



# SYNCHRO SOFTWARE



SCH



PRO



## Level 2 Scheduling Training

Synchro PRO  
Synchro Scheduler

# V 4.10

September 2014

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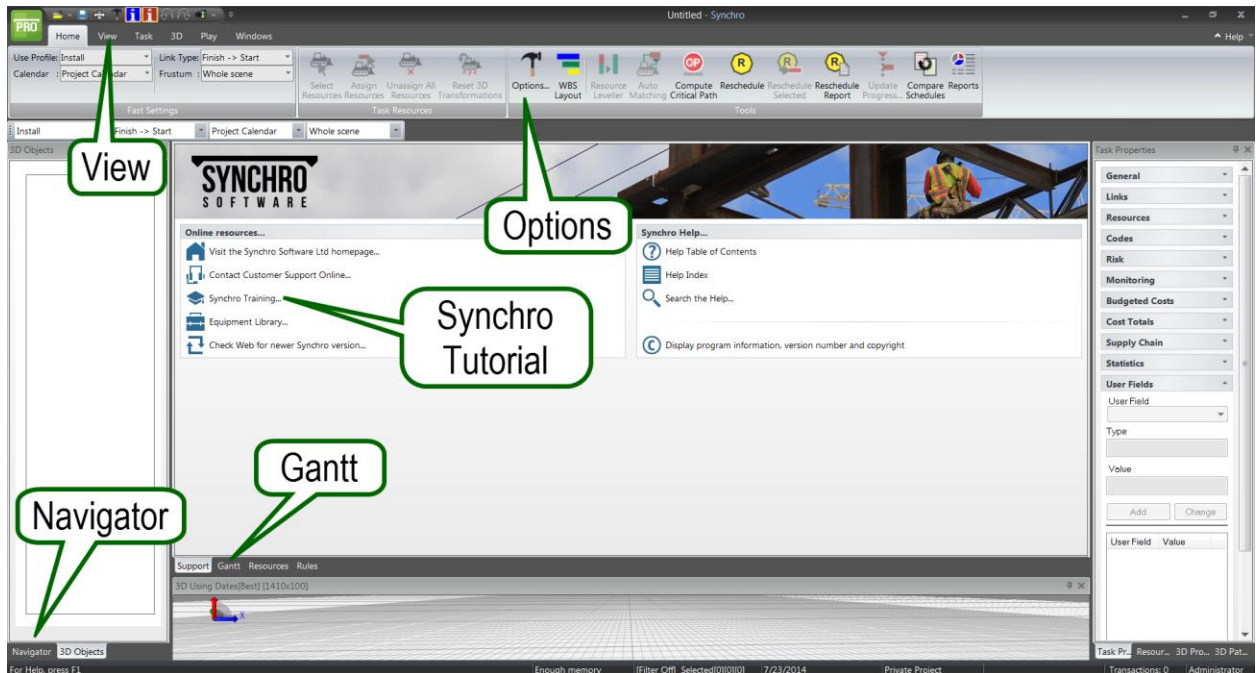
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# 1. The Synchro Workspace

## 1.1. Initial Setup

### 1. Start Synchro

You will be presented with the following opening Synchro screen layout-



2. Select (left mouse click) the **Gantt Tab** to display the Gantt Chart
3. Select the **Navigator Tab**
4. If you are working in Synchro PRO, close the 3D View by selecting the 'X' in the top right corner of the 3D window. If you are working in Scheduler, there is no 3D window, so skip this step.
5. The Gantt chart may be viewed by Work Breakdown Structure (WBS), Activity Codes, or strictly by List. Initially we are going to create a schedule using Work Breakdown Structure (WBS) so we must ensure the Gantt Chart is viewed by WBS.

Select **View Tab>Gantt Mode** and select  **WBS**

## 1.2. Screen Layout

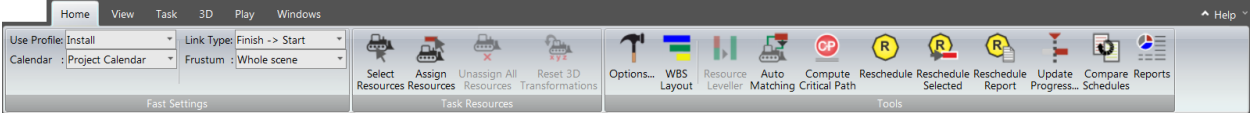
This training course will refer to different windows that you need to be aware of as shown below-

### File

### Quick Access Toolbar



### Ribbon Toolbar



### Fast Options



**Gantt Window**

#### Navigator Window



#### Task List

ID	Name	Duration	Start	Finish
1	Construction Project	51d	2/17/2012	4/27/2012
2	Site	18d	2/17/2012	3/13/2012
3	Mobilization	4d	2/17/2012	2/22/2012
4	Mobilize Site Offices	2d	2/17/2012	2/20/2012
5	Mobilize Equipment	2d	2/21/2012	2/22/2012
6	Site Prep	6d	2/23/2012	3/5/2012
7	Site Fencing Install	1d	2/23/2012	2/23/2012
8	Temp Power Install	1d	2/24/2012	2/24/2012
9	Clear & Grub	3d	3/1/2012	3/5/2012
10	Excavation	6d	3/6/2012	3/13/2012
11	Mass Excavation	4d	3/6/2012	3/9/2012
12	Shoring Install	2d	3/8/2012	3/9/2012
13	Foundation Excavation	2d	3/12/2012	3/13/2012
14	Foundation	14d	3/14/2012	4/2/2012
15	Footings	8d	3/14/2012	3/23/2012
16	FRP Footings 1	4d	3/14/2012	3/19/2012
17	FRP Footings 2	2d	3/20/2012	3/21/2012
18	FRP Footings 3	2d	3/22/2012	3/23/2012
19	Slabs	6d	3/26/2012	4/2/2012
20	FRP Basement Slab 1	2d	3/26/2012	3/27/2012
21	FRP Basement Slab 2	2d	3/28/2012	3/29/2012
22	FRP Basement Slab 3	2d	3/30/2012	4/2/2012
23	Structure	5d	4/3/2012	4/10/2012
24	Level 00-01	3d, 3h	4/3/2012	4/6/2012
25	Erect Steel	8h	4/3/2012	4/3/2012
26	Plumb, Bolt & Weld	2d, 6h	4/3/2012	4/6/2012
27	Level 01-02	1d, 4h	4/6/2012	4/10/2012
28	Erect Steel	8h	4/6/2012	4/7/2012
29	Plumb, Bolt & Weld	2d, 6h	4/7/2012	4/10/2012
30	Interiors	9d	4/17/2012	4/27/2012
31	Level 00	3d	4/17/2012	4/19/2012
32	OH MEP Rough In	1d	4/17/2012	4/17/2012

#### Gantt Chart

#### Task Properties

**Resource Window Tab**      **Resource Property Tab**

- **File** The main Synchro start icon
- **Quick Access Toolbar** This toolbar gives you quick access to the icons that are used most in Synchro
- **Ribbon Toolbar** Each tab on the Ribbon Toolbar Contains sets of panel shortcuts and useful command icons. Hover over icons and the icon description will become visible.
- **Fast Options** Use drop down menus by clicking on the  button to change use properties, link types, calendar, and view.
- **Gantt Chart Window** a combination of the Task List and Gantt Chart as described -
- **Task List** *displays the list of tasks and task details.*
- **Gantt Chart** *displays the task bars, links, and flow of the tasks.*
- **Navigator Window** will be automatically docked against the left hand side of the screen. This window can be undocked and repositioned as needed. This window can also be hidden by right clicking the Navigator Tab and choosing Auto Hide or Move to Main Tab. Auto Hide places the Navigator Tab to the left of the Gantt chart. Move to Main Tab places the Navigator Tab underneath the Gantt chart.
  - The Navigator window contains useable project information grouped by the categories shown above; for example Project details, Filters, Calendars, Activity Codes, Companies etc.
- **Resource Tab** is located as a tab on the bottom of the Gantt chart. If you click on the Resource Tab you will see the Resource Window appear- when populated this will contain the list of "Task" resources (Equipment, Human, Location and Material) that can be assigned to individual tasks.
- **Task Properties** will open on the right when the  icon is toggled on. It contains detailed information about an individual task. The information is grouped by category.
- **Resource Properties** contains detailed information about the individual Company resources listed under the Resource Tab.

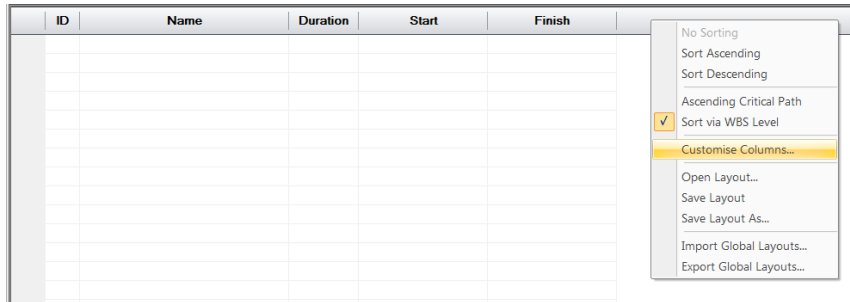
## 2. User Interface Set Up

### 2.1. Customise Columns

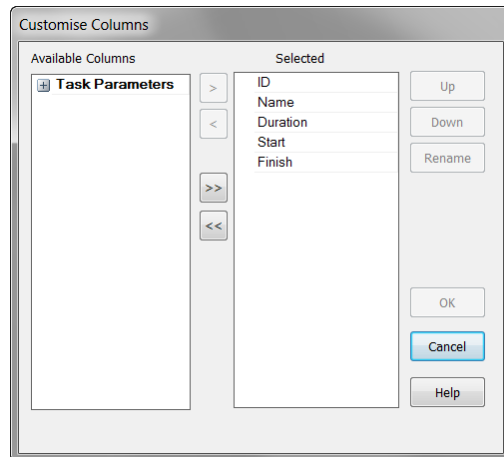
Synchro has the default columns ID, Name, Duration, Start and Finish.

You can add more columns to the task list through **Customise Columns**

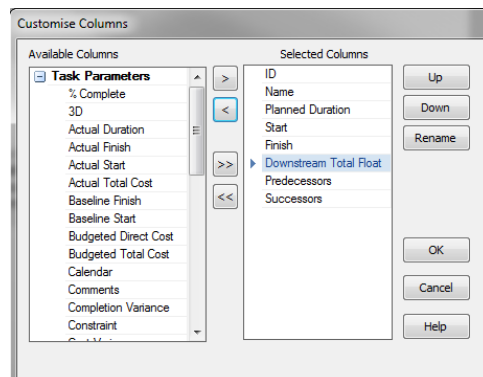
1. Right click in the heading field of the task list and select **Customise Columns** as shown below



You will be presented with the Customise Columns window.

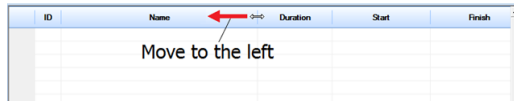


2. Expand **Task Parameters** under Available Columns by clicking on **+** to the left. Select **Planned Duration, Predecessors, Successors, and Downstream Total Float** and move them from **Available Columns** to **Selected Columns** by using the **>** button. Unselect the **Duration** Column by using the **<** button. Move the columns using the **Up** and **Down** buttons so the Customise Column window looks as shown, and then select **OK**. This will create extra columns in the task list. You can Add or Remove other columns in a similar manner.



*Note: The **Planned Duration** is the original duration of the activity. The **Planned Duration** (original duration) can be revised until the task has been stasured. The **Duration** is the current duration of a task based on the task's actual duration to date plus its remaining duration.*

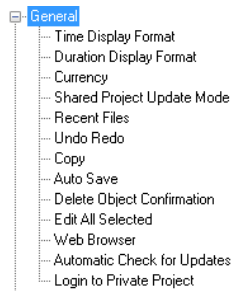
3. To resize the columns, hover between the column titles until the double arrow icon appears then hold down the left mouse button and drag to the left (the task list can also be resized in the same manner by hovering over the grey bar between the task list and Gantt chart)



## 2.2. General Settings

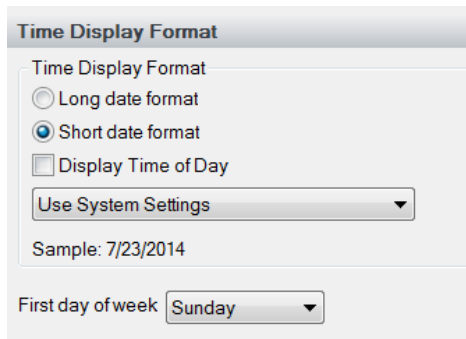
### 2.2.1. Display Settings

1. In the **Home Tab** or on the **Quick Access Toolbar**, select **Options**, open **General**.

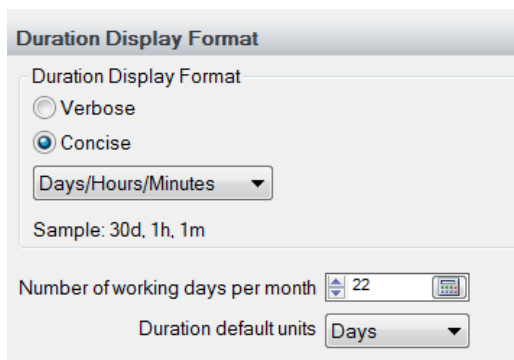


*Note: to reset any options to their default settings click the reset button in the bottom left of the option window*

2. Select **Time Display Format** from the menu. For this tutorial, set the Time Display Format to **Short date format** and disable **Display Time of Day**



3. The first day of the week to be displayed can also be chosen from the drop down menu – keep this as **Sunday** as shown above.
4. Select **Duration Display Format** from the menu. Set to **Concise** and **Days/Hours/Minutes**.



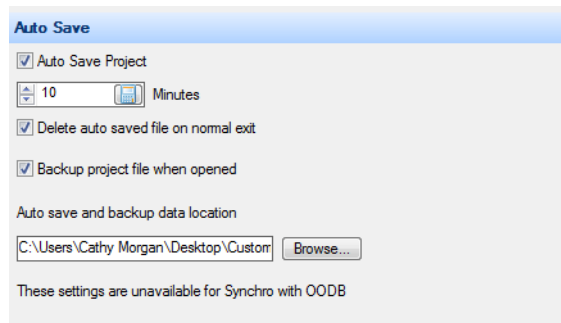
*Note: the difference between Verbose and Concise is that the Verbose display format does not abbreviate the time units*



5. The **Number of working days per month** and **Duration default units** can be also be set – the defaults will be used, as shown above.

### 2.2.2. Auto Save

1. Still in  **Options > General**, select **Auto Save**.



2. Activate the box next to **Auto Save Project** and designate 10 minutes (optional).  
Whether you choose to enable Auto Save and the frequency of the save will depend on the size of the file. The larger the file the less frequently you will want to Auto Save since it slows down the program.
3. If Auto Save is enabled, it is recommended to enable **Delete auto saved file on normal exit**.

#### **Important**

Always have **Backup project file when opened** enabled and select a convenient location (The folder where the backups are saved will need to be emptied from time to time.)

### 2.2.3. Gantt Chart Settings

1. Still in **Options**, expand **Gantt Chart** and select **Rescheduling>Parameters**. **Enable Automatic Rescheduling, Confirm Rescheduling Results** and **Snap To Hour** options should be set as shown for this tutorial.

**Parameters**

Enable Automatic Rescheduling

Confirm Rescheduling results

Snap To: Hour

Link Calendar to use during rescheduling

Own

Project

Upstream Task

Downstream Task

None (use Elapsed)

On scheduling progressed Tasks use

Retained Logic

Progress Override

Actual Dates

Own


#### Note:

- When **Enable Automatic Rescheduling** is disabled:
    - Reschedule will not be proposed when a link is unscheduled.
    - Start As Soon As Possible constraints are not enforced.
    - Any "Cannot Reschedule" constraints are not enforced.
  - **"Snap To"** defines how the tasks are rescheduled. When a task is rescheduled it will snap to the specified time increment. For example if **"Snap To"** is set to "day" and you have two tasks of 1.5 days linked in a chain with Finish to Start relationship, the second task will not be able to start immediately after the first task (half way through the day). Instead its start time will "snap" to the beginning of the next full day. Therefore the second task would finish 3.5 days after the start of the first. On the other hand, if **"Snap To"** is set to "hour", the second task can start at the beginning of the next hour after the first finishes. Therefore it will start immediately after the first and will finish 3 days after the start of the first.
  - The **Confirm Rescheduling results** option, when selected, will prompt the user to confirm that project rescheduling should take place whenever a change is made to the schedule that affects other tasks. This option only applies when Automatic Rescheduling is enabled.
  - **The Link Calendar to use during rescheduling** options allows the user to choose how Synchro calculates the link delays each time the project is re-scheduled. When the Own option is selected, task link delays will be calculated using the calendar assigned to that particular link. (See the Help in Synchro for a more thorough description of each option)
  - **The On scheduling progressed Tasks use** options allow the user to choose how Synchro calculates the schedule. Each scheduling calculation may produce different planned dates and/or float depending on the tasks' actual dates and if any tasks are out-of-sequence. (See the Help in Synchro for a more thorough description of each option)
2. To reschedule manually, disable Automatic Rescheduling and press F9 (This will be used later in the tutorial.)

- The Critical Path default options can be viewed by selecting **Rescheduling>Critical Path**. The default settings are shown below along with a brief description of all the settings. The default settings will be used in this tutorial.

**Note:**


**Critical Path update** options determine when the Critical Path display will be updated:

- **Don't Update** – The Critical Path is not displayed.
- **Update Manually** – Update the Critical Path displayed by selecting the Home Tab >Tools >  Compute Critical Path or Ctrl + F5.
- **Update Automatically (slowest)** – The Critical Path displayed is updated automatically.

**Critical Path method** options determine how the critical path is calculated:


- **Longest path** - the critical path is calculated as the longest chain of tasks with zero float.
- **Least total float** – the critical path is calculated as the longest chain of tasks that match the float criteria you define using the following:
  - **Maximum for critical Tasks** defines the maximum total float allowed for a task to be considered critical.
  - **Maximum for subcritical Tasks** defines the maximum total float allowed for a task to be considered near-critical.
  - **Duration units** define the units being specified in previous options.

### 2.2.4. Task ID

- Still in  **Options** open **Defaults for New Objects**
- Select **Task ID**
- The task ID settings are used on all new tasks that are created. These settings can be edited. Keep the default settings displayed in this window for this tutorial.

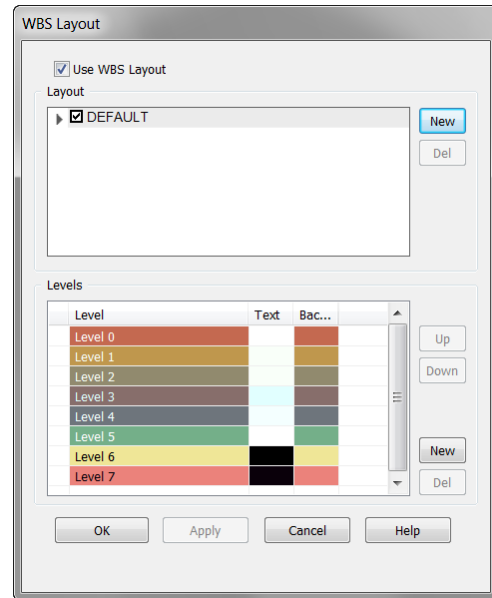
## 2.3. Gantt Display

### 2.3.1. WBS Layout

Select the **Home Tab** >  **WBS Layout**-  
The WBS Layout window will be displayed.

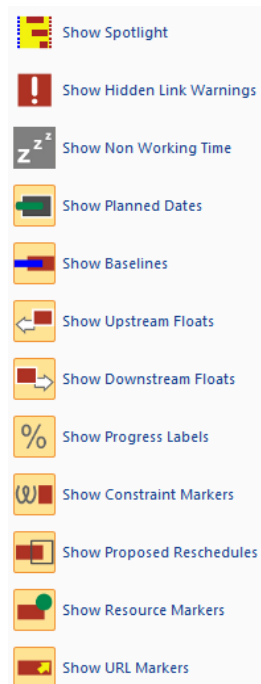
In this window, you can-

- Enable/disable the Default WBS Layout
- Select New to design your own layout
- Modify colours/order of Levels for a layout



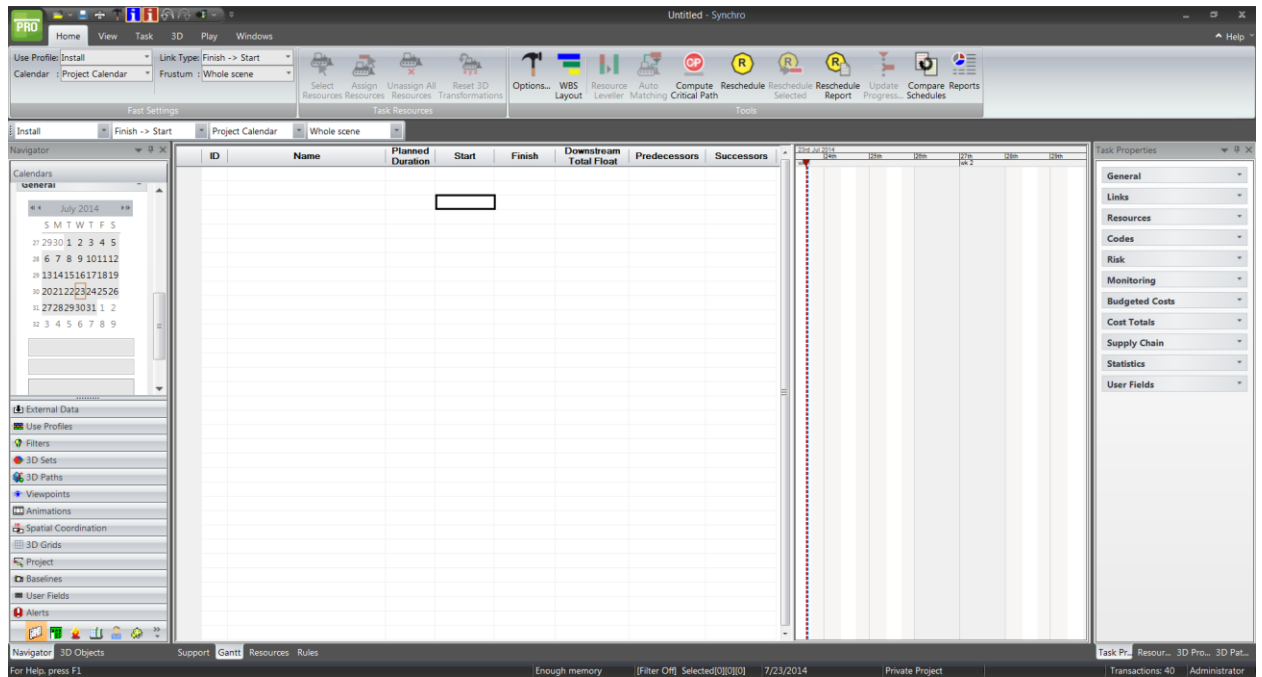
### 2.3.2. Gantt View Options

1. To manage which schedule details are displayed visually in the Gantt Chart select the **View Tab** > **Gantt Details** and use the drop down arrows to access the Menu
2. The commands act like a toggle button which can be turned on or off. *Please refer to the Help for definition of terms.*
3. By default all Gantt details are displayed except **Show Spotlight**. Disable **Show Hidden Link Warnings**



### 2.3.3. Gantt Display

The Synchro screen should look as below-

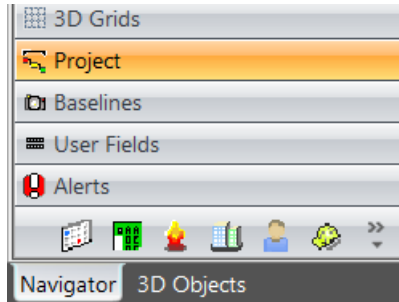


You may need to move the divider line and/or resize the column so you can see Downstream Float, Predecessors, and Successors

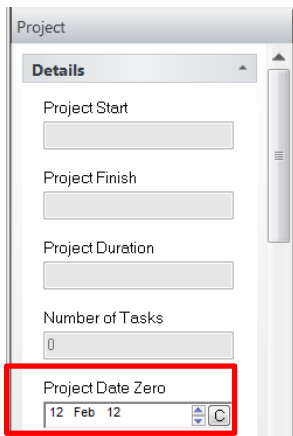
### 3. Setting up the Project

#### 3.1. Project Date Zero

1. Select **Navigator** >  **Project**



2. Open up **Details** tab
3. For the purpose of this training set the **Project Date Zero** to 12 Feb 12.



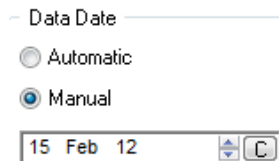
- **Project Start** – the date of the first (earliest) task
- **Project Finish** – the latest finish date
- **Project Duration** – the estimated project duration
- **Project Date Zero** – the actual progress start date used for progress monitoring. It defines the start of the 1<sup>st</sup> week of the project.

