A Guide to Primavera P6 Global & Project Data

I've always had difficulty explaining the concept of global and project data to new users of Primavera P6 in my training courses. It's a bit too much for some, and why should you even care? You seem to be able to use Primavera P6 just fine without any knowledge of Global or Project Data.

You can, but you can also get into trouble once you start moving data around, especially back and forth between databases. If you've ever sent or received a Primavera P6 .xer file then this guide is for you. It will help you to make sure your Primavera P6 project data is making it to it's destination when you send a file. But it's also good knowledge to have for any user of Primavera P6 Professional or EPPM.

Primavera P6 Global & Project Data

It's important to remember that Primavera P6 was initially designed as an Enterprise project management system. Even though many of us use Primavera P6 as a standalone tool, shunning all of the enterprise bells and whistles, at it's core is a database initially designed for the enterprise's needs. If Primavera P6 was truly a standalone tool, you'd find it to resemble a tool like Microsoft Project, where you deal with files only and projects don't share data between them.

Primavera P6, both the Professional version and EPPM, have a more complex data structure that enables them to be in the realm of Enterprise software tools. The goal was to design a system that could be used by an organization's many departments. So it would have to be flexible enough to be configurable for each department's needs. But also, the organization would want some over-arching corporate assets that could be set up and available to any department.

With Primavera P6, a primary enterprise distinction is that we have this concept of "Global" data objects and "Project" (or embedded) data objects.

If you consider that any company that sets up Primavera P6 will want to reuse and share data objects across their P6 projects, then you have just revealed the difference between global and project objects. Global objects can be shared and used on more than one project, while embedded objects cannot.

Primavera's Global Objects Are Linked And Not Embedded in Projects

Going a bit deeper, we encounter how global data objects are actually shared by multiple projects – it's a concept I call "linking". By the way, these concepts exist everywhere in databases, and are not unique to Primavera P6….just sayin'.

Global objects are P6 constructs that are used on or linked in to a project, but never wholly become part of the project. For example, a global Calendar exists in P6's database where it can be shared and used on multiple projects. Thus, a global Calendar gets linked to a project and used on Activities in that project, but the Calendar never becomes wholly owned by the project nor is it embedded inside the project.

The same concept always applies to Resources. A Resource can be assigned to a project's activities, but the Resource (and it's associated attributes, like Price/Unit hourly rate) are never embedded into a

project. That same resource can always be assigned to the activities of another project at the same time, applying the linking concept or the sharing of resources across projects.

When you start to thing about all of the many global objects that can be linked to a large project, the list starts to look like this:

- Global Calendars
- Cost Accounts
- Global Activity Codes
- Project Codes
- Resources
- Roles
- Shift Calendar
- User Defined Fields
- etc.

Qualities of global objects is summarized in this list :

- global objects can be used on the activities of multiple projects.
- global objects exist outside of all projects.
- global objects are not deleted when their associated project(s) are deleted.
- global objects can be left out during an import process.

It's import to understand Primavera P6's innate data linking concept because it comes into play in a major way when you export and import projects through .xer files. More on that soon.

What is An Embedded (Project) Object?

Some of the data objects in the list above can also be created as a "Project" object. Let's look at Calendars again. A Calendar in P6 can be created either as a Global Calendar (shareable on other projects) or a Project Calendar, which then becomes embedded inside the project you use it on. Project Calendars can't be shared or used on other projects. No embedded object can.

Other examples include Project Layouts or Activity Codes. Here again, you have the option to create either a Global Activity Code, or a Project Activity Code.

Embedded object are wholly owned by the project. Embedded objects in a project has these qualities:

- embedded objects cannot be used or linked to another project's activities.
- embedded objects exists only inside the project and can be edited only when the project is open.

- embedded objects are deleted along with the project.
- embedded objects are always imported with the project and cannot be left out.

Exporting and Importing Primavera P6 Global Objects

This where things can get messy.

If I want to export a project to an .xer or .xml file, and ensure you have a complete record of the project, then during the export, all the bits of linked Global objects have to come along for the ride. And that's why happens. Included inside the .xer/.xml file are all of the Global Resources, Calendars, Activity Codes, Cost Accounts, etc. that are used in the project. So we now have a combination of Global data objects and Project data objects in the same file. This isn't really a problem on its own, as during the export this all happens automatically and there is no way to alter what data goes into an export file from Primavera P6 Professional.

However, it's on the importing of data from a .xer or .xml file that many users usually run into trouble.

10 Primavera P6 Layouts You Must Implement

It can get difficult to analyze the mountain of schedules you're responsible for and our good friend Jerome Ijachi Odeh has recently pulled together a list of 10 Must-Have Primavera P6 Layouts….ones you probably should be using everyday.

So to help you take advantage of P6's powerful layout features (like these ones we've already told you about), here is a little sneak peek of 10 must-have Primavera P6 layouts you should be using in Primavera P6 with the simple Grouping, Sorting, Filter and Column tools…since, like yesterday. So let's get started!

Oh, and don't worry – we'll show you how to build each P6 layout step-by-step.

Layout 1: Developing Schedules

For starters, when building a new schedule, make sure to use the layout below to have all the key fields clearly visible and easy to find. The Relationship tab in the Details pane is vital because it's used to add logic relationships between activities in the schedule.

This layout is **grouped by WBS and sorted by Activity ID**.

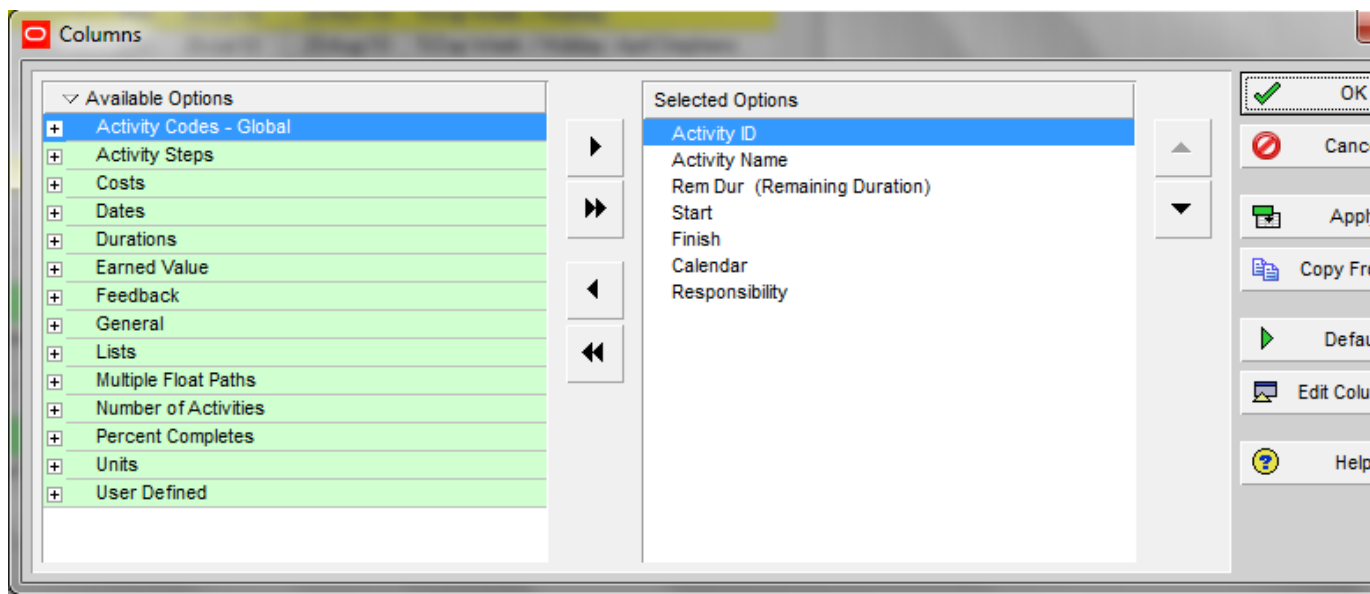# Here is how to build the Layout:

1. Grouping

2. Sorting

3. Filter

No filter is applied in this layout so that **all activities** are displayed.

4. Columns
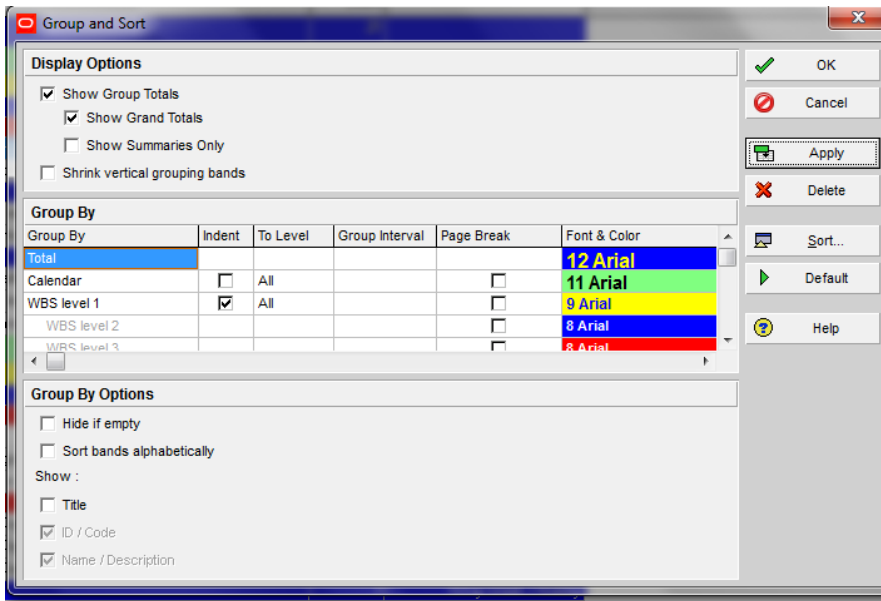

Layout 2: Analyzing Calendars

You need to make sure the right calendars are assigned to activities when working with schedules because of the effect of calendars on Total Float calculations and Activity Dates.

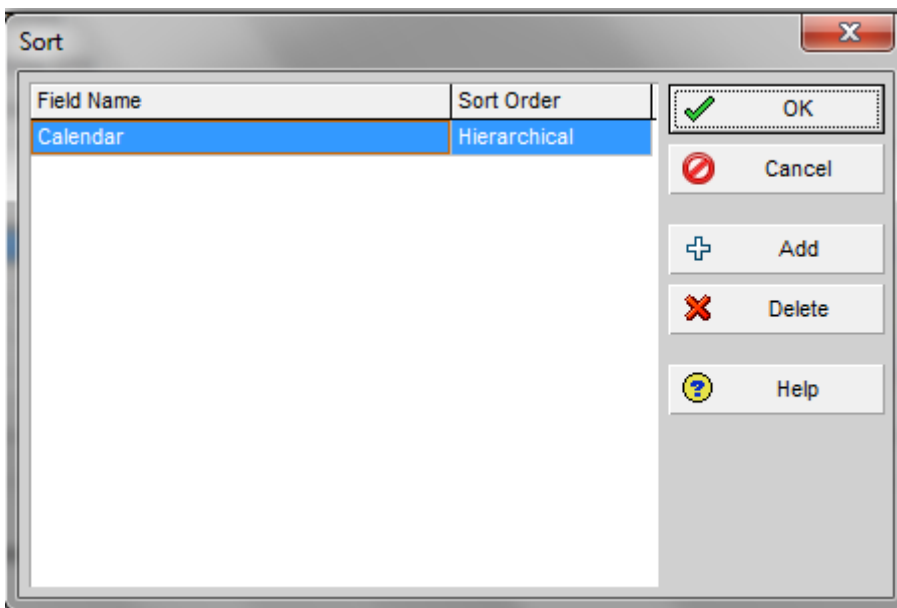The layout used for analyzing calendars is **grouped by Calendar >WBS and sorted by Calendar** as you can see below.

Here is how to build the Layout:

1. Grouping

2. Sorting

3. Filters

No filter is applied in this layout so that **all activities** are displayed.

4. Columns
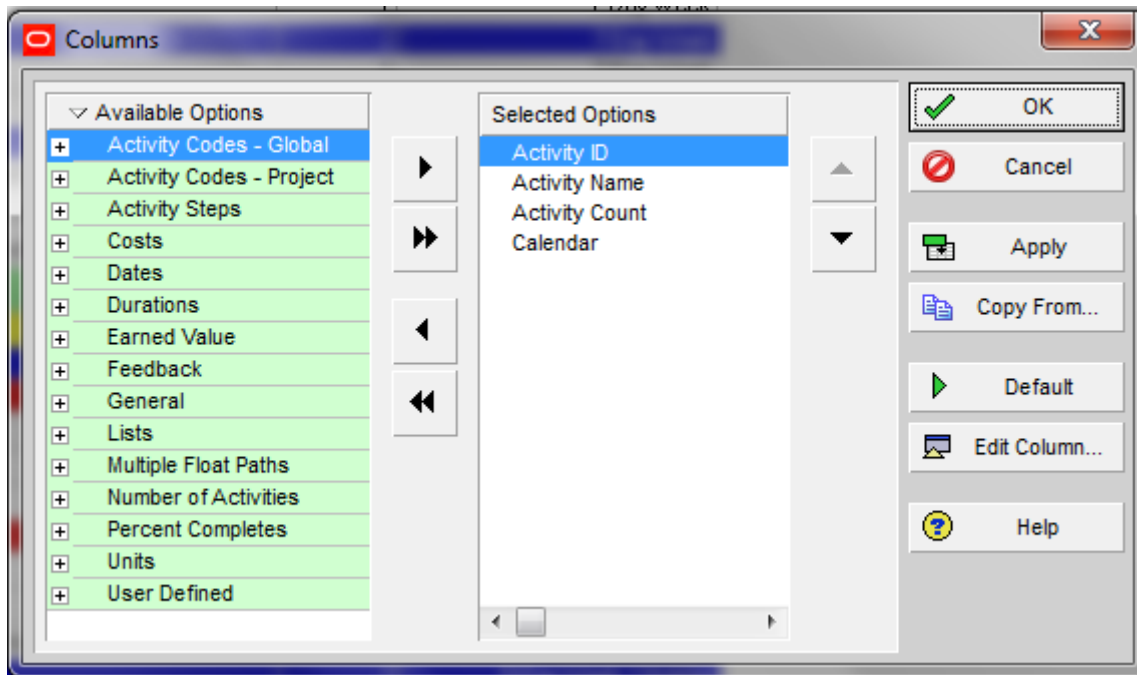
Layout 3: Analysing Constraints

Constraints are mainly used for the Project Start milestones, contractual milestones and external milestones. When reviewing schedules from contractors make sure to check the constraints applied in the schedule to ensure that constraints are not been used in place of schedule logic to drive dates.

