

Advanced Resource Allocation Using Microsoft Excel

Introduction

As previously mentioned in the previous article of how we can manage resources and start the resource allocation process with Primavera P6 Software. In this article, we will present a different process while allocating resources using Microsoft Excel.

How Microsoft Excel Can Make the Resource Allocation Process Easier

The previous method can take a longer time when having so many resources that require allocation to the schedule. By using Excel in the process, you can assign a lot of resources in no time.

1. Let us first open an Excel sheet and add the following columns:

- Activity ID: this column lists the Activity IDs of the activities we want to allocate resources for.
- Activity Name: This includes the names of the activities that will be assigned.
- Resource ID: this column will include the IDs of the resources we will add.
- Budget Units: This column lists the budget hours for each resource.

Activity ID	Activity Name	Resource ID	Budgeted Units
EC1230	Excavation	R1-Exc	80
EC1330	Install Underground Electric Conduit	R2-Elec	60
EC1340	Form/Pour Concrete Footings	R3-Opt	50
EC1350	Concrete Foundation Walls	R3-Opt	50
EC1360	Form and Pour Slab	R3-Opt	50
EC1370	Backfill and Compact Walls	R1-Exc	80
EC1430	Concrete First Floor	R3-Opt	100
EC1460	Erect Stairwell and Elevator Walls	R4-Labor	140
EC1470	Concrete Basement Slab	R3-Opt	130
EC1480	Concrete Second Floor	R3-Opt	130
EC1640	Install Wiring and Cable	R2-Elec	55
Total			925

2. Go to Primavera p6 and open the schedule to create the above resources similar to the resource dictionary built previously.

Display: All Resources				
Resource ID	Resource Name	Resource Type	Default Units / Time	
R-6	Painting Crew	Labor	8/d	
R-7	Gypsum board Crew	Labor	8/d	
R-8	Flooring Crew	Labor	8/d	
R-12	Marble Crew	Labor	8/d	
R-9	Carpenter Crew	Labor	8/d	
R-10	Plumping Crew	Labor	8/d	
R-11	Electrical Crew	Labor	8/d	
CSO	City Center Project	Labor	8/d	

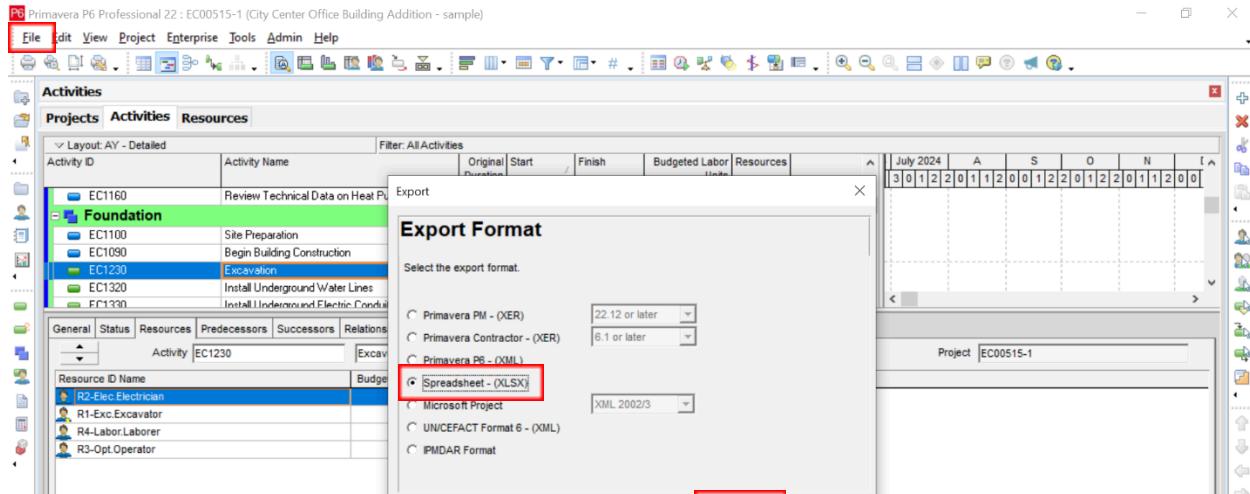
3. The next step is to assign these resources to just one activity on the list we have created. Let us choose EC1230 – Excavation.

Activity ID	Activity Name	Original Duration	Start	Finish	Budgeted Labor Units	Resources
EC1160	Review Technical Data on Heat Pumps	27	24-Feb-11 A	06-Apr-11 A	0	
Foundation						
EC1100	Site Preparation	43	23-Feb-11 A	18-Apr-11 A	0	
EC1090	Begin Building Construction	0	28-Feb-11 A		0	
EC1230	Excavation	24	02-May-11	06-Jun-11	772	Excavator
EC1320	Install Underground Water Lines	12	06-Jun-11	22-Jun-11	0	
EC1330	Install Underground Electric Conduit	12	06-Jun-11	22-Jun-11	0	

General	Status	Resources	Predecessors	Successors	Relationships	Codes															
		Activity	EC1230	Excavation																	
<table border="1"> <thead> <tr> <th>Resource ID</th> <th>Name</th> <th>Budgeted Units</th> </tr> </thead> <tbody> <tr> <td></td> <td>R2-Elec.Electrician</td> <td>193</td> </tr> <tr> <td></td> <td>R1-Exc.Excavator</td> <td>193</td> </tr> <tr> <td></td> <td>R4-Labor.Laborer</td> <td>193</td> </tr> <tr> <td></td> <td>R3-Opt.Operator</td> <td>193</td> </tr> </tbody> </table>							Resource ID	Name	Budgeted Units		R2-Elec.Electrician	193		R1-Exc.Excavator	193		R4-Labor.Laborer	193		R3-Opt.Operator	193
Resource ID	Name	Budgeted Units																			
	R2-Elec.Electrician	193																			
	R1-Exc.Excavator	193																			
	R4-Labor.Laborer	193																			
	R3-Opt.Operator	193																			

4. To link these resources to our activity list, let us export the resource assignments to Excel.

i. Click on “File” and choose “Export.” Then click on “Spreadsheet – XLSX” and click Next.