#### 3.2. Data Date

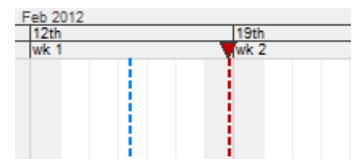
The **Data Date** is the date used to define the project reporting date when calculating the schedule. Parameters such as Percent Complete and Earned Value are computed using the Data Date. This date is typically not the current calendar date - it is typically set to the end of the current reporting period. This date can also be modified to the required date for "what-if" analysis. The Data Date for calculation purposes can be set to-

- **Automatic**- to use the current date when the project is opened
- **Manual**- to enter your own date (Industry standard)

For the purpose of this training set this to **Manual** and set the data date to 15 Feb 12



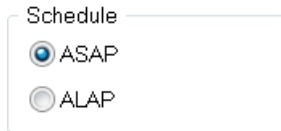
The Blue dotted line displayed in the Gantt Chart is the Data Date  
The Red dotted line with the red triangle is the Focus Time (Used in 4D Projects)



### 3.3. Schedule

This setting defines whether a task should be scheduled to its Early Dates (ASAP – As Soon as Possible) or scheduled to its Late Dates (ALAP – As Late as Possible)

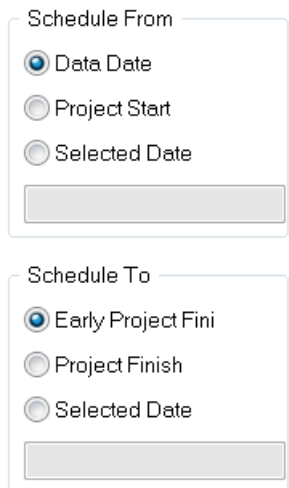
For the purpose of this training leave it set to the default - **ASAP**



### 3.4. Schedule From/To

These settings tell the software the time frame that you want the schedule calculations to pass through.

Set the "**Schedule From**" to **Data Date** and the "**Schedule To**" to **Early Project Finish**



**Note:** *Schedule From* defines the date to use when "Schedule" is set to ASAP and when scheduling tasks which are constrained to "Start as soon as possible."

**Schedule To** defines the date to use when "Schedule" is set to ALAP and when scheduling tasks which are constrained to "Start as late as possible."

**Note:** *It is NOT necessarily recommended that constraints be used, but if they are this is how the associated tasks will be scheduled.*

### 3.5. Gantt Chart Display Manipulation

To manoeuvre within the Gantt chart move the cursor within the Gantt Chart-

#### **To Pan**

- Hold down the middle mouse button then move the mouse up, down, left and right.


#### **To Zoom**

- Roll the middle mouse button wheel forward and back to zoom in and out respectively.

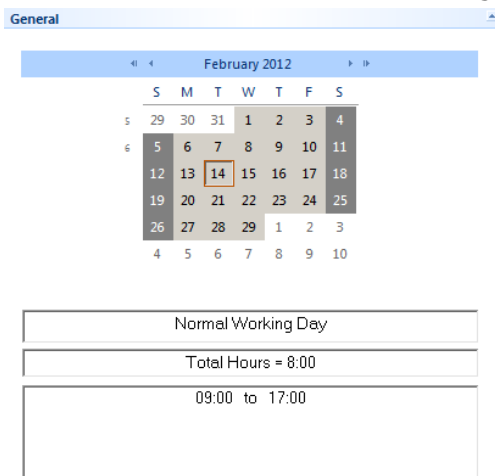
## 4. Calendars

Calendars are used to assign working time and non-working time to an activity. Every project will have a default calendar that is used when new tasks are created or scheduled. Other calendars can be added to define different working periods for different tasks. For example, you can have one calendar that defines a 5 day work week for concrete placement and another calendar that defines a 7 day work week for concrete curing.

### 4.1. Project Calendar

1. Select **Navigator**  **Calendars**
2. You will see that Synchro creates a default calendar- **Project Calendar**
3. Select and highlight **Project Calendar**, then open the **General** tab below.

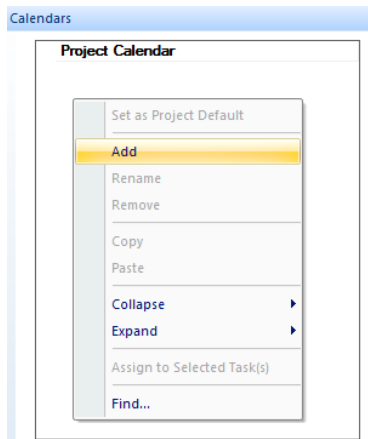
You will see the current month - the working days lightly shaded; and the working hours -



This **Project Calendar** is a 5 day week with working hours between 09:00 and 17:00

### 4.2. Adding Calendars

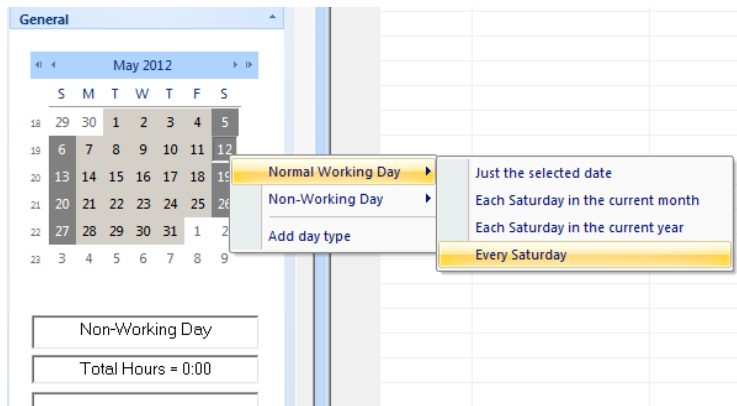
1. A new calendar will be added for training. Move back up to the white window (at the top) then right click and select **Add**



2. Rename the new calendar to **7 day work week**



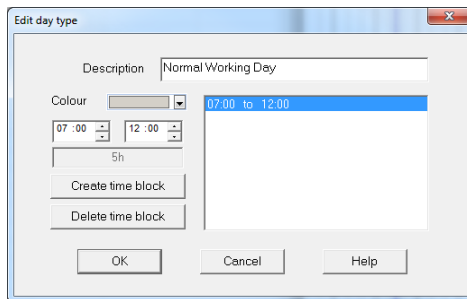
3. Select and highlight the **7 day work week** and open the **General** tab
4. Any day can be changed to a working day. Right click on any Saturday date and select **Normal Working Day** then **Every Saturday**. This will change all Saturdays to work days.



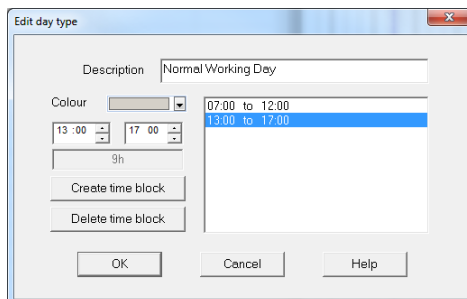
5. Repeat this for **Every Sunday**  
 Non-working days can be assigned as well as specific day types that may be utilized on a project - for example, holidays or owner restricted work days.

### 4.3. Modifying Calendar Work Hours

1. To change the working hours in a day, right click on any day and select **Edit day type**.
2. Once the edit window opens, the working hours can be changed. For this tutorial, a lunch break will be added to the **7 day work week** calendar. Adjust the morning work hours by selecting the working hours (**09:00 to 17:00**) then change the start and end times to **07:00 to 12:00** as shown below



3. Multiple working blocks of time can be created for each working day. To create multiple working time blocks, select **Create time block** to enter another block of time. For the **7 day work week** calendar enter the afternoon work hours **13:00 to 17:00** as shown below then select OK



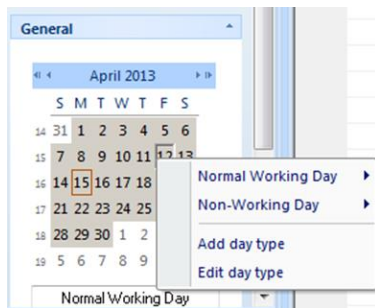
- The **Normal Working Day** will be a 9 hour day with 2 work periods for the *7 day work week* calendar for all dates as shown below



Normal Working Day
Total Hours = 9:00
07:00 to 12:00 13:00 to 17:00

#### 4.4. Creating Different Day Types

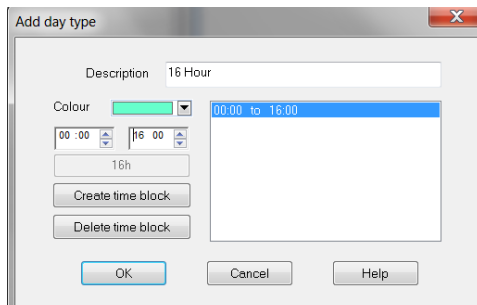
- To create different day types, right click on a day and the following menu will open



- If you select Normal Working Day or Non-Working Day you will be presented with the following to allow you to choose either the day selected or additional days.

Just the selected date
Each Monday in the current month
Each Monday in the current year
Every Monday

- In this case only one 16 hour day and one 24 hour day will be added. We will start with the 16 hour day by selecting **Add day type**
- The "Add day type" window will open









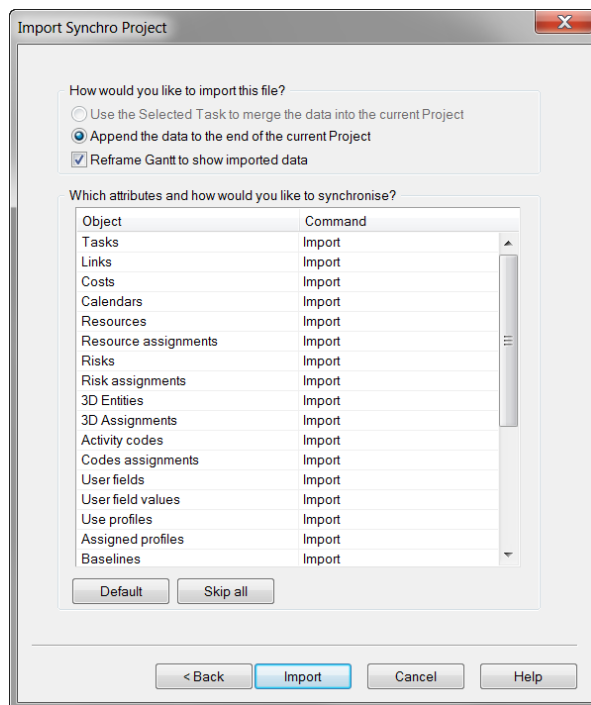
5. Type **16 Hour** in the **Description**
6. Select **Create time block**
7. Keep start time as **00:00** then change end time to **16:00**
8. You will now see that this has changed to a 16 hour calendar day
9. Since this day type will not be saved, select Cancel
10. To create a 24 hour day right click on a day and select **Add day type** from the menu
11. The "Add day type" window will open, type **24 Hour** in the **Description**
12. Select **Create time block**
13. Keep start time as **00:00** then change end time to **24:00**
14. You will now see that this has changed to a 24 hour calendar day
15. Select Cancel

## 5. Saving Template

You may want to save any calendars, filters, etc. that are created so they do not have to be created each time a new file is started.

This is done by creating a .sp template file. Set up needed calendars, filters, etc., then either-

- Save as a .sp file (Synchro's extension). Open this file when beginning a new project; save it with new file name; and then enter the new project information.
- Save as .sp file, and then import this file into another Synchro project with the required attributes that were created - such as calendars, filters etc. This method is explained below-
  - 1) Select  **File** >  **Save As** >  **Private Project .... Synchro Template** (for example) then select **Save**
  - 2) Select  **File** >  **New** – (or alternatively exit and reopen Synchro)
  - 3) Prior to importing a template, rename the **Project Calendar** in the new Synchro file to **XXX**. If you do not, a duplicate Project Calendar will be created when the template calendar information is imported into the new Synchro file.
  - 4) When you have started a new project select  **File** >  **Import** >  **Synchro Project**
  - 5) **Browse** and select **Synchro Template.sp**. Click **Open**, and then click **Next**. You will be presented with the **Import Synchro Project** Window



- 6) Select **Skip All**
- 7) Then change the **Command** next to the Objects- **Calendars, Filters**, etc. to **Import** for any object you want to include from the template file. *For this training select only **Calendars** as shown below-*

Calendars	Import
Resources	Skip
Resource assignments	Import

- 8) Select **Import** (you will see a report of what is importing) then select **Finish**
- 9) Select **File** > **Save As** > **Private Project ...** browse, name your file and save.

## 6. Creating the Schedule

The Work Breakdown Structure (WBS) will be used to create this training schedule. The WBS is a way of organizing the data represented in the schedule

To begin creating the schedule, open the Synchro template you created:

- Select **File** > **Open** > **Private Project.....** browse and find your template file

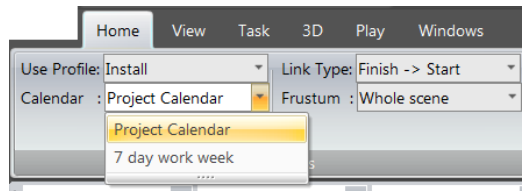
Modify your **Project Date Zero** and **Data date** as needed. For this training we will use the dates from the template. Save it as a new file using:

- Select **File** > **Save As** > **Private Project ...** browse, name your file and save.

There are various ways to create tasks, links etc. which will be covered in this section.

### 6.1. Creating Tasks

1. Open the **Home Tab** and use the **Calendar** dropdown box under the fast settings to select a calendar to use for all new tasks or use the **Calendar** dropdown box from the **Fast Options**. Select **Project Calendar** as shown



2. In the **Task List**, select the first **Name** cell by left clicking on the cell so it is highlighted. This allows you enter a new activity name. To edit a current activity name in a cell, highlight the cell and left click, or right click and choose Rename Task from the context menu. Selecting **F2** on the keyboard when the cell is highlighted also enables editing of the cell.

ID	Name	Planned Duration	Start	Finish	Downstream Total Float	Predecessors	Successors

3. Type **Construction Project** in this **Name** cell then press **Enter** on the keyboard
4. You will see the following cells populated-

ID	Name	Planned Duration	Start	Finish	Downstream Total Float	Predecessors	Successors
1	ST00020 Construction Project	1d	15/02/12	15/02/12	0 Days		

- *ID (derived from the values given in tools>Options>Default for New Objects>Task ID)*
- *Name (Construction Project)*
- *Duration (Defaults to 1 day)*
- *Start (Same as Data Date)*
- *Finish (As Above)*
- *Gantt bar created*

5. Repeat this process to create the 15 Activities and name them as shown below-

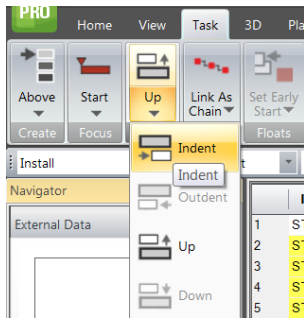
	<b>ID</b>	<b>Name</b>	<b>Planned Duration</b>	<b>Start</b>	<b>Finish</b>
1	ST00020	Construction Project	1d	15/02/12	15/02/12
2	ST00030	Site	1d	15/02/12	15/02/12
3	ST00040	Mobilization	1d	15/02/12	15/02/12
4	ST00050	Site Prep	1d	15/02/12	15/02/12
5	ST00060	Excavation	1d	15/02/12	15/02/12
6	ST00070	Foundation	1d	15/02/12	15/02/12
7	ST00080	Footings	1d	15/02/12	15/02/12
8	ST00090	Slab	1d	15/02/12	15/02/12
9	ST00100	Structure	1d	15/02/12	15/02/12
10	ST00110	Level 00-01	1d	15/02/12	15/02/12
11	ST00120	Level 01-02	1d	15/02/12	15/02/12
12	ST00130	Interiors	1d	15/02/12	15/02/12
13	ST00140	Level 00	1d	15/02/12	15/02/12
14	ST00150	Level 01	1d	15/02/12	15/02/12
15	ST00160	Level 02	1d	15/02/12	15/02/12

## 6.2. Creating Parent & Child Relationships

### 6.2.1. Using Indent

Using indents allows the WBS structure to be created or Parent and Child tasks. The top level WBS for this project will be **Construction Project**

1. Select the **Site** task and hold down the **Shift** button on your keyboard then select the **Level 02** task so all the tasks between those two tasks are highlighted
2. From the **Task Tab** select the dropdown on the **Move Panel**



3. Select **Indent**. There are also options to **Outdent** or move tasks **Up** and **Down**. Now all the original tasks are child tasks to the **Construction Project** task. The schedule will now be displayed as shown below-

	ID	Name	Planned Duration	Start	Finish
1	ST00020	Construction Project	1d	2/15/2012	2/15/2012
2	ST00030	Site	1d	2/15/2012	2/15/2012
3	ST00040	Mobilization	1d	2/15/2012	2/15/2012
4	ST00050	Site Prep	1d	2/15/2012	2/15/2012
5	ST00060	Excavation	1d	2/15/2012	2/15/2012
6	ST00080	Footings	1d	2/15/2012	2/15/2012
7	ST00090	Slab	1d	2/15/2012	2/15/2012
8	ST00110	Level 00-01	1d	2/15/2012	2/15/2012
9	ST00120	Level 01-02	1d	2/15/2012	2/15/2012
10	ST00070	Foundation	1d	2/15/2012	2/15/2012
11	ST00100	Structure	1d	2/15/2012	2/15/2012
12	ST00130	Interiors	1d	2/15/2012	2/15/2012
13	ST00140	Level 00	1d	2/15/2012	2/15/2012
14	ST00150	Level 01	1d	2/15/2012	2/15/2012
15	ST00160	Level 02	1d	2/15/2012	2/15/2012

4. Make sure the tasks are in order as shown above. Select the following tasks then **Indent** after each selection to create the secondary WBS level
  - Tasks **Mobilization**, **Site Prep**, and **Excavation** will be subtasks to the **Site** task
  - Tasks **Footings** and **Slabs** will be subtasks to the **Foundation** task.
  - Tasks **Level 00-01** and **Level 01-02** will be subtasks to the **Structure** task.
  - Tasks **Level 00**, **Level 01**, and **Level 02** will be subtasks to the **Interiors** task.

The schedule will now be displayed as shown below

	ID	Name	Planned Duration	Start	Finish
1	ST00020	Construction Project	1d	2/15/2012	2/15/2012
2	ST00030	Site	1d	2/15/2012	2/15/2012
3	ST00040	Mobilization	1d	2/15/2012	2/15/2012
4	ST00050	Site Prep	1d	2/15/2012	2/15/2012
5	ST00060	Excavation	1d	2/15/2012	2/15/2012
6	ST00070	Foundation	1d	2/15/2012	2/15/2012
7	ST00080	Footings	1d	2/15/2012	2/15/2012
8	ST00090	Slab	1d	2/15/2012	2/15/2012
9	ST00100	Structure	1d	2/15/2012	2/15/2012
10	ST00110	Level 00-01	1d	2/15/2012	2/15/2012
11	ST00120	Level 01-02	1d	2/15/2012	2/15/2012
12	ST00130	Interiors	1d	2/15/2012	2/15/2012
13	ST00140	Level 00	1d	2/15/2012	2/15/2012
14	ST00150	Level 01	1d	2/15/2012	2/15/2012
15	ST00160	Level 02	1d	2/15/2012	2/15/2012

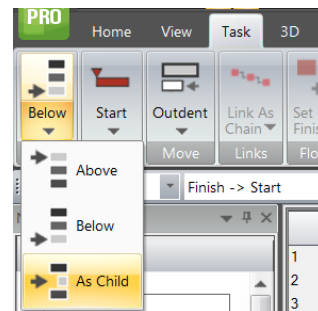
### 6.2.2. Adding Additional Detail


There are times when an activity needs to be broken down into a greater level of detail to create a better understanding of the project. This detail can be added to the schedule by adding "child" or "detailed" activities below "parent" or "summary" activities. Two methods of adding extra detail to your schedule are discussed below.

When beginning, keep the original order of the original activities – task lines 1-15. As you add child tasks (subtasks) the task line number on the left will change based on the number of child tasks (subtasks) added.

#### I. Using "As Child" Function

- 1) Select & highlight task - **Mobilization** then from the **Task Tab** select the dropdown on the **Create Panel** and choose **As Child**



- 2) You will see a *New Task* has been created which is a child (subtask) of its parent task, **Mobilization**. Rename as **Mobilize Site Offices**
- 3) Select & highlight task - **Mobilize Site Offices**, then from the **Task Tab** select the dropdown on the **Create Panel** and choose **Below**. Rename as added task as **Mobilize Equipment**
- 4) Left click (or double click) in the Duration Cell for **Mobilize Site Offices** then enter **2d** (2 days)
- 5) In the duration cell for **Mobilize Site Offices** hover over the grey box  in the bottom right hand corner and a crosshair icon will appear

Mobilization	2d	2/15/2012
Mobilize Site Offices	2d	2/15/2012
Mobilize Equipment	1d	2/15/2012


Grey Box 




- 6) Select this crosshair icon with a left mouse click, hold and drag over the duration cell below until both durations read 2 days as shown

	ID	Name	Planned Duration	Start
1	ST00020	Construction Project	2d	2/15/2012
2	ST00030	Site	2d	2/15/2012
3	ST00040	Mobilization	2d	2/15/2012
4	ST00170	Mobilize Site Offices	2d	2/15/2012
5	ST00180	Mobilize Equipment	2d	2/15/2012







**Note-** If you want to remove a task -

- Select Task(s), right click and select  **Delete Task(s)**
- Select Task(s) then press **Delete** on your keyboard

## II. Creating a new task below then indenting

1. Select & highlight task - **Site Prep**, then from the **Task Tab** select the dropdown on the **Create Panel** and choose  **Below**.

A *New Task* is created below **Site Prep**. Rename the new activity to **Site Fencing Install**.