The layout used for analyzing constraints is **grouped by Primary Constraints >WBS and sorted by Activity ID** as you can see below.
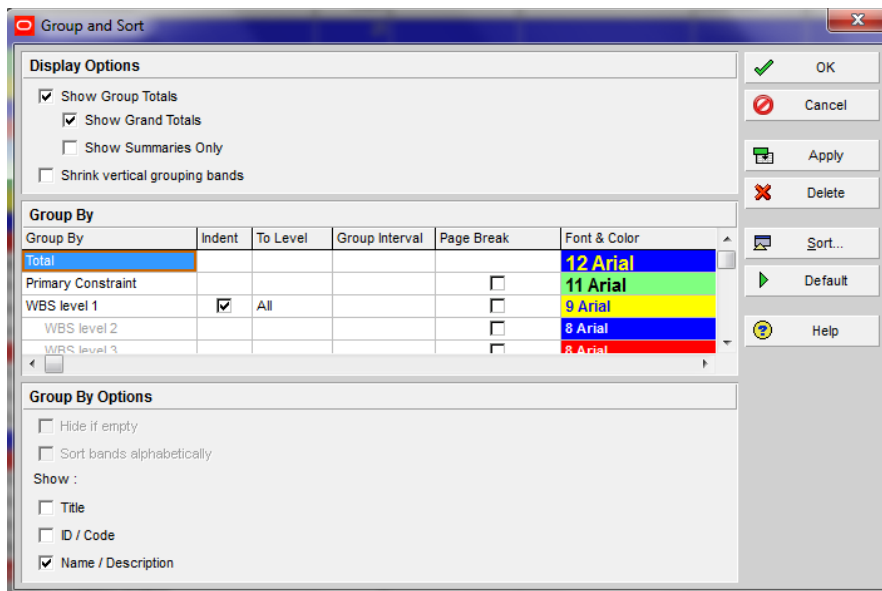
Here is how to build the Layout:

1. Grouping

2. Sorting

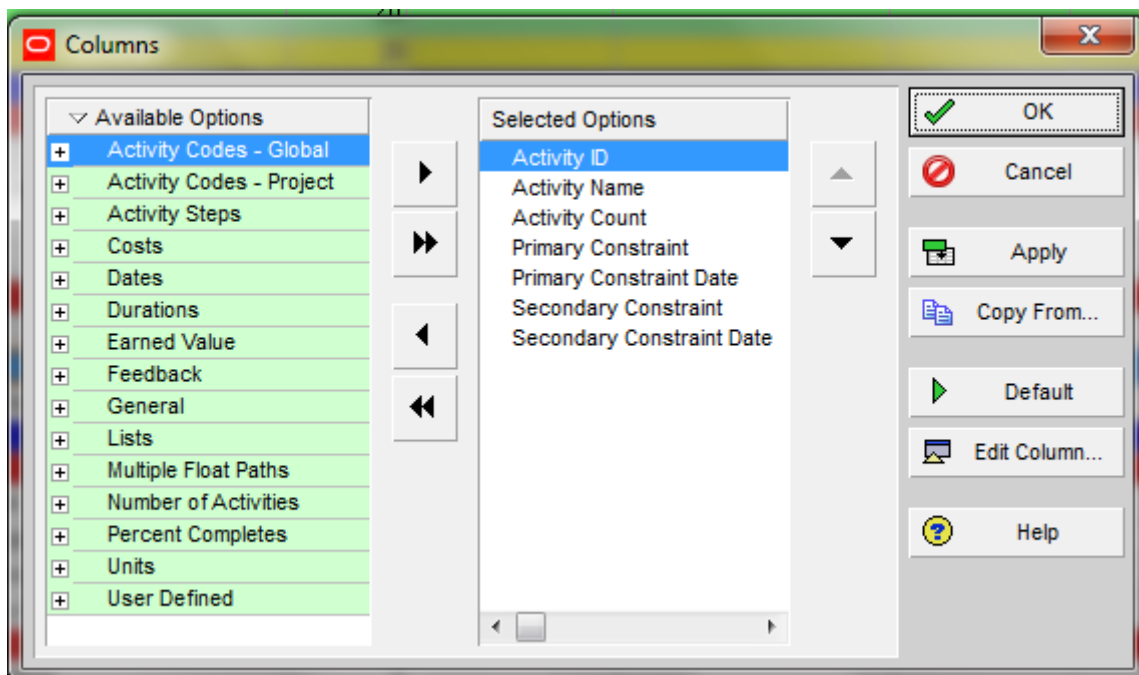## 3. Filter

No filter is applied in this layout so that **all activities** are displayed.

4. Columns

11 Ways to Build a Cringe-Worthy Primavera P6 Schedule

1. Link Only Half of Your Activities Together

Imagine trying to send an email from a computer that is not connected to the network. Nowadays, if it's not connected, your PC isn't doing much good. Now imagine a project schedule with 450 activities that have no predecessor or successor relationships. Same idea.

Activity ID	Activity Name	Original Duration	May 2014	June 2014	July 2014	August 2014	September 2014
B3260	16500 - Copy of Approva	10.00d		16500 - Copy of Approvals from local Hydro and the Ontario Electrical Safety Authority - Prepare & Sub			
B3270	16500 - Copy of Approva	1.00d		16500 - Copy of Approvals from local Hydro and the Ontario Electrical Safety Authority - Review & Approve			
⊟ **Healthy & Safety**		10.00d		28-May-14, Healthy & Safety			
B3280	01060 - All information as	10.00d		01060 - All information as required by the Ministry of Labour - Prepare & Submit			
B3290	01060 - All information as	1.00d		01060 - All information as required by the Ministry of Labour - Review & Approve			
B3300	01062 - Project Safety Pl	10.00d		01062 - Project Safety Plan - Prepare & Submit			
B3310	01062 - Project Safety Pl	1.00d		01062 - Project Safety Plan - Review & Approve			
B3320	01062 - Trench Safety - F	10.00d		01062 - Trench Safety - Prepare & Submit			
B3330	01062 - Trench Safety - F	1.00d		01062 - Trench Safety - Review & Approve			
B3340	01063 - Tunnel Safety Pl	10.00d		01063 - Tunnel Safety Plan - Prepare & Submit			
B3350	01063 - Tunnel Safety Pl	1.00d		01063 - Tunnel Safety Plan - Review & Approve			
B3360	01063 - Resume of Safet	10.00d		01063 - Resume of Safety Officer (Tunnel and Shafts) - Prepare & Submit			
B3370	01063 - Resume of Safet	1.00d		01063 - Resume of Safety Officer (Tunnel and Shafts) - Review & Approve			

A project schedule is really just a network of interconnected tasks put into a thoughtful order of execution. Without the relationships, you don't have a network. And you don't have an accurate Critical Path as there is no path *to* an activity with missing relationships (or perhaps no path *from* an activity if we're talking about open ends).

Here's how to fix it.

Leave no activity un-linked. That is, any activity that is a workable task should have a predecessor and a successor. The only exceptions are the project's first and last activities.

2. Don't bother with Milestones

I don't know about you, but one of the very first things I look for when I'm shown a schedule are the milestones. It's the easiest way to get a sense for major deadlines and startups. So when I don't see any, I get confused and quick. Now think about the owner, client or project sponsor. Milestones are a necessity for tracking to major deliverables,

the beginning or end of a project phase, or major events like materials showing up or approvals.

3. Being Vague Is Best

If you're really going for a project that's vague and ambiguous, then you should consider using lots of one-word activity names to add some mystery to what your crew is working on. Try some of these descriptions:

- EC2030 – Fix
- M5860 – ASCMAC 24
- C3100 – Excavate

Maybe "Excavate" makes perfect sense in the context of that activity being under the WBS element **"Area 3, West end (10+320 to 10+430)"**. But if you ever use P6's tools to regroup, filter or sort, you may not always see the WBS, leaving that activity to any number of interpretations you don't have time to consider.

Using too many abbreviations can have the same effect. Sometimes more is best. Maybe your client doesn't know that "ASCMAC" stands for Aluminized Corrugated Steel Metal Arch Culvert. (but maybe you don't want to type it out 90 times either….I know. Typing can suck. Tip below.)

Here's how to fix it.

Be clear in your activity descriptions. Include a well-defined action on ALL activities, and a location if you are repeating the same work elsewhere. We've already given you some tips on this. Spelling counts! TIP: Don't forget about P6's "Find & Replace" feature. You can use the CTRL+R key combo in the Activity Name column to replace an abbreviation with a longer description throughout your schedule in a few seconds.

4. Cost-Load Non-Resource Costs with Resources

Why would you create a resource called "Cash" or "Interest" and assign it to your activities? This is some sort of workaround that sounds painful and confusing. It's true -P6 does not always shine when it comes to managing costs, but some of the resources I've seen are just weird….like "Travel".

Here's how to fix it.

Stick to letting resources be resources. Use the Expenses area / tab to track any fixed costs that are not resource related. If you need more firepower, then I would recommend doing it right with a package like Ares Prism or just plain old Excel.

5. Increment Activity IDs by 1's

For those of you who know even a little about Primavera P6, you'll probably remember the familiar ID numbering sequence "A1000, A1010, A1020, A1030…etc." It's pretty much accepted that a P6 schedule will increment by 10's to allow space to add extra activities with numbers that fit in-between – A1015 for example.

No way to add activities in-between

When you increment by 1's, then you've created a numbering system that won't allow you to add activities in-between. So if you ever have to add an activity into the sequence, you're going to rely on renumbering ALL of your activities, which takes time and can be messy. Now some of you just want P6 to work like Microsoft Project which automatically renumbers when you add activities in-between. Sorry, we're all waiting for that one.

The Fix.

Make sure to set your Activity ID numbering sequence on the Defaults tab of your project to increment by 5's, 10's or 20's. 10's is the most common setup. If your project is already built on a sequence incremented by 1's or 2's, then highlight your Activities, right-click and pick "Renumber Activity IDs" from the menu to renumber everything properly. NOTE: this feature is present in versions 7 of Primavera P6 or later.

6. Go Activity Constraints Crazy

P6 is a scheduling engine, but some of us don't like to give the software the control to schedule our work. It's a trust issue. Those people usually go for the comfort of mass Activity Constraints to force Activities to start or end on the best dates.
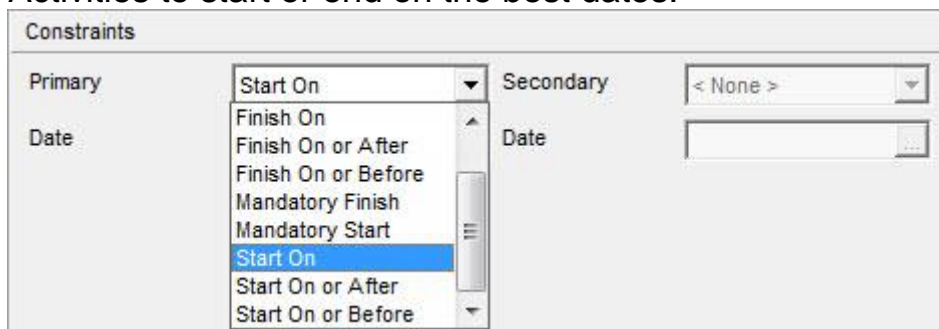
So why bother with relationships if you plan to simply force every Activity to a set of dates? Constraining %50 of your Activities seems to be an

effective way to get the dates you want….but it will cost you in the end. With too many constraints, you lose the fluidity of the logic dependencies (or maybe you didn't bother with logic in the first place).

How to fix it.

Let Primavera P6 do the scheduling for you. You set the following:

- Project Start Date
- Activities with duration estimates
- Order of execution (by adding relationships)

And once you hit F9 to schedule your project, P6 will calculate a start and finish date for each activity. It's why you bought P6 in the first place.

7. Calendars – Make Sure To Use Many

They say the more, the merrier! To get really merry, make sure to use a lot of different Calendars throughout your project schedule. If you have enough trouble with the equation "TF = LS – ES" then ensuring to use multiple calendars will make your head spin when trying to figure out why your Total Float values are off the chart. For example, you'd think Activity A below, would be on the Critical Path.

Activity ID	Activ Name	Original Duration	Calendar	Start	Finish	Total Float	Free Float	A S O N D
Multiple Cal		270.00d		08-Sep-14	19-Sep-15	0.00d	0.00d	
A1000	A	365.00d	7d x 24hr Workweek	08-Sep-14	08-Sep-15	0.33d	0.33d	
A1010	B	6.00d	5 Day Week w/ Basic Holidays	08-Sep-15	15-Sep-15	0.00d	0.00d	
A1020	C	2.00d	7d x 24hr Workweek	15-Sep-15	17-Sep-15	0.00d	0.00d	
A1030	D	1.67d	7d x 24hr Workweek	17-Sep-15	19-Sep-15	0.00d	0.00d	

How to fix it.

Keep it simple and stick to 1 Project Calendar throughout your schedule. Not practical? Then prepare for strange Total Float values in your schedule. There are rumours that P6's Total Float calculations are wrong in some instances where multiple calendars are used. We're working on validating. Leave us a comment if you can help.

8. Use Some Loco Logic

I know you can sometimes make dates line up perfectly if you use nothing but Start-to-Finish relationships and negative lags. But it doesn't mean you should. Although there are 4 relationship types, don't go loco trying to make sure you use them all in equal parts. Things will get messy and your Critical Path will be where it should. Keep it simple with good 'old Finish-to-Start as much as possible. The same applies to lags. We already know that lags and leads are not clearly visible in schedules (although we've showed you how to find lag in your schedule), and they are often poorly documented. Sometimes they are even misused to chew up float.

The fix.

Avoid all of those crazy logic options and stick to using Finish-to-Start relationships with 0 lag or lead time. If you do, you will have the cleanest Critical Path possible, assuming you're not guilty of #1 above and are linking everything together.

9. Update Progress Here, There, and Everywhere

It's Tuesday at 1pm – progress update time! The same for next Friday but only at 10am.

Timeliness not your thing? Details and decimal….meh.

Maybe you project controls is not for you, or at the meticulous process of updating a schedule with progress. If your updates are *sporadic and spasmodic* your project is going to suffer from giving everyone a major headache and also from uncertainly of how much work has been done.

How to fix it.

Like the changing of the guard, you need to follow a consistent and disciplined process to properly update your project. Pick a time and update your project at that time every week (2-weeks / month). Scrutinize every activity that was to be done and don't leave any out. Primavera will push forward any work that wasn't done as planned. Be impeccable in your updating.

10. Muck With The Bar Colors

Why are Critical Activities *puce*? (whatever puce is)
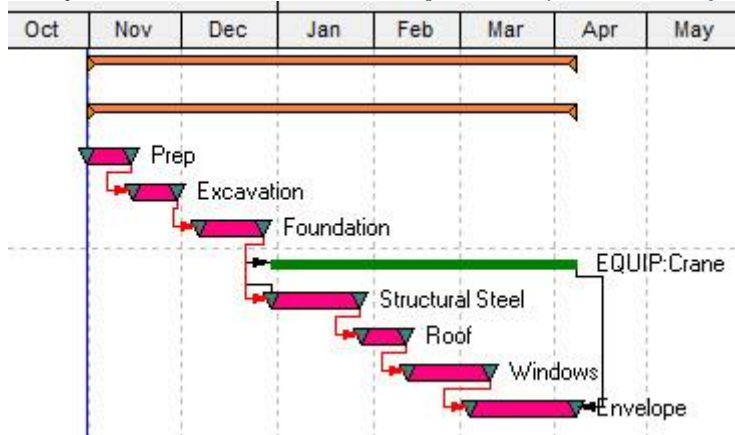
It's fun to tinker. And man, can you make some ugly Gantt charts using the extensive options provided in Primavera P6. But please don't.

How To Put It Back

Those standard P6 colors are so ingrained that changing them might cause a riot. Find a layout that has the standard colors and use it. Stay safe kids.

What are Level of Effort Activities for?

You might already know that Level of Effort activities are designed to represent support work on a project. This is work that does not contribute directly to the deliverables or outcome of the project, but supports their progress. These are still important tasks, even critical to the project, but are defined as supportive.

Examples of Level of Effort activities include:

- Customer Meetings
- Project Management tasks
- Maintenance of equipment
- Clerical work

These activities don't "earn" us much from an earned value perspective. In Earned Value Management, any supportive-type Level of Effort tasks are called "non-discrete" – which means that measurement of these tasks is harder than say measuring a task to install 12 lamp-posts.

How much project management did you do? **VS.** How many lamp posts did you install?

You can see what the Defence Contract Management Agency has to say about discrete tasks versus Level of Effort tasks and how they relate to earned value.

As one Linkedin member recently commented "…if I cannot see it, touch it, bump my hard hat on it or fall into it….it gives you NO progress." And Level of Effort activities, in describing supportive-type work, fall into that bucket.

What does Level of Effort mean?

The term Level of Effort could be reworded as – "to level out effort" OR "to spread out the work".

Since a Level Effort activity in Primavera P6 "summarizes" other discrete activities, it spans the duration of multiple consecutive activities, the result is similar to spreading out work over the duration of those activities.

Level Of Effort – "to level out effort" OR "to spread out the work".

Can Level of Effort Activities be on the Critical Path?

No. Level of Effort Activities should not appear on the Critical Path, nor should they add any duration to the project.

How do I use Level of Effort Activities in Primavera P6?

If you add a Level of Effort Activity in Primavera P6, it's most likely because you want to track a resource and their time on a support task.

Level of Effort activities get their dates and durations from their predecessors and successors. It's most common to assign a predecessor with an SS relationship and a successor with an FF relationship (however you aren't limited to those as in P3's hammocks"). Then you assign a resource to the activity and his/her effort is will be spread over the activity's duration.

How is a Level of Effort Activity's Duration calculated in Primavera P6?

The Level of Effort Activity gets it's start date from the Early Start date of it's predecessor. It gets it's finish date from the Early Finish of it's successor. Then it's own calendar is used to calculate the duration between the start and finish dates.

All of this happens when you reschedule your project. After you reschedule, the Level of Effort's duration will be calculated.

Of course, if any of the activities that a Level of Effort summarizes has a change of duration, then after rescheduling P6 will calculate a new duration for your Level of Effort.

How do I show my Level of Effort Activities on the Gantt Chart? My Level of Effort bars are not showing on the Gantt Chart.

