL JOBS
As-Built Items Filter:

Code	Description	Data Point Type	Item Quantity (Primary)	Unit (Primary)	Cost/Primary Unit	Man-Hrs/ Primary Unit	Primary Units/ Man-Hr	Ratio (Primary / Secondary)	Item Quantity (Secondary)	Secondary Unit	Cost/Secondary Unit	Man-Hrs/ Secondary Unit	Secondary Units/ Man-Hr	Ratio (Secondary / Primary)
	Training Job - Maricopa County No. TM2924	Current	1,024.00	Linear Feet	11.74	0.22	4.46	0.00	0.00		0.00	0.00	0.00	0.00
		Average	693.33	Linear Feet	7.85	0.15	324.40	0.00	0.00		0.00	0.00	0.00	0.00
E201 Training Job - RB	Training Job - Maricopa County No. TM2924	As-Estimated	1,024.00	Linear Feet	11.74	0.22	4.46	0.00	0.00		0.00	0.00	0.00	0.00
Training Job - Infrustructure	Training Job - Maricopa County No. TM2924	As-Estimated	1,024.00	Linear Feet	11.74	0.22	4.46	0.00	0.00		0.00	0.00	0.00	0.00
Training Job- CIA	Training Job - Maricopa County No. TM2924	As-Estimated	32.00	Linear Feet	0.06	0.00	964.29	0.00	0.00		0.00	0.00	0.00	0.00

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16.1.4 ACCOUNT CODE UTILIZATION REGISTER

The Account Code Utilization Register is used to roll estimate line items into an account code hierarchy, with the ability to control which cost items contribute quantity to their parent, in order to benchmark against historical projects in a way that is consistent across projects.

The Account Code Utilization Register is similar to the **Cost Breakdown Structure (CBS)** and the **Master Cost Breakdown Structure (CBS)**, with the following exceptions:

- The rows in the Account Code Utilization Register represent Account Codes rather than individual Cost Items, so the tree structure reflects the Account Code hierarchy rather than the CBS hierarchy.

- The detail rows in the Account Code Utilization Register reflect a terminal Account Code's assigned Cost Items.
- The terminal rows in the Account Code Utilization Register represent each utilized Account Code in the CBS.
- If the Account Code's **Auto-Quantity** setting is set to **Yes**, then the Quantity of the terminal row is equal to the Quantity (Primary or Secondary) of all the cost items in the CBS with that assigned Account Code, and the cost items in the CBS employing resources with that assigned Account Code, provided that they have the same Unit of Measure type as the Account Code.
- Detail rows for each terminal row represent the cost items assigned to the terminal Account Code, including cost items employing resources that are assigned to the terminal Account Code.
- The Account Code Utilization Register can be filtered to display only terminal items by clicking the drop down arrow on the Is Terminal column and selecting Checked.
- When an Account Code is assigned to an employed resource, the resource's total Cost/Mhrs are removed from the Account Code associated with the cost item and placed, instead, in the Account Code assigned to the employed resource.

The parent-child hierarchy for Account Codes is based on the **Account Code Hierarchy Separator**, which is located from the Backstage View **Settings** under the **Options** drop down labeled as **Account Code Settings**. The Hierarchy Separator defines the parent-child relationship within the Account Code structure.

The Account Code Utilization Register is used primarily for analysis, and most of the columns are read-only. Most of these columns originate on the Account Codes tab in the **Foundation Setup Data Register** and the **Master Foundation Setup Data Register**. Modifying an editable column on this form has the same effect as modifying the same field on the Account Codes tab of the Foundation Setup Data Register or on the Account Record. For further information, see **Creating Account Codes**.