File edit View Project Enterprise Tools Admin Help

Activities

Projects Activities Resources

Activity ID Activity Name Original Start Finish Budgeted Labor Resources

Foundation

EC1100 Site Preparation 43 23-Feb-11 A 18-Apr-11 A 0

EC1090 Begin Building Construction 0 28-Feb-11 A 0 0

Excavation

EC1230 Excavation 24 02-May-11 06-Jun-11 772 Excavator

EC1320 Install Underground Water Lines 12 06-Jun-11 22-Jun-11 0

EC1330 Install Underground Electric Conduit 12 06-Jun-11 22-Jun-11 0

General Status Resources Predecessors Successors Relationships Codes

Activity EC1230 Excavation

Resource ID Name Budgeted Units

R2-Elec.Electrician 193

R1-Exc.Excavator 193

R4-Labor.Laborer 193

R3-Opt.Operator 193

Export Format

Select the export format.

Primavera PM - (XER) 22.12 or later

Primavera Contractor - (XER) 6.1 or later

Primavera P6 - (XML)

Spreadsheet - (XLSX)

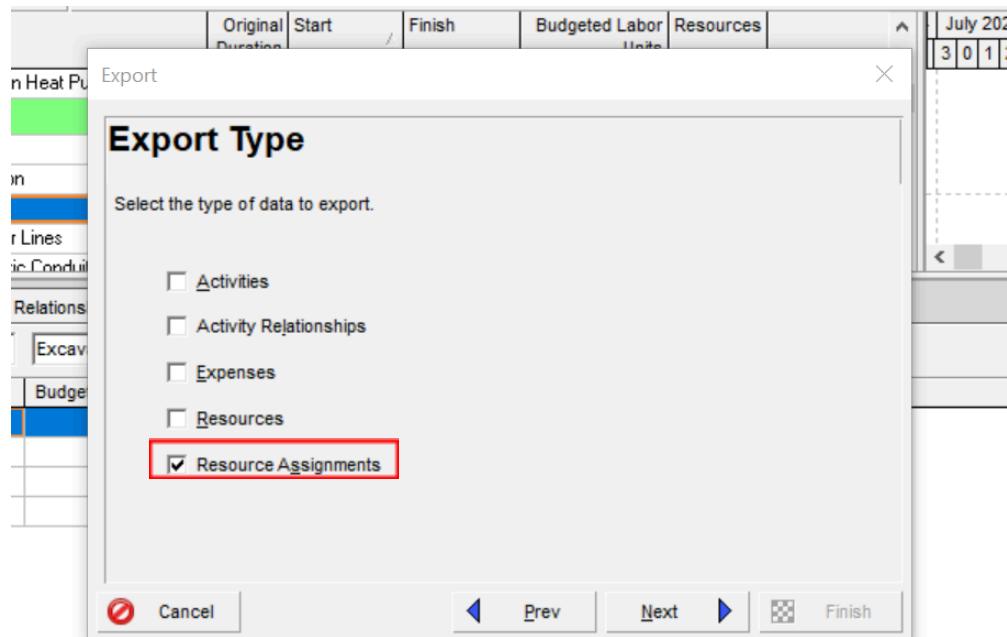
Microsoft Project XML 2002/3

UN/CEFACT Format 6 - (XML)