2. With the new task **Site Fencing Install** selected, make sure you are still in the **Task Tab**. Choose  **Create Panel** making sure the  **Below** is highlighted, then click  **Below** twice to add two new activities below **Site Fencing Install**. (The toolbar command button remembers the last operation performed which was  **Below**)
3. Rename the two new activities below **Site Fencing Install** to **Temp Power Install** and **Clear & Grub**.
4. Change the duration of **Clear & Grub** to **3 days**.
5. Select task - **Site Fencing Install**. Hold down the shift key and select task - **Clear & Grub** then select  **Indent**. You can also right click on the mouse and select **Move**  **Indent**.


The display will be as shown below-

	ID	Name	Planned Duration	Start	Finish
1	ST00020	Construction Project	3d	2/15/2012	2/17/2012
2	ST00030	Site	3d	2/15/2012	2/17/2012
3	ST00040	Mobilization	2d	2/15/2012	2/16/2012
4	ST00170	Mobilize Site Offices	2d	2/15/2012	2/16/2012
5	ST00180	Mobilize Equipment	2d	2/15/2012	2/16/2012
6	ST00050	Site Prep	3d	2/15/2012	2/17/2012
7	ST00055	Site Fencing Install	1d	2/15/2012	2/15/2012
8	ST00057	Temp Power Install	1d	2/15/2012	2/15/2012
9	ST00058	Clear & Grub	3d	2/15/2012	2/17/2012

6. Using one of the two methods, add the additional tasks as described:
  - a. Add the following tasks and durations under the **Excavation** task as shown

10	ST00060	Excavation	4d	2/15/2012	2/20/2012
11	ST00190	Mass Excavation	4d	2/15/2012	2/20/2012
12	ST00200	Shoring Install	2d	2/15/2012	2/16/2012
13	ST00210	Footing Excavation	2d	2/15/2012	2/16/2012

- b. Add three new tasks under the **Footings** tasks with durations of 2 days each
- c. Use the same method for renaming tasks as you used for copying duration values.

- Type the first task name - FRP Footings 1, then hover over the grey box  in the bottom right hand corner until a crosshair icon appears
- Select this with a left mouse click, hold and drag over the name cells below and they will be named in numerical order FRP Footings 1 to 3
- The result should be as shown

14	ST00070	Foundation	2d	2/15/2012	2/16/2012
15	ST00080	Footings	2d	2/15/2012	2/16/2012
16	ST00220	FRP Footings 1	2d	2/15/2012	2/16/2012
17	ST00230	FRP Footings 2	2d	2/15/2012	2/16/2012
18	ST00240	FRP Footings 3	2d	2/15/2012	2/16/2012



d. Add the following tasks and durations under the **Slabs task** as shown

19	ST00090	Slabs	2d	2/15/2012	2/16/2012
20	ST00250	FRP Basement Slab 1	2d	2/15/2012	2/16/2012
21	ST00260	FRP Basement Slab 2	2d	2/15/2012	2/16/2012
22	ST00270	FRP Basement Slab 3	2d	2/15/2012	2/16/2012

e. Add the following tasks and durations under the **Level 00-01** task as shown

24	ST00110	Level 00-01	3d	2/15/2012	2/17/2012
25	ST00280	Erect Steel	2d	2/15/2012	2/16/2012
26	ST00290	Plumb, Bolt & Weld	3d	2/15/2012	2/17/2012

### III. Copying and Pasting Tasks

- 1) Select task - **Level 01-02** and create a child task below
- 2) Select the previously created child tasks of **Level 00-01**, tasks - **Erect Steel** and **Plumb, Bolt & Weld**, right click and select  **Copy Task(s)**
- 3) Right click on the **New Task** under task - **Level 01-02** and select  **Paste Task(s)** .  
You will see -

27	ST00120	Level 01-02	3d	2/15/2012	2/17/2012
28	ST00310	Erect Steel	2d	2/15/2012	2/16/2012
29	ST00330	Plumb, Bolt & Weld	3d	2/15/2012	2/17/2012


4) Use the same method to create the following tasks and durations as shown below

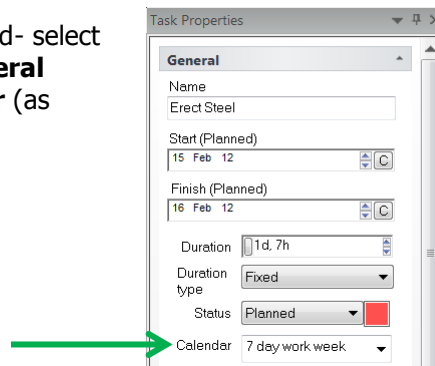
30	ST00130	Interiors	5d	2/15/2012	2/21/2012
31	ST00140	Level 00	5d	2/15/2012	2/21/2012
32	ST00300	OH MEP Rough-in	5d	2/15/2012	2/21/2012
33	ST00320	Framing/Drywall	5d	2/15/2012	2/21/2012
34	ST00340	Trim Out	3d	2/15/2012	2/17/2012
35	ST00150	Level 01	5d	2/15/2012	2/21/2012
36	ST00360	OH MEP Rough-in	5d	2/15/2012	2/21/2012
37	ST00380	Framing/Drywall	5d	2/15/2012	2/21/2012
38	ST00400	Trim Out	3d	2/15/2012	2/17/2012
39	ST00160	Level 02	5d	2/15/2012	2/21/2012
40	ST00410	OH MEP Rough-in	5d	2/15/2012	2/21/2012
41	ST00430	Framing/Drywall	5d	2/15/2012	2/21/2012
42	ST00450	Trim Out	3d	2/15/2012	2/17/2012

### 6.2.3. Changing Task Calendars

There may be tasks in a project schedule that need to utilize different work periods. For example concrete will be placed during the normal 5 day work week but the curing of the concrete will occur over the 7 days (including weekends) following a concrete pour. In this case the concrete tasks would be assigned to the Project Calendar which is a 5 day normal work day calendar and the curing would be assigned to a 7 day – 24 hour calendar.

In this training, it has been decided that the structure activities **Level 00-01** and **Level 01-02** will use a 7 day week calendar

1. Hold **Shift** on your keyboard and select **Structure** followed by **Plumb, Bolt & Weld of Level 01-02** so that all the Structure tasks are highlighted
2. Select **Navigator**  **Calendars**
3. Select **7 day working week** calendar, hold down the left mouse button and drag and drop the calendar onto one of the highlighted tasks
4. To check that the correct calendar has been assigned- select one of the tasks then open **Task Properties>General** (Right hand side of screen) and check the **Calendar** (as shown to the right)



5. You will also see that the duration of these tasks has been altered because the 7 day working week has a normal working day of 9 hours and the project calendar has a normal working day of 8 hours. The tasks will still take the same number hours thus the duration was converted.

If you want the task to take the full day on the **7 day work week calendar**, change the calendar under the **Fast Settings** to the **7 day work week calendar** prior to creating the tasks or type in the duration in days for the tasks after changing the task calendar.

For training we want the durations on these tasks to be in days so change the durations of the 4 tasks back to their original durations as shown

23	ST00100	Structure	3d	2/15/2012	2/17/2012
24	ST00110	Level 00-01	3d	2/15/2012	2/17/2012
25	ST00280	Erect Steel	2d	2/15/2012	2/16/2012
26	ST00290	Plumb, Bolt & Weld	3d	2/15/2012	2/17/2012
27	ST00120	Level 01-02	3d	2/15/2012	2/17/2012
28	ST00310	Erect Steel	2d	2/15/2012	2/16/2012
29	ST00330	Plumb, Bolt & Weld	3d	2/15/2012	2/17/2012

#### 6.2.4. Task Properties – General

The **Task Properties > General** tab allows the task properties for a selected activity to be viewed and modified if needed.

Under this tab you can-

- Edit the Task Name
- Change Planned Start/Finish
- Edit the Duration and Duration type
- Enter a Physical Volume (used to calculate duration and estimated rate when production rate Rules are applied)
- Change the status of the Task
- Change the Assigned Calendar
- Add a Task Constraint
- Choose the Task Type (i.e. work, key dates, hammocks, etc.)
- Assign an additional description called a Category
- Connect a URL to the task (viewed in browser)
- Add Comments
- Review Upstream & Downstream Float

The screenshot shows the 'Task Properties' dialog box with the 'General' tab selected. The task name is 'Erect Steel'. The start date is '15 Feb 12' and the finish date is '16 Feb 12'. The duration is '2d' with a 'Fixed' duration type. The status is 'Planned' (indicated by a red square). The calendar is '7 day work week'. The physical volume is '0' with an empty unit dropdown. The constraint type is 'No Constraint', with empty early and late date fields. The task type is 'Work' and the category is empty. The 'Template Task' checkbox is unchecked. The URL field is empty. The comments field is empty. The upstream float is '0 Days' and the downstream float is '5d'. The task name 'Erect Steel' is visible in the task list at the bottom of the dialog.

### 6.2.5. Task Constraints

**Task Constraints** are limiting dates that control a task's start or finish. Use of constraints should be limited. It is best to use them only for contractual milestones.

Types of Constraints:

- **No Constraint** - the Task is calculated based on the task links or it can be set to start at any date/time you choose
- **Cannot Reschedule** - the Task cannot have its start or finish date changed
- **Start as Soon as Possible** - the Task will start on its Early Start Date. If no links exist, the Task will be set to start at the current data date. If a link does exist then the Task start date will be driven by its dependencies
- **Start as Late as Possible** - the Task will start on its Late Start Date based on its dependencies
- **Start On** - the Task will start on the date specified unless the Task's dependencies drive the Task to start on a later date then specified. If that occurs negative float will be reflected on the Task
- **Start On or After** - the Task will start on the date specified unless the Task's dependencies drive the Task to start on a later date then specified
- **Start On or Before** - the task will start on the date determined by the Task's dependencies. If the Task starts after the date specified, negative float will be reflected on the Task
- **Start Between** - the task will start between the dates specified unless both of the specified dates are prior to the Early Start Date as determined by the Task's dependencies or both dates are after the Late Start Date as determined by the Task's dependencies
- **Finish On** - the Task will finish on the date specified unless the Task's dependencies drive the Task to finish on a later date then specified. If that occurs negative float will be reflected on the Task
- **Finish On or After** - the Task will finish on the date specified unless the Task's dependencies drive the Task to finish on a later date then specified
- **Finish On or Before** - the task will finish on the date determined by the Task's dependencies. If the Task finishes after the date specified, negative float will be reflected on the Task
- **Finish Between** - the task will finish between the dates specified unless both of the specified dates are prior to the Early Finish Date as determined by the Task's dependencies or both dates are after the Late Finish Date as determined by the Task's dependencies
- **Mandatory Start** - No matter the dependencies the Task will start on the specified start date. No negative float will be shown even if the specified start date is after the calculated Late Start Date. **This constraint should never be used unless mandated by the contract. If mandated by the contract a duplicate should be put into the schedule without the Mandatory Start Constraint to properly reflect the float on the Task**
- **Mandatory Finish** - No matter the dependencies the Task will finish on the specified finish date. No negative float will be shown even if the specified finish date is after the calculated Late Finish Date. **This constraint should never be used unless mandated by the contract. If mandated by the contract a duplicate should be put into the schedule without the Mandatory Finish Constraint to properly reflect the float on the Task**
- **Work Between** - The Task should start On or After the specified Early Start Date and finish on or before the specified Late Finish Date. Tasks Dependencies have a greater priority than the specified Early and Late Finish Dates!
- **Work Out** - The Task should start on or before the specified Early Start Date and finish on or after the specified Late Finish Date. Tasks Dependencies have a greater priority than the specified Start and Finish Dates!

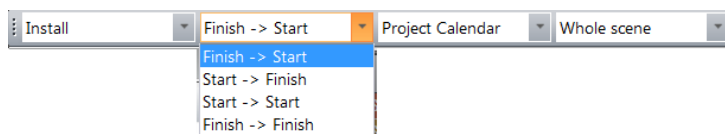
## 7. Linking Options

There are several ways that tasks can be linked to each other in the project schedule. This section will discuss the options that are available.

### 7.1. Link Tasks in a Chain with Automatic Rescheduling Enabled

Linking tasks in a chain allows several activities to be linked together in the order they are selected with minimal key strokes. With Automatic Rescheduling Enabled, once a Task is linked it will be rescheduled to a new planned date. Earlier in this tutorial we ensured that Automatic Rescheduling was enabled.

1. Select task - **Mobilize Site Offices** then hold down Shift on your keyboard and select task - **Mobilize Equipment** so they are both highlighted in that particular sequence
2. Ensure that the link type is **Finish to Start** in the **Fast Settings** toolbar



3. From the **Task Tab** select **Link As Chain**. With each link change the **Reschedule Task** dialog box will open since both the **Automatic Rescheduling** and **Confirm Rescheduling results** are enabled.

	ID	Name	Planned Duration	Start	Finish	Downstream Total Float	Predecessors	Success
1	ST00020	Construction Project	5d	2/15/2012	2/21/2012	0 Days		
2	ST00030	Site	4d	2/15/2012	2/20/2012	1d		
3	ST00040	Mobilization	2d	2/15/2012	2/16/2012	3d		
4	ST00170	Mobilize Site Offices	2d	2/15/2012	2/16/2012	1d		ST00180
5	ST00180	Mobilize Equipment	2d	2/15/2012	2/16/2012	3d	ST00170	
6	ST00050	Site Prep	3d	2/15/2012	2/17/2012	2d		
7	ST00055	Site Fencing Install	1d	2/15/2012	2/15/2012	4d		
8	ST00057	Temp Power Install	1d	2/15/2012	2/15/2012			
9	ST00058	Clear & Grub	3d	2/15/2012	2/15/2012			
10	ST00060	Excavation	4d	2/15/2012	2/15/2012			
11	ST00190	Mass Excavation	4d	2/15/2012	2/15/2012			
12	ST00200	Shoring Install	2d	2/15/2012	2/15/2012			
13	ST00210	Footing Excavation	2d	2/15/2012	2/15/2012			
14	ST00070	Foundation	2d	2/15/2012	2/15/2012			
15	ST00080	Footings	2d	2/15/2012	2/15/2012			
16	ST00220	FRP Footings 1	2d	2/15/2012	2/15/2012			
17	ST00230	FRP Footings 2	2d	2/15/2012	2/15/2012			
18	ST00240	FRP Footings 3	2d	2/15/2012	2/16/2012	3d		

The Gantt chart shows a sequence of tasks: Construction Project, Site, Mobilization, Mobilize Site Offices, Mobilize Equipment, Site Prep, Site Fencing Install, Temp Power Install, Clear & Grub, Excavation, Mass Excavation, Shoring Install, Footing Excavation, Foundation, Footings, FRP Footings 1, FRP Footings 2, and FRP Footings 3. A dialog box titled 'Reschedule Tasks' is open, stating '1 Task(s) will be automatically rescheduled. Continue?' with 'Yes' and 'No' buttons and a 'do not ask again' checkbox.





The Gantt Chart will show a preview of the new position of the Task Bar outlined in black.

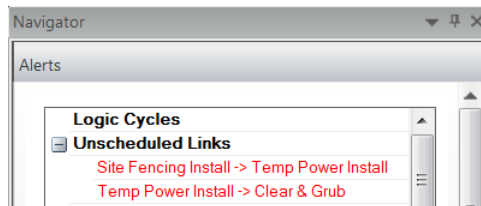
4. If the preview is acceptable click **yes** and the schedule will be rescheduled.

**Note:** If the **Automatic Rescheduling** is enabled and the **Confirm Rescheduling results** is not enabled, the schedule will reschedule with no warning with each link change.

## 7.2. Link Tasks in a Chain with Automatic Rescheduling Disabled

Disabling Automatic Rescheduling allows you to choose when the schedule should be rescheduled. When working in a schedule with a large number of tasks, this is especially helpful as it is time consuming for the computer to reschedule all tasks every time a change is made to one task. Disabling Automatic Rescheduling allows you to reschedule just once after making many changes.

1. Select  **Options>Gantt Chart** then highlight **Rescheduling**
2. Deselect the box next to **Enable Automatic Rescheduling** and select OK
3. Select task - **Site Fencing Install**, hold down **Shift** and select task - **Clear & Grub** so the three tasks are highlighted in that particular sequence
4. From the Toolbars select  **Link As Chain**, or press **Ctrl + L** on the keyboard
5. Links have been created between the 3 tasks but they have not been rescheduled. The two links created are known as unscheduled. Any links created and not rescheduled are unscheduled links.
6. To view the unscheduled project links select  **Options > Options> Gantt Chart > Rescheduling > Report**. Under **Checks** enable **Unscheduled links**. The other options can be checked as well and they will be included in the schedule report. Select **OK** when complete.
7. To generate schedule report select the **Home Tab** and click  **Reschedule Report**. The scheduling report will be created. The unscheduled links will be listed towards the bottom of the report. If wanted, the report can be copied to a clipboard and pasted into a document. Once complete select **OK**.
8. Once you have run the **Reschedule Report** option, the unscheduled link will appear under **Alerts**. Open **Navigator>Alerts**. The two **unscheduled links** appear in the **Alerts** window under **Unscheduled Links**.



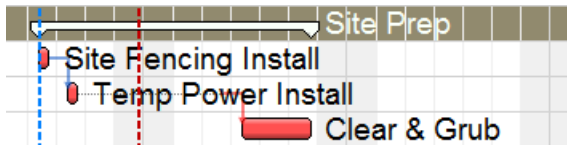
9. When an alert instance is selected, the Gantt chart is refocused to the tasks and the link in question.
10. Manually reschedule by pressing **F9**. The schedule will be recalculated, the unscheduled links will be corrected and the alerts will be removed.

**Important:** Remember to press **F9** to reschedule periodically and/or run a **Reschedule Report** to find any unscheduled links

### 7.3. Introducing Delay to Links

Finish to Start links have been created thus far. Links between two tasks can also contain a delay (lag) between the two tasks. This delay can be created by editing the **Delay** box **Amount** under **Task Properties>Links**.

1. Select task - **Temp Power Install** then open **Task Properties>Links**  
The Link information is shown on the right of this page
2. Select and highlight the successor link listed. You will see the ID, Type, Name and Delay of the successor selected
3. The link type can be modified under **Type**. For now keep the link type as **Finish > Start**
4. Under **Delay** enter **3 Days** for **Amount** and retain the **Project Calendar** and **Positive** delay
5. Press **F9** on the keyboard to reschedule and see the result as shown below-



#### **Note-**

- If you want to remove a individual link right click on the predecessor or successor in Task Properties>Links then select **Remove**
- If you want to remove all links on that task right click in either the Predecessors or Successors white window and select **Remove All**

**Task Properties**

**General**

**Links**

Predecessors

ID	Name	Type	Delay
ST00055	Site Fe...	Finish -> Start	0 Days

Successors

ID	Name	Type	Delay
ST00058	Clear & ...	Finish -> Start	3d

Type

Finish -> Start  
 Finish -> Finish  
 Start -> Start  
 Start -> Finish

Delay

Amount: 3d

Calendar: Project Calendar

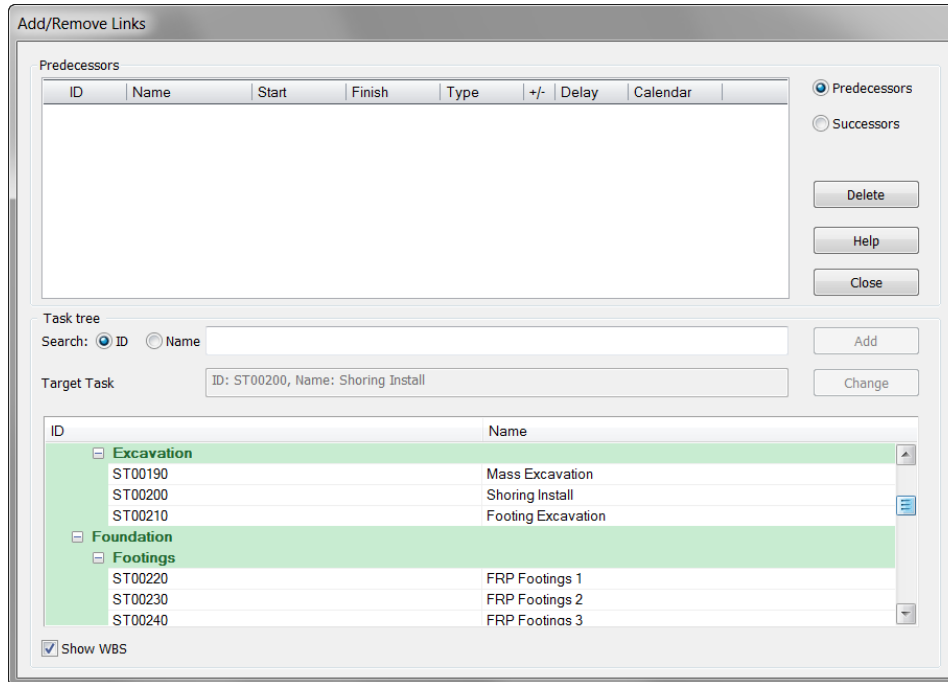
Positive  
 Negative



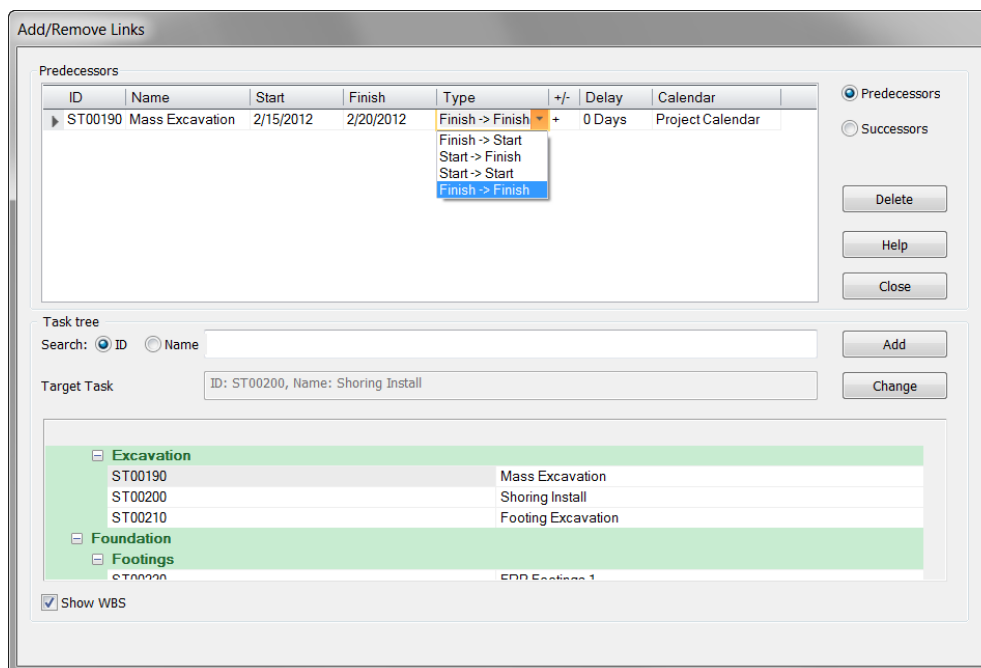
## 7.4. Creating Links from Task Properties

1. Select task - **Shoring Install** then open **Task Properties>Links**
2. Right click in the **Predecessors** window and select **Add**.