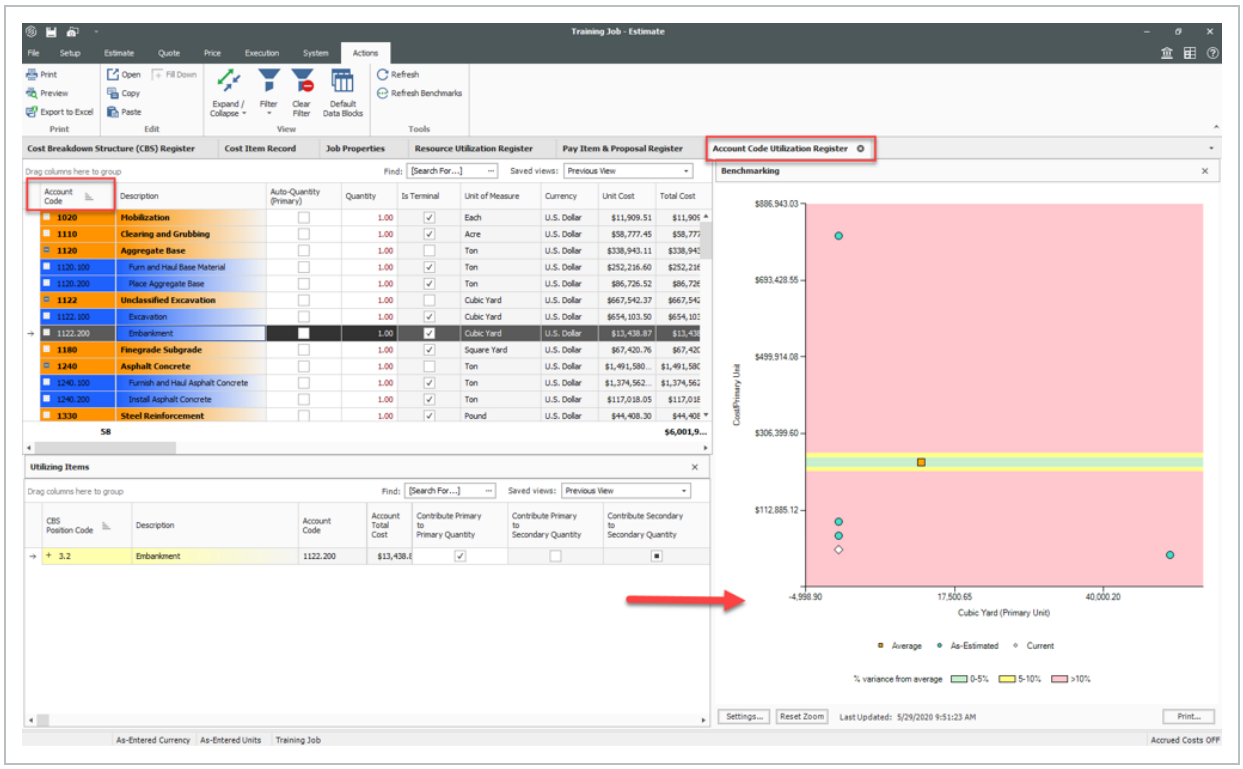
The Benchmarking portion of the form is similar to the **Benchmarking** data block on the Cost Item Record, with the following exceptions:

- The Item Matching criteria is always Account Code.
- Parent account codes will include all matching data points for their child account codes, based on the Hierarchy Separator.
- Account Code rows can be benchmarked at the terminal row level or at any superior row level in the Account Code Utilization Register, meaning that both current estimate values and benchmark values can be compared at any level since both include the values rolled up from their children.

16.1.4.1 OPENING THE ACCOUNT CODE UTILIZATION REGISTER

STEP BY STEP – OPENING THE ACCOUNT CODE UTILIZATION REGISTER

1. From the Backstage View, select **Library** from the left pane navigation.
2. From the Ribbon, select the **Estimate** tab.
3. Under the section Master Breakdown Structures, select **Account Code Utilization**. The Account Code Utilization Register opens.



EXERCISE 16.1 – BENCHMARKING SETUP

Your manager wants you to benchmark costs and man-hours against at least three past projects.

Help set up benchmarking accordingly. Be sure to:

- Use Default Account Code Matching Criteria
- Use Default Jobs Filter
- Benchmark Graph Display Options

Hints:

- The “Jobs matching filter criteria” indicates how many jobs it found a match for.
- A value of “0” means it didn’t find a match and the learner would need to double check their benchmarking settings.

Congratulations, you have completed this exercise!