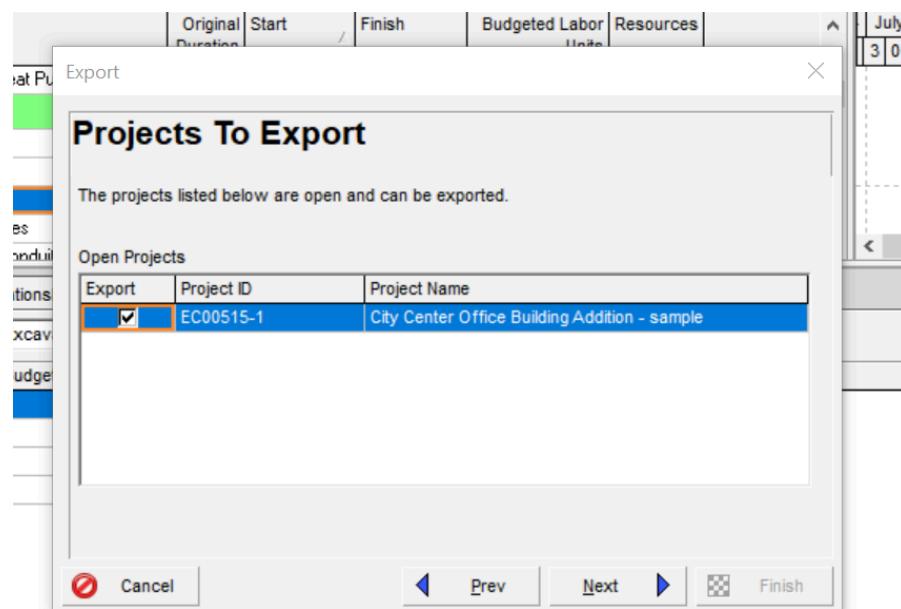
IPMDAR Format

Project EC00515-1

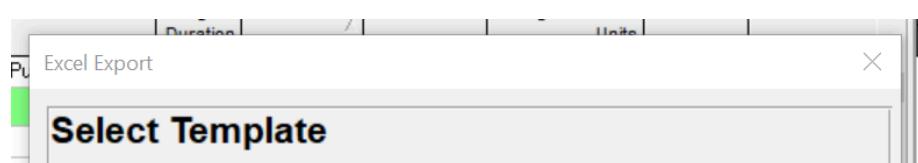
ii. Click on “Resource Assignments” and click on Next.



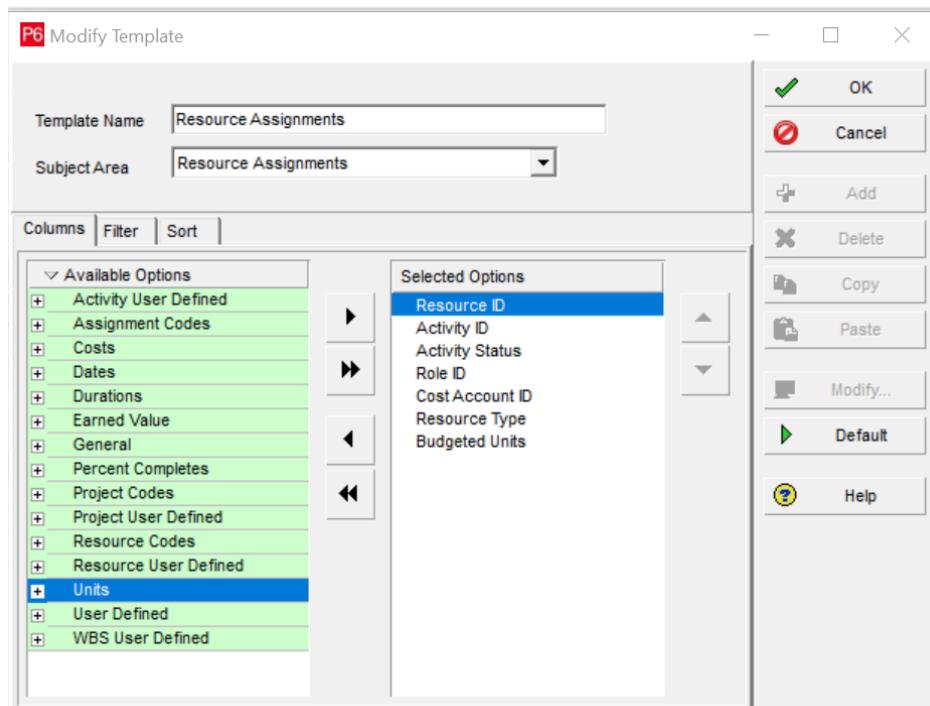
iii. Check the “Export Box” to export the project to Excel and click on Next.



iv. Click on “Add” to export the required columns for the Excel template.

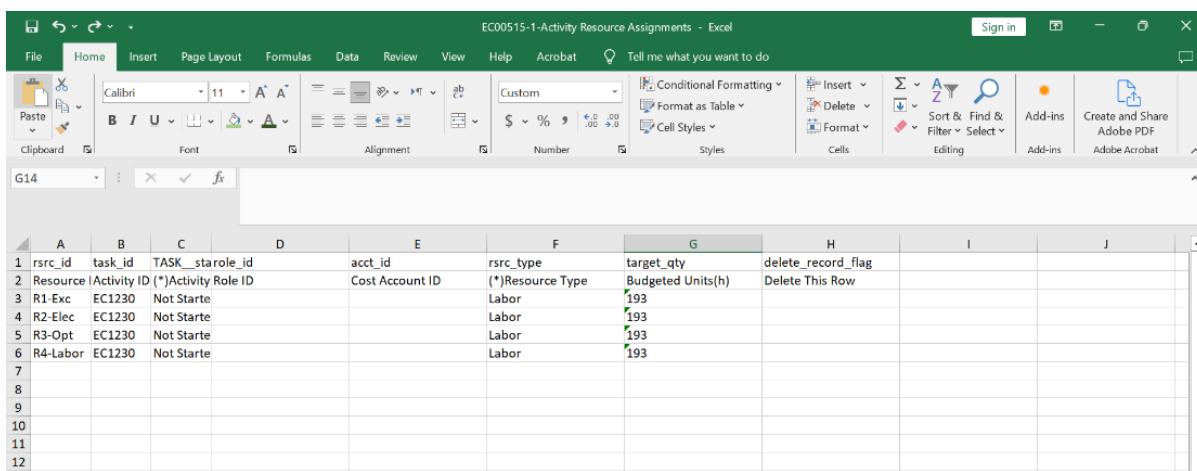


v. The below window will appear, choose these columns to be exported and click OK.
 (Activity ID, Activity Name, Resource ID, Role ID, Cost Account ID, Resource Type, and Budgeted Units)