The **Add/Remove Links** window will appear

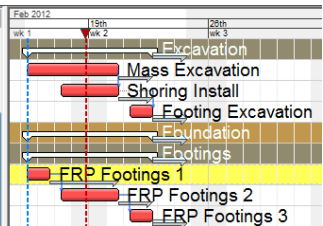


3. Select **Mass Excavation** from the list and then select **Add**
4. The Predecessor Link options above will be populated. Change **Link Type** to **Finish -> Finish** using the drop down menu



- In the top right of the **Add/Remove Links** window, select **Successors**. You can now add Successors to **Mass Excavation**
- Select **Footing Excavation** and select **Add**. Modify the **Link Type** to a **Finish -> Finish** and the **Delay** to **2 days**.
- Select **FRP Footings 2** in the list at the bottom of the **Add/Remove Links** window, then select **Change**. The task you are editing will be listed in the **Target Task** box.
- Notice that you are still adding **Successors**, so select **FRP Footings 3** then **Add** - keep settings as they are then switch to **Predecessors**
- Select **FRP Footings 1** then **Add** - keep settings as they are then **Close**
- Press **F9** on the keyboard to reschedule. The result should look like this:

	ID	Name	Planned Duration	Start	Finish	Downstream Total Float	Predecessors	Successors
10	ST00060	Excavation	6d	2/15/2012	2/22/2012	2d		
11	ST00190	Mass Excavation	4d	2/15/2012	2/20/2012	2d		ST00200
12	ST00200	Shoring Install	2d	2/17/2012	2/20/2012	2d	ST00190	ST00210
13	ST00210	Footing Excavation	2d	2/21/2012	2/22/2012	2d	ST00200	
14	ST00070	Foundation	6d	2/15/2012	2/22/2012	2d		
15	ST00080	Footings	6d	2/15/2012	2/22/2012	2d		
16	ST00220	FRP Footings 1	2d	2/15/2012	2/16/2012	2d		ST00230
17	ST00230	FRP Footings 2	2d	2/17/2012	2/20/2012	2d	ST00220	ST00240
18	ST00240	FRP Footings 3	2d	2/21/2012	2/22/2012	2d	ST00230	



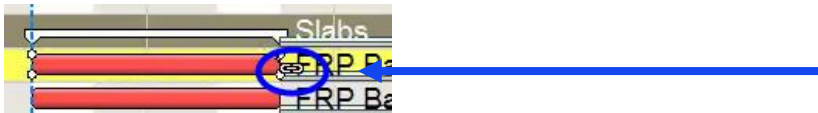
## 7.5. Creating Links from Task Bars

It is a good idea to zoom in on the task bars in the Gantt Chart to create the links using this method

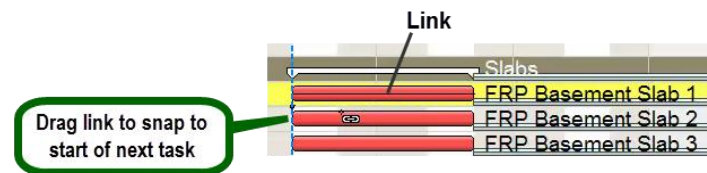
- Move over the centre of the task bar for Task - **FRP Basement Slab 1** – the cursor will change into a crosshair as shown below, then left click on the task bar to select



- Move to the far right of this task bar and it will change into a chain-link icon



- Hold down the left button on the chain-link then drag the mouse you will see a black link line with an arrow that you will snap to the front of the next task



- This creates a Finish to Start link  
**Note:** Depending on where the linked has been "snapped from" and "snapped to" will determine the Link Type (FS, FF, SS or SF).
- Link Task - **FRP Basement Slab 2** and Task - **FRP Basement Slab 3** in the same manner with FS relationship
- Press **F9** on the keyboard to reschedule

**Note:** Please select **Options > Gantt Chart > Links** for various Link options available

## 7.6. Linking Completion

Link all the remaining tasks as noted below. Use any of the methods demonstrated above. Linking the tasks utilizing 'Link Tasks in a Chain with Automatic Rescheduling Disabled' may be the easiest for most people. Remember to press **F9** on the keyboard to reschedule. This may be done after each link is made or at any time thereafter, but it must be done after the last link.

Add the following links:

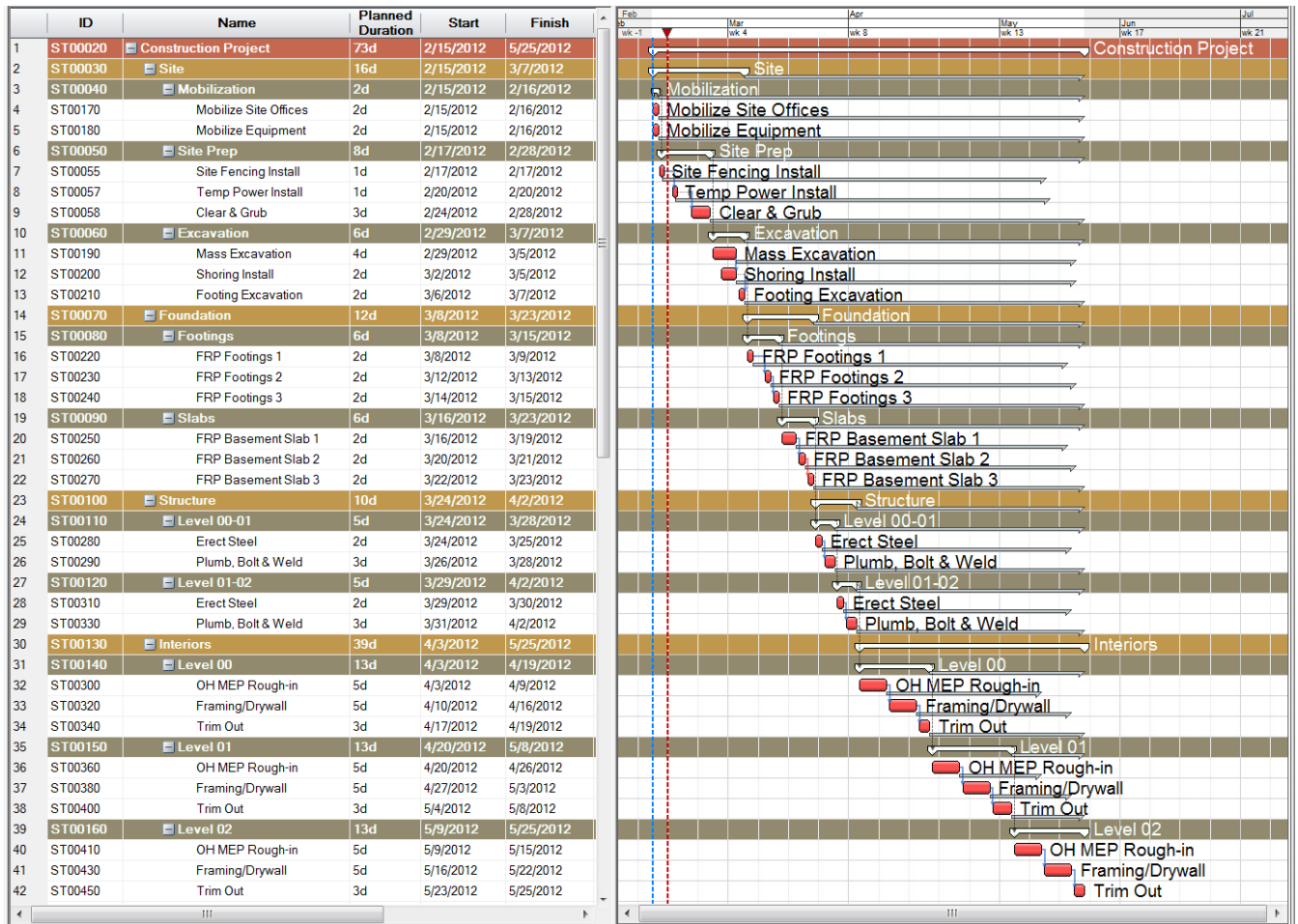
- For **Structure, Level 00-01**
  - Task - ***Erect steel*** Finish -> Start with 0 day delay to Task - ***Plumb, Bolt & Weld***
- For **Structure, Level 01-02**
  - Task - ***Erect steel*** Finish -> Start with 0 day delay to Task - ***Plumb, Bolt & Weld***
- For **Interiors, Level 00**
  - Task - ***OH MEP Rough In*** Finish -> Start with 0 day delay to Task – ***Framing/Drywall***
  - Task – ***Framing/Drywall*** Finish -> Start with 0 day delay to Task - ***Trim Out***
- For **Interiors, Level 01**
  - Task - ***OH MEP Rough In*** Finish -> Start with 0 day delay to Task – ***Framing/Drywall***
  - Task – ***Framing/Drywall*** Finish -> Start with 0 day delay to Task - ***Trim Out***
- For **Interiors, Level 02**
  - Task - ***OH MEP Rough In*** Finish -> Start with 0 day delay to Task – ***Framing/Drywall***
  - Task – ***Framing/Drywall*** Finish -> Start with 0 day delay to Task - ***Trim Out***

## Linking the WBS Summary Activities

Typically the WBS summary tasks are not linked if the tasks beneath WBS summary are fully linked. If one set of WBS tasks needs to precede another set of WBS tasks then it would be appropriate to link the WBS summary tasks. For this training, this is the case, so the WBS summary tasks will be linked as stated below.

- Hold the **CTRL** on your keyboard and select the grey summary bars (ie. Mobilization, Site Prep etc.) one by one in order, from top down, then select **Link As Chain** with a **Finish to Start** Link
- Press **F9** on the keyboard to reschedule.

The result should be as shown:



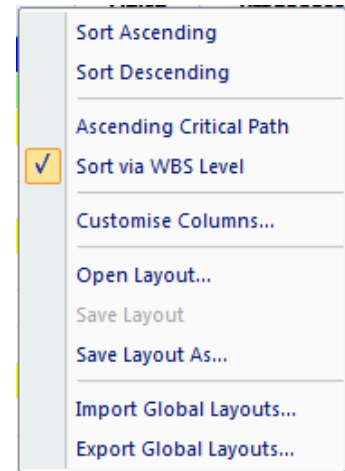
## 7.7. Schedule Sorting

The schedule can be sorted several different ways. Under **View>Gantt Mode**, WBS has been chosen for the primary sort. If activity codes had been created and assigned to each activity the schedule could be sorted by the activity codes. (This will be discussed later in the training)

Another sort or a secondary sort can be chosen by right clicking on a specific Column title in the Task List and choosing one of the schedule sort options for that column – for example, ascending and descending by activity ID, by Start or by Finish. Specific sorts can also be selected such as Ascending critical path or Sort via WBS level.

Layouts refer to the how the task columns are organized for that specific project. Each time you add and/or reorganize the columns you can save it as a layout so it can be used another time


Global Layouts refer to Synchro task column layouts for all projects.



## 8. Task Modification

### 8.1. Changing Duration

If the duration of a task needs to be revised, highlight the duration cell and type in the new value or use the arrow to revise the value. The duration can also be revised by going to **Task Properties > General** and revising the value in the **Duration** cell.

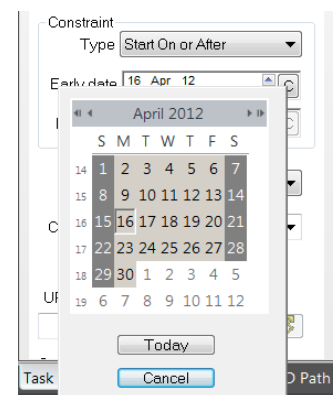
1. Select Task - **FRP Footing 1** and click in the duration cell
2. Either type **4d** (4 days) or double click in the duration cell, highlight the number **2** and use the up arrow.
3. An unscheduled link is created which will be reported in **Navigator > Alerts** when you run the  **Reschedule Report**.
4. Press **F9** on the keyboard to reschedule the task.

### 8.2. Changing Start Times

The Start date drives the task. This should typically be controlled by the links but there may be instances that you want to push the start date of a task to another date for resource management. Once your date has been pushed an additional lag or constraints can be put in so the task will calculate to the new planned date.

Imagine for example, that the MEP subcontractor is not available until 4/16/12 because they are finishing another job. Using the schedule logic, the **Level 00>OH MEP Rough-in** task which requires the MEP subcontractor is scheduled to start 4/9/12. Changing the task start date manually in the Start column of the task list will have no effect as it will snap back to the 9<sup>th</sup> according to the schedule logic when rescheduled. Artificial lag could be introduced, to force the task to start on the 16<sup>th</sup>, but if the preceding tasks become delayed, this artificial lag may cause the start date of the **Level 00>OH MEP Rough-in** task to start later than necessary. To change the start date of the **Level 00>OH MEP Rough-in** task we will add a **Start On or After** constraint.


1. Select the **Level 00** Task - **OH MEP Rough In** then open **Task Properties>General**
2. Change the **Constraint Type** to **Start On or After**
3. The **Early Date** (to start on or after) is automatically set to the Planned Start. To change the date, select the "C" to open the calendar, then select the day one week later than the current planned start (16 Apr 12).
4. Press F9 to reschedule.
5. An marker has been placed in the Gantt Chart to indicate that this task is constrained.




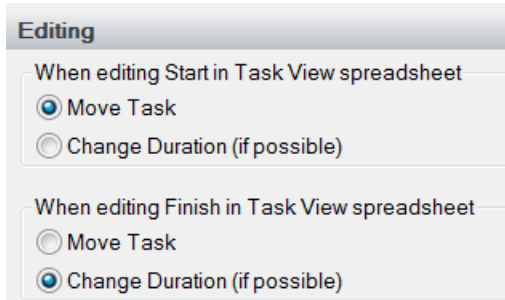
Level 01-02	5d	4/2/2012	4/6/2012
Erect Steel	2d	4/2/2012	4/3/2012
Plumb, Bolt & Weld	3d	4/4/2012	4/6/2012
Interiors	39d	4/16/2012	6/7/2012
Level 00	13d	4/16/2012	5/2/2012
OH MEP Rough-in	5d	4/16/2012 (*)	4/20/2012
Framing/Drywall	5d	4/23/2012	4/27/2012
Trim Out	3d	4/30/2012	5/2/2012

### 8.3. Changing Finish Times

As previously mentioned the Start time drives the task. If you try to move the Finish time, the task will move to a new starting point and the duration will remain intact, since the default setting in Synchro when editing the Finish date is "Move Task". There may be times that a Task will start as scheduled but must complete on a particular date due to jobsite constraints.

To move the Finish time and alter the duration a setting needs to be changed under  **Options**

1. Select  **Options>Gantt Chart>Editing**
2. Under **When editing Finish in Task View Spreadsheet** enable **Change Duration**




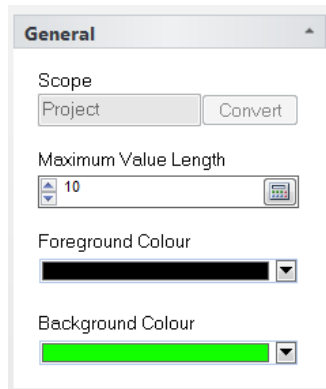
3. Select **Structure, Level 00-01** Task - **Erect Steel**.
4. Change **Finish** date to one week later (05 Apr 12)
5. Press **F9** on the keyboard to reschedule

## 9. Activity Codes

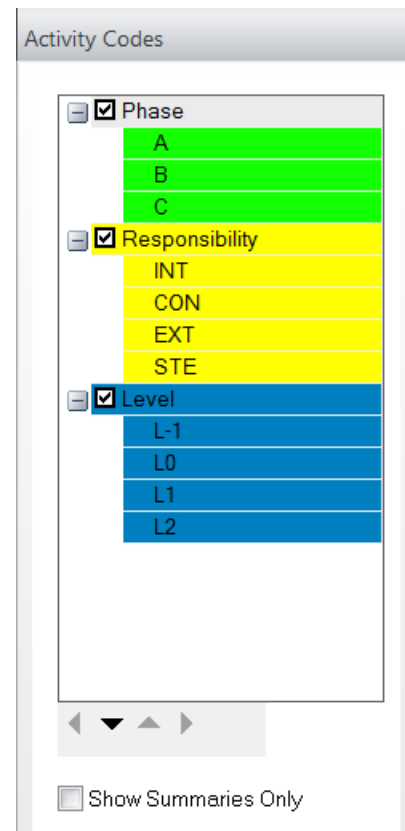
Activity codes are used to organize tasks by grouping, sorting, and/or filtering. Each task can have an unlimited number of activity codes assigned to it. This allows greater flexibility for organizing, sorting, and filtering.

### 9.1. Creating Activity Codes

1. Select **Navigator>  Activity Codes**
2. Right click in top white window and select **Add Activity Code** from the dialog box
3. Rename "New Activity Code" to ***Phase***. Highlight the code
4. Open the **General** tab under **Activity Codes** and change the background colour to green



5. Select the ***Phase*** code, right click and select **Add Code Value** from the dialog box
6. Name the new ***Phase*** code value "A"
7. Repeat this step 2 times until you have ***Phase*** code values **A, B, & C**
8. Right click in top white window and select **Add Activity Code** from the dialog box
9. Rename "New Activity Code" to ***Responsibility*** and highlight the code to activate the code box
10. Under **General** change the background colour to yellow
11. Select the ***Responsibility*** code, right click and select **Add Code Value** from the dialog box
12. Name the new ***Responsibility*** code value "INT"
13. Repeat this step 3 times to add code values **CON, EXT & STE**
14. Repeat the steps above to add activity code ***Level***, change background colour to light blue, and add code values **L-1, L0, L1, and L2**
15. The result will be as shown to the right. The sort priority for the **Task List** can be defined by prioritizing of the codes and code values.



To prioritize, rearrange the codes and/or values, select the code or code value and use the arrows towards the bottom to rearrange.



## 9.2. Assigning Activity Codes

Activity codes can be assigned by simply selecting the code value to be assigned, selecting the task or tasks to be assigned to that code value, then clicking and dragging the code value to the tasks.

### 1. Assign the **Phase** code values

- Phase **A** is assigned to all sub tasks under **Site** and **Foundation**
  - Select code value **A** under **Phase** as shown on right
  - Select all the tasks under the **Site** and under **Foundation** as shown on right
  - Left click on code **A**, hold and drag onto the selected activities

ID	Name	Planned Duration	Start	Finish
1	ST00020 Construction Project	82d	2/15/2012	6/7/2012
2	ST00030 Site	16d	2/15/2012	3/7/2012
3	ST00040 Mobilization	2d	2/15/2012	2/16/2012
4	ST00170 Mobilize Site Offices	2d	2/15/2012	2/16/2012
5	ST00180 Mobilize Equipment	2d	2/15/2012	2/16/2012
6	ST00050 Site Prep	8d	2/17/2012	2/28/2012
7	ST00055 Site Fencing Install	1d	2/17/2012	2/17/2012
8	ST00057 Temp Power Install	1d	2/20/2012	2/20/2012
9	ST00058 Clear & Grub	3d	2/24/2012	2/28/2012
10	ST00060 Excavation	6d	2/29/2012	3/7/2012
11	ST00190 Mass Excavation	4d	2/29/2012	3/5/2012
12	ST00200 Shoring Install	2d	3/2/2012	3/5/2012
13	ST00210 Footing Excavation	2d	3/6/2012	3/7/2012
14	ST00070 Foundation	14d	3/8/2012	3/27/2012
15	ST00080 Footings	8d	3/8/2012	3/19/2012
16	ST00220 FRP Footings 1	4d	3/8/2012	3/13/2012
17	ST00230 FRP Footings 2	2d	3/14/2012	3/15/2012
18	ST00240 FRP Footings 3	2d	3/16/2012	3/19/2012
19	ST00090 Slabs	6d	3/20/2012	3/27/2012
20	ST00250 FRP Basement Slab 1	2d	3/20/2012	3/21/2012
21	ST00260 FRP Basement Slab 2	2d	3/22/2012	3/23/2012
22	ST00270 FRP Basement Slab 3	2d	3/26/2012	3/27/2012
23	ST00100 Structure	17d	3/28/2012	4/13/2012

- Assign Phase **B** in the same manner to all sub tasks under **Structure**
- Assign Phase **C** in the same manner to all sub tasks under **Interiors**

### 2. Assign all the code values under **Responsibility** as follow:

- INT** is assigned to all sub tasks under **Interiors**
- CON** is assigned to all sub tasks to all **FRP** tasks  
(Tip: Right click in task list and select **Find Task...** (or **CTRL F**). Type **FRP**, then **Find All**)
- EXT** is assigned to all sub tasks under **Site**
- STE** is assigned to all sub tasks under **Structure**

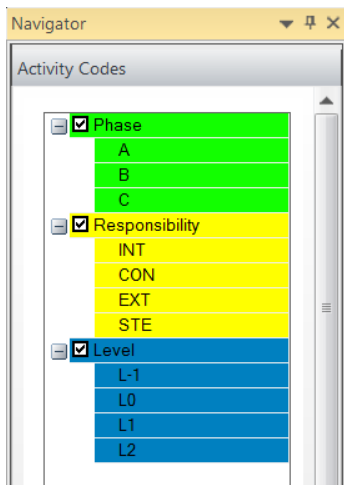
### 3. Assign all the code values under **Level** as follow:

- L-1** is assigned to all sub tasks under **Site & Foundations**
- L0** is assigned to all sub tasks under **Interiors>Level 00, Structure Level 00-01**
- L1** is assigned to all sub tasks under **Interiors>Level 01 and Structure Level 01-02**
- L2** is assigned to all sub tasks under **Interiors>Level 02**

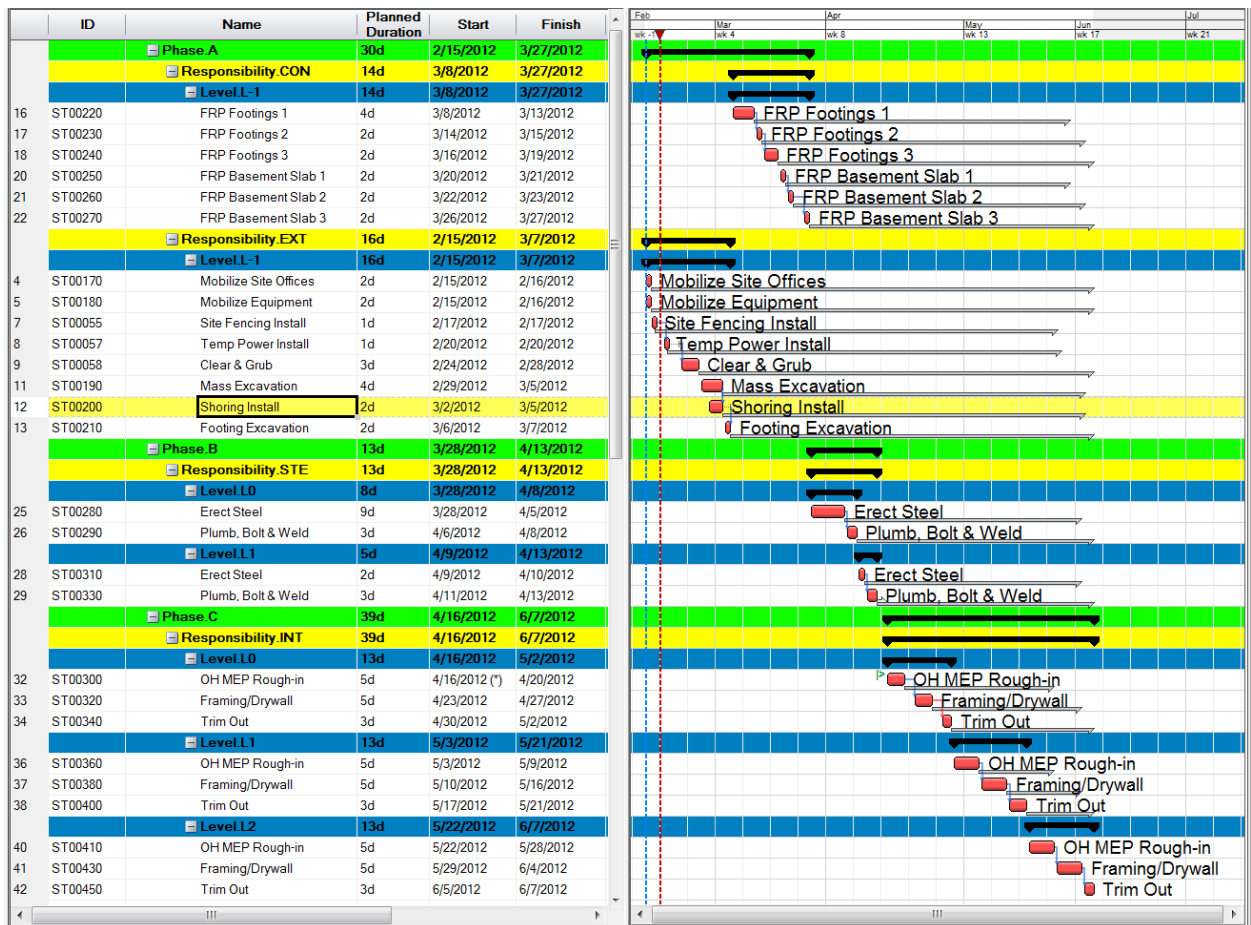
### 4. To check the codes assigned to a task, select a task, for example **Shoring Install**. Then open **Task Properties>Codes**. The Code and associated code value will be shown in the dialog box as shown

Activity Code	Code Value	Description
Phase	A	
Responsi...	EXT	
Level	L-1	

- To view the Gantt Chart as Activity Codes open the **View Tab** select **Gantt Mode** > **Activity Code**.
- Then under **Navigator**>**Activity Codes**, check the codes you want to organize by




- The Gantt chart should be organized as shown



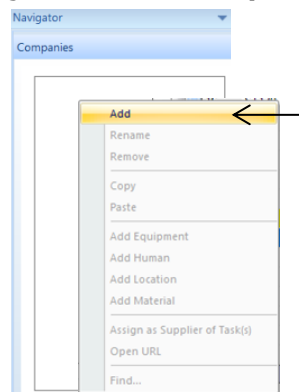
## 10. Resources

Resources are used to track Equipment, Labour, Material, and Costs by assigning them to individual tasks. There are 4 types of Resources available in Synchro – Equipment, Human, Location, and Material. Resources belong to Companies, therefore the company should exist in Synchro before a resource is created.