Simple, you'll just need to adjust the Gantt Bars settings in Primavera P6. Right-click on the Gantt Chart, select Bars. Check on any entry that is called "Remaining Level of Effort". If you don't have an entry like

that, then go ahead and add one using the Add button. Set the parameters a shown below. Make sure to set the Bar style as well.
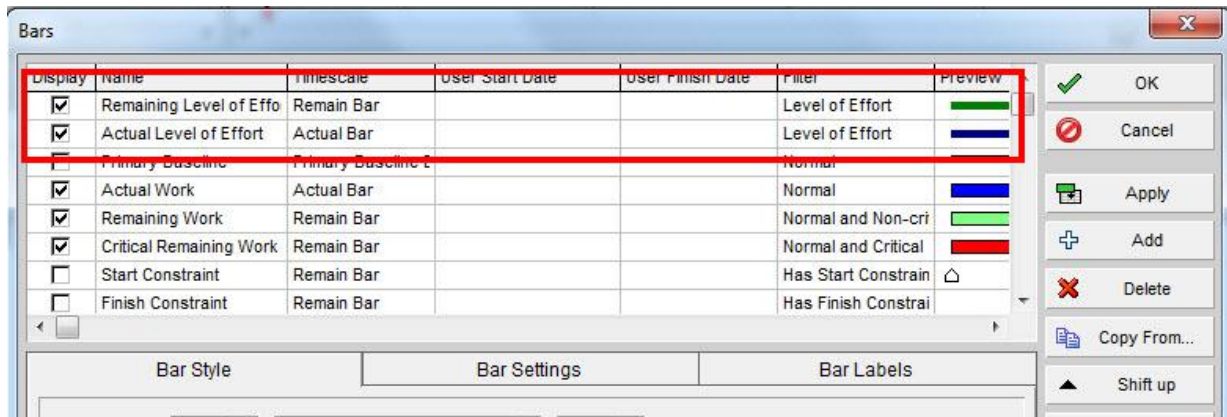
Wrap-Up

Level of Effort activities are an essential component in building complete schedules, for displaying and representing supportive, non-discrete work. Make sure you familiar with them but don't overuse them. Like most things in planning and scheduling, a little goes a long way.

5 Tips to Improve Your Primavera P6 Activity Names

Newer versions of Primavera P6 and beyond allow many more characters in the activity description field. Follow these 5 simple tips to improve the overall quality of your schedule network and respective activity descriptions.

1. Use an action word.

When adding an activity description you always want to add an action word first. For construction related activities consider such words as install, construct, place, or fabricate. For Engineering use action words such as develop, issue, or incorporate. Make sure you follow the action by the activity to be performed.

For example: "*Install* Lower Base Slab".

2. Don't abbreviate unless you absolutely have to.

When developing your activity descriptions do your best to spell out what you are trying to say.

For **example** instead of

"FREP lwr fndn concrete"

try

"Form, Rebar, Embed & Place lower foundation concrete."

The more abbreviations your schedule contains, the greater potential for confusion, particularly for those unfamiliar with the schedule or your naming conventions.

3. Be descriptive!

The activity description needs to be as descriptive and detailed as possible. For construction activities consider adding the location,

utilizing column references, direction, room numbers, and floor elevation.

Example: *"Install North Lower Base Slab Col 1 – Col 5, Floor 1".*

This type of description will give your reader vital information about where this activity is physically located. Always assume that your reader will not be using your code grouping & sorting when reading yours schedule. Make sure each activity can stand on its own without any coding headers.

4. Uniformity

Developing standard activity descriptions, similar to activity IDs, will help standardize your schedule. Try to come up with a standard structure that can be conveyed to the entire planning team. This is especially good practice when working with multiple users in the same program.

An **example** for an engineering schedule could be *"*Action Word* – *Deliverable* – *System*".* Below are some other examples to help keep uniformity in the schedule.

Use the *<Action Word> – <Deliverable> – <System>* template.

1). Develop Mechanical Data Sheet – Horizontal Pump

2). Issue Piping Isometrics (Dwg #) – Cooling Water System

3). Issue RFQ (PO #) – Horizontal Pump

4). Award Purchase Order (PO #) – Horizontal Pump

5. Don't scream!

THERE IS NO NEED FOR ALL OF YOUR ACTIVITIES DESCRIPTIONS TO BE CAPTILIZED! For some reason there are several planners that prefer to work in all-caps. Do us all a favor and please turn the caps lock off. There is no need to scream and it adds no value to the final product.

Schedule % Complete in Oracle Primavera

Schedule % Complete is one of the many percent completes you have in Primavera P6 and we're going to have a complete look at what it is and how it is calculated. Two important products of maintaining schedules are planned progress and actual progress of a given time; you want to know how much you've done so far and compare it with how much you were supposed to do so far, in order to reach project targets.

The first thing to mention is that Schedule % Complete deals with planned progress. As a result, it is calculated based on the Project Baseline and the Data Date; it has nothing to do with the current schedule.

The second thing is that this field is calculated differently for Activities than for WBS Elements. This is the source of the most common problems people have with this field.

Schedule % Complete for Activities

And now, let's start the story with how Schedule % Complete is calculated for Activities. It's simple; just take a look at the following figure.
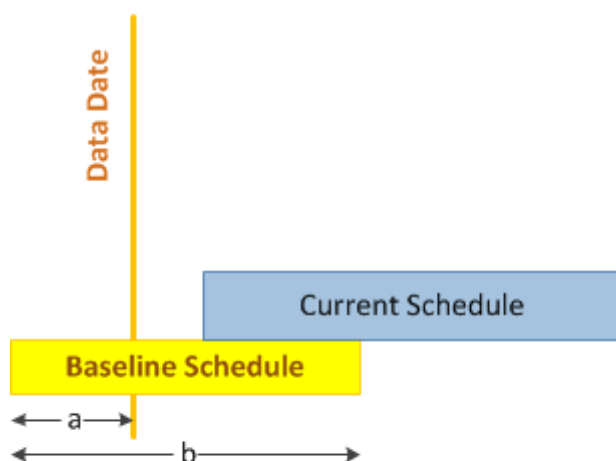
Schedule % Complete for this activity = a / b

When the Data Date is earlier than the Baseline Start date, Schedule

% Complete is zero, when it's after the Baseline Finish data, Schedule % Complete is 100%. Otherwise, Schedule % Complete would show what percentage of the Baseline duration is passed by the Data Date. Here's a formula to calculate Activity Schedule % Complete:

```
Schedule % Complete(Act) = ( [Data Date] – [Baseline
Start] ) / ( [Baseline Finish] – [Baseline Start] )
```

The following diagram shows the Schedule % Complete of a single Activity for different Data Dates:

Schedule % Complete for this activity = 0%
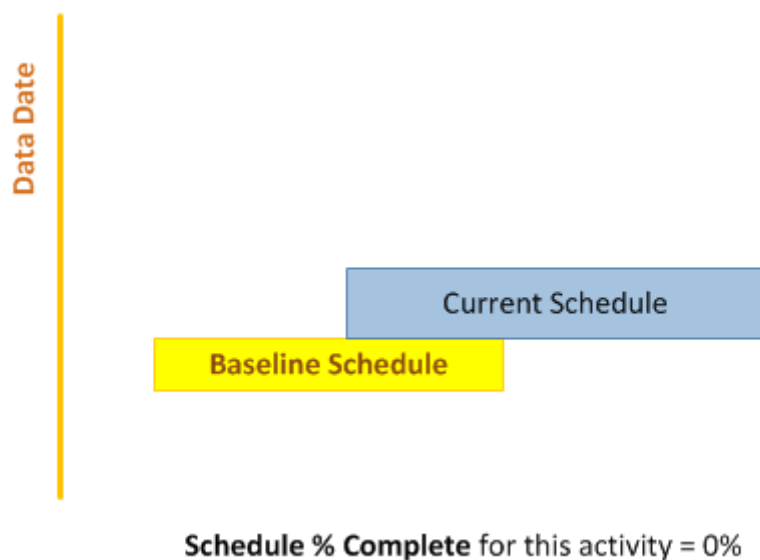
And that's all for the activities; it has nothing to do with the current schedule, the resource curves, the costs, etc. For Activities, Schedule % Complete is strictly calculated based on:

1. Data Date
2. Activity's Baseline Start
3. Activity's Baseline Finish

Schedule % Complete for WBS Elements

And now, the story of how Schedule % Complete is calculated for WBS Elements. Let's start by reviewing 2 possible scenarios:

Scenario 1

Name	Schedule % Complete
Sample WBS Element	0%
Sample Activity 1	100%
Sample Activity 2	70%
Sample Activity 3	30%

How are these calculations possible? The Sample WBS Element has three Activities, they all have Schedule % Completes greater than zero, but the value for Sample WBS Element is 0! Before I reveal the answer, here's a contrasting scenario.

Scenario 2

Name	Schedule % Complete
Sample WBS Element	75%
Sample Activity 1	50%
Sample Activity 2	40%
Sample Activity 3	20%

In this scenario, the Sample WBS Element has three Activities with Schedule % Completes less than 50%, but the Schedule % Complete of the WBS Element is 75%.

What is going on here? How is Schedule % Complete calculated in each scenario?

A WBS Element's Schedule % Complete is calculated in a completely different way. You might expect it to be the rollup value of the underlying Activities (a weighted average for example). But, as in scenario 2, the three Activity values which are all less than 50% could never have a weighted average more than 50%.

As you saw before, the Schedule % Complete of the Activities is time-based. However Schedule % Complete for WBS Elements is:

1. Depended project costs and…
2. Does not factor in any Activities' Schedule % Complete values

How Schedule % Complete is Calculated for WBS Elements

When you assign resources and expenses to activities, each activity will receive a calculated Total Cost. Resource assignment hours and costs are, by default, spread uniformly over the duration of the activity (but you may apply a Resource Curve to alter this). Oracle Primavera will show you how costs are then planned for each day of the Activity. These costs are aggregated to the WBS level, and the time-phased cost of the WBS Element will be calculated automatically.

The Schedule % Complete of the WBS Element will be the ratio of the Baseline Costs before the Data Date to the Total Baseline Cost.
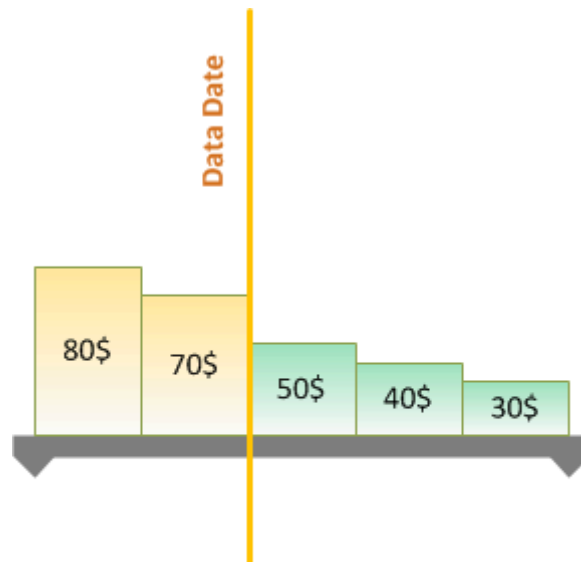
BAC = 80$+70$+50$+40$+30$ = 270$

PV = 80$+70$ = 150$

Schedule % Complete = PV / BAC = 56%

In the world of Earned Value, the costs before the Data Date are called the Planned Value, or PV for short (Also called BCWS – Budgeted Cost of Work Scheduled). The total baseline cost is called Budget At Completion or BAC for short. We can now formulate the calculation of Schedule % Complete for WBS Elements as:

`Schedule % Completed (WBS) = PV / BAC`

Please have this in mind that all the mentioned parameters are derived from baseline and not from current schedule; the WBS bar shown in these figures is the baseline schedule of the WBS Element and the costs are the baseline costs of the WBS Element.

The following diagram shows Schedule % Complete of a sample WBS Element for different Data Dates:
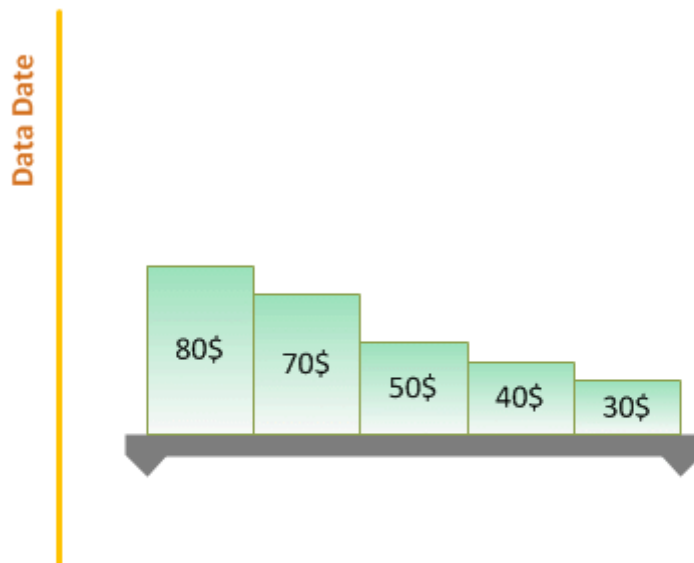
BAC = 80$+70$+50$+40$+30$ = 270$

PV = 0$

Schedule % Complete = PV / BAC = 0%

The above descriptions show that the Schedule % Complete of the WBS Elements depend on the following:

1. Data Date
2. Baseline Costs before the Data Date (PV)
3. Total Baseline Costs (BAC)

To summarize, Schedule % Complete for Activities is based on **time**, while its value for WBS Elements is based on **costs**.

Pulling Schedule % Complete together for WBS and Activities

The following diagram shows Schedule % Complete of a sample WBS Element with two Activities in different Data Dates.
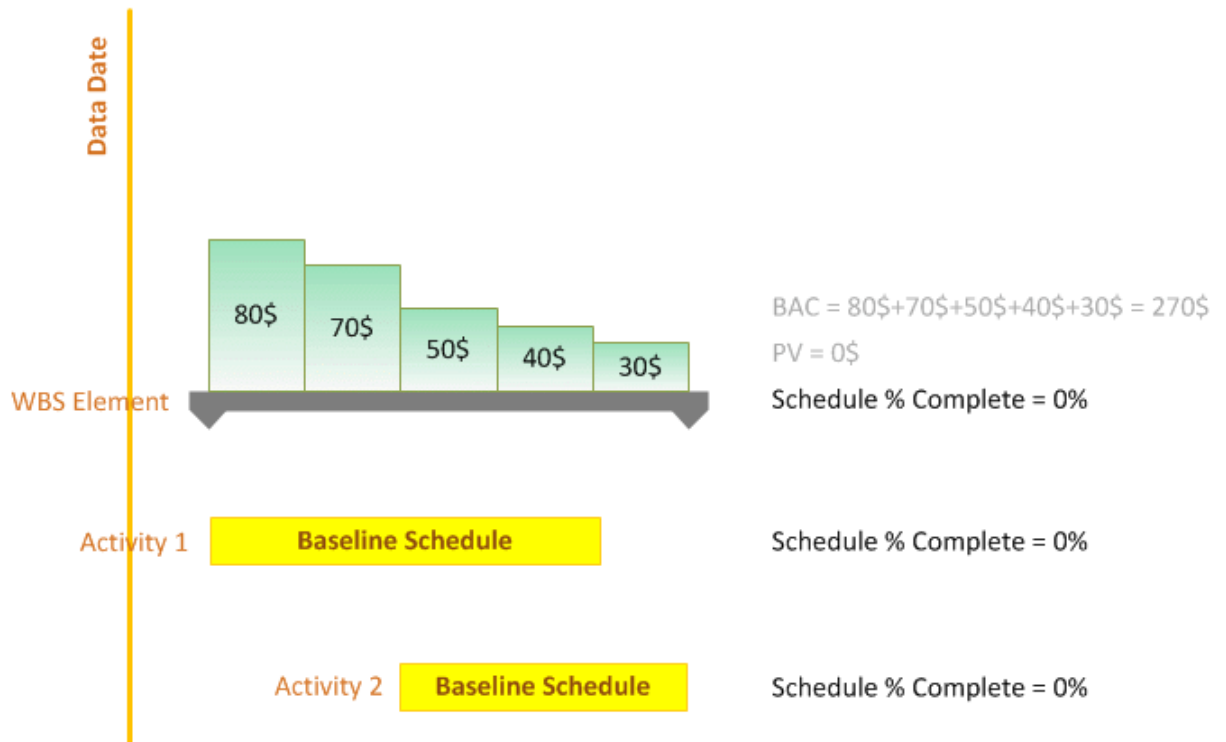
The Proper Setup : Baselined and Cost-loaded

Now let's see how Schedule % Complete works in action on a sample Primavera P6 plan.