LESSON 16 REVIEW

1. Where do you set up benchmarking matching criteria and display options?
   a. Foundation Setup Data
   b. Job Properties
   c. Cost Breakdown Structure Register
   d. Resource Rate Register

---

2. How do you make sure benchmarking data is up to date in the CBS Register?
   a. Update settings in the Job Properties > Benchmarking tab
   b. Select Update Graph on the Cost Item Record
   c. Save the job
   d. Select Refresh Benchmarks from the More Actions menu in the CBS

---

3. How can you view the benchmarking graph for a cost item?
   a. Select the Benchmarking tab in Job Properties
   b. Select the Benchmarking saved view in the CBS register
   c. Select the Benchmarking tab on a cost item record
   d. Select the Benchmarking report from the Reports menu

LESSON 16 SUMMARY

As a result of this lesson, you can:

- Set up and use benchmarking to compare your job to past projects

LESSON 17 – CONFORM THE ESTIMATE

LESSON DURATION: 40 MINUTES

LESSON OBJECTIVES

After completing this lesson, you will be able to:

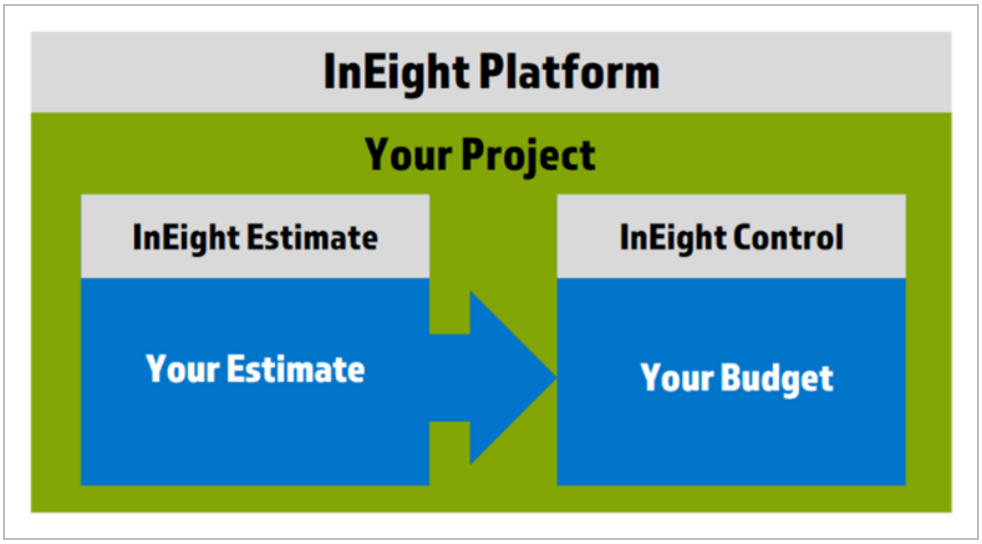
- Align Estimate data with Platform data in preparation for publishing the estimate
- Conform the estimate to publish successfully
- Publish the estimate to a project in Platform
- Review to confirm successful publishing of the estimate

17.1 CONFORM THE ESTIMATE

The project estimate is often used as a starting point for the project budget. The estimate needs to be conformed in preparation for project execution so there can be effective tracking, forecasting, and reporting.

When you create a job in InEight Estimate in the cloud, you connect it to a project in InEight Platform.

In Estimate, you can publish the conformed estimate to become the project budget in InEight Control.



To successfully publish the estimate for project execution, you must perform the following:

- Align the Estimate and Platform data.
- Conform the estimate.
- Publish the estimate to a project in Platform.
- Review the project to confirm successful publishing of the estimate.

For more information, download the following documents from the Integrated Documents page:

Estimate Integration to Cloud Platform and Control for more detailed information about Estimate integration to Platform.

Prepping Control Budget for Various Interfaces for detailed information about the preparation of a project budget for implementation in Control.