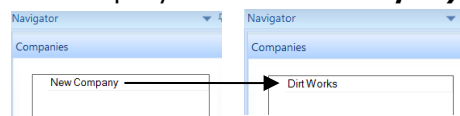
### 10.1. Companies

Companies are responsible for providing resources for the project tasks. Companies can be added by opening the  **Companies Tab** in the **Navigator** Window.

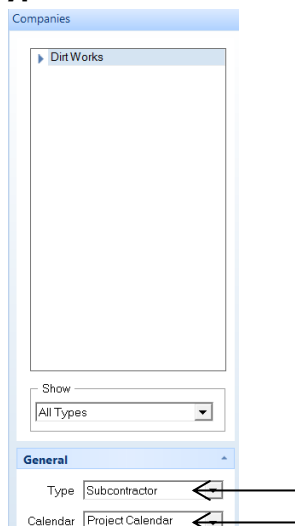
1. Right-click in the **Companies list panel** and select **Add** from the context menu.



2. A new company named **New Company** will be added. Rename **New Company** to **Dirt Works**



3. Highlight company **Dirt Works**. Open up **Companies > General** Tab and change the **Type** to **Subcontractor**. Leave the **Calendar** as **Project Calendar**



*These companies can be colour coded if needed. There is also a Contact Tab below the General Tab that should be filled in with Company Specifics. This will not be done in this training.*

4. Repeat steps 1 – 3 and add the four additional companies: **Concrete**; **Steel**; **Drywall**; and **MEP** in the same manner

**Note:** A Company can be deleted by highlighting the company and typing the delete key. A dialogue box will open confirming that the Company is to be deleted

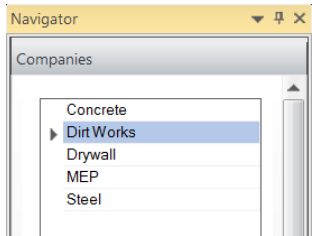
## 10.2. Companies & Resources

Resources need to be added for a Company prior to it being assigned to an individual task

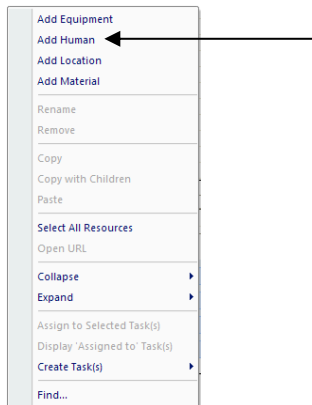
1. Select the **Resource Tab** on the bottom of the Gantt screen to open the Resource Screen
2. In the Resource Screen select the top name cell

	Name	Type	Supplier	Calendar

3. In the **Company list panel** highlight the company **Dirt Works**.



4. With **Dirt Works** highlighted, right click in the **Resource Screen** name cell to open the context menu. Select **Add Human**



5. A "**New Human Resource**" will appear in the name cell. Rename this to **Excavation Crew**
6. Repeat steps 1 – 5 and add crews for the four additional companies - **Concrete; Steel; Drywall; and MEP**, in the same manner. If you've accidentally added a Resource with the wrong Company or need to edit the company later, you can always change the Company by selecting from the drop-down list in the Supplier column of the **Resources** window.
7. An Equipment resource will also be added for the site work. In the **Company Panel** highlight the company **Dirt Works**, right click in the **Resource Screen** name cell to open the context menu and Select **Add Equipment**
8. A "**New Equipment Resource**" will appear in the name cell. Rename this to **Backhoe**.
9. Once the new resources have been added the Resource Screen should look as follows

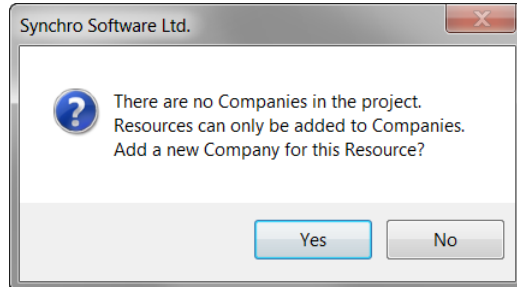
	Name	Type	Supplier	Calendar
	<b>Equipment Resources</b>			
1	Backhoe	Equipment	Dirt Works	Project Ca...
	<b>Human Resources</b>			
3	Concrete Crew	Human	Concrete	Project Ca...
4	Drywall Crew	Human	Drywall	Project Ca...
5	Excavation Crew	Human	Dirt Works	Project Ca...
6	MEP Crew	Human	MEP	Project Ca...
7	Steel Crew	Human	Steel	Project Ca...

**Note:** Material and Location resources can also be added if needed. They will not be added for this training

### 10.3. Resources not Assigned to a Company

If companies have not been set up in Synchro and you right click in the Resource Screen Name cell to add a resource, the context menu will open

When you select **Add Human** the following message will appear



Select **Yes**. A New Company will be added to the Company list panel along with a New Human Resource in the Resource screen. Both of these can be renamed

## 10.4. Sub-Resources

There are times when a resource needs to be broken down into sub resources. This is the case for several of the resources added above. For example, the concrete crew is comprised of carpenters, labourers, iron workers, and finishers. To track the work each discipline performs on a task the **Concrete Crew** resource must be broken down into sub resources

1. Select **Concrete Crew** in the **Resource Screen**

	Name	Type	Supplier	Calendar
	<b>Equipment Resources</b>			
1	Backhoe	Equipment	Dirt Works	Project Ca...
	<b>Human Resources</b>			
3	<b>Concrete Crew</b>	Human	Concrete	Project Ca...
4	Drywall Crew	Human	Drywall	Project Ca...
5	Excavation Crew	Human	Dirt Works	Project Ca...
6	MEP Crew	Human	MEP	Project Ca...
7	Steel Crew	Human	Steel	Project Ca...

2. Right Click to open the context menu and select **Add Human**



3. A **New Human Resource** will be added below **Concrete Crew** and it will be indented. Rename this human resource to **Carpenter**

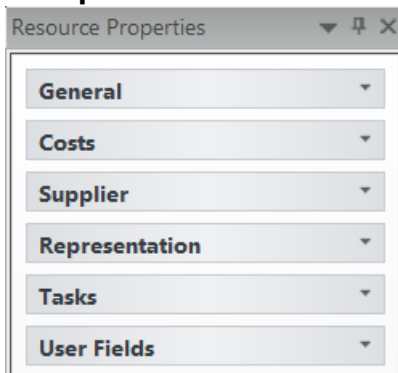
	Name	Type	Supplier	Calendar
	<b>Equipment Resources</b>			
1	Backhoe	Equipment	Dirt Works	Project Ca...
	<b>Human Resources</b>			
3	Concrete Crew	Human	Concrete	Project Ca...
4	<b>New Human Resource</b>	Human	Concrete	Project Ca...
5	Drywall Crew	Human	Drywall	Project Ca...
6	Excavation Crew	Human	Dirt Works	Project Ca...
7	MEP Crew	Human	MEP	Project Ca...
8	Steel Crew	Human	Steel	Project Ca...

4. Again, highlight **Concrete Crew** in the **Resource Screen**
5. Right Click to open the context menu and select **Add Human**
6. A second **New Human Resource** will be added below **Concrete Crew** and it will be indented. Rename this human resource to **Labourer**
7. Repeat this process to add **Iron Worker** and **Finisher** under the **Concrete Crew**. Once all the sub-resources have been added the **Resource Screen** should look as follows

	Name	Type	Supplier	Calendar
	<b>Equipment Resources</b>			
1	Backhoe	Equipment	Dirt Works	Project Ca...
	<b>Human Resources</b>			
3	Concrete Crew	Human	Concrete	Project Ca...
4	Carpenter	Human	Concrete	Project Ca...
5	Finisher	Human	Concrete	Project Ca...
6	Iron Worker	Human	Concrete	Project Ca...
7	Labourer	Human	Concrete	Project Ca...
8	Drywall Crew	Human	Drywall	Project Ca...
9	Excavation Crew	Human	Dirt Works	Project Ca...
10	MEP Crew	Human	MEP	Project Ca...
11	Steel Crew	Human	Steel	Project Ca...

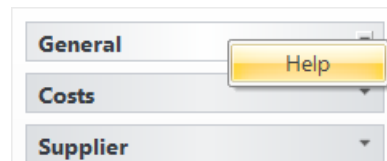
## 10.5. Assigning Resource Properties

Each "Task" Resource has its own set of properties that are defined under **Resource Properties**.



- The **General Tab** reflects the basic resource attributes
- The **Cost Tab** defines the Use Rate and Cost of a resource
- The **Supplier Tab** provides a summary of the contact information
- The **Representation Tab** gives a summary of the sub-resources
- The **Task Tab** shows the list of the tasks the resource is assigned to
- The **User Field Tab** holds custom resource information from imported files

*To learn more about each of the resource property tabs, place your cursor on the tab and right click to access the help menu*




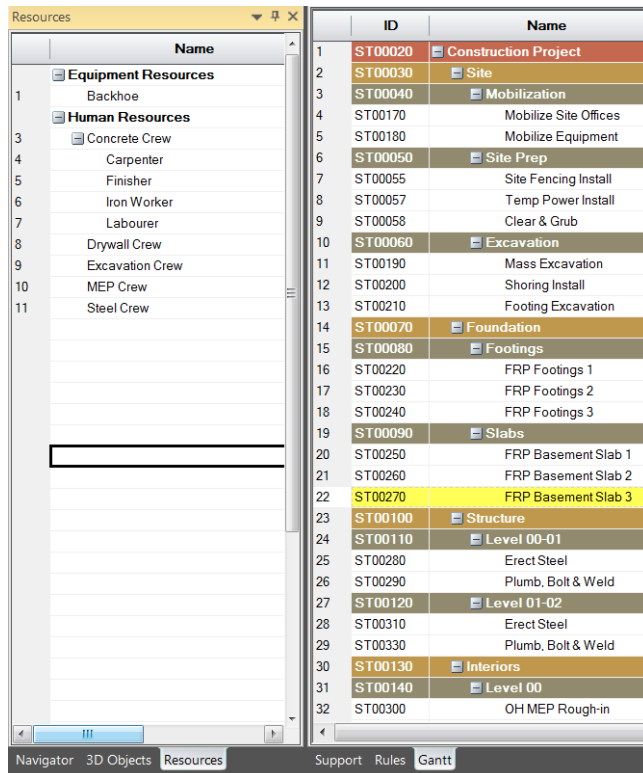
Some of the selections under a tab are only available to a certain types of Task resource. For example, under the **General Tab**, the **Unit Type** can only be defined for a Material or a Location resource. When either Material or Location is the Resource Type, a drop down menu will become available for the **Unit Type** selection. If a resource property under any tab can not be modified it will be greyed out.

For this training we will concentrate on assigning the Resource Cost properties associated with the **Cost Tab** in Section 11

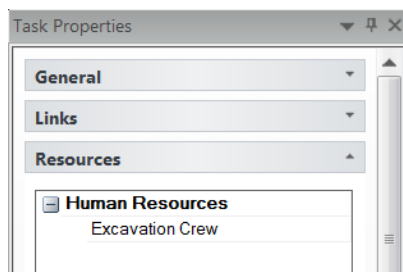
## 10.6. Assigning Resources to Individual Tasks

The easiest way to assign a resource to a task is to have both the **Gantt Chart Task List** open as well as the **Resources** window. This allows you to drag and drop resources to a task or drag and drop tasks to a resource. For this tutorial it will be easier to have the tasks sorted by WBS.

1. Open the **View Tab** and select **Gantt Mode** >  **WBS**
2. **Left Click** the **Resource** window tab and drag it to the right so it is unpinned
3. Drag and drop it onto the Navigator so it is docked on the left of the screen.



4. Highlight the tasks **Clear & Grub** and **Site Fencing Install** on the **Task List**
5. Highlight **Excavation Crew** on the **Resource Screen**
6. Drag the **Excavation Crew** onto either of the two highlighted tasks - **Clear & Grub** or **Site Fencing Install**. This will be assigned to all the highlighted tasks.
7. Open **Task Properties** > **Resources** and verify the **Excavation Crew** resource has been added for both tasks - **Clear & Grub** and **Site Fencing Install**




8. Highlight the task **Temp Power Install** on the **Task List**



9. Highlight the **MEP Crew** on the **Resource Screen** and drag it onto the highlighted **Temp Power Install** task
10. Verify that the **MEP Crew** resource has been added to the **Temp Power Install** task
11. Highlight the tasks - **Mass Excavation**; **Footing Excavation**; and **Shoring Install** on the **Task List**
12. Highlight **Excavation Crew** on the **Resource Screen** and drag onto the three highlighted tasks
13. Do the same for the **Backhoe** Equipment resource
14. Assign resources to the remaining tasks
  - Assign the **Concrete Crew** to all three **FRP Footing** tasks and all three **FRP Basement Slab** tasks
  - Assign the **Steel Crew** to the **Erect Steel** tasks and the **Plumb, Bolt, & Weld** tasks
  - Assign the **Drywall Crew** to the **Framing/Drywall** tasks
  - Assign the **MEP Crew** to the **OH MEP Rough-in** tasks and the **Trim Out** tasks
15. You can add the **Resources** column to the **Task List** to verify that all resources have been assigned to the appropriate tasks at a glance

## 11. Task Costs

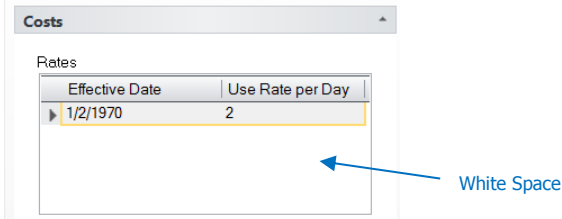
Costs can be assigned to each task. This is either done by assigning cost to the **Resource**, thus a task's cost is computed based on resource utilization, or by assigning a **Direct** cost to a task.

First check the correct currency is selected. In the **Home Tab** or on the **Quick Access Toolbar**, select  **Options > General > Currency**. Select the desired currency and formats.

### 11.1. Assigning Cost Using Resource Properties

To assigning a cost via the **Resource**, use the **Cost** tab under the **Resource Properties** window to define the resource utilization over a period of time as well as the type of cost.

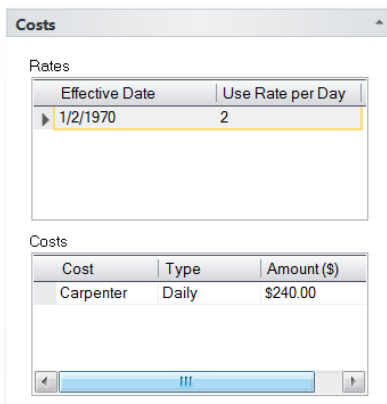
1. Open the **Resources** screen
2. Highlight **Carpenter** on the **Resource** screen
3. Open **Resource Properties>Costs**
4. Under the **Rates** window select the rate and modify the effective **Use Rate per Day** to 2 since we will assume 2 **Carpenters** are on the **Concrete Crew**. Then **Click** in the white space below to set, leaving the Effective Date as shown



*If the Use Rate would change between time periods, another time period would need to be added and the Use Rate per Day would be defined for that time period.*


The **Effective Date** determines the start date of the **Use Rate**. The **Effective Date** can be any date before the resource utilization (it is automatically set to a date well in the past). The **Use Rate** defines the utilization of the resource per day from the date of the specified **Effective Date**. The **Use Rate** may refer to men per day (man days), man-hours per day, or other company specified units. Man days are being used for the training.

5. While **Carpenter** is still selected on the **Resource Screen**, highlight the **Use Rate** line
6. **Right Click** in the **Costs** window and select **Add**
7. A **New cost** will appear that can be defined for the Carpenter Resource
8. Modify the **New Cost** to **Carpenter**, change the **Type** to **Daily**, and put in **\$240** under the **Amount**



9. Highlight **Finisher** on the **Resource Screen**

10. Under the **Rates** window modify the effective **Use Rate per Day** to 1 since we will assume 1 **Finisher** is on the **Concrete Crew**. Click in the white space below to set. Leave the Effective Date as shown
11. While **Finisher** is still selected on the **Resource Screen**, highlight the **Use Rate** line
12. **Right Click** in the **Costs** window and select **Add**
13. A **New cost** will appear that can be defined for the Finisher Resource
14. Modify **New Cost** to **Finisher**, change the **Type** to **Daily**, and put in **\$280** for the **Amount**
15. Using the same method as above assign the following daily **User Rate per Day**, cost **Type**, and **Amount** to the remaining members of the concrete crew as noted below:
  - **Iron Worker** - **Use Rate per Day** = 2; **Type** = Daily ; and **Amount** = \$320
  - **Labourer** - **Use Rate per Day** = 2; **Type** = Daily; and **Amount** = \$200

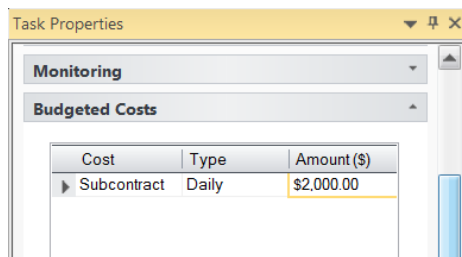
**Note:** Under **Rates**, there is a calculator icon  to the right on the **Use Rate per Day** cell that can be opened. This enables the use rate per day to be calculated. This is especially helpful if you are calculating the use rate per day in manhours. There is also a calculator icon to the right on **Amount(\$)** cell under **Costs**.

## 11.2. Assigning Direct Task Costs

Assigning a Direct Cost to a task is accomplished by adding the cost under **Task Properties > Budgeted Costs**. The Direct Costs will show up in the Cost Totals under **Other** whereas the resource utilization costs will be shown under **Resource**. A direct cost can be assigned as a daily cost thus the total cost will be based on the duration or a fixed cost which is the total cost no matter the duration of the task. A task may have more than one assigned direct cost.

### 11.2.1. Assigning a Direct Daily Cost to a Task

1. Open the **Gantt** Screen
2. Open **Task Properties > Budgeted Costs Tab** and the **Task Properties > Cost Totals Tab**.
3. Highlight the task **Clear & Grub**. Assume for the purposes of this training that this task is going to be subcontracted out for a direct daily unit price.
4. Under **Budgeted Costs**, right click in the cost window
5. Select **Add** and a "New Cost" item will appear
6. Rename the "New Cost" to **Subcontract**
7. Modify the **Type** to **Daily** under the drop down menu
8. Change the amount from **\$0** to **\$2000**



9. Under **Task Properties>Cost Totals** you will see that the **Cost** summary window, the **Budgeted Totals** window - **Other** and **Total** reflect \$6000. This was calculated based on the task's daily direct cost of \$2000 and the 3 day task duration. The Cost Total fields have been populated as shown below

Cost	From	Type	Amount (\$)	Units total	Amount total (\$)
Subcontract	Direct	Daily	\$2,000.00	3.00	\$6,000.00

Budgeted Totals	
<b>Resource</b>	
Human	\$0.00
Equipment	\$0.00
Location	\$0.00
Material	\$0.00
<b>Risk</b>	
Mitigated	\$0.00
Unmitigated	\$0.00
<b>Other</b>	
Direct	\$6,000.00
<b>Total</b>	\$6,000.00

### 11.2.2. Assigning a Direct Daily Cost to Multiple Tasks

When multiple tasks are assigned the same cost name, type and amount you do not have to assign the costs one at a time, you can assign the costs once to the entire group. The following tasks are also Subcontract with the same Daily fixed amount as shown

- **Site Fencing Install** – Amount \$2000
- **Mass Excavation** – Amount \$2000
- **Shoring Install** – Amount \$2000
- **Footing Excavation** – Amount \$2000

1. Highlight the four tasks above using Ctrl to select the tasks

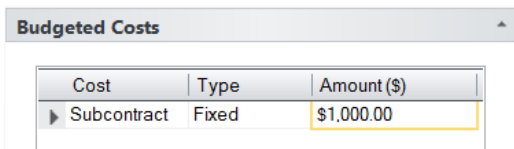
Site Prep	8d	2/17/2012	2/28/2012
Site Fencing Install	1d	2/17/2012	2/17/2012
Temp Power Install	1d	2/20/2012	2/20/2012
Clear & Grub	3d	2/24/2012	2/28/2012
Excavation	6d	2/29/2012	3/7/2012
Mass Excavation	4d	2/29/2012	3/5/2012
Shoring Install	2d	3/2/2012	3/5/2012
Footing Excavation	2d	3/6/2012	3/7/2012

2. Under **Budgeted Costs (summary)**, right click in the cost window. Note: when multiple tasks are selected **Budgeted Costs** is revised to **Budgeted Costs (summary)**
3. Select **Add** and a "New Cost" item will appear
4. Rename the "New Cost" to **Subcontract**
5. Modify the **Type** to **Daily** under the drop down menu
6. Change the amount from **\$0** to **\$2000**
7. Verify the added costs on each task under **Task Properties>Cost Totals**. You will see that in the **Cost Totals** summary window, the **Budgeted Totals> Other** and **Total** reflect the appropriate amount for each task based on the task's duration.