Since Schedule % Complete is based on both Project Baseline fields and Earned Value Cost fields, to calculate it properly, your schedule should:

- be cost-loaded at the Activity-level
- have a project baseline set

Examine the sample plan below. This plan has four WBS Elements in two levels and seven Activities. Activities have sample durations and relationships and you can see the current schedule in the Gantt chart. Each Activity has a resource assignment and that's why we have costs in the plan. Some Activities have uniform resource curves, while others use At-Start, At-Finish or Bell-Shaped resource curves.
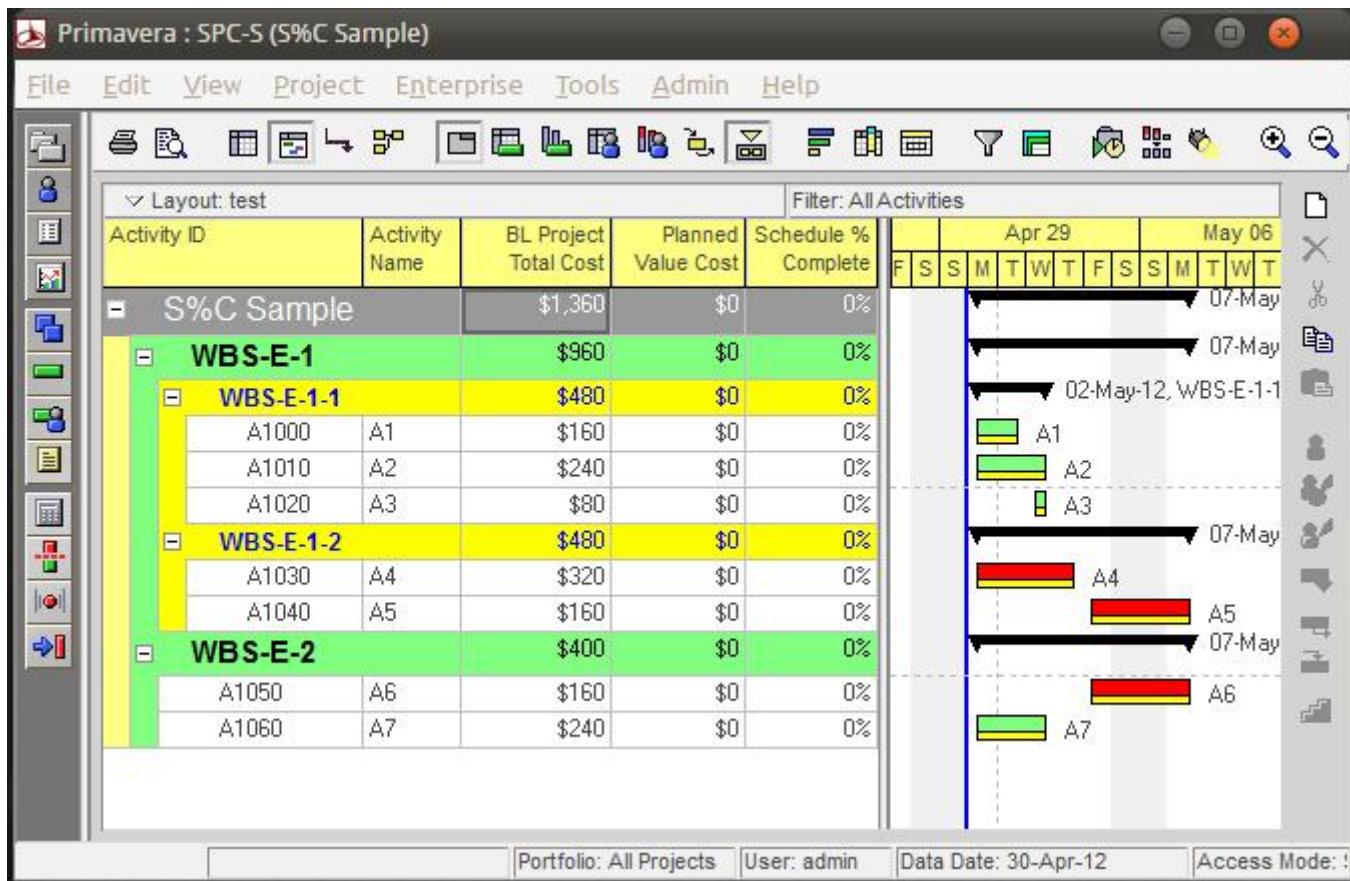
The project baseline is maintained and assigned. The baseline schedule is shown by the yellow bars in Gantt chart. The current schedule and the baseline are the same now.

Examining Schedule % Complete for Activities

I will reschedule the plan for the second day, moving the Data Date forward 1 day.

Primavera : SPC-S (S%C Sample)

Activity ID	Activity Name	BL Project Total Cost	Planned Value Cost	Schedule % Complete
S%C Sample		$1,360	$800	58.82%
WBS-E-1		$960	$560	58.33%
WBS-E-1-1		$480	$400	83.33%
A1000	A1	$160	$160	100%
A1010	A2	$240	$240	66.67%
A1020	A3	$80	$0	0%
WBS-E-1-2		$480	$160	33.33%
A1030	A4	$320	$160	50%
A1040	A5	$160	$0	0%
WBS-E-2		$400	$240	60%
A1050	A6	$160	$0	0%
A1060	A7	$240	$240	66.67%

Portfolio: All Projects   User: admin   Data Date: 02-May-12   Access Mode:

There are no actuals entered, but as we saw in Part 1, Schedule % Complete has nothing to do with the current schedule or actual data. The Schedule % Complete column shows the current values; for example, take a look at A4:
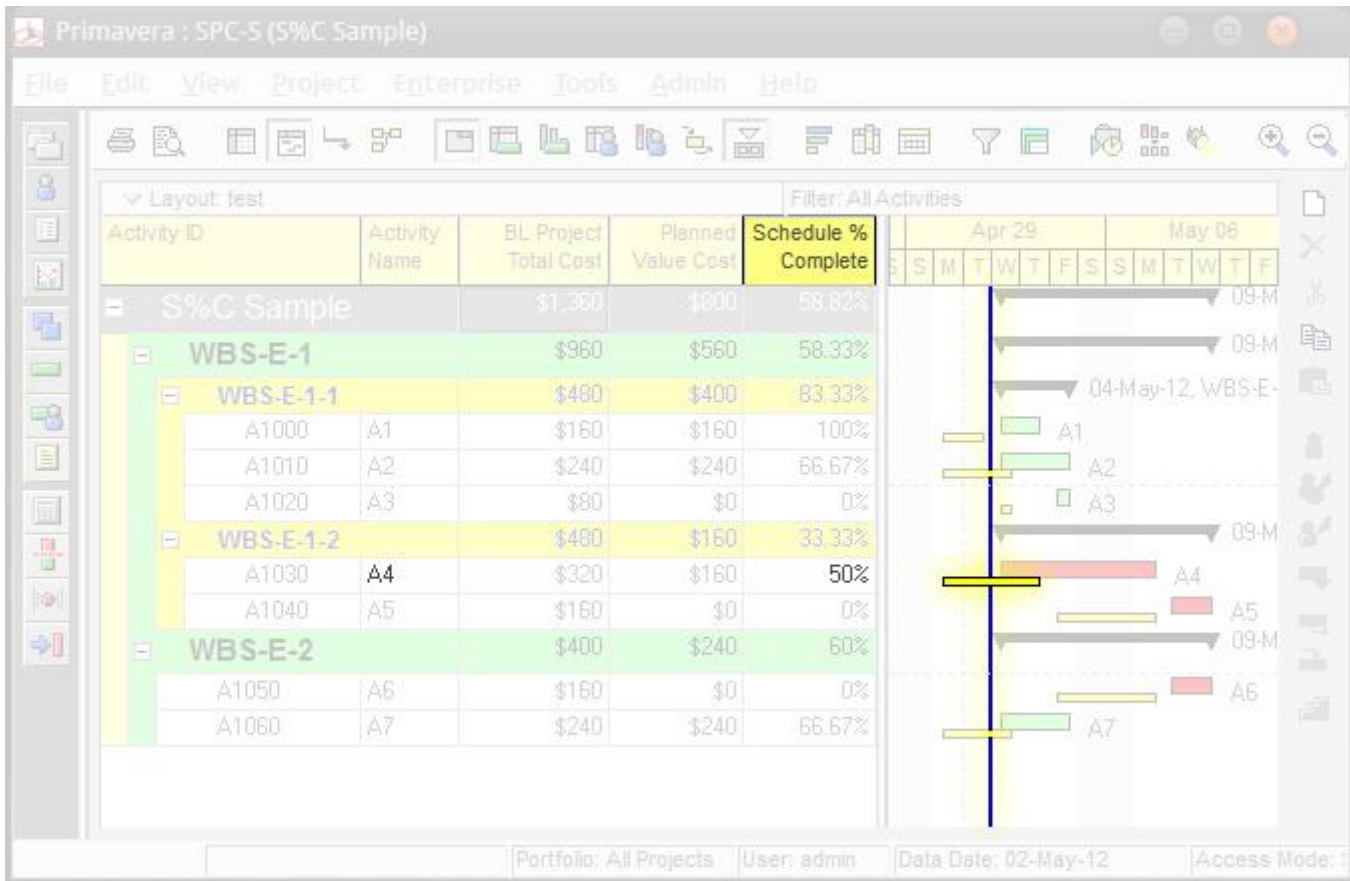
The Data Date has passed half of the baseline schedule of A4, which would be the Schedule % Complete of 50%.
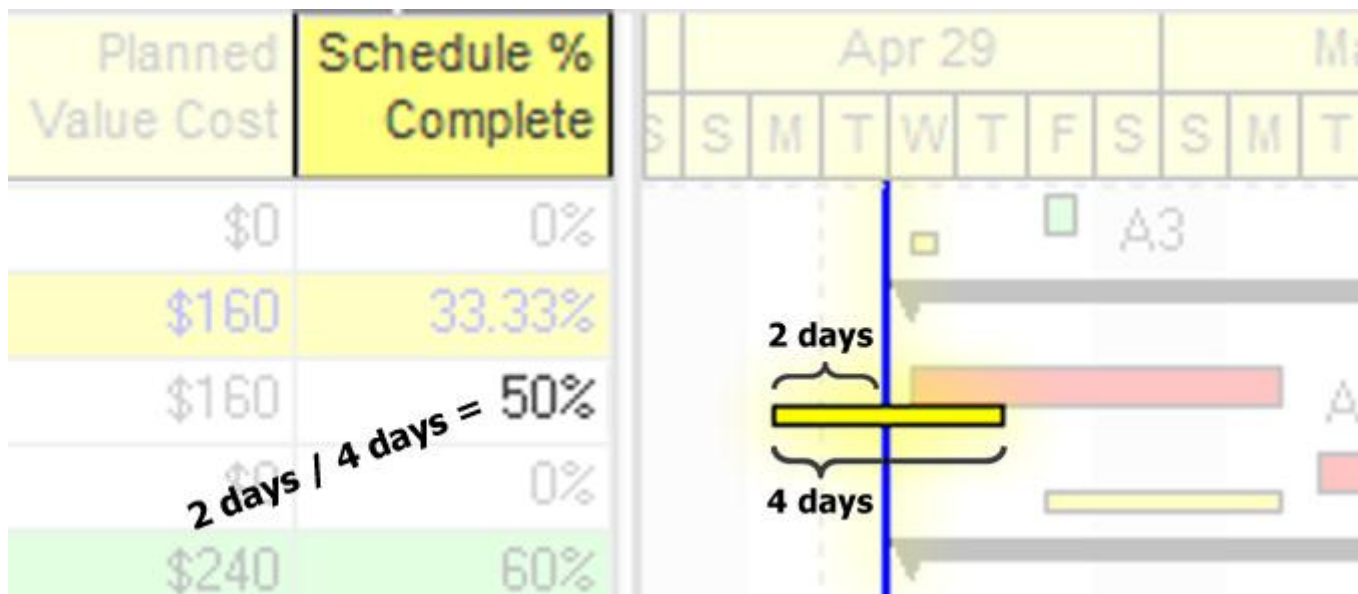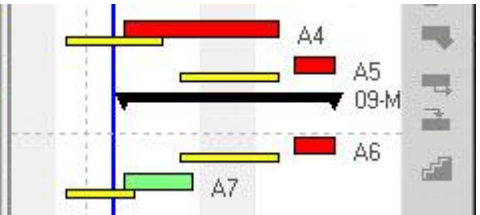
Sometimes you have nonworking days in the schedule; in this cases, those days would not be counted in passed and total baseline days (as usual).

Schedule % Complete for WBS

Let's examine WBS E-2.

WBS E-2 has the following values:

- PV (Planned Value Cost column) = $240
- BAC (BL Project Total Cost column) = $400

The WBS Schedule % Complete is calculated as PV / BAC = $240 / $400, or 60%.

How BAC and PV are calculated for WBS?

1. BAC – Budget at Completion

BAC for the WBS Element E2 is the sum of the A6 and A7 BACs. Think of this as the sum of the Total Cost for each Activity (see diagram above) but taken from the project baseline.

2. PV – Planned Value

Planned Value (PV) is bit trickier as it related to how your schedule is cost-loaded in a time-phased manner.

The Activity Usage Spreadsheet, shown in bottom half of the screen below, is handy for analysing planned value for Activities.
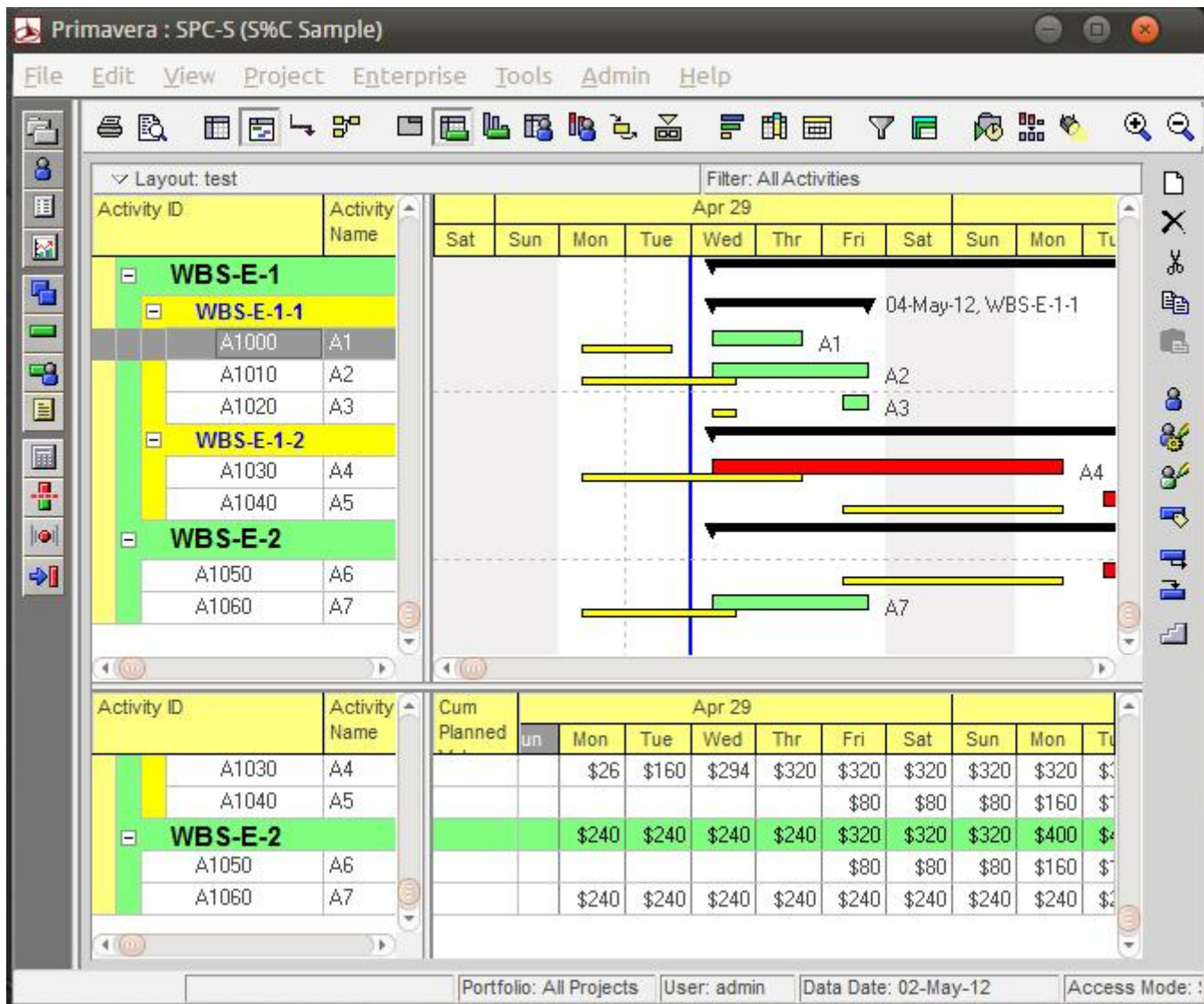
The bottom layout is set to show timephased values of the Cumulative Planned Value Costs using the Activity Usage Spreadsheet. Why use the Cumulative Planned Value Cost field? Because it's essentially a running total. With that in mind, in this view we can quickly see a running total PV for the WBS at any day in the project.