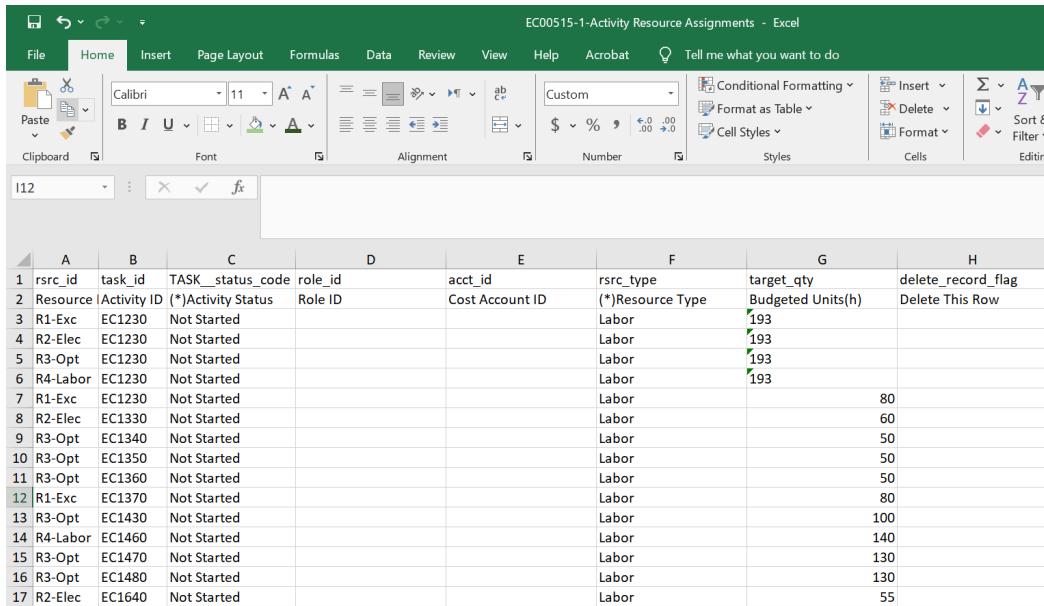
vi. Choose where you want to save your file and click finish.

5. Alright, let's open both Excel files; the one we created earlier and the one with the exported resource assignments. This is what the exported spreadsheet looks like:



A	B	C	D	E	F	G	H	I	J
1	rsrc_id	task_id	TASK_starole_id	acct_id	rsrc_type	target_qty	delete_record_flag		
2	Resource ID	Activity ID	(*)Activity Role ID	Cost Account ID	(*)Resource Type	Budgeted Units(h)	Delete This Row		
3	R1-Elec	EC1230	Not Starte		Labor	193			
4	R2-Elec	EC1230	Not Starte		Labor	193			
5	R3-Opt	EC1230	Not Starte		Labor	193			
6	R4-Labor	EC1230	Not Starte		Labor	193			
7									
8									
9									
10									
11									
12									

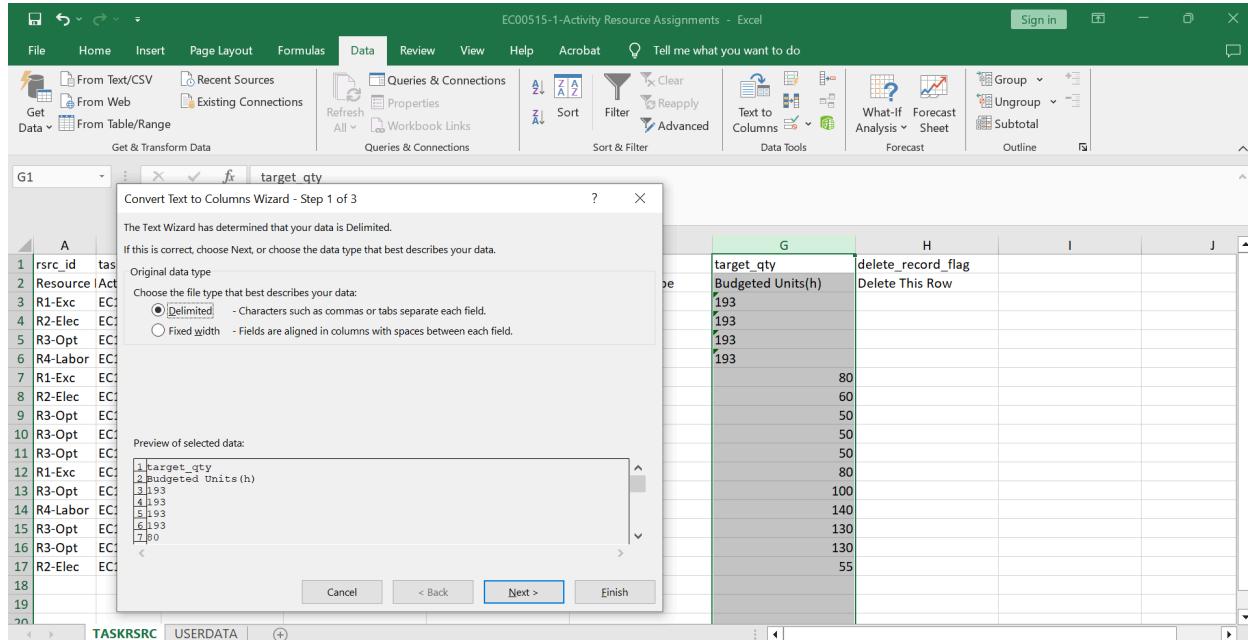
6. copy and paste the values created earlier in the sample sheet to the exported sheet. Fill down the activity status to have all activities “Not Started” and the Resource Type to “Labor”.