### 11.2.3. Assigning a Direct Fixed Cost to a Task

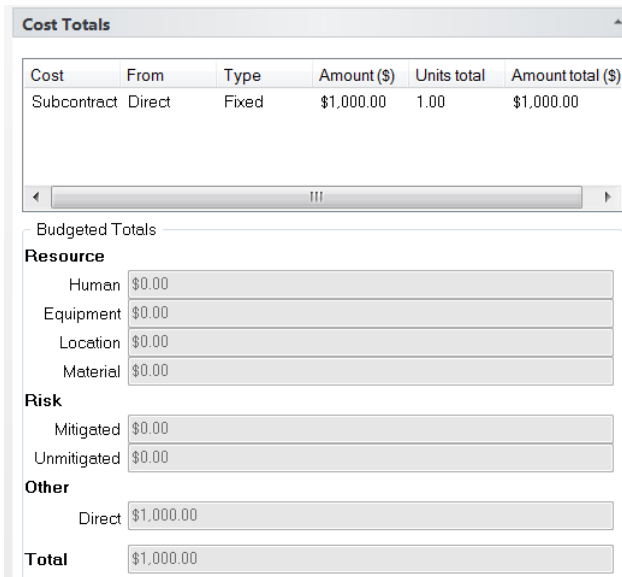
A direct cost can be assigned as a fixed cost. The Fixed cost is the total lump sum cost for that task regardless of task duration.

1. Highlight the task **Temp Power Install**. Assume for the purposes of this training that this task is going to be subcontracted out for a fixed lump sum price.
2. Under **Budgeted Costs**, right click in the cost window
3. Select **Add** and a **"New Cost"** item will appear
4. Rename the **"New Cost"** to **Subcontract**
5. Modify the **Type** to **Fixed** under the drop down menu
6. Change the amount from **\$0** to **\$1000**



Cost	Type	Amount (\$)
Subcontract	Fixed	\$1,000.00

7. Under **Task Properties>Cost Totals** you will see that the **Cost** summary window, the **Budgeted Totals** window - **Other** and **Total** reflect \$1000. The Cost Total fields have been populated as shown below



Cost	From	Type	Amount (\$)	Units total	Amount total (\$)
Subcontract	Direct	Fixed	\$1,000.00	1.00	\$1,000.00

Budgeted Totals

**Resource**

Human	\$0.00
Equipment	\$0.00
Location	\$0.00
Material	\$0.00

**Risk**

Mitigated	\$0.00
Unmitigated	\$0.00

**Other**

Direct	\$1,000.00
--------	------------

**Total**

Total	\$1,000.00
-------	------------

#### 11.2.4. Assigning a Direct Fixed Cost to Multiple Tasks

When multiple tasks are assigned the same cost name, type and amount, you do not have to assign the costs one at a time, you can assign the costs once to the entire group.

1. Select the tasks ***Erect Steel (Level 00-01 & Level 01-02)*** using the Ctrl key
2. Under **Budgeted Costs**, right click in the cost window
3. Select **Add** and a **"New Cost"** item will appear
4. Rename the **"New Cost"** to ***Subcontract***
5. Modify the **Type** to ***Fixed*** under the drop down menu
6. Change the amount from **\$0** to ***\$8000***
7. Assign a fixed cost to the following tasks using the amounts shown. Utilize the method for assigning costs to multiple tasks grouping the tasks with the same costs. Make sure to assign the Cost to "Subcontract" and assign the Type to "Fixed".
  - ***Plumb, Bolt, and Weld (Level 00-01 & Level 01-02)*** – Amount \$3000
  - ***Framing/Drywall (Levels 00,01, & 02)*** – Amount \$1000
  - ***OH MEP Rough-in (Levels 00,01, & 02)***– Amount \$1000
  - ***Trim Out (Levels 00,01, & 02)***– Amount \$1000

### 11.2.5. Assigning Additional Cost to a Task

Tasks can be assigned **Direct** costs in addition to **Resource** Costs.

- When you select any of the FRP Footing tasks or the FRP Basement Slab tasks you will see the **Resource** under the **Budgeted Totals** already has costs assigned based on the resources assigned. The **FRP Footings 1** task is shown

Cost	From	Type	Amount (\$)	Units total	Amount total
Labourer	Human	Daily	\$200.00	4.00	\$800.00
Iron Worker	Human	Daily	\$320.00	4.00	\$1,280.00
Finisher	Human	Daily	\$280.00	4.00	\$1,120.00
Carpenter	Human	Daily	\$240.00	4.00	\$960.00

Budgeted Totals	
<b>Resource</b>	
Human	\$4,160.00
Equipment	\$0.00
Location	\$0.00
Material	\$0.00
<b>Risk</b>	
Mitigated	\$0.00
Unmitigated	\$0.00
<b>Other</b>	
Direct	\$0.00
<b>Total</b>	\$4,160.00

- Review the **Resource** costs assigned to the other **FRP Footing** tasks and the **FRP Basement Slab** tasks
- Add **Direct** material costs for the three FRP Footing Tasks. Highlight the three tasks as shown

Foundation
Footings
FRP Footings 1
FRP Footings 2
FRP Footings 3

- Under **Budgeted Costs**, right click in the cost window
- Select **Add** and a **"New Cost"** item will appear
- Rename the **"New Cost"** to **Material**
- Modify the **Type** to **Fixed** under the drop down menu
- Change the amount from **\$0** to **\$1000**
- Verify the added costs on the three tasks under **Task Properties>Cost Totals**. For task **FRP Footings 1**, the **Cost** summary window, the **Budgeted Totals** window - **Other** should reflect \$1000 and **Total** should reflect the Resource Costs plus the Direct Costs - \$5,160 as shown

Cost	From	Type	Amount (\$)	Units total	Amount total
Finisher	Human	Daily	\$280.00	4.00	\$1,120.00
Carpenter	Human	Daily	\$240.00	4.00	\$960.00
Material	Direct	Fixed	\$1,000.00	1.00	\$1,000.00

Budgeted Totals	
<b>Resource</b>	
Human	\$4,160.00
Equipment	\$0.00
Location	\$0.00
Material	\$0.00
<b>Risk</b>	
Mitigated	\$0.00
Unmitigated	\$0.00
<b>Other</b>	
Direct	\$1,000.00
<b>Total</b>	\$5,160.00



### 11.3. Viewing the Project Budgeted Costs

Cost can be viewed by summary band level or at the project level

1. In Task List select the **Construction Project** summary task to see the total cost of all the tasks
2. All the different costs are reflected under **Task Properties>Cost Totals** in the **Cost** summary window. You will need to scroll down to see all the assigned costs.

The **Budgeted Totals** window reflects the total **Resource** cost, total **Direct** cost and the **Total** cost as shown below

Cost	From	Type	Amount (\$)	Units total	Amount total (\$)
Subcontract	Direct	Fixed	\$8,000.00	1.00	\$8,000.00
Labourer	Human	Daily	\$200.00	2.00	\$400.00
Iron Worker	Human	Daily	\$320.00	2.00	\$640.00
Finisher	Human	Daily	\$280.00	2.00	\$560.00
Carpenter	Human	Daily	\$240.00	2.00	\$480.00

Budgeted Totals	
<b>Resource</b>	
Human	\$14,560.00
Equipment	\$0.00
Location	\$0.00
Material	\$0.00
<b>Risk</b>	
Mitigated	\$0.00
Unmitigated	\$0.00
<b>Other</b>	
Direct	\$59,000.00
<b>Total</b>	\$73,560.00





3. To review the Total Project Budgets open **Navigator>Project>Costs**. You will see there are Budget Totals for both the **Resources Human - Costs** and the **Task Direct – Costs**

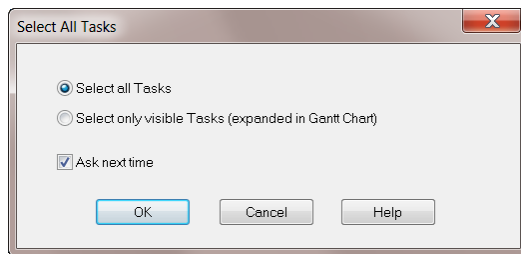
Budgeted Totals	
<b>Resources</b>	
Human	\$14,560.00
Equipment	\$0.00
Location	\$0.00
Material	\$0.00
<b>Risks</b>	
Mitigated	\$0.00
Unmitigated	\$0.00
<b>Tasks</b>	
Direct	\$59,000.00
<b>Total</b>	\$73,560.00

## 12. Baselines


A baseline is a snapshot in time that can be created to analyse “what-if” scenarios or compare planned against actual in Synchro. Baselines can be made up of all tasks or just a few tasks. It depends on what needs to be compared.

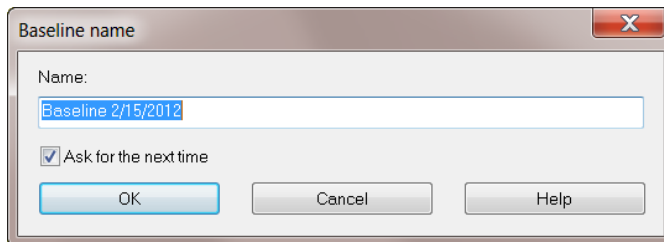
### 12.1. Create a Baseline Using the Task List

1. Make sure the Gantt View is set to WBS mode (**View>Gantt Mode>**  **WBS**)
2. Select the **Navigator>**  **Baselines** button and select **All** under **Show**
3. Right click within the task window and select  **Expand All** to make sure no tasks are summarized – all tasks are viewable
4. Right click in the Task List and then click  **Select All**
5. You will be presented with a **Select All Tasks** dialog window - Confirm that **Select all Tasks** is selected then click **OK**

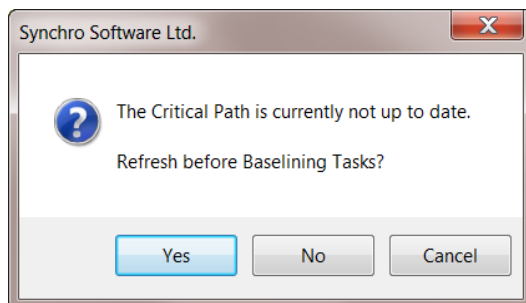


**Note:** If any WBS summaries are collapsed in the Gantt Chart, any of their children tasks will not be included in the Baseline when the “Select only visible Tasks” option is chosen

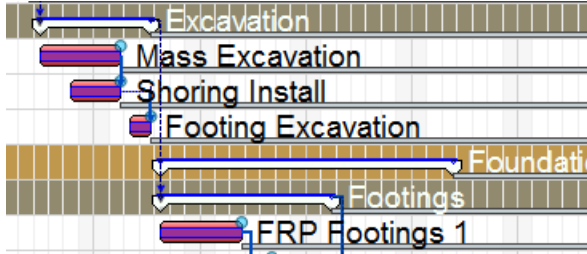
6. Right click again in the task window and select  **Baseline Selected Tasks**
7. The **Baseline name** window will be shown. The name automatically includes the Data Date. You can choose to leave the name as it is, or rename to something more clear. For this training, rename to Original Schedule and select OK.



8. When this message appears, select **Yes** to recalculate the critical path.



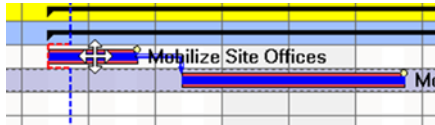
- This new baseline will show up in the **Baselines** window. The Baseline tasks are overlaid in blue on the current schedule, as shown below-



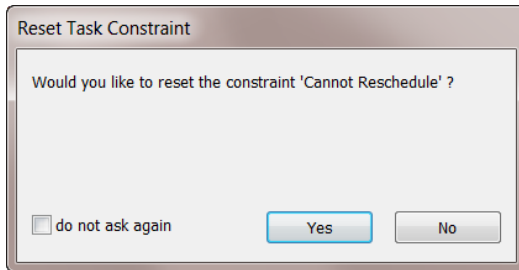
**Note:** The Baseline bar colour can be changed by opening **General** in the **Baselines Tab** and selecting a new colour

## 12.2. Baseline Comparison

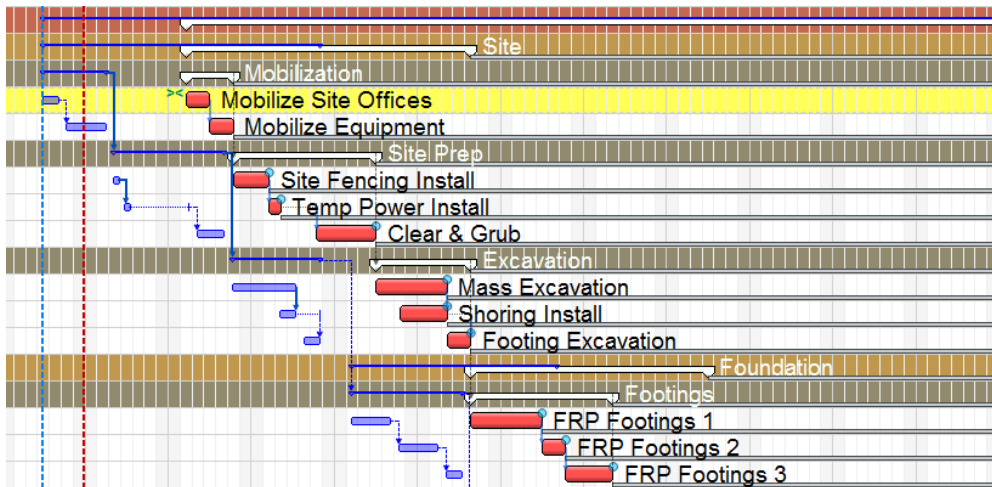
- Select task **Mobilize Site Offices** and hover over centre of the task bar until the arrows symbol appears



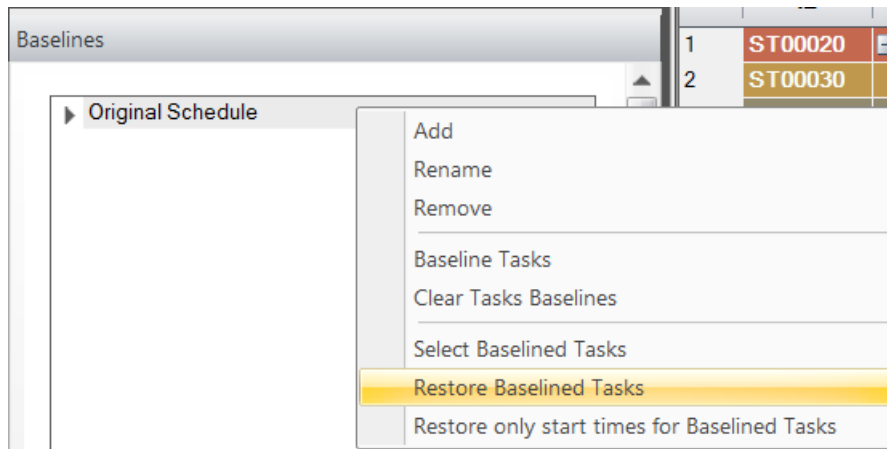
- For the purpose of this tutorial, hold down the left mouse button and move the task to a later date.
- When the following message appears select **Yes** to fix the start date



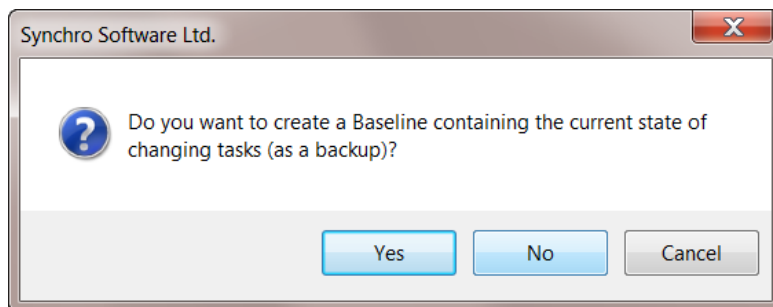
- Press **F9** on the keyboard to reschedule  
You will then see a clear difference between the original plan and the revised plan as the project is now later than initially planned-



5. Open **Customise Columns**. Add the **Baseline Start** column and the **Baseline Finish** column to compare the initial early dates to the current planned early dates
6. To restore the original dates, select the Baseline in **Navigator>Baselines**, right click and select **Restore Baselined Tasks**



7. The following dialog will appear. For this training, select **No** to continue without creating a Baseline of the current schedule.



**NOTE:** The **Restore Baselined Tasks** command will restore any tasks that were deleted since the baseline was created, delete any tasks created after the baseline was saved, and restore the start dates of all tasks as stored in the baseline. Tasks that were deleted will be restored beneath the last task in its WBS level - it will not have any logic or resource assignments (these will need to be restored manually)


The **Restore only start times for Baselined Tasks** command will update the current schedule with the start dates of the baselined tasks stored in the selected Baseline, but does not affect tasks that were deleted or created since the baseline was saved.

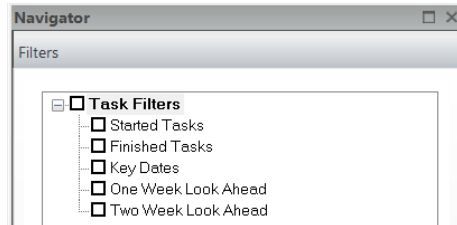
8. To turn off the Baseline, select the **Navigator>Baselines**, then un-highlight the selected Baseline

## 13. Task Filters

It is possible to hide elements of the project plan using pre-set filters or by creating custom filters.

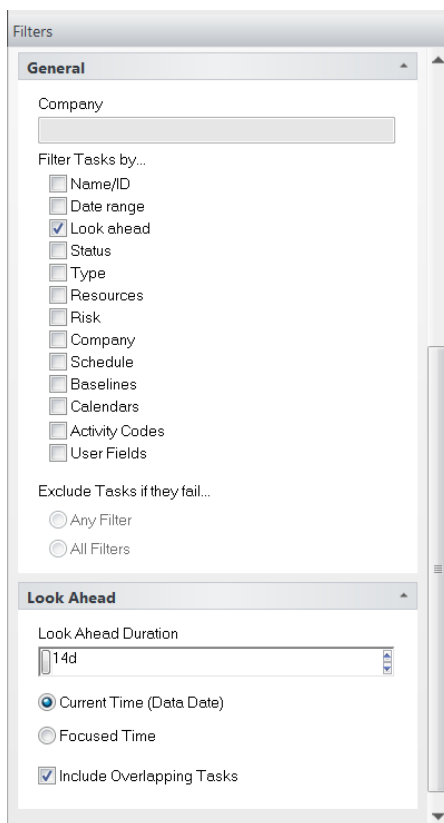
### 13.1. Applying Pre-set Task Filters

1. Select the **Navigator** >  **Filters Tab** and you will see there are five pre-set filter options.



*You may use any of these pre-set filters as they are or you can modify the filter criteria under the General and other tabs*

2. Deselect all current filters
3. Select the **Two Week Look Ahead** filter
4. Once the filter is selected the **General** the **Look Ahead** Tabs become available. Open both the **General** Tab and the **Look Ahead** Tab and you will see the following filter options:



*The selected filter options shown are specific for the Two Week Look Ahead Filter. To modify the current filter you may apply other filter options; choose to exclude tasks; or choose to modify the Look Ahead options*

- Leave the settings as they are and look at the Gantt chart. You will see the activities that are planned for the two weeks beyond the data date.



## 13.2. Creating & Applying New Task Filters

- Select the **Navigator** > **Filters Tab**
- Deselect all current filters
- Right click within the filters list panel and select **Add Task Filter** and rename it **Gantt Filter**
- Open the **General** tab below to view all filter options

**General**

Company

Filter Tasks by...

Name/ID

Date range

Look ahead

Status

Type

Resources

Risk

Company

Schedule

Baselines

Calendars

Activity Codes

User Fields

Exclude Tasks if they fail...

Any Filter

All Filters

When a **Filter Tasks By...** option is selected, specific tabs are shown beneath the **General** tab for that selection. You need to open these tabs to set specific criteria for your filter.

If you choose more than one **Filter Tasks By ...** selection, all the tabs related to the selections will be available.

When multiple filter selections are chosen you must also select **Any** or **All** under **Exclude Tasks if they fail...**

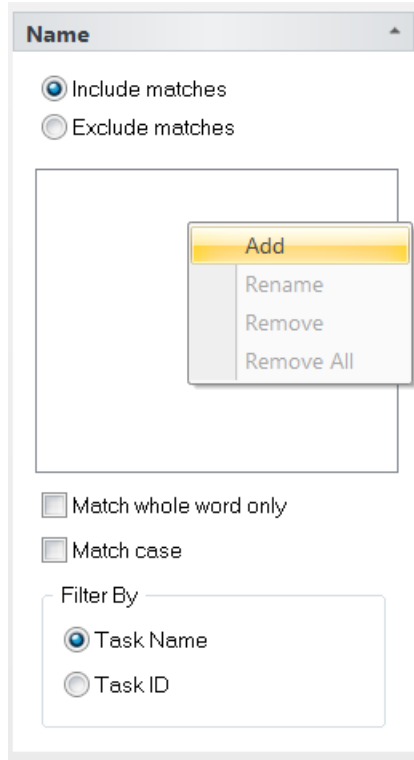
The **Any Filter** selection filters tasks that meet all of the selected filters and the **All Filters** selection filters tasks that meet one or more of the selected filters.

For training we will select one **Filter Task by..** selection at a time

### 13.2.1. Filtering Tasks by Name/ID or Risk

These filter selections allow you to filter tasks by character strings contained in the task Name, ID, or the risk Name. The filter method is similar for either the **Name/ID** or **Risk** filter selections. We will create a **Name/ID** filter selection using the steps below

1. Activate **Name/ID** (the Gantt Chart will clear)
2. Open **Name** tab that is now shown below the **General** tab
3. Right click in white window and select **Add**



*Note: Task Name is selected by default under Filter By. You can also choose to filter by Task ID*

4. **New Filter String** will appear- left click on this name (or right click) and rename as **FRP**  
You will only see the tasks which contain the name FRP

ID	Name	Planned Duration	Start	Finish
ST00020	Construction Project	82d	2/15/12	6/7/12
ST00070	Foundation	14d	3/12/12	3/29/12
ST00080	Footings	8d	3/12/12	3/21/12
ST00220	FRP Footings 1	4d	3/12/12	3/15/12
ST00230	FRP Footings 2	2d	3/16/12	3/19/12
ST00240	FRP Footings 3	2d	3/20/12	3/21/12
ST00090	Slabs	6d	3/22/12	3/29/12
ST00250	FRP Basement Slab 1	2d	3/22/12	3/23/12
ST00260	FRP Basement Slab 2	2d	3/26/12	3/27/12
ST00270	FRP Basement Slab 3	2d	3/28/12	3/29/12

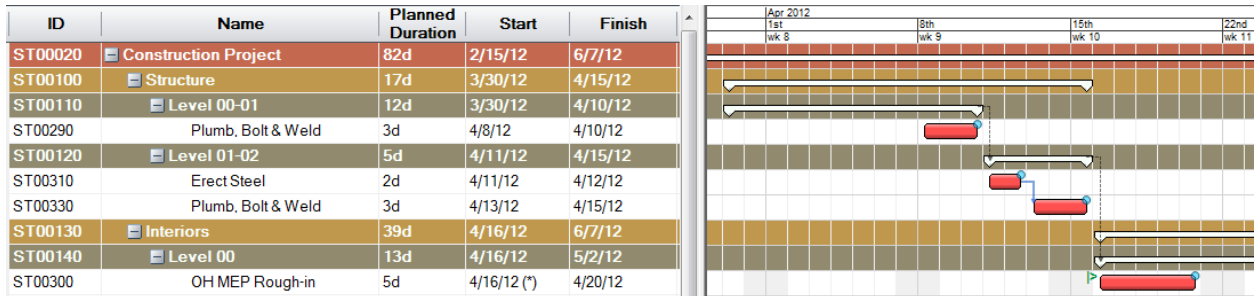
5. Deactivate **Name/ID** selection (all the tasks will appear in the Gantt Chart)

### 13.2.2. Filtering Tasks by Date Range

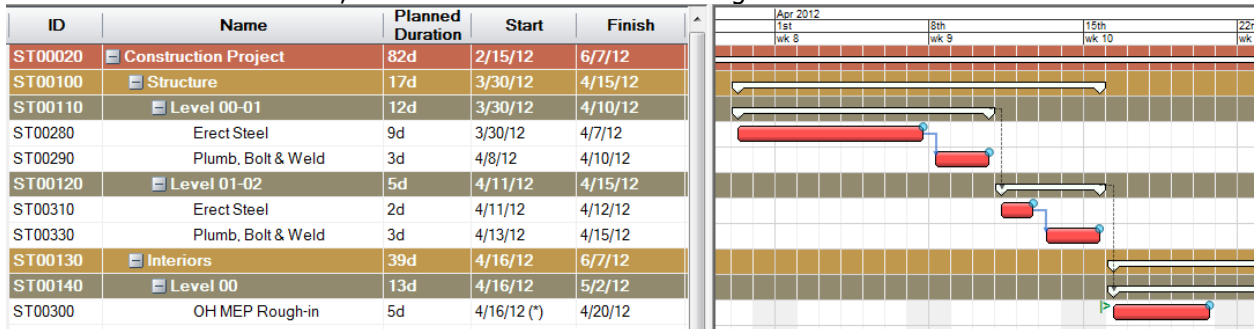
Filtering tasks by a date range allows you to focus on tasks that will take place or have taken place during a certain time period.