Planned Value….elaborated

Planned Value taked into account Resource Curves. Let's explore Activity A6.

A6 has a uniform curve and it has only two working days, $80 planned for each one. $80 for the first day, and the cumulative value remains

80$ for the next two nonworking days, then increases to $160 in the last day.
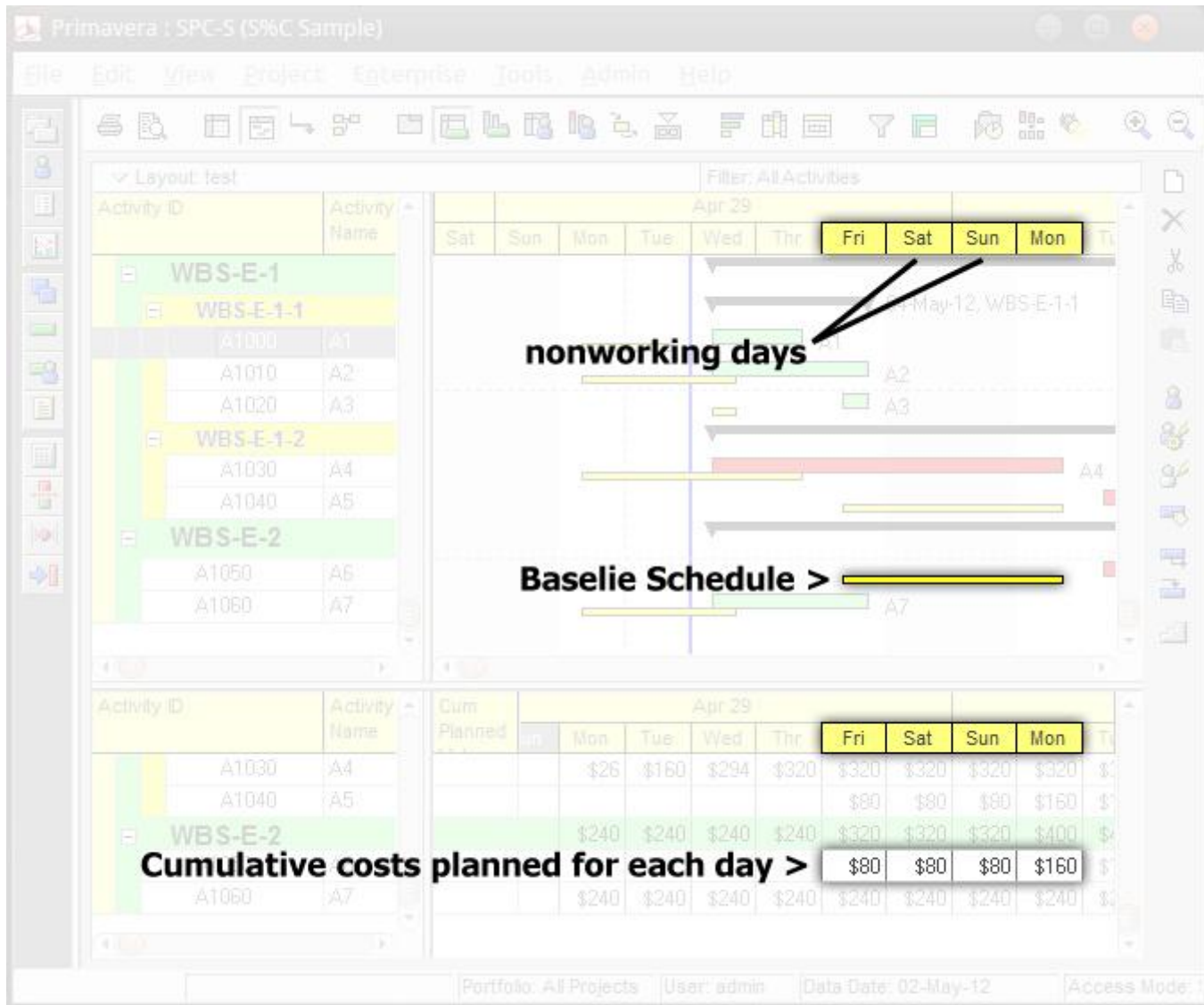
ActivityA7 has an "At Start" resource curve assigned. All of A7's planned cost will be loaded to the first day and the cumulative value of the next days would be the same.

No matter how the Activity planned values are distributed over time,
the WBS's planned values are the total of the Activities' planned
values.

The Data Date in the previous sample was the second day of the project and PV of the last WBS Element is 240$ in that day. If we change the Data Date to the sixth day, its PV would be $320. The following figure shows the values with the Data Date set to day six of the project.
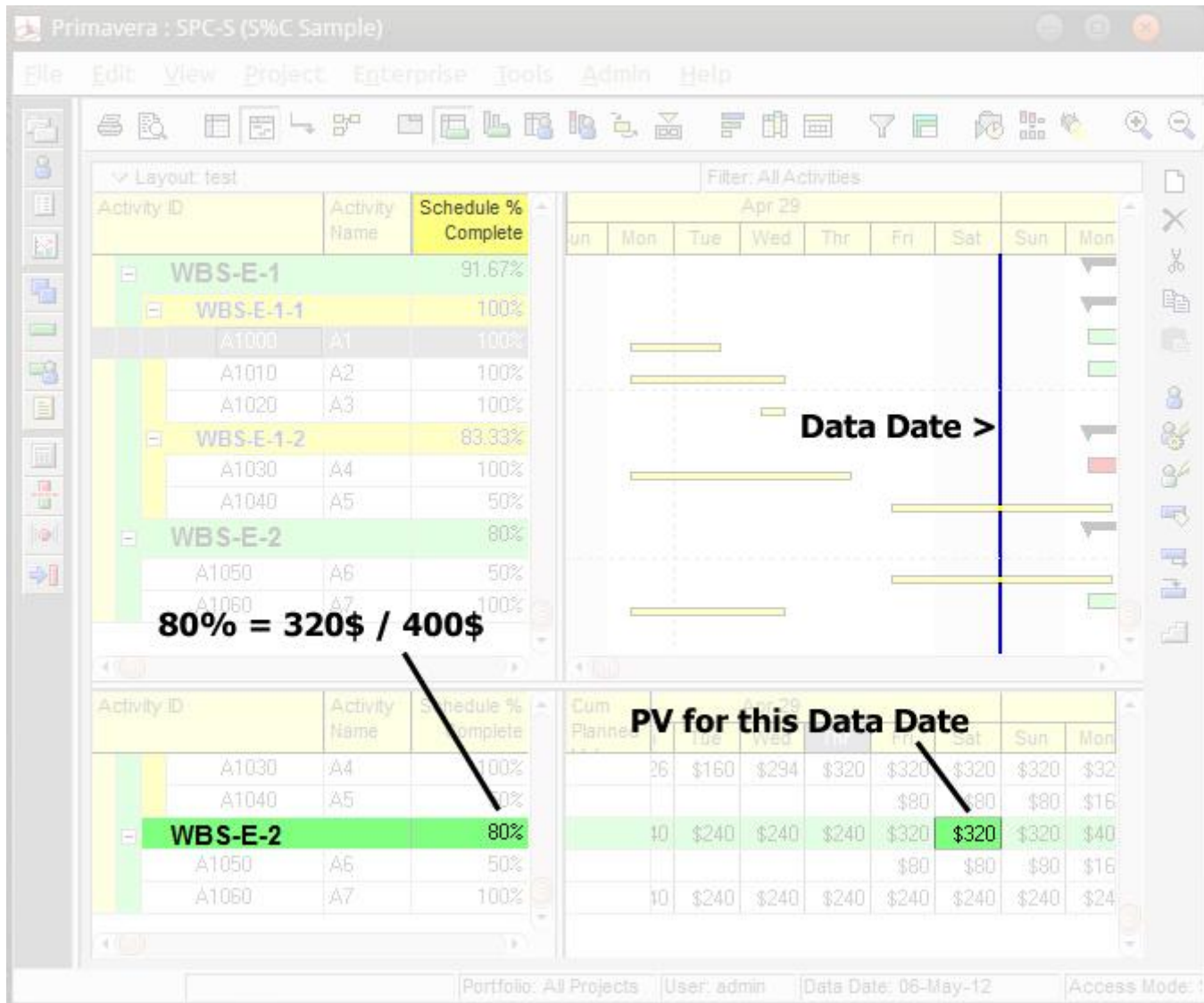
When Things Don't Add Up – A Scenario using Resource Curves

Before wrapping up, let's look at a tricky scenario; I made some changes and re-baselined the schedule. Check the values for WBS E.1.1.
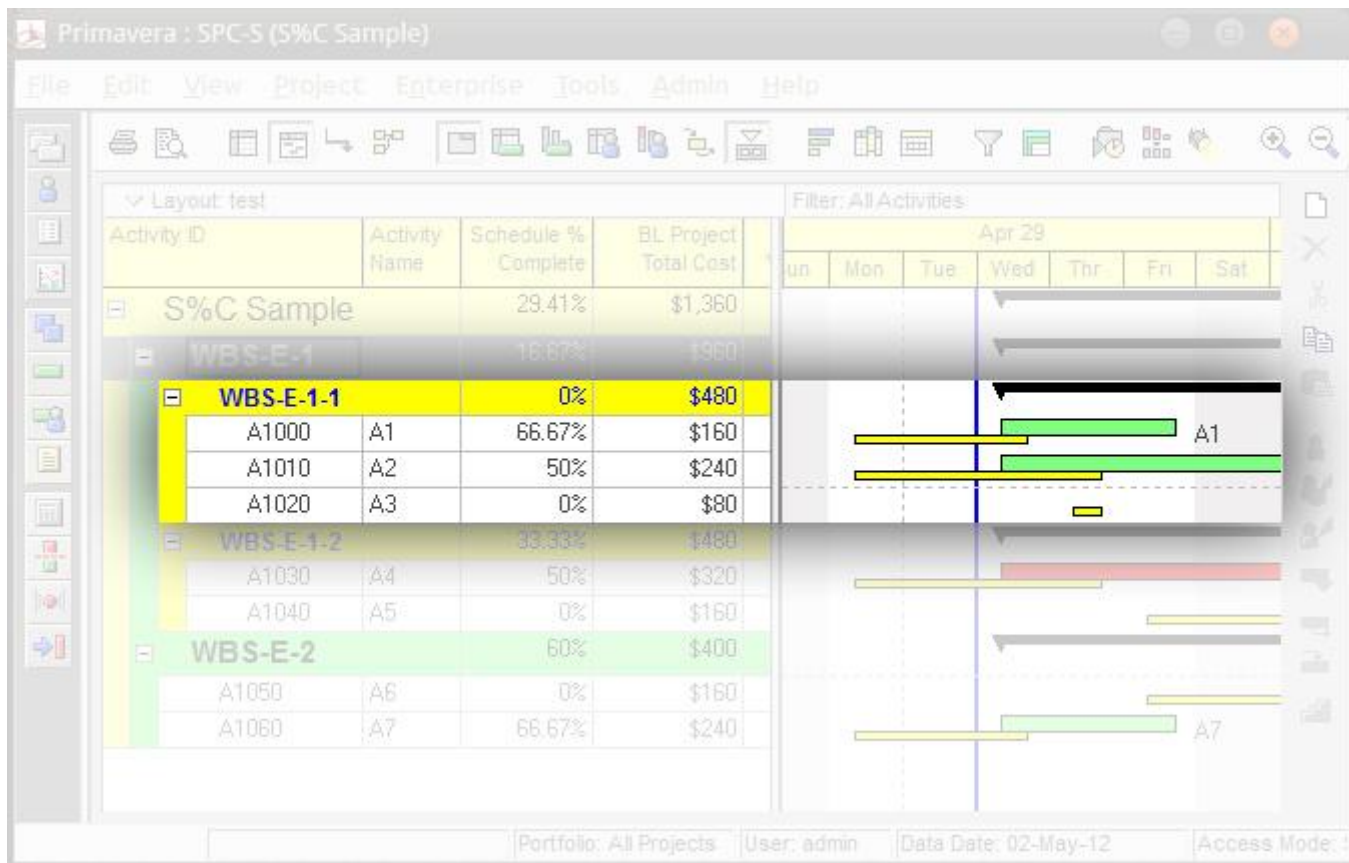
As you see, WBS E.1.1 and all of her underlying Activities have costs. Two Activities have Schedule % Complete values that are greater than zero and the WBS Element's value is still **zero**. Why?