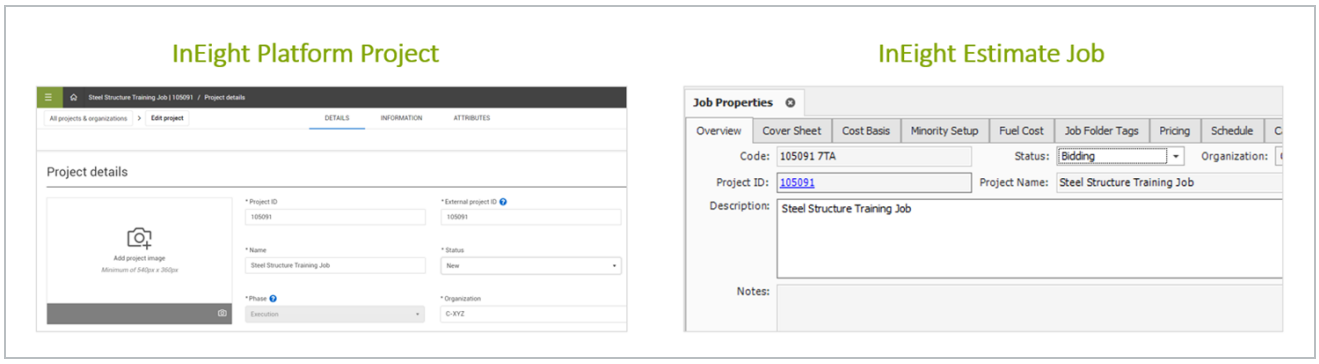
17.2 ALIGN ESTIMATE AND PLATFORM DATA

You can align the Estimate data with Platform data to prepare the job in Estimate for publishing. Alignment starts with creating a project in Platform, and then matching your estimate. For more information about creating a project in Platform, see Project initiation.

CREATE A PLATFORM PROJECT

1. In Platform > Main menu > **All projects & organizations**, click the **Add project**icon to create a new project.
2. Enter the Project ID and External Project ID.
3. Enter a project name in the Name field. The name does not have to match the ID, or the project name in Estimate.
4. In Status, select **New** to execute the Publish Estimate to a New Project status. The budget becomes initialized when the status is set to New.
5. In Phase, select **Execution**.
6. Select an organization from the list.

Next, create the estimate (job) in Estimate. You must select the Platform project to associate the estimate to. Doing this updates the estimate with certain project details, such as notes, and location.



After you match the Platform project and the job in Estimate, you must check that the following data matches between the two applications:

- Currency must match the project base currency for the project in Platform. Make sure the currency symbol descriptions match in both Estimate and Control. For example, AUS dollars in

Estimate must be AUS dollars in Control.

- Units of Measure names must exist in both Estimate and Platform.
- Account Code structure must be finalized to match Platform. Account codes are optional.
- Tags and User-defined fields from Estimate need to be configured at the organization or project level in Platform.
- Cost Categories.
- Pay Item related fields.

The following are key considerations when conforming the estimate:

- Summarizing estimate details into logical work groupings, such as combining costs, quantities, and work hours for work activities and resources.
- Breaking estimate structure into more detail (e.g., to track by area).
- Aligning the estimate data with an Account Code Structure.
- Conforming major materials from resources to cost items for better tracking.
- Moving, splitting, and combining cost items.
- Converting dependent cost items and cost item assemblies into standard cost items and resources.
- Addressing suspended cost items. Suspended cost items do not go over to Control.
- Converting ad-hoc resources to a library resource or a plug value against a cost item.
- Addressing productivity factors by updating in Estimate to reflect the actual budgeted man-hours that are required for the cost item in Control.
- Adding man-hours by creating a labor resource in Estimate or importing man-hours directly to Control (when necessary).
- Establishing tag values imported from Estimate in Platform at the organization level.
- Configuring key pay item fields to match Control.

For more detailed information about Estimate integration to Platform, see **Estimate Integration to Cloud Platform and Control**.

17.2.1 CONVERT DEPENDENT COST ITEM TO PLUG COST ITEM

You must convert a dependent cost item to plug cost item as part of conforming the estimate. You can do this in the CBS register of the estimate. For more information about dependent cost items, see

Dependent cost items.

CONVERT DEPENDENT COST ITEM TO PLUG COST ITEM

1. Create a new cost item at the bottom of the CBS, and then enter a description for the dependent cost item you're replacing.
2. Select a unit of measure.
3. Open both the dependent cost item and new cost item.
4. Change the new cost item's Cost Source to **Plug**.
5. Review the unit and total values in the dependent cost item's cost category fields.
6. Copy or enter those values into the same cost category fields of the new cost item's Plug tab.

NOTE Make sure contingency is represented on its own cost item. Contingency should not be directly included in cost items where cost performance is required against budgeted rates.

17.3 CONFORMING USING OTHER BREAKDOWN STRUCTURES

It is more efficient to track progress on your projects by organizing your budget in a more consolidated and potentially different breakdown structure than how the job was estimated. Using account codes, tag field values, or a work breakdown structure are common ways of viewing the estimate in an alternate way. Most often one of these alternate views corresponds to the best way to structure the budget to track the work.