1. With **Gantt Filter** selected in **Navigator>Filters** with, Activate **Date Range** in the **General** tab (the Gantt Chart will clear)
2. Open the **Date Range** tab below
3. Change dates to suit your filter needs – for training use the date range shown

4. You will see the tasks that are planned to start and finish within those dates



5. Check the box to **Include Overlapping Tasks**. This option will include in the filter tasks that overlap either the **From** or **To** dates. In this case, the **Level 00-01 > Erect Steel** task starts before **From** date, but continues into the Date Range.



6. Deactivate **Date Range** selection (all the tasks will appear in the Gantt Chart)

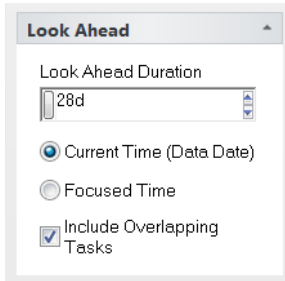
### 13.2.3. Look Ahead Filters

**Look Ahead** filters allow you to look at tasks that need to be worked in the next several weeks or months depending on the time frame chosen in the filter selection and update dynamically with the Data Date or Focus Time.

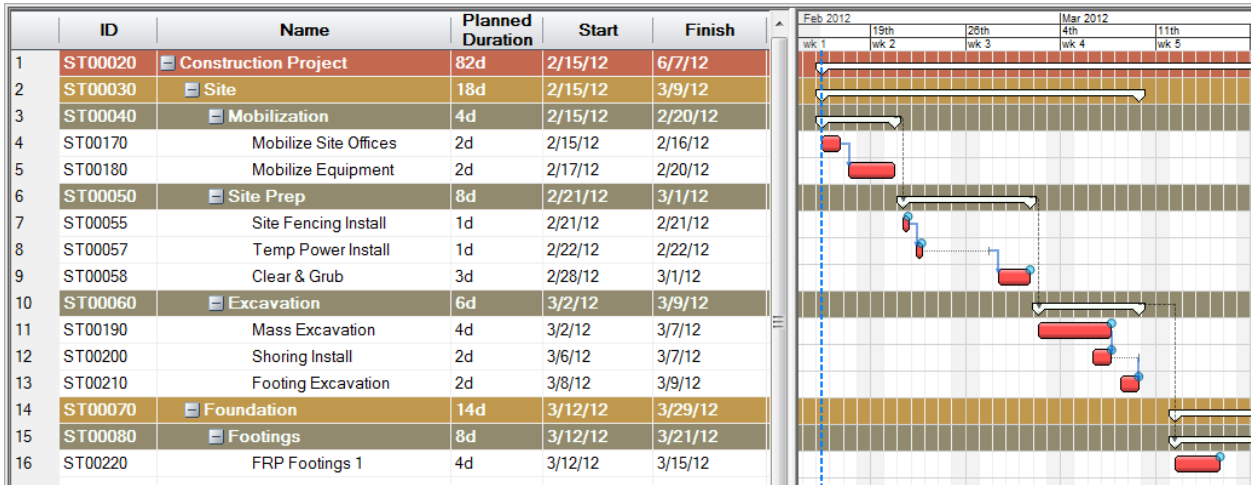
1. Activate **Look Ahead** in the General tab (the Gantt Chart selection will change)
2. Open the **Look Ahead** tab below




- With **Current Time (Data Date)** selected change **Look Ahead Duration** to **28d** –



- The Gantt Chart should display the following tasks:



- Change the **Look Ahead Duration** to **1d** (1 day)
- Enable **Focused Time**
- Open the **Play Tab**. Move the focus time to the start of the project by selecting  **Move to Start**.

When the focus time is moved in the Gantt Chart you will only see the tasks that are active within 1 day of where the Focus Time is located. This is based on the **Look Ahead Duration** specified. This can be particularly useful when exporting AVI videos with the Gantt Chart included, as the Gantt Chart does not scroll vertically in the animation

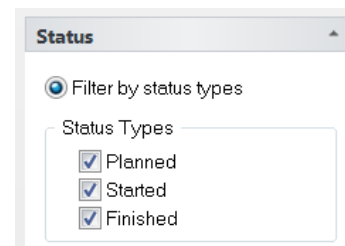
- Deactivate **Look Ahead**

### 13.2.4. Filtering Tasks by Status, Type, Company, Schedule, Baselines, or Calendars

These filtering selections all use a similar method in which you choose different attributes related to that specific filter selection. These attributes allow you to customise the chosen filter selection based on your needs. For this training the **Status** filter selection is shown below as an example.

- Activate the **Status** filter selection
- Open the **Status** tab below the **General** tab
- Disable the **Planned** box and you will see that the Gantt Chart will clear

Enable the selections desired to create the filter



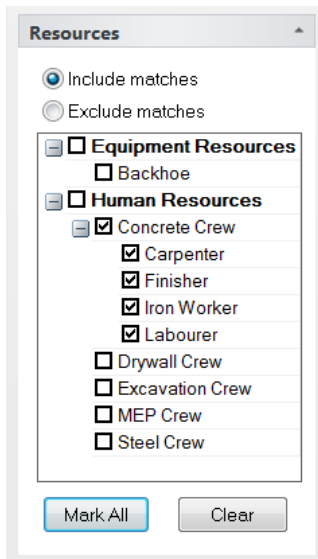
4. Deactivate **Status**

**13.2.5. Filtering Tasks by Resources**

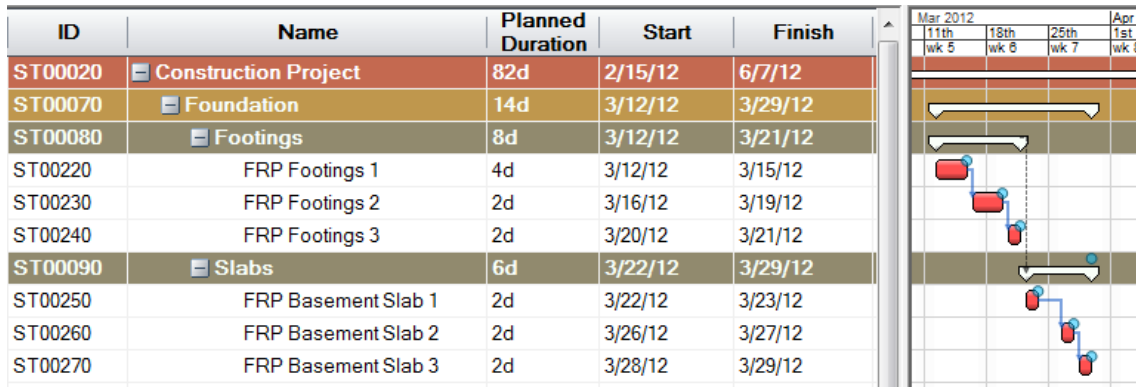
The **Resources** filtering selection allows you to choose one or multiple resources to filter tasks that can be viewed in the **Gantt** window. Along with viewing the tasks, you can also view the resource utilisation associated with the filtered tasks in the **Resource Utilisation** window.

The **Concrete Crew** will be filtered for this example

1. Activate **Resources** (the Gantt Chart will clear)
2. Open **Resources** tab below
3. Ensure **Include matches** is selected
4. Select the **Concrete Crew** resources as shown below

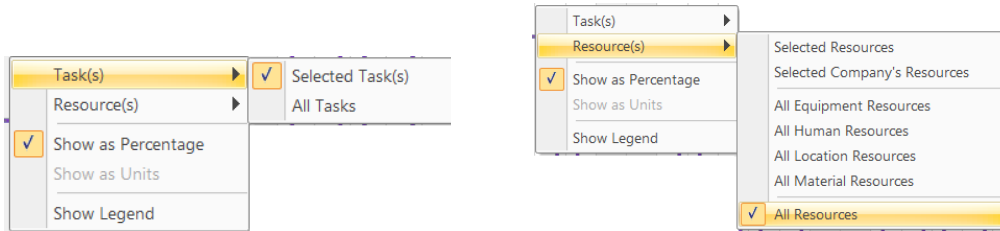


5. You will see just the tasks associated with the **Concrete Crew** resource as shown below

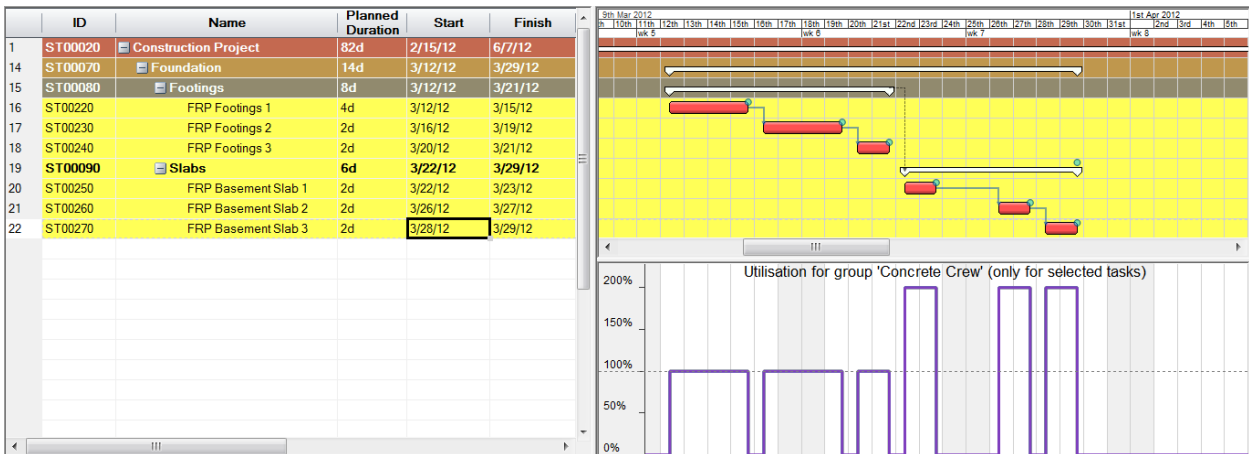


6. In the **Windows Tab** toggle on  **Resource Utilisation**. The **Resource Utilisation** window will open beneath the **Gantt Chart**

- Right click in the Resource Utilisation window and select **Task(s)>Selected Task(s)**. Right click again and select **Resource(s)>All Resources**

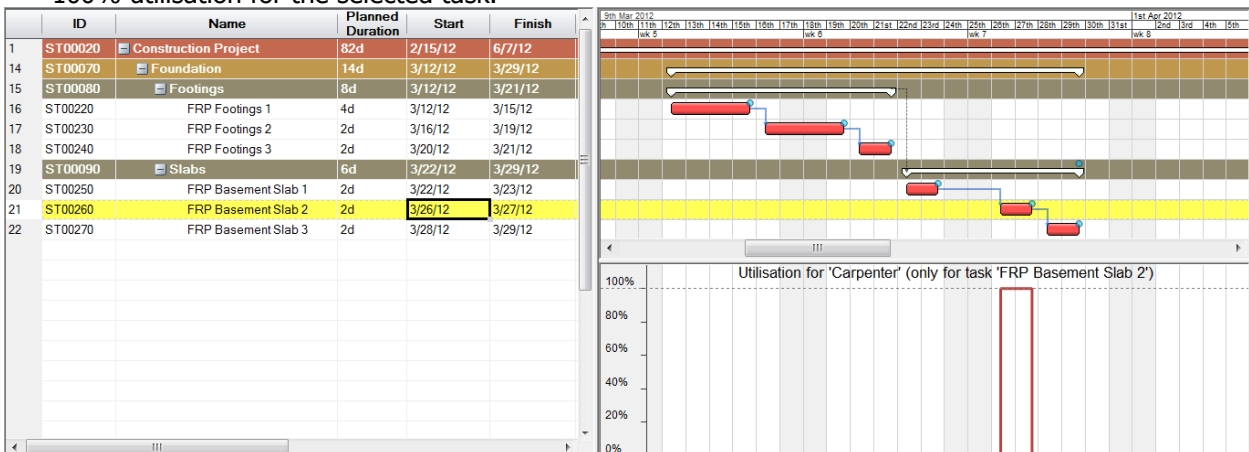


- By selecting (highlighting) one task you can view the **Resource Utilisation** for that particular task in the **Resource Utilisation** window. Highlight all the filtered tasks in the **Task List** and the planned **Resource Utilisation** will be shown for all the tasks as shown



You can see that the Concrete Crew is over-utilised (>100% Utilisation) for the **FRP Basement Slab** tasks.

- Select the task **FRP Basement Slab 1**. In Task Properties>Resources, select **Carpenter**. You can see that the Planned Utilisation is 2 Units.
- With **Carpenter** still selected, open **Resource Properties>General**. Under **Available Quantity**, you will see that there is only 1 Unit available at a time. Change this quantity to **2**. In the Resource Utilisation window you will see that the Carpenter resource now displays 100% utilisation for the selected task.



- Change the **Available Quantity** to **2** for the **Finisher, Iron Worker** and **Labourer** resources as well.

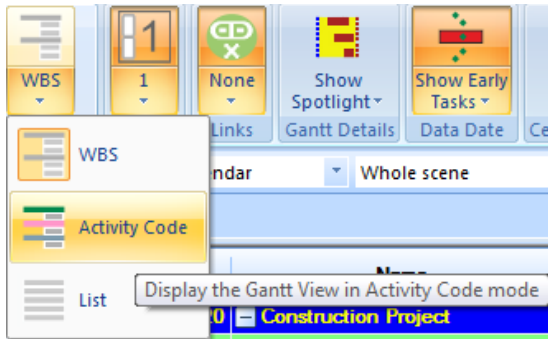
12. Deactivate **Resources** in **Navigator>Filters>General**
13. Turn off the **Resource Utilisation** window

### 13.2.6. Filtering Tasks by Activity Codes or User Fields

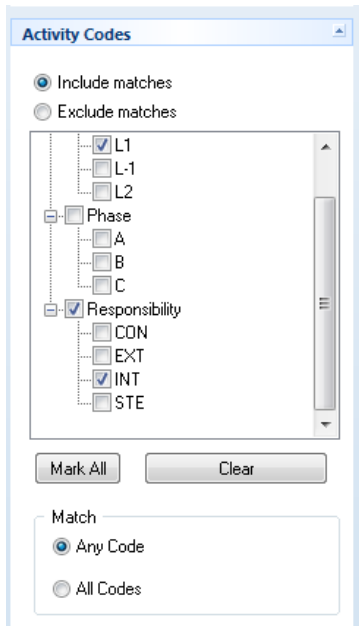
These filter selections allow you to filter tasks by the project Activity Code(s) assigned to the tasks or by User Field(s) assigned to the tasks. Similar methods are used to select the Activity Code(s) or User Field(s) related to that specific filter selection to filter the data needed. The Activity Codes filter selection is shown below as an example.

The **Gantt Window** will need to be viewed in the **Activity Code** mode for this filter selection

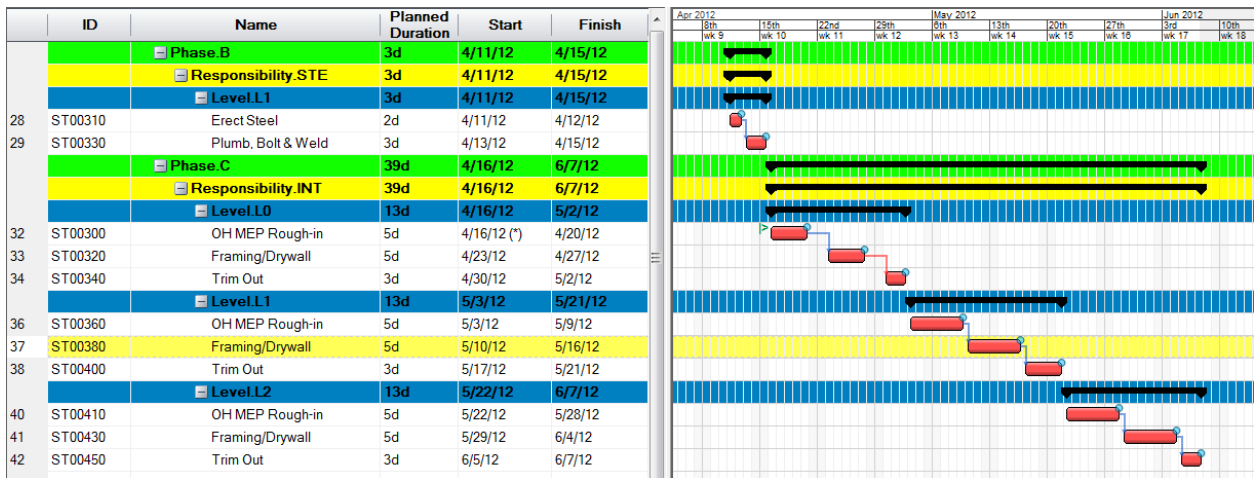
1. Select the **View Tab > Gantt Mode**.
2. Use the drop down to select the **Activity Code** mode




3. Select the **Navigator> Filters Tab**
4. With the **Gantt Filter** selected, activate **Filter Tasks by... Activity Code** in the **General** tab
5. Open **Activity Codes** Tab below in **Filters**
6. Select **Include matches**
7. Enable **Level L1** and **Responsibly INT**
8. Select **Match - Any Code**



9. The Gantt Chart result will be as shown below




10. Deactivate the **Gantt Filter** so all activities are visible in the Gantt Chart

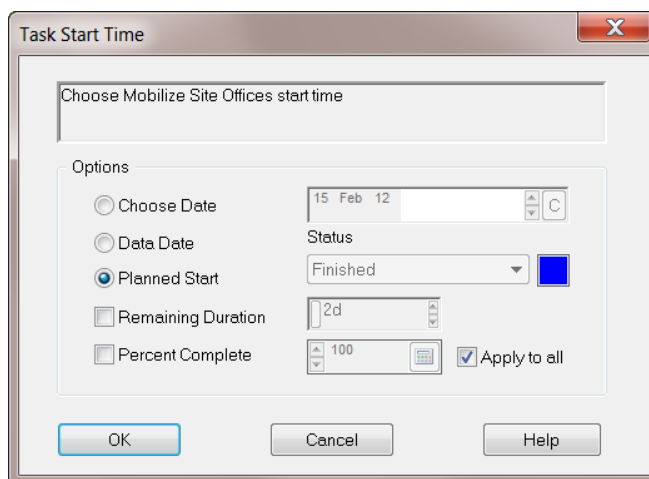
11. Open the **View Tab** and select **Gantt Mode** >  **WBS**

## 14. Schedule Updating & Monitoring

### 14.1. Updating Tasks

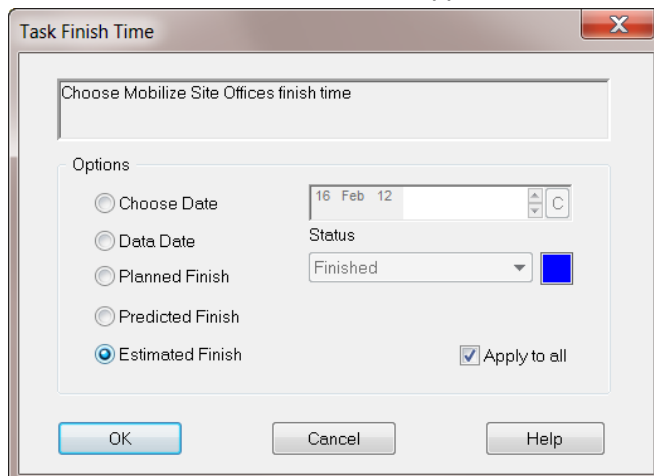
For this training we are going to update the schedule. The progress data date for the update will be situated part way through the duration of task - **Level 00-01 Erect Steel**

1. Select **Navigator**  **Project**
2. Ensure the Data Date is set to manual and change the date to **02 Apr 2012**
3. Select sub-tasks – **Mobilize Site Offices** through **FRP Basement Slab 3**, then open **Task Properties>General**
4. Change the **Status** to **Finished**
5. The **Task Start Time** window appears



The 'Task Start Time' dialog box is shown. It has a title bar with a close button (X). The main area contains a text box with the text 'Choose Mobilize Site Offices start time'. Below this is an 'Options' section with several radio buttons and input fields. The 'Planned Start' radio button is selected. The 'Status' dropdown menu is set to 'Finished'. The 'Remaining Duration' is set to '2d'. The 'Percent Complete' is set to '100'. There is a checked checkbox for 'Apply to all'. At the bottom are three buttons: 'OK', 'Cancel', and 'Help'.

6. Select **Planned Start** selected, enable **Apply to All** then select **OK**
7. The **Task Finish Time** window will appear

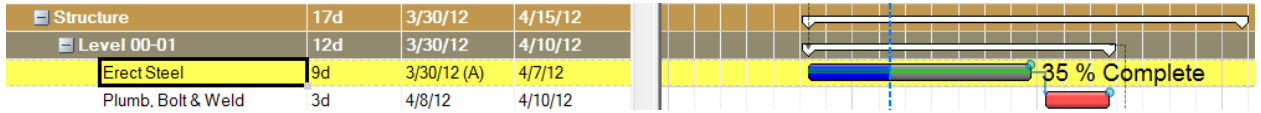


The 'Task Finish Time' dialog box is shown. It has a title bar with a close button (X). The main area contains a text box with the text 'Choose Mobilize Site Offices finish time'. Below this is an 'Options' section with several radio buttons and input fields. The 'Estimated Finish' radio button is selected. The 'Status' dropdown menu is set to 'Finished'. There is a checked checkbox for 'Apply to all'. At the bottom are three buttons: 'OK', 'Cancel', and 'Help'.

8. Select **Estimated Finish** and enable **Apply to All**  
All selected tasks will be given the status of Finished
9. Select task - **Level 00-01 Erect Steel** and change the **Status** to **Started**
10. Keep **Planned Start** selected, then select **OK**

- The **green** line indicates the **duration** of the Task.
- The **white** line indicates the **portion** of the Task

The Task bar changes colour to grey to reflect the new Started status. The green line indicates the Planned duration of the Task. The blue portion of the task bar indicates the portion completed.