I believe you can say; when Schedule % Complete of the WBS Element is zero, you should expect that the PV is also zero. How is it possible for the PV to be zero when Data Date has passed half of the baseline duration? The answer is simple: the Activity costs are not uniform…. because of **Resource Curves**.
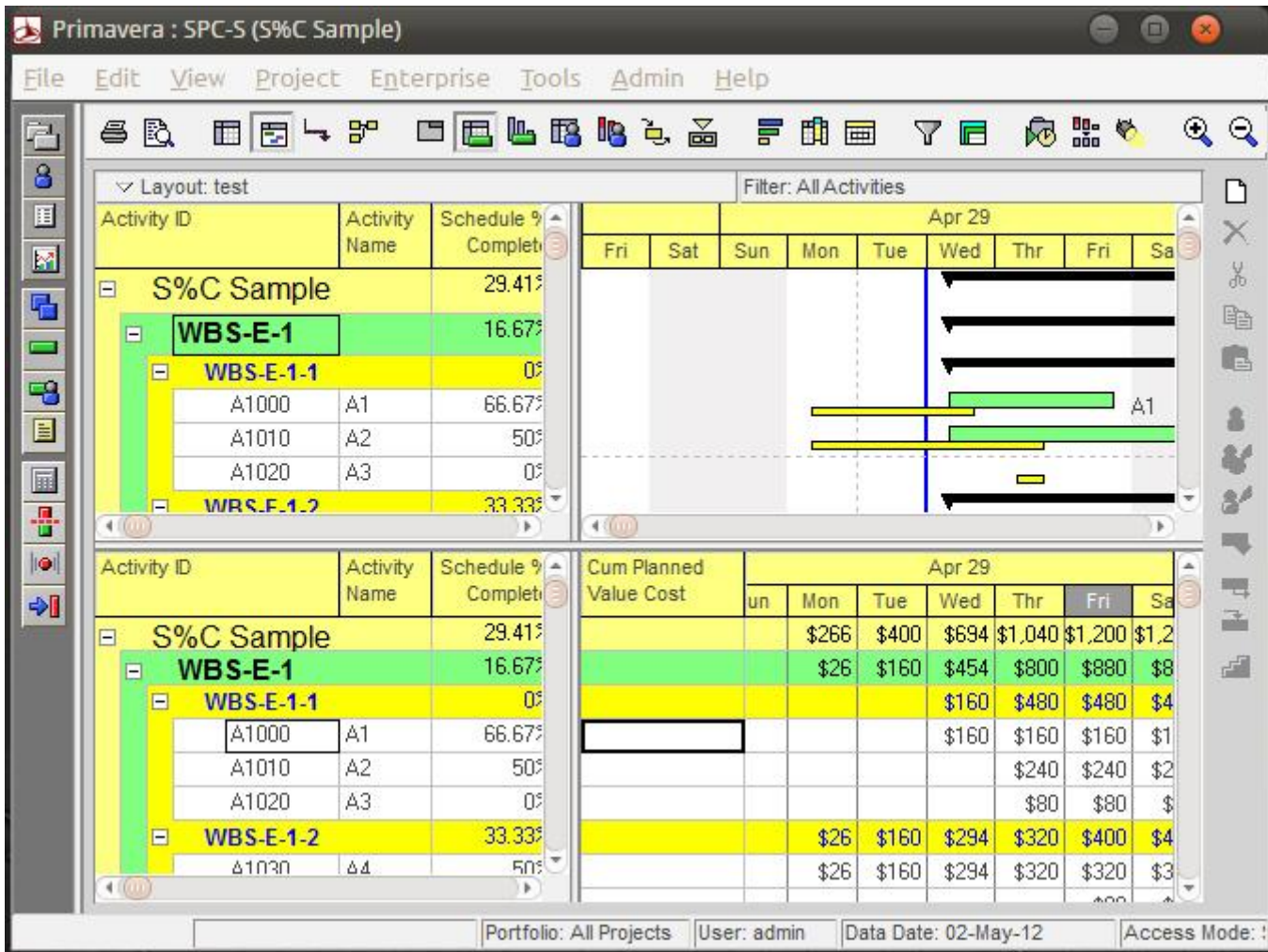
All of these three activities' costs have "At Finish" curve. The following figure is focused on the A2:
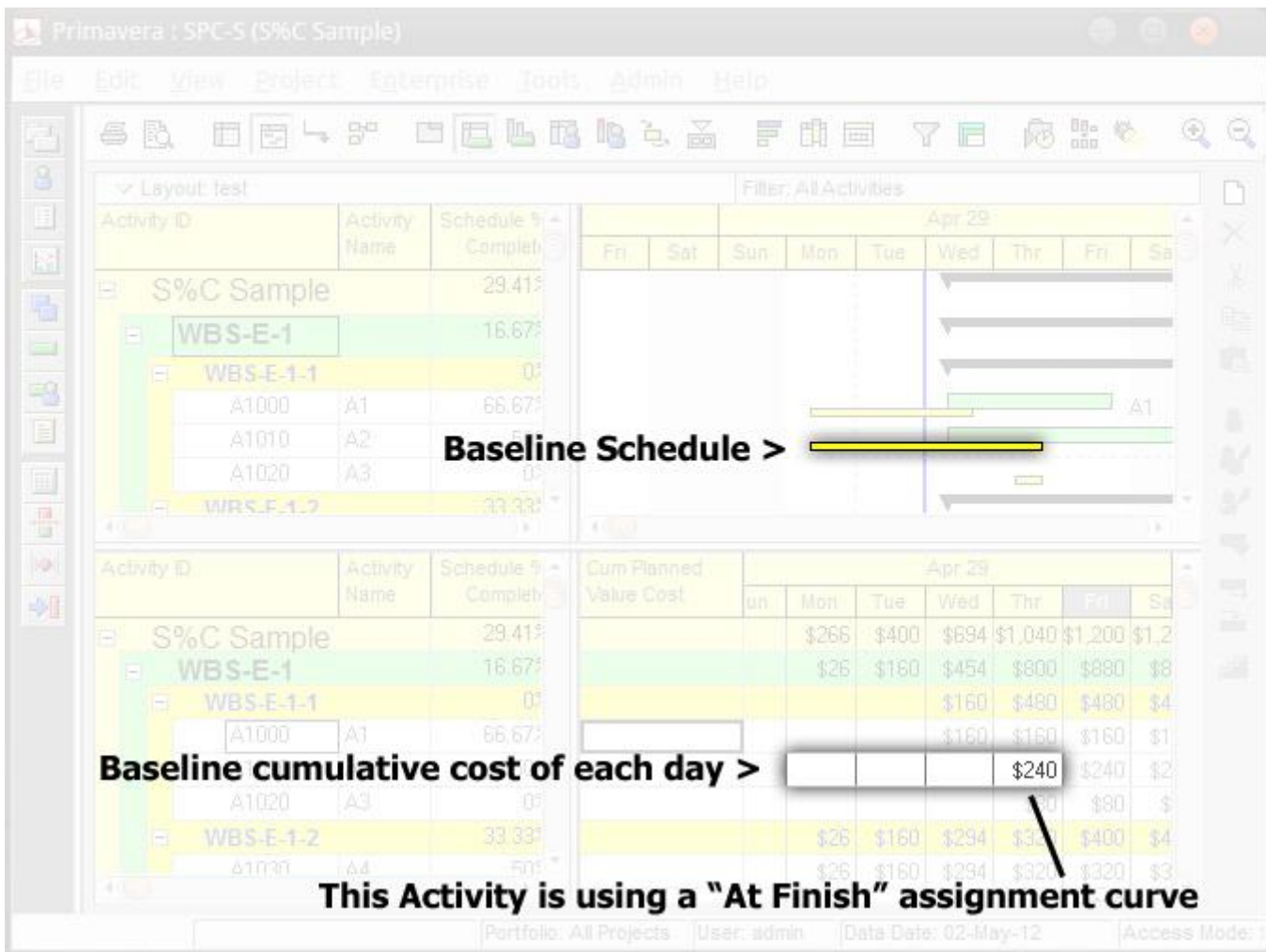
Many planners use Resource Curves in their schedules to properly distribute labor hours and costs across an activity's duration. But keep in mind that Resource Curves can cause scenarios like this one to confuse and puzzle you, if you are calculating and finding strange values for Schedule % Complete. Here's another reason to know your schedule intimately.

The Essential Guide to Printing Layouts in Primavera P6

Primavera P6 provides the ability to display project schedule information using "Layouts". Layouts are customizable views of project information and are the primary method for printing Gantt Charts, Profiles, Spreadsheets, and Trace Logic views. Schedules are tough to read and all members of the project team can benefit from an easier way to interpret their schedules. Did you know that you can customize the display of schedule information by using the Layout Options Bar?

The Layout Options Bar is used to create customized layouts that fulfill your project reporting requirements. The Layout Options Bar is located in the Activities Window.

The Layout Options Bar enables you to customize/incorporate the following (in addition to other options):

- Bars
- Columns
- Table Font & Row
- Group & Sort
- Filters

This Primavera P6 training tutorial addresses the procedures for printing the Layouts once you have customized them to your needs.

Step 1: Open the layout that you want to print using the Layout Options Bar. The layout displayed below is: **X – Current vs. Baseline Bars**. This layout includes the Activity Table on the left and the Gantt chart on the right. The Gantt chart includes both current and baseline bars. Click the Print Preview icon on the toolbar (see yellow arrow).

Step 2: In the Print Preview Dialog Box, you can use the toolbar at the top left to access various print/view options.

Step 3: We will access the "Page Setup" option, which is the first icon from the left. "Page Setup" consists of 5 tabs, and we will review each of those tabs. The first tab is the Page tab, which can be used to select page orientation, scaling and paper size.
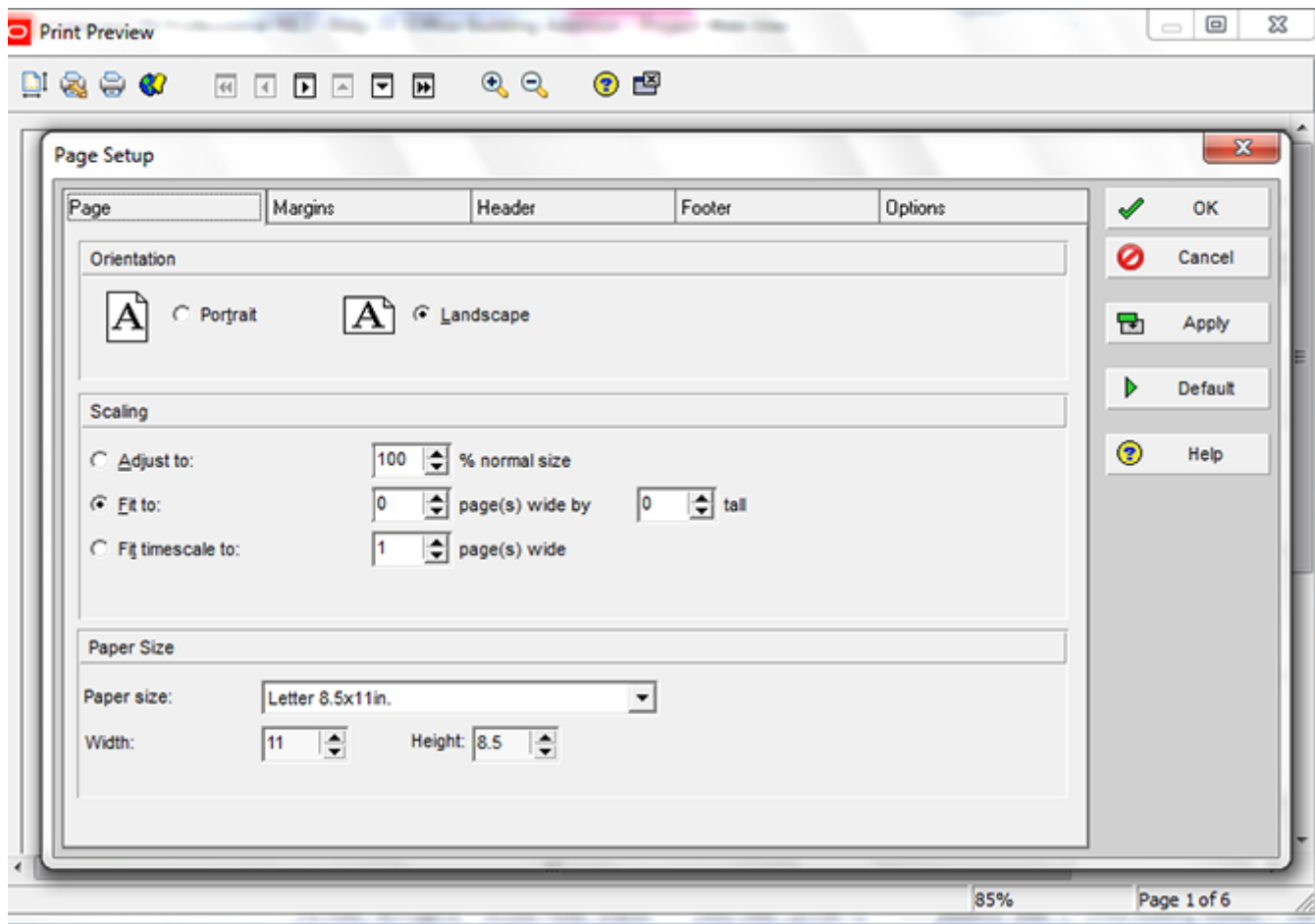
**Step 4**: The Margins tab allows you to establish the top, bottom, left and right margins.
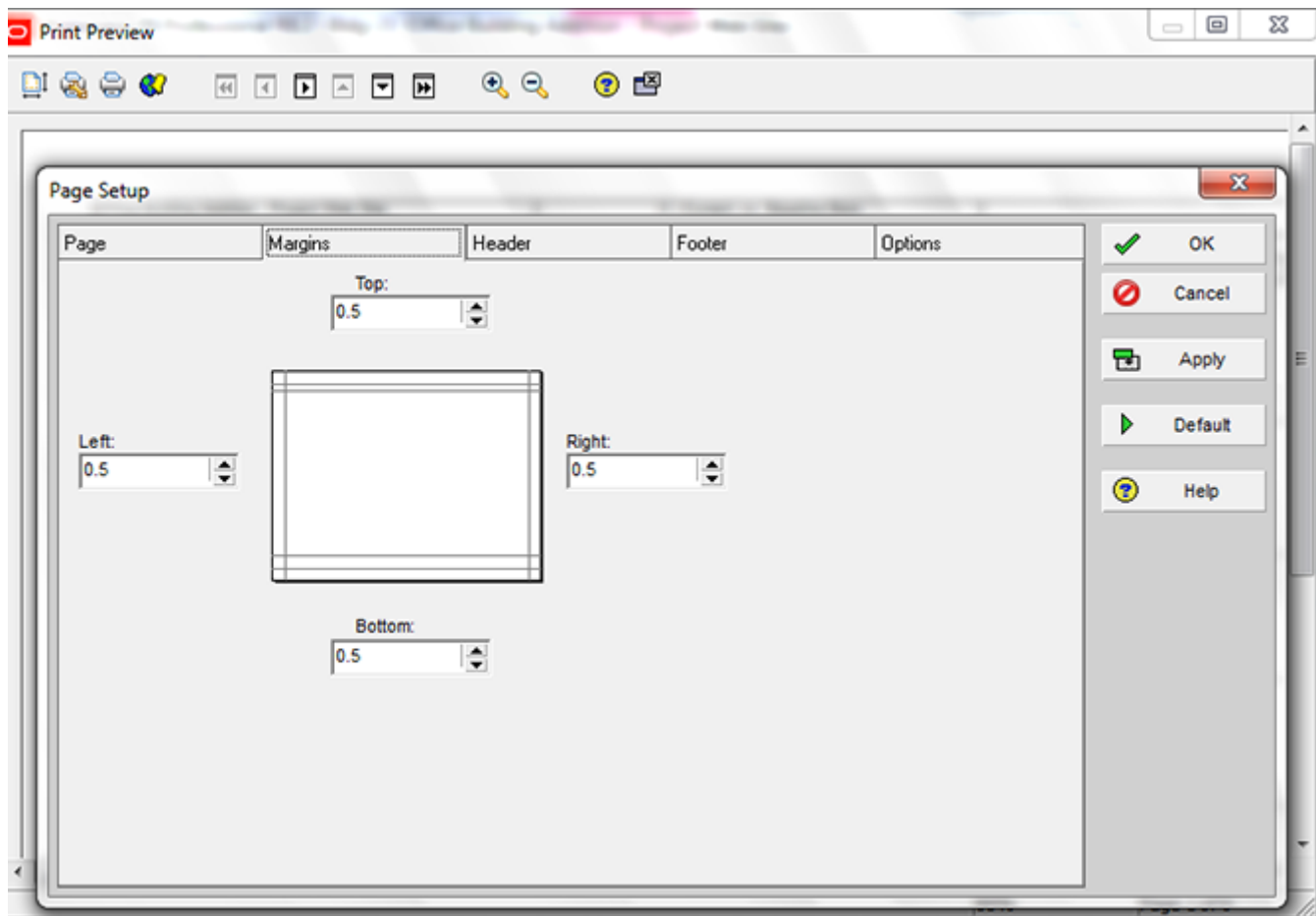
Step 5: The Header tab enables you to select the appearance of the Header. You can divide the header (see yellow arrow) into up to 5 sections and can control the contents of each section. You can also identify on which pages you would like to include the Header, as well as the height of the Header. In our example, we will divide the Header into 3 sections. We will put a logo in the first section, insert the Project Name & Layout Name in the second section, and the Date/Time in the third section.