A	B	C	D	E	F	G	H	
1	rsr_id	task_id	TASK_status_code	role_id	acct_id	rsr_type	target_qty	delete_record_flag
2	Resource	Activity ID	(*)Activity Status	Role ID	Cost Account ID	(*)Resource Type	Budgeted Units(h)	Delete This Row
3	R1-Exc	EC1230	Not Started			Labor	193	
4	R2-Elec	EC1230	Not Started			Labor	193	
5	R3-Opt	EC1230	Not Started			Labor	193	
6	R4-Labor	EC1230	Not Started			Labor	193	
7	R1-Exc	EC1230	Not Started			Labor	80	
8	R2-Elec	EC1330	Not Started			Labor	60	
9	R3-Opt	EC1340	Not Started			Labor	50	
10	R3-Opt	EC1350	Not Started			Labor	50	
11	R3-Opt	EC1360	Not Started			Labor	50	
12	R1-Exc	EC1370	Not Started			Labor	80	
13	R3-Opt	EC1430	Not Started			Labor	100	
14	R4-Labor	EC1460	Not Started			Labor	140	
15	R3-Opt	EC1470	Not Started			Labor	130	
16	R3-Opt	EC1480	Not Started			Labor	130	
17	R2-Elec	EC1640	Not Started			Labor	55	

7. The final step is to convert the Budget units column to “Text” as the primavera will not read the numbers. To fix this, we need to convert it to text format.

- Select the Budgeted Units column. Go to “Data” and click on “Text to Column.” Choose “Delimited” and click Next.

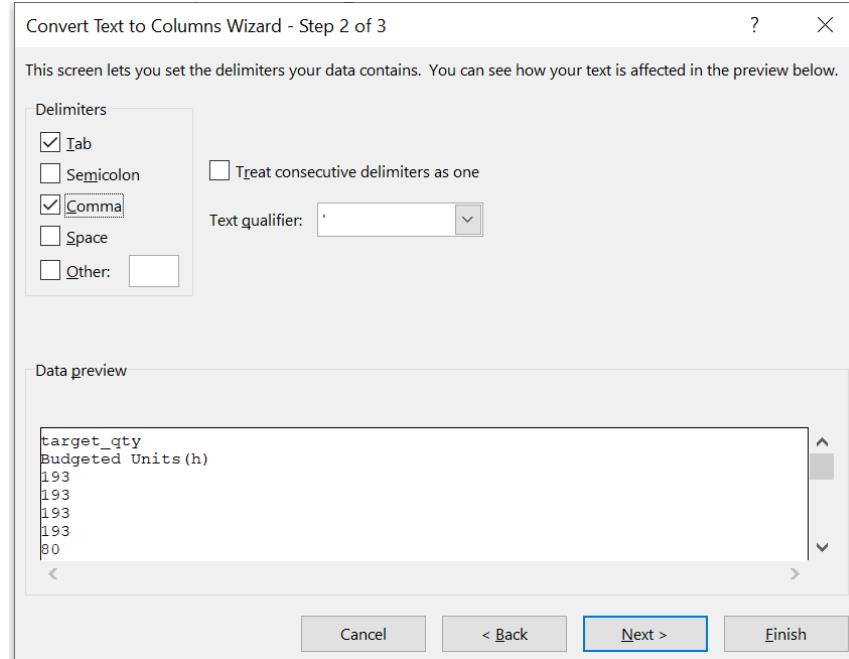


The 'Convert Text to Columns Wizard - Step 1 of 3' dialog box shows the following settings:

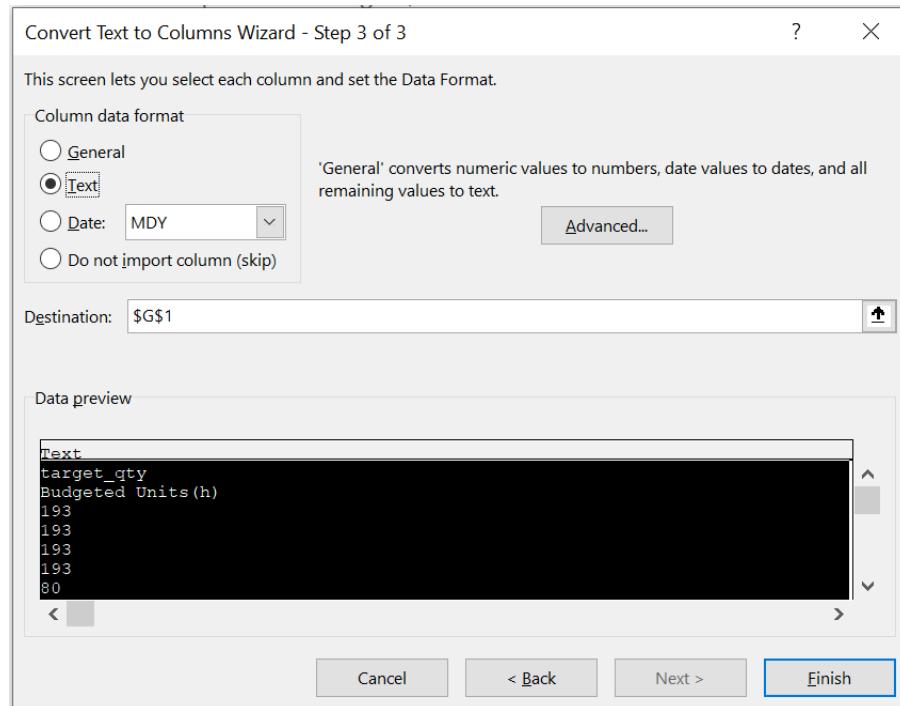
- Original data type: Delimited
- Delimited: Characters such as commas or tabs separate each field.
- Fixed width: Fields are aligned in columns with spaces between each field.
- Preview of selected data:

1	rsr_id	task_id	target_qty
2	Resource	Activity ID	Budgeted Units(h)
3	R1-Exc	EC1230	193
4	R2-Elec	EC1230	193
5	R3-Opt	EC1230	193
6	R4-Labor	EC1230	193
7	R1-Exc	EC1230	80
8	R2-Elec	EC1330	60
9	R3-Opt	EC1340	50
10	R3-Opt	EC1350	50
11	R3-Opt	EC1360	50
12	R1-Exc	EC1370	80
13	R3-Opt	EC1430	100
14	R4-Labor	EC1460	140
15	R3-Opt	EC1470	130
16	R3-Opt	EC1480	130
17	R2-Elec	EC1640	55

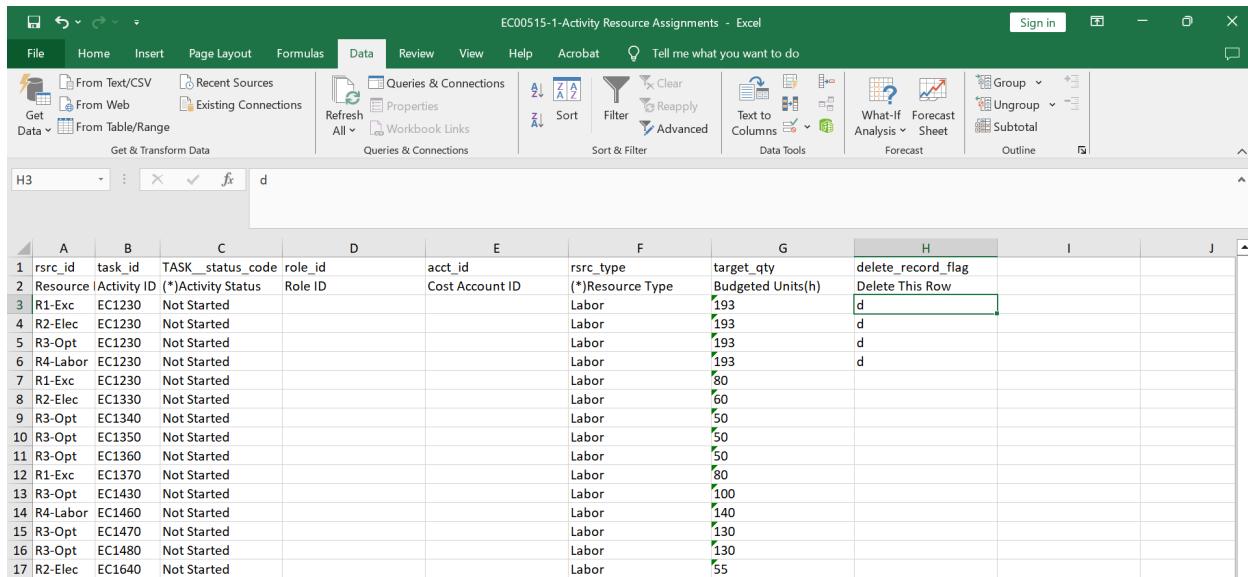
- Choose “Comma” and in the Text Qualifier also choose the apostrophe and click Next.



- Choose “Text” and Click Finish. Now all values are read in text format.



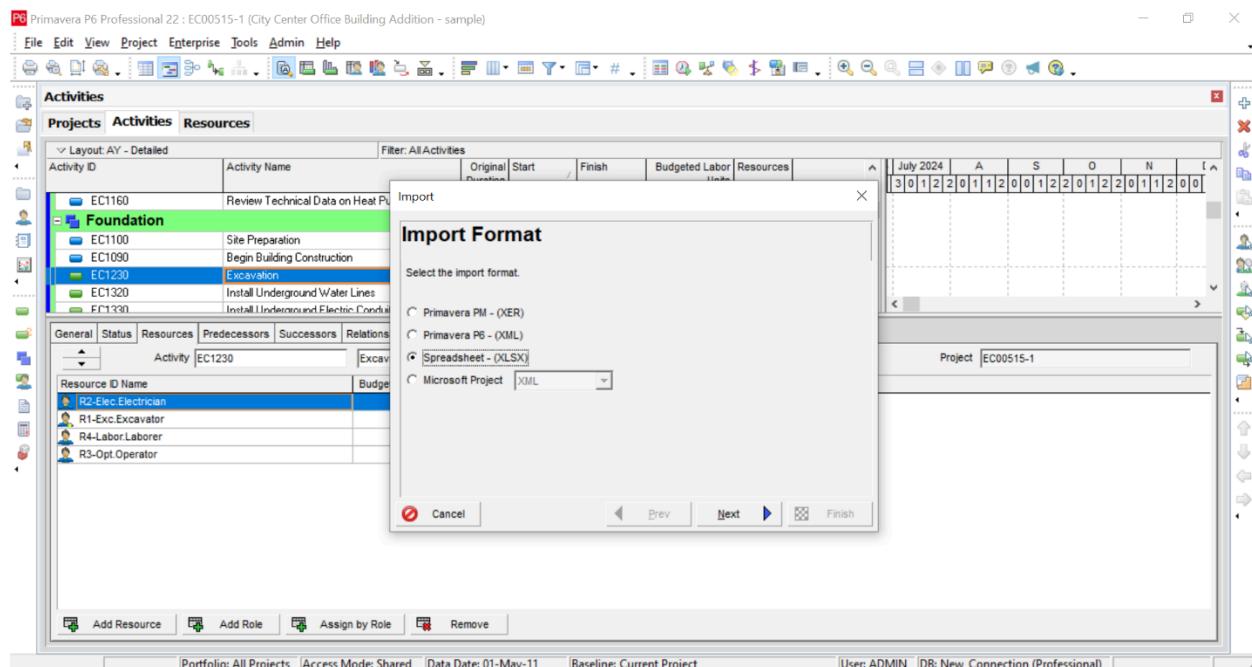
8. Now click type the letter "d" in Column H "delete this row" to delete the resource assignments on the Excavation activity in the first step. After that, save the file and close it.