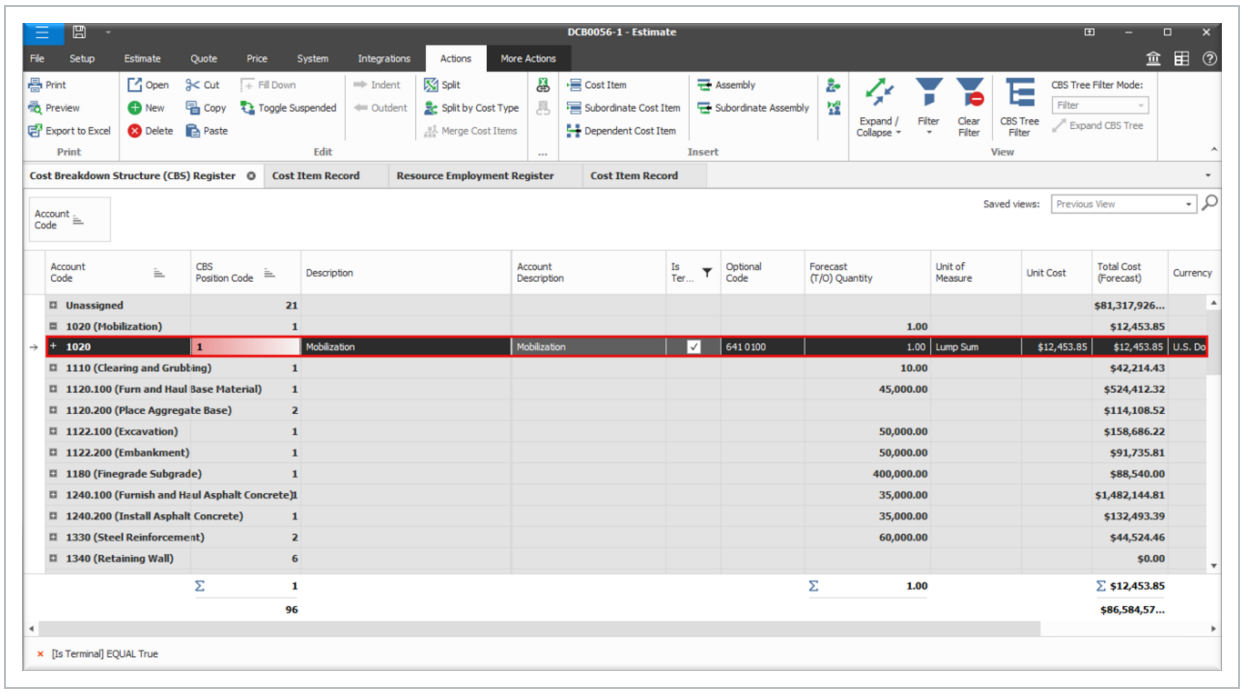
17.3.1 CONFORMING BY ACCOUNT CODES

You can organize your budget by conforming your Estimate CBS structure to match a standard account code structure.

17.3.2 STEPS

CONFORM YOUR ESTIMATE USING AN ACCOUNT CODE STRUCTURE

1. Open a copy of the job in Estimate job that used for reference.
2. In the CBS register, group by Account Code.
3. Create a new job in Estimate, where items from the original estimate will be copied to.
    - Assure that all job properties and settings match the original estimate file.
    - Create any initial structure that is needed to organize your cost structure, such as General Conditions, Direct Labor, Material and Subcontracts.
4. In the job with the grouped account codes, expand the first account code.
    - When there is only one cost item, copy and paste it into the applicable location in the conformance project.
    - For account codes with multiple cost items, add a parent cost item to the conformance project, and then copy and paste the cost items from the original estimate as subordinates.