To insert the logo into section 1, click the drop-down list for section 1 and select Picture (see red arrow below),
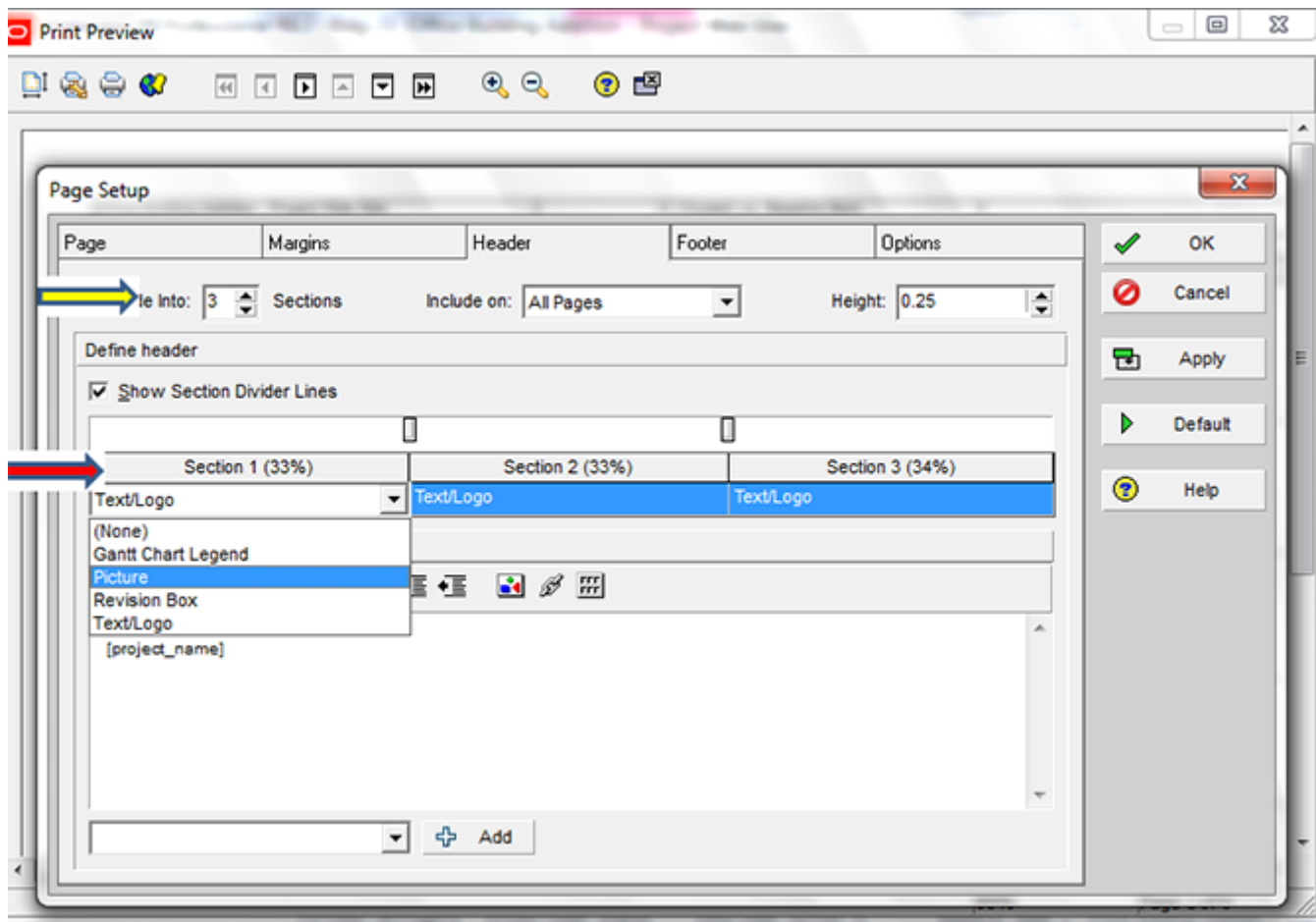
Step 6: Use the browse button to select the filename of the logo (see yellow arrow) . Click the Apply button on the right to preview the layout with the new modifications. Notice that the logo is barely visible (see green arrow below) because the Header height is only .25.
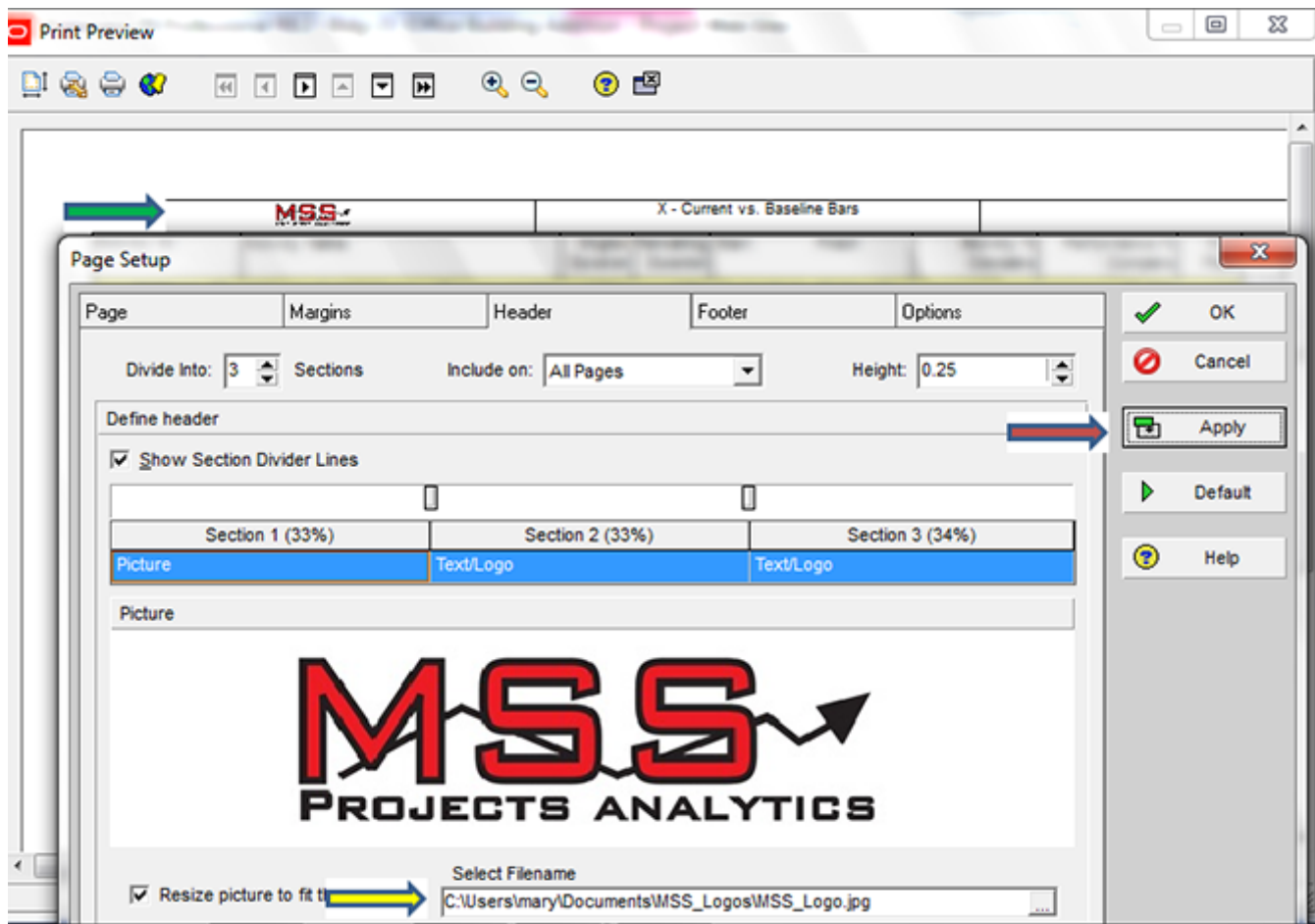
Step 7: Increase the Header height to 1 and click Apply to view the result. Notice that the logo is now more prominent.
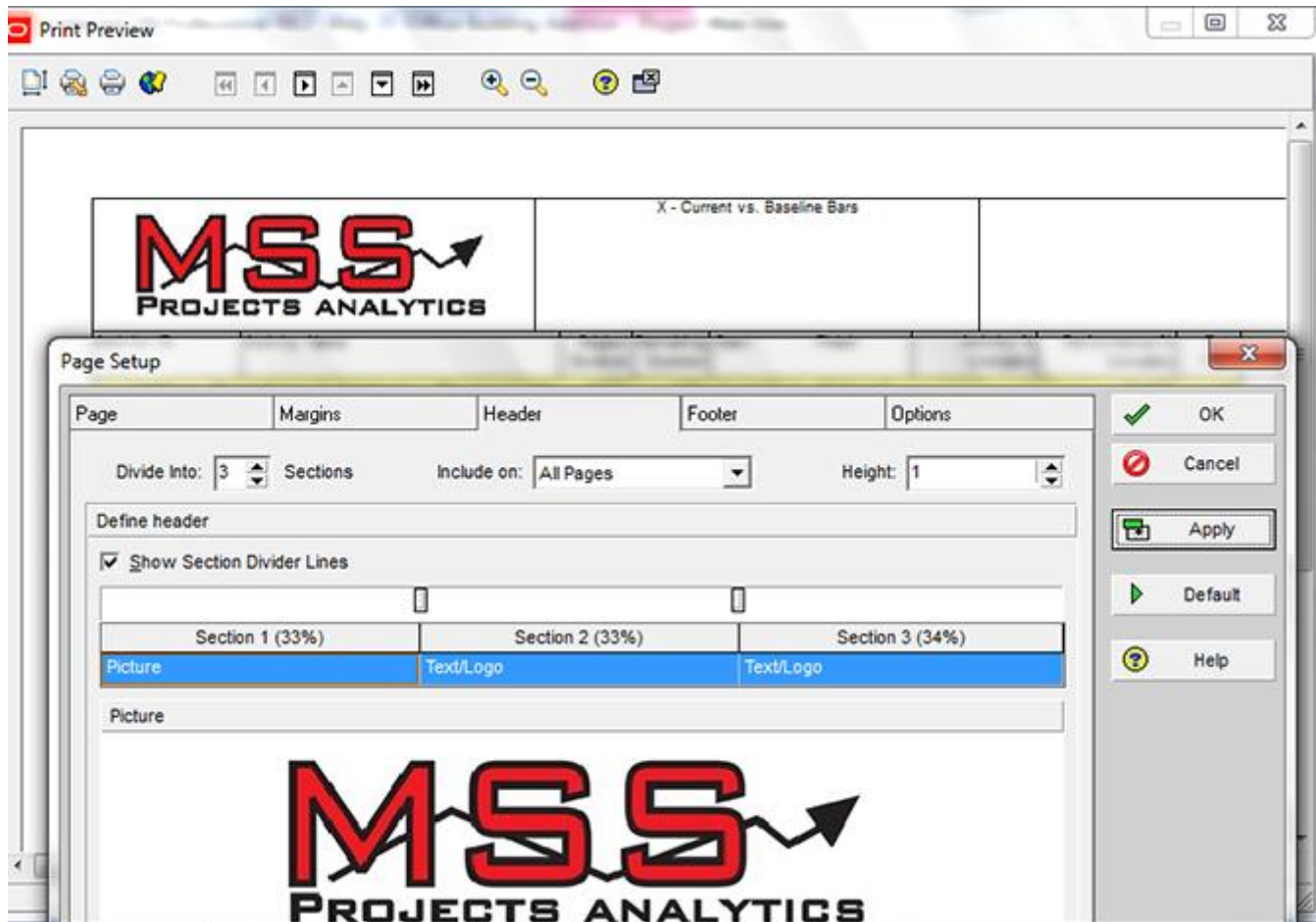
Step 8: Let's work on the 2nd Section of the Header. Currently, the 2nd section is set to display the Layout Name (see Red arrow). We would like to display the Project Name in addition to the Layout Name and would also like the Project Name to be displayed as red text.
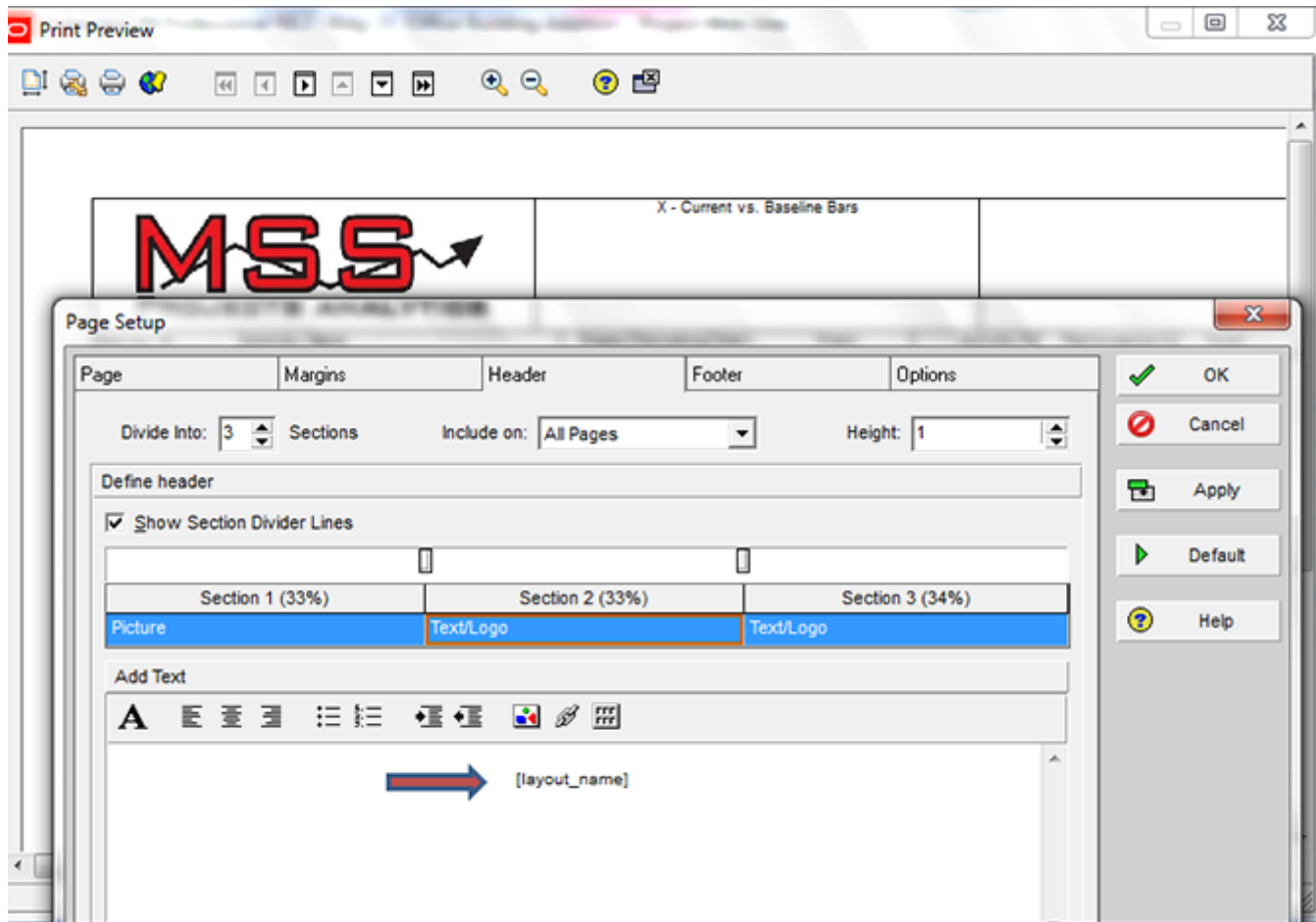
Step 9: In section 2, select Text/Logo (see yellow arrow) to identify the desired contents. Click the drop-down list at the bottom left to pick Project Name (see red arrow).
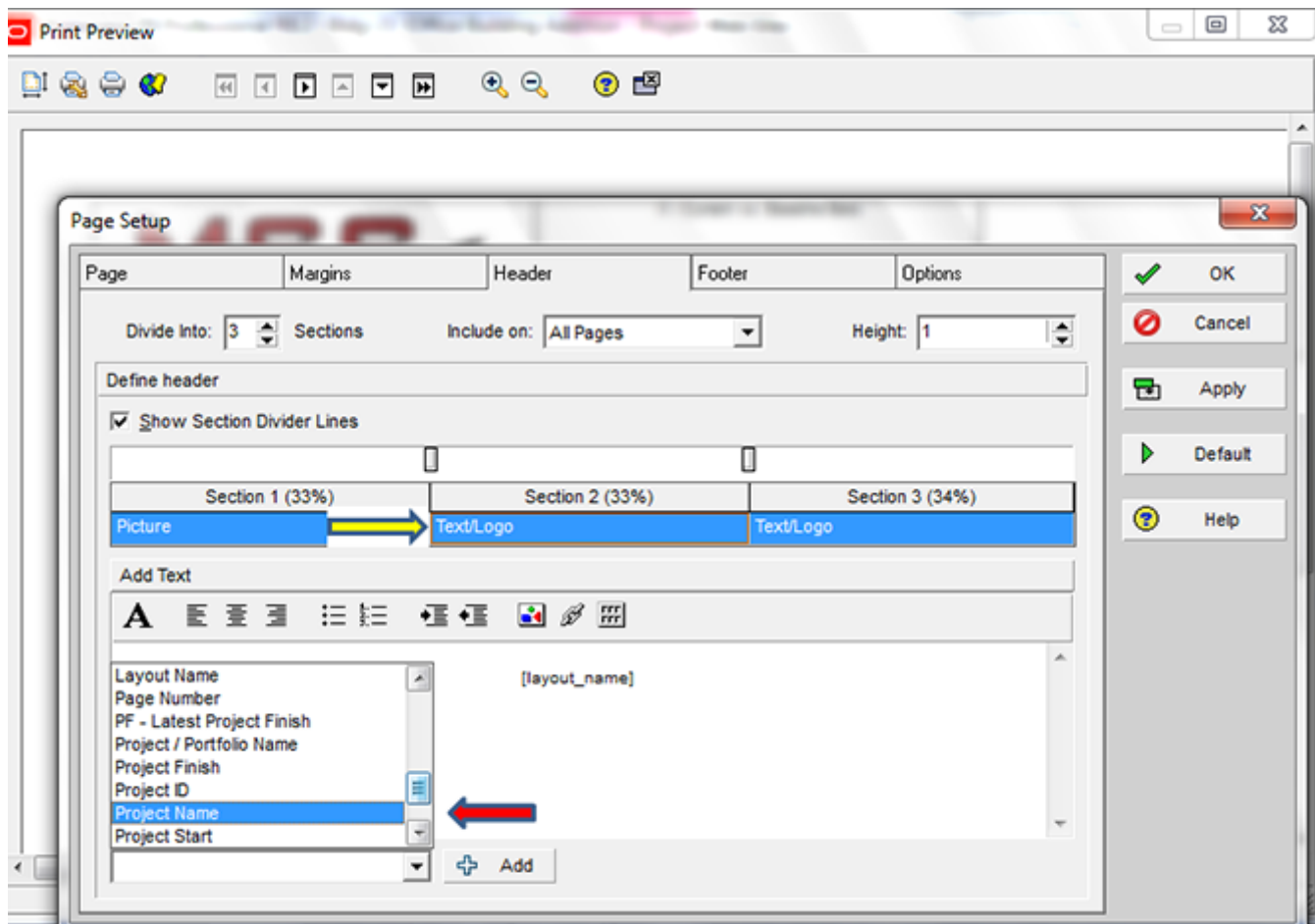
Step 10: Use the text formatting tools to format the text for the contents of section 2 (see red arrow). Click the Apply button to view the results. You can see that the text for Project Name has been set to red using the text formatting tools.
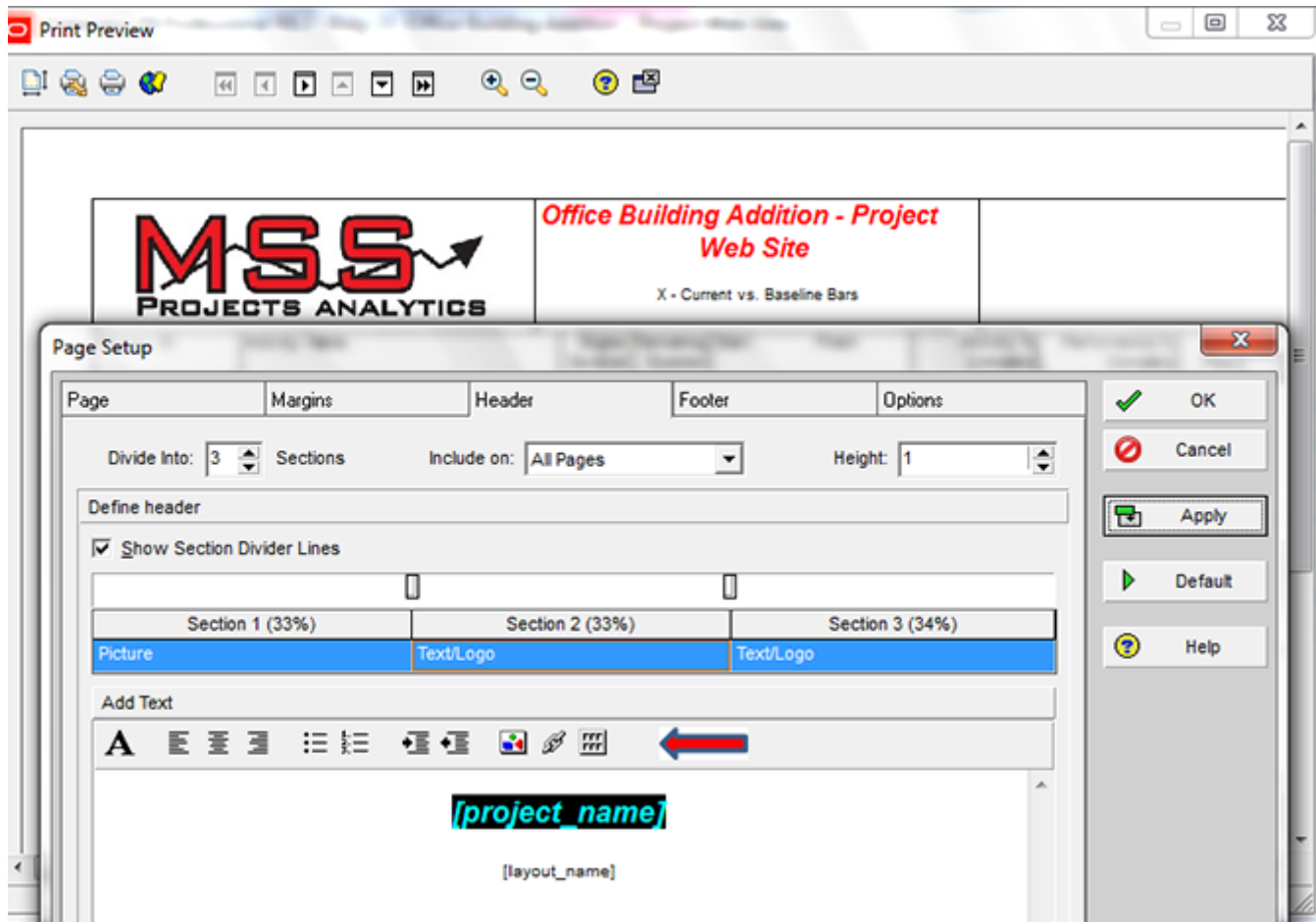
Step 11: We will let Section 3 of the Header reflect Date/Time (see red arrow).
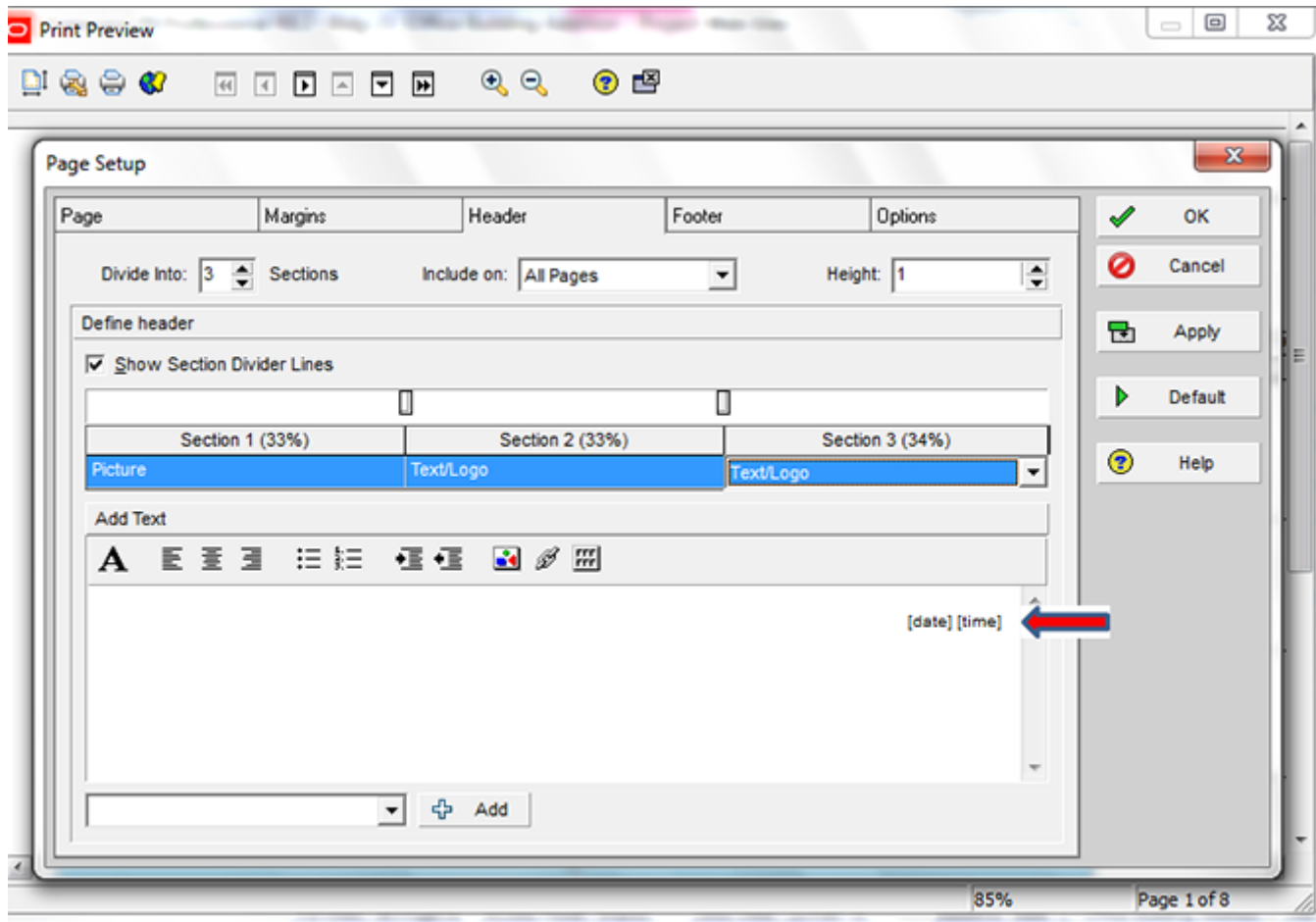
Step 12: The Footer Tab works exactly as the Header tab.
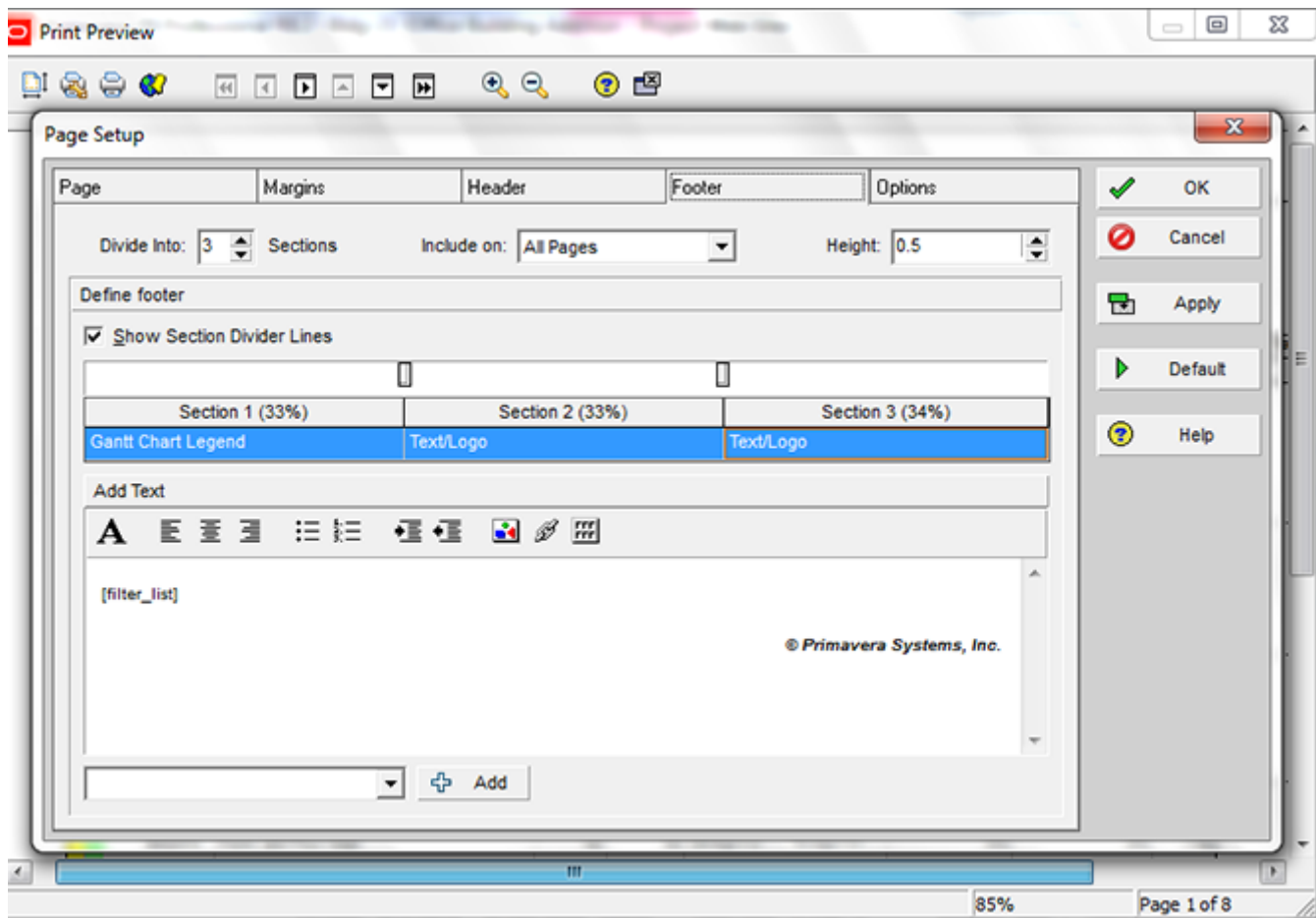
Step 13: The Options tab will be available if your Layout includes a Gantt chart, Profile, Spreadsheet, or Trace Logic. You can identify the Timescale Start and Timescale Finish. These can be predefined dates or you can specify a custom date. We have selected DD (Earliest Data Date) for the Timescale Start and PF (Latest Project Finish) for the Timescale Finish. Of course, you'll want to ensure you descrunch the Gantt chart if you're printing it with this trick.