A	B	C	D	E	F	G	H	I	J
rsrc_id	task_id	TASK_status_code	role_id	acct_id	rsrc_type	target_qty	delete_record_flag		
Resource	Activity ID	(*)Activity Status	Role ID	Cost Account ID	(*)Resource Type	Budgeted Units(h)	Delete This Row		
R1-Exc	EC1230	Not Started			Labor	193	d		
R2-Elec	EC1230	Not Started			Labor	193	d		
R3-Opt	EC1230	Not Started			Labor	193	d		
R4-Labor	EC1230	Not Started			Labor	193	d		
R1-Exc	EC1230	Not Started			Labor	80			
R2-Elec	EC1330	Not Started			Labor	60			
R3-Opt	EC1340	Not Started			Labor	50			
R3-Opt	EC1350	Not Started			Labor	50			
R3-Opt	EC1360	Not Started			Labor	50			
R1-Exc	EC1370	Not Started			Labor	80			
R3-Opt	EC1430	Not Started			Labor	100			
R4-Labor	EC1460	Not Started			Labor	140			
R3-Opt	EC1470	Not Started			Labor	130			
R3-Opt	EC1480	Not Started			Labor	130			
R2-Elec	EC1640	Not Started			Labor	55			

9. Now, the next step is to import this file back to P6 to have the resources assigned to the required activities.

- Click on File and choose Import. Then choose "Spreadsheet – XLSX."



Primavera P6 Professional 22 : EC00515-1 (City Center Office Building Addition - sample)

File Edit View Project Enterprise Tools Admin Help

Activities

Projects Activities Resources

Import Format

Select the import format:

Spreadsheet - (XLSX)

Primavera PM - (XER)

Primavera P6 - (XML)