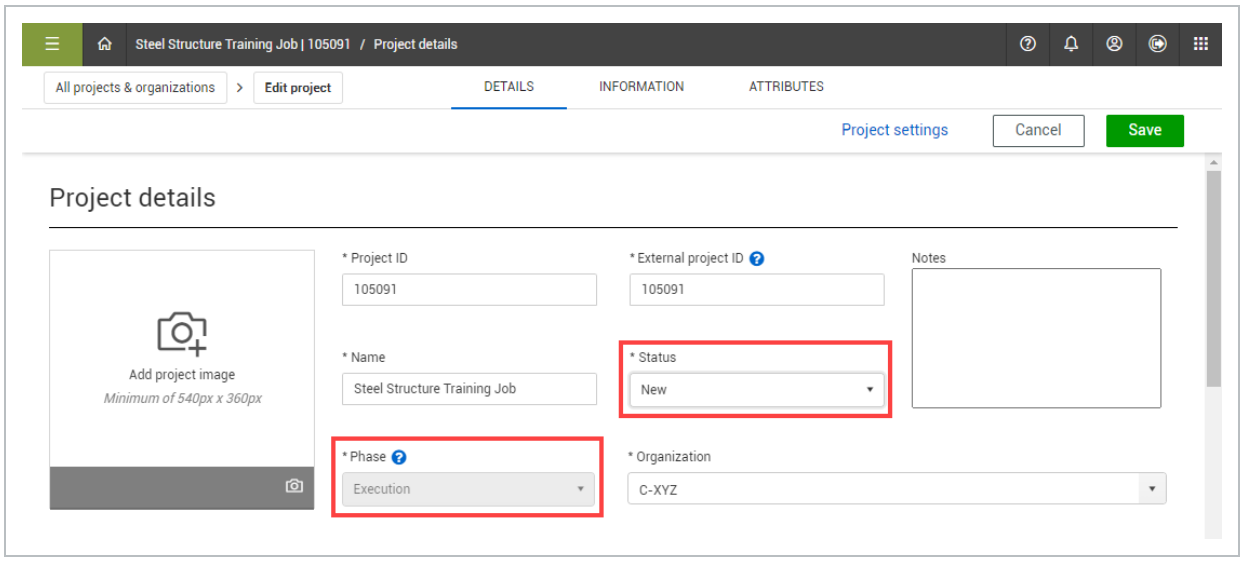


NOTE It's not required to have the account codes in Estimate, but using account codes in Estimate can help to ensure accurate benchmarking functionality.

17.4 PUBLISH TO PLATFORM PROJECT

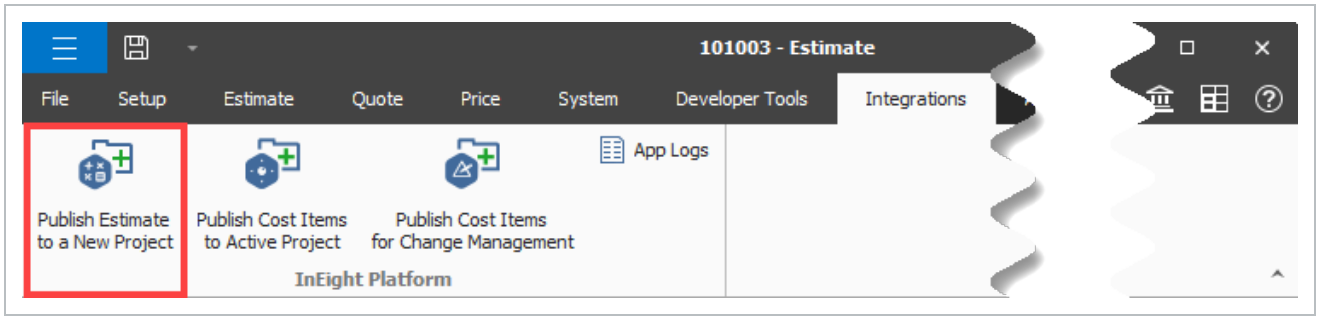
When you are ready to publish the estimate, confirm that the project in Platform has the following settings:

- **Phase** - Execution
- **Status** - New



17.4.1 PUBLISH ESTIMATE TO A NEW PROJECT

To initialize a new control budget, publish the job in Estimate to become the project budget in Control, click the **Publish Estimate to a New Project** option in the Integrations tab.



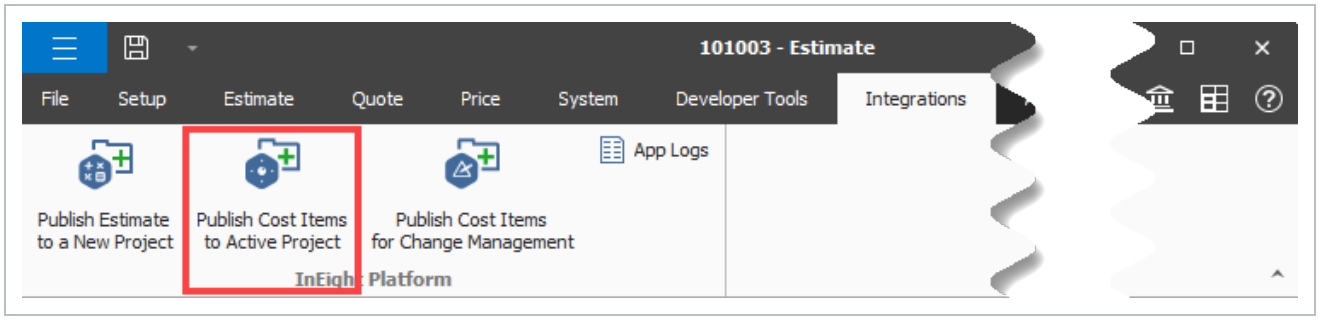
When you publish an estimate to a new project, all cost items, pay items, and change orders that may already exist in the project are removed.

When the integration process is successful, you receive an Import Success email.

17.4.2 PUBLISH COST ITEMS TO AN ACTIVE PROJECT

After an estimate has been published and progress is being tracked against a budget, it's not uncommon for new scope to be added to a project as the work progresses.

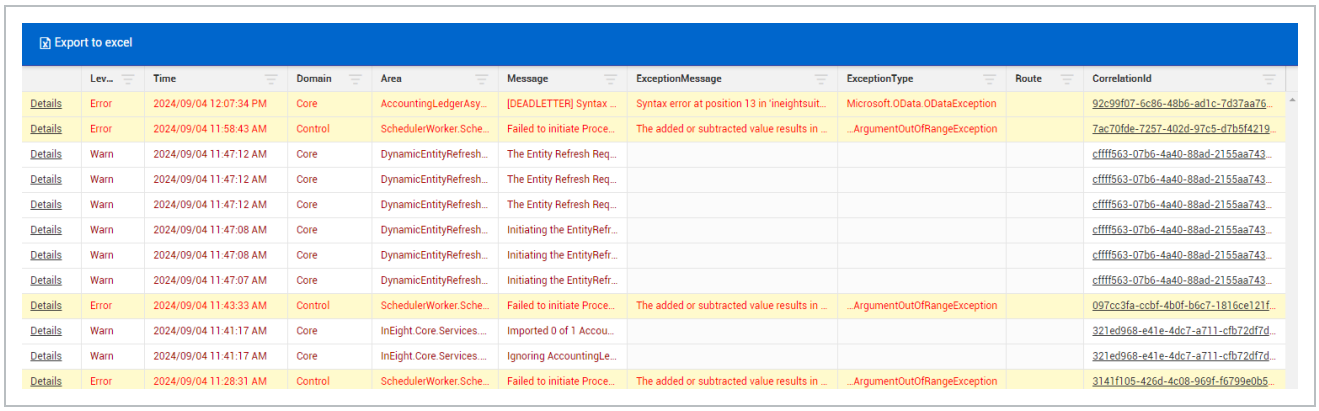
You can estimate the cost of this new scope using Estimate, and then publish the newly estimated costs to a project in execution by using the **Publish Cost Items to Active Project** option.



NOTE Prior to publishing the cost items, change the status of the Platform project to *Active*.

17.4.3 UNSUCCESSFUL IMPORTS

When there are errors during the import, the import is unsuccessful. An InEight Notification email is sent to you with a link to view the list of errors. Click the link shown under Summary to view the list of errors. You can also access the App Logs in Estimate > Integrations > **App Logs**.