Notice the other print options that can be selected. We will explore those options with the subsequent images.
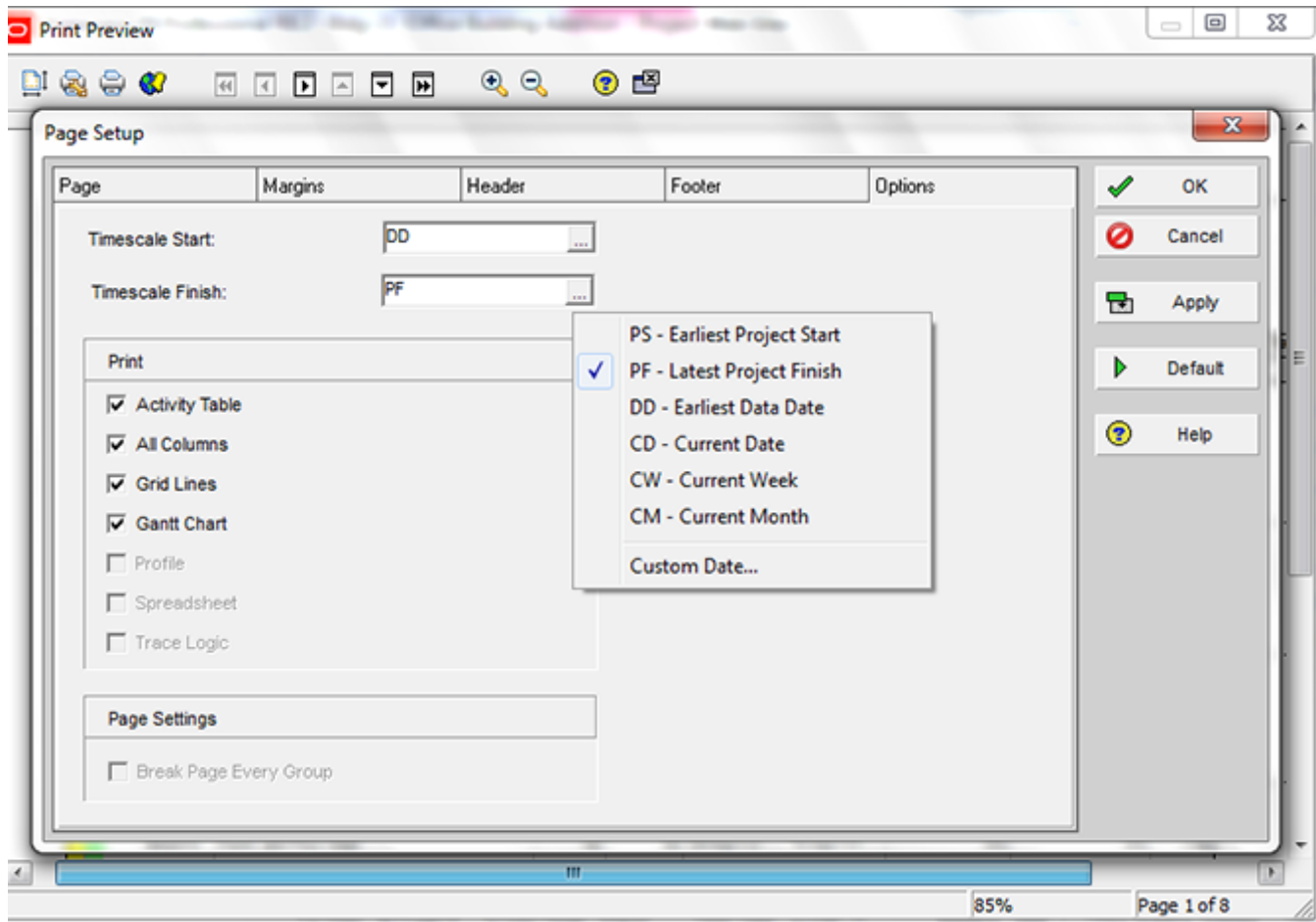
Step 14: The preview displayed below depicts printing the Gantt chart, only without the Activity Table.