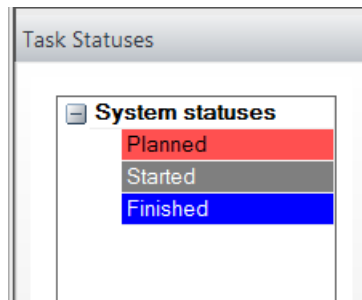


The **% Complete** can alternatively be displayed as a **Duration Complete, Remaining %** or **Remaining Duration** by changing the settings under **Options > Gantt Chart > Progress**

## 14.2. User Defined Statuses

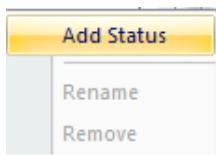
A user can customise the task bar colour based on the status of a task. A status colour then can be assigned to a task or a group of tasks. This allows the planner to manage particular tasks based on their status.

1. Select **Navigator > Task Statuses**

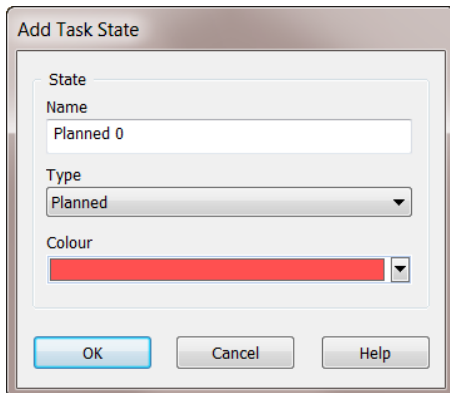


*There are three system status colours defined, or you can create your own*

2. To create a **User Defined Status** right click in the white space and select **Add Status**




3. The **Add Status** window appears which allows you to rename, change the Type (Planned, Started, or Finished) and the colour.

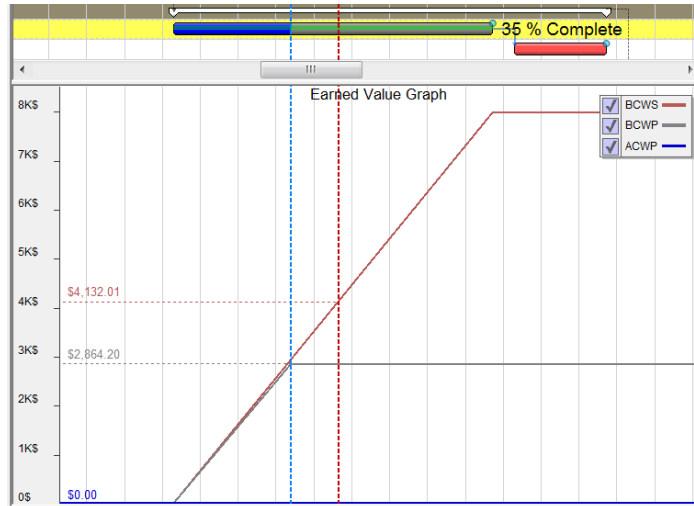


4. Once the new **Task Status** is defined it will show up as a **User Defined Status**
5. To assign a **Task Status** to a task either drag and drop a status onto a task or change the status in **Task Properties > General**

### 14.3. Earned Value Analysis

**Earned Value Analysis** allows you to compare the Planned Costs of the project against the value of the work completed

1. Select the **Windows Tab** and toggle on the  EVA Graph
2. Select task - **Level 00-01 Erect Steel** and view the EVA graph



**Tip-** the EVA Graph manipulation is governed by pan and zoom in the Gantt Chart.

**Tip-** You can show/hide BCWS, BCWP and/or ACWP using the tick boxes in the Legend

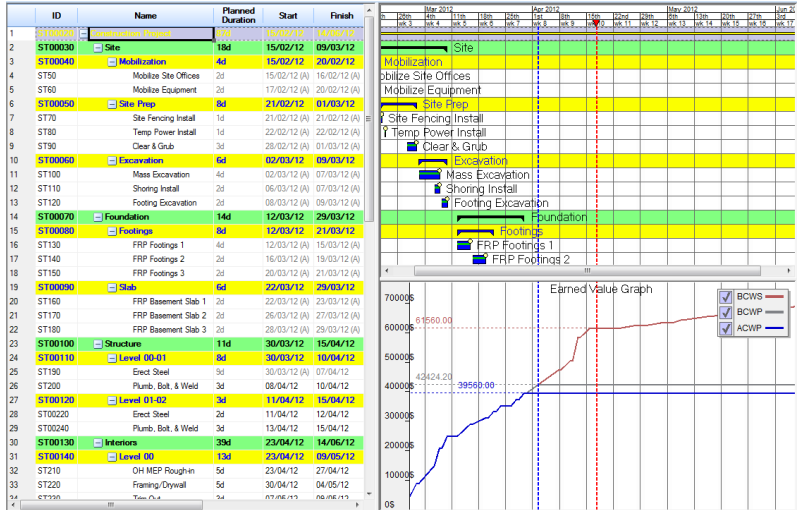
- **BCWS** (The Budgeted Cost of Work Scheduled) in red quantifies the budget value of the work still to be performed on that selected task or group of tasks
- **BCWP** (The Budgeted Cost of Work Performed) in grey quantifies the budgeted value of the work performed to date on that selected task or group of tasks

The intersection of the **Data Date** line and the **BCWP** grey line reflects the **Budgeted Cost of Work Performed** at that point in time for the selected task or group of tasks. By moving the **Focus Time** to the Data Date, the **cost** is shown in grey on the left of the **EVA Graph**.

The intersection of the **Focus Time** line with the **BCWS** red line reflects the **Budgeted Cost of Work Scheduled** at that point in time for a selected task or group of tasks. This **cost** is shown in red on the left of the **EVA Graph**. Moving the **Focus Time** gives a cost forecast reading at that specific moment in time for the selected task or group of tasks.



- Select the WBS Summary task - **Construction Project** so you can see the result in the EVA Graph of all tasks



- To view the **Earned Value Cost (BCWP)** or **Actual Total Cost** columns in the **Task List** go to **Customise Columns** and add the columns to the others currently viewable

## 14.4. Monitoring

Should the task fall behind schedule, the status can be updated and its impact on the Project Plan can be reviewed.

1. Select task - **Level 00-01 Erect Steel**
2. Open up the **Task Properties>Monitoring Panel**
3. Change the **% Complete** value to 25
4. The estimated **Remaining Duration** is updated.
5. In the Gantt Chart, the grey task bar extends beyond its Planned duration represented by the green line



7. A **Progress Report** of Type **Delay** is created in the **Monitoring Panel** under **Reason**

Reason	Date	Type	Percentage	Duration
Progress Report	02/04/12	Delay	10%	8h, 6m

8. The variance shown in the Progress Report is also reflected under the **Analysis Panel**

Analysis	
% Due	35%
% Current	25%
% Variance	-10%
Hours Variance	-8h, 6m

### Monitoring

Actual Start: 30 Mar 12

Estimated Finish: 07 Apr 12

Progress: Automatic

% Complete: 35.80

Remaining Duration: 5d, 7h

Physical Volume

Actual: 0

Remaining: 0

Reason	Date

Report Date: [ ]

Comments: [ ]

Value

Delay  Advance

Percent: [ ] %

Duration: [ ]

Cost	Type

Analysis

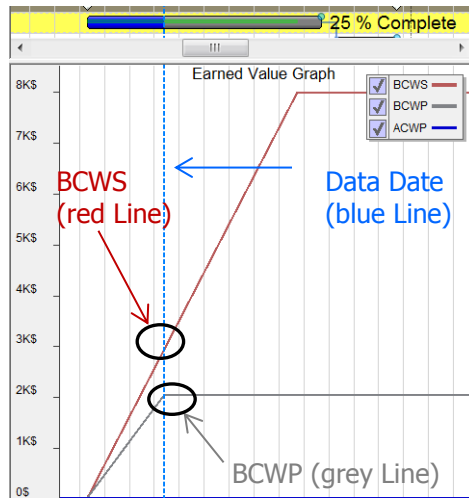
% Due: 35%


% Current: 35%

% Variance: 0%

Hours Variance: +0 Days

9. The **EVA Graph** now displays the delay. If a task is on time the **BCWS** red line and the **BCWP** grey line would be at the same point on the **Data Date**. In this case they are not. Since the **BCWP** grey line is less than the **BCWS** red line, it is understood that the task is behind schedule.

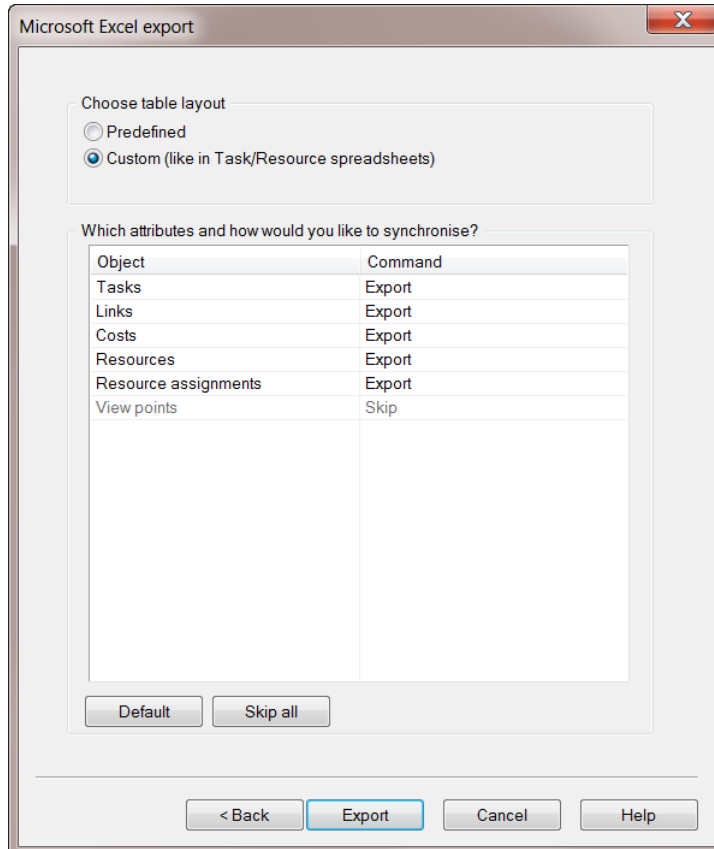


5. Select the **Windows Tab** and toggle off the  EVA Graph

## 14.5. Exporting Cost Results

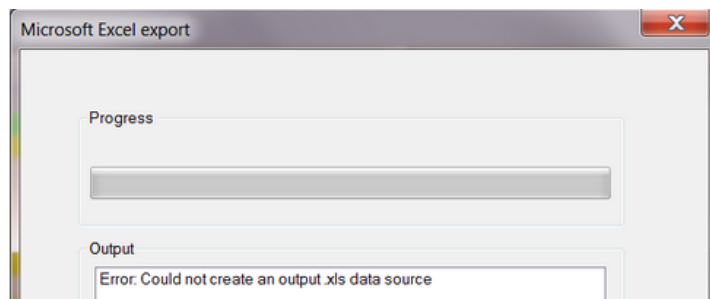
Utilize the export function to export the costs to a spread sheet

1. Select **File** > **Export** > **Microsoft Excel** then browse to a location, name file and **Save** then **Next**
2. Microsoft Excel export window appears. Choose between predefined table layout (**ID, Name, Start, Finish, Duration, Status, %Complete, Budgeted Total, Actual Total**) and custom table layout (columns taken from current Task/Resource lists in Synchro, including User Fields). Select the objects required, then press **Export**, then **Finish**



3. In the Excel file, each of the Objects will be displayed in their own tab.
4. Open the **Windows Tab** and deactivate **EVA Graph**



**Note:** If you receive the error shown, please search Synchro Help for the topic "Cannot Export to Microsoft Excel on Windows x64-bit Platform" for information on the solution.

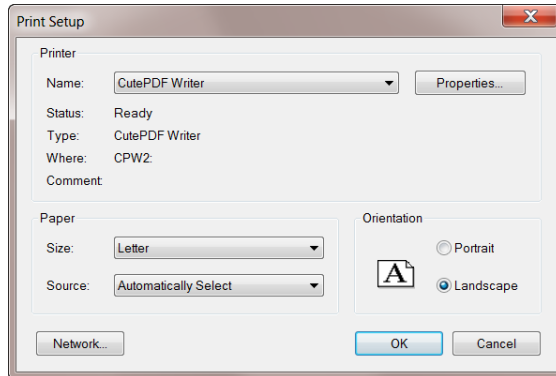




## 15. Printing

### 15.1. Printing the Gantt Chart

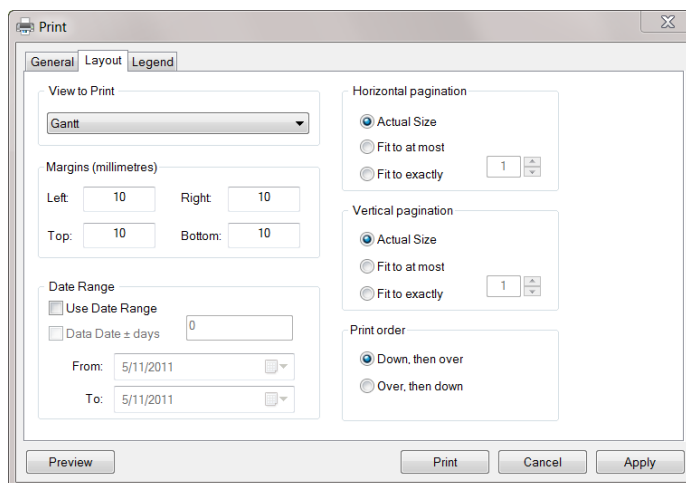
Before printing the Gantt Chart, the Task List must be customised to include the data columns you wish to print.

1. Using **Customise Columns** remove the necessary columns so the only columns visible are **ID, Name, Planned Duration, Start, and Finish**.
2. Select  **File** +  **Print Set Up** and set the options as required (Landscape)

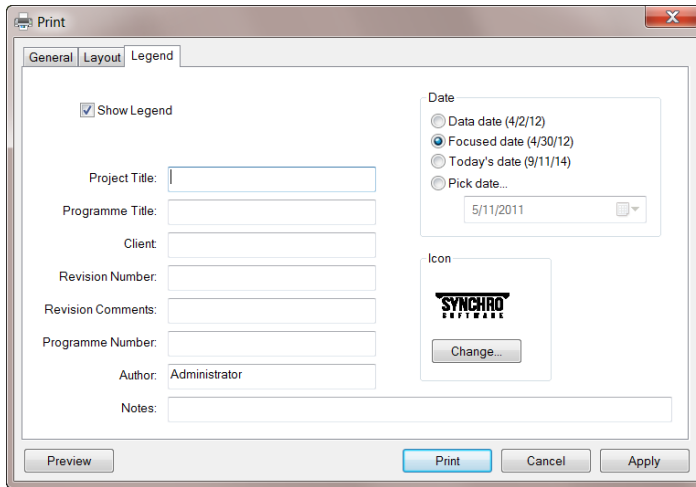


3. Select the required printer from the list (use PDF for training), edit the properties accordingly, and click **OK**
4. Select  **File** +  **Print**
5. Verify the printer selection and edit the preferences accordingly
6. Select the **Layout Tab**

Here you can choose what to print in the **View to Print** drop down. Note that there are four default selections – Gantt, Resource Usage, Resources, and Task Usage. If other windows are open on screen such as the 3D view or EVA graph, etc. – then these specific views will become available to print. When the **View to Print** is set to 3D, the page options are not available since **Fit to exactly** is assumed. Click **Apply** when finished



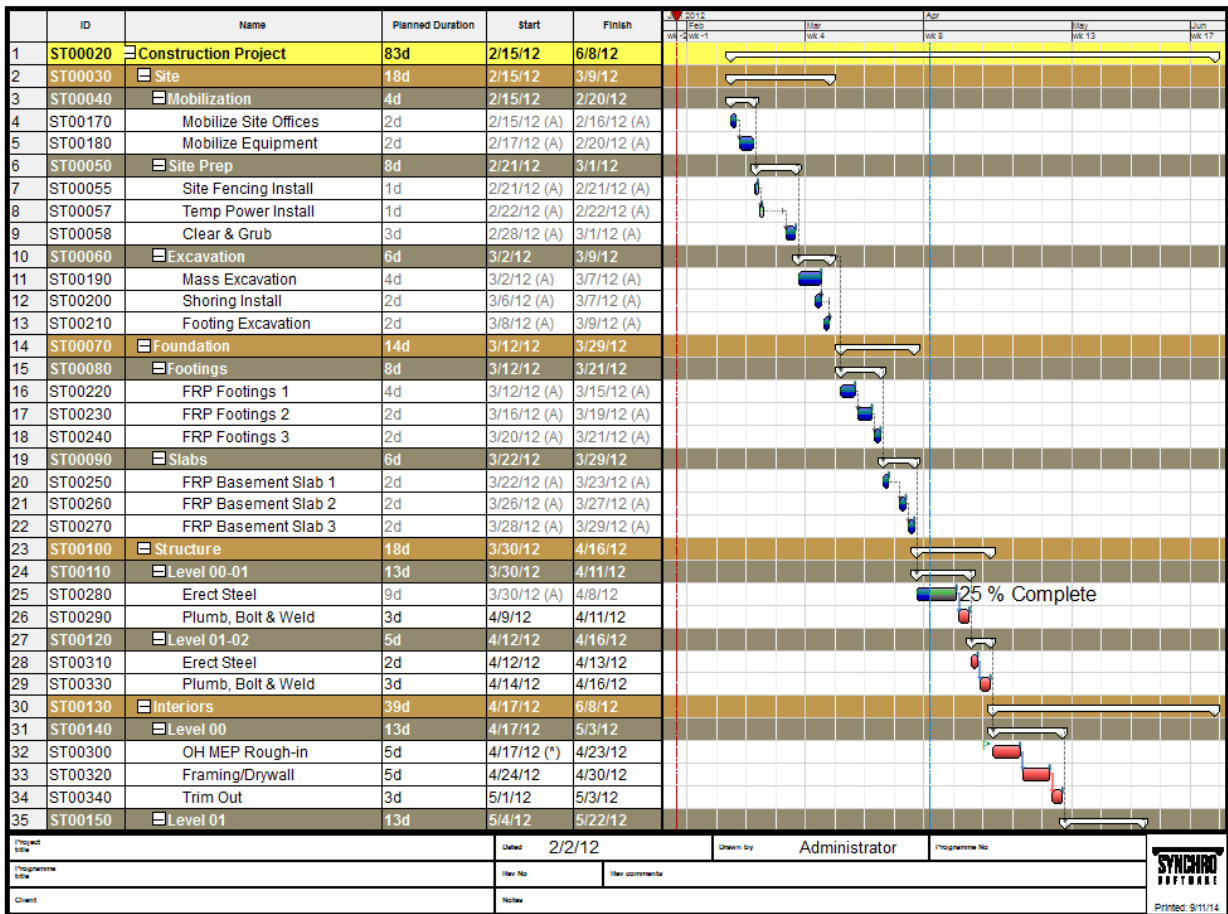
7. Select the **Legend Tab**



The **Legend Tab** allows options to:






1. Place a legend at the bottom of the print by selecting **Show Legend**
2. Select the date to be shown
3. Select a logo to print
4. Click **Apply** when finished

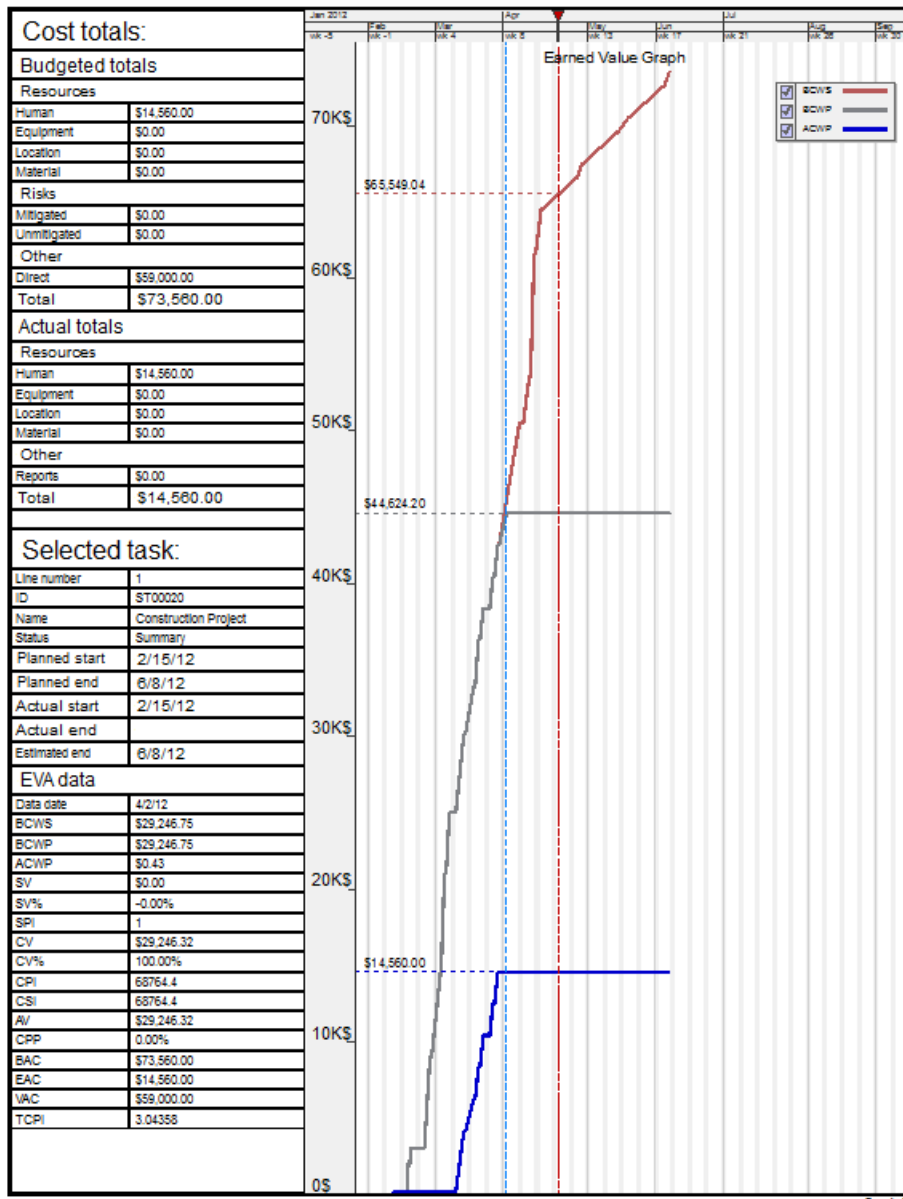
8. Select Print or Print Preview. The PDF will look similar to shown



9. Select **File> Save**

## 15.2. Printing EVA Results

1. Open the **Windows Tab** and make sure the  **EVA Graph** is enabled and is visible on screen
2. Select  **File +  Print Set Up.** Select Portrait and set the options as needed
3. Select  **File +  Print**
4. Select the **Layout Tab**. Change the **View to Print** to **EVA Graph**. Since the **EVA Graph** window is enabled this selection is now available.
5. Modify any other settings as needed and click **Apply** when finished
6. Select Print or Print Preview. The EVA PDF will look similar to shown



## 16. Contact Details

### User Support

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