Export to excel

	Lev...	Time	Domain	Area	Message	ExceptionMessage	ExceptionType	Route	CorrelationId
Details	Error	2024/09/04 12:07:34 PM	Core	AccountingLedgerAsy...	[DEADLETTER] Syntax ...	Syntax error at position 13 in 'ineightsuit...	Microsoft.OData.ODataException		92c99f07-6c86-48b6-ad1c-7d37aa76...
Details	Error	2024/09/04 11:58:43 AM	Control	SchedulerWorker.Sche...	Failed to initiate Proce...	The added or subtracted value results in ...	...ArgumentOutOfRangeException		7ac70fde-7257-402d-97c5-d7b5f4219...
Details	Warn	2024/09/04 11:47:12 AM	Core	DynamicEntityRefresh...	The Entity Refresh Req...				cffff563-07b6-4a40-88ad-2155aa743...
Details	Warn	2024/09/04 11:47:12 AM	Core	DynamicEntityRefresh...	The Entity Refresh Req...				cffff563-07b6-4a40-88ad-2155aa743...
Details	Warn	2024/09/04 11:47:12 AM	Core	DynamicEntityRefresh...	The Entity Refresh Req...				cffff563-07b6-4a40-88ad-2155aa743...
Details	Warn	2024/09/04 11:47:08 AM	Core	DynamicEntityRefresh...	Initiating the EntityRefr...				cffff563-07b6-4a40-88ad-2155aa743...
Details	Warn	2024/09/04 11:47:08 AM	Core	DynamicEntityRefresh...	Initiating the EntityRefr...				cffff563-07b6-4a40-88ad-2155aa743...
Details	Warn	2024/09/04 11:47:07 AM	Core	DynamicEntityRefresh...	Initiating the EntityRefr...				cffff563-07b6-4a40-88ad-2155aa743...
Details	Error	2024/09/04 11:43:33 AM	Control	SchedulerWorker.Sche...	Failed to initiate Proce...	The added or subtracted value results in ...	...ArgumentOutOfRangeException		097cc3fa-ccbf-4b0f-b6c7-1816ce121f...
Details	Warn	2024/09/04 11:41:17 AM	Core	InEight.Core.Services....	Imported 0 of 1 Accou...				321ed968-e41e-4dc7-a711-cfb72df7d...
Details	Warn	2024/09/04 11:41:17 AM	Core	InEight.Core.Services....	Ignoring AccountingLe...				321ed968-e41e-4dc7-a711-cfb72df7d...
Details	Error	2024/09/04 11:28:31 AM	Control	SchedulerWorker.Sche...	Failed to initiate Proce...	The added or subtracted value results in ...	...ArgumentOutOfRangeException		3141f105-426d-4c08-969f-f6799e0b5...

Examples of failed import causes are:

- When a resource has more than 11 characters in front of the decimal. Cloud Platform only accepts 11 numeric character places before the decimal, and 11 numeric character places after the decimal.
- An account code assigned in Estimate that is not in the corporate list in project suite. The full import might fail because there is nothing to roll up into the account code.

NOTE To access the app logs, you must have the DevOps Admin role.

After resolving errors, you can republish the estimate. Republishing the estimate also removes all cost items, pay items, and change orders that were imported previously.

17.5 REVIEW PUBLISHED DATA IN CONTROL

After a successful import, you can review the published data in Control. To review the data, go to Control > Workspaces > Audit Log > **Import history**. You must manually refresh the import history to see the newly updated import history data.

REVIEW PUBLISHED DATA IN CONTROL

1. In your project's homepage, navigate to Control > Workspaces > **Audit Log** tab.
2. Select **Import history** in the left pane.
3. Select the **Pending** status for the newly imported line item.
4. Select the cost items you want to keep in Control.
5. Select **Import**.

   NOTE You can't add any cost items in the CBS or activate any syncs during the import process.

6. Go to the Import history to view the import in process.

An email is sent to you that informs you whether the import succeeds or fails .

LESSON 17 REVIEW

1. Where would you go to review account codes and units of measure in InEight Estimate?
   a. Pay Item & Proposal Register
   b. Price Breakdown Structure
   c. Job Properties
   d. Foundation Setup Data

---

2. Which of the following needs to be converted when conforming the estimate?
   a. Labor resources
   b. Ad-hoc resources
   c. Equipment resources
   d. Supply resources

---

3. What phase does the project in InEight Platform need to be changed to prior to publishing the estimate?
   a. Initiation
   b. Construction
   c. Pre-execution
   d. Execution

LESSON 17 SUMMARY

As a result of this lesson, you can:

- Align Estimate data with Platform data in preparation for publishing the estimate
- Conform the Estimate to publish successfully
- Publish the Estimate to a project in Platform
- Review to confirm successful publishing of the estimate