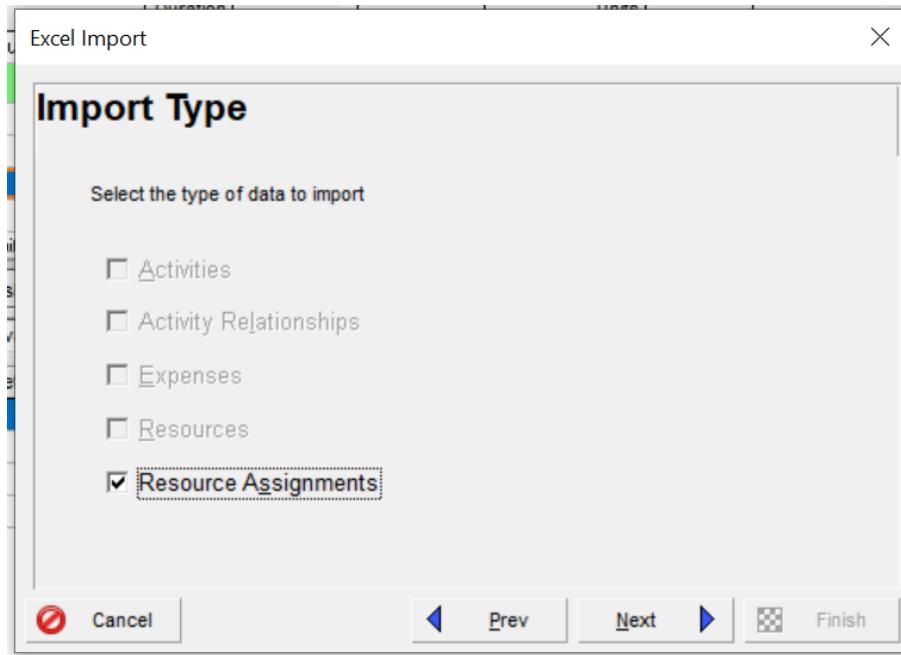
Microsoft Project

Cancel Next Finish

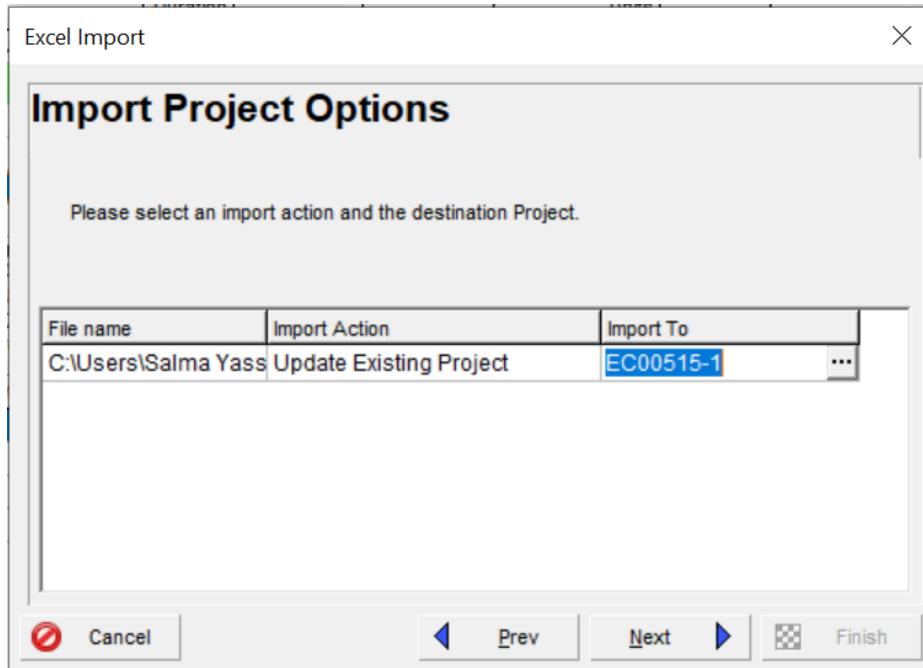
Project EC00515-1

Portfolio: All Projects Access Mode: Shared Data Date: 01-May-11 Baseline: Current Project User: ADMIN DB: New_Connection (Professional)

- Select the file you saved to be imported and click Next.
- Click on “Resource Assignments” and click on Next.



- The last step is to update the project with the resource assignments and click Next.

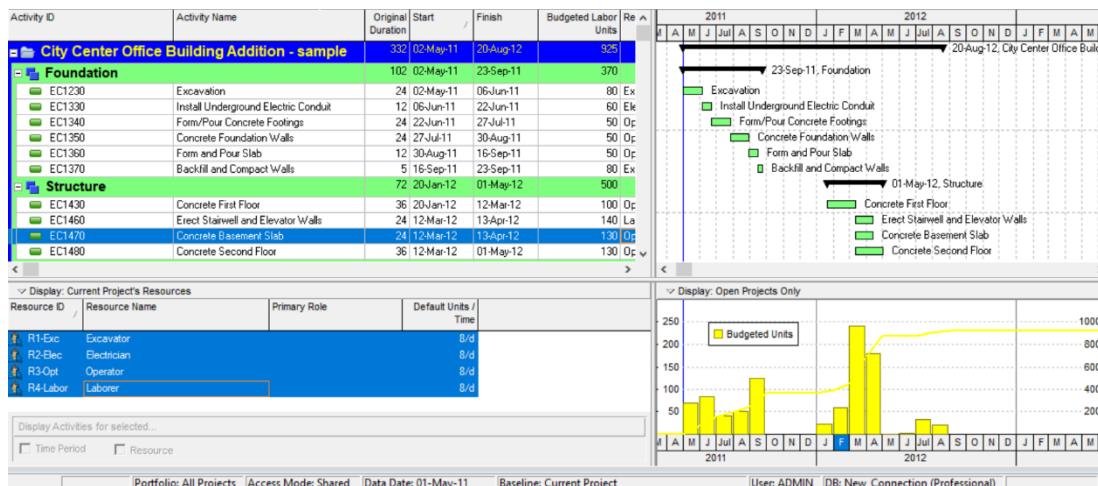


Finally, the resources you defined are assigned to the corresponding scheduled activities!

As expected, the Budgeted Units for these activities match the 925 hours created in the initial Excel file. The below figure shows a layout of these activities in p6.

Activity ID	Activity Name	Original Duration	Start	Finish	Budgeted Labor Units	Resources
	City Center Office Building Addition - sample	332	02-May-11	20-Aug-12	925	
	Foundation	102	02-May-11	23-Sep-11	370	
EC1230	Excavation	24	02-May-11	06-Jun-11	80	Excavator
EC1330	Install Underground Electric Conduit	12	06-Jun-11	22-Jun-11	60	Electrician
EC1340	Form/Pour Concrete Footings	24	22-Jun-11	27-Jul-11	50	Operator
EC1350	Concrete Foundation Walls	24	27-Jul-11	30-Aug-11	50	Operator
EC1360	Form and Pour Slab	12	30-Aug-11	16-Sep-11	50	Operator
EC1370	Backfill and Compact Walls	5	16-Sep-11	23-Sep-11	80	Excavator
	Structure	72	20-Jan-12	01-May-12	500	
EC1430	Concrete First Floor	36	20-Jan-12	12-Mar-12	100	Operator
EC1460	Erect Stairwell and Elevator Walls	24	12-Mar-12	13-Apr-12	140	Laborer
EC1470	Concrete Basement Slab	24	12-Mar-12	13-Apr-12	130	Operator
EC1480	Concrete Second Floor	36	12-Mar-12	01-May-12	130	Operator
	Mechanical/Electrical Systems	36	28-Jun-12	20-Aug-12	55	
	Plumbing and Electrical	36	28-Jun-12	20-Aug-12	55	
EC1640	Install Wiring and Cable	36	28-Jun-12	20-Aug-12	55	Electrician

Also, you can create a resource graph showing the hourly distribution of these activities as previously described.



Conclusion

In conclusion, resource allocation using Microsoft Excel can save a lot of time of the process. You can now start managing as much resources as you can from small to large scale projects.

In the end, continuous monitoring and controlling of these resources is crucial to ensure the project stays on time and within budget. We will explore this further in the next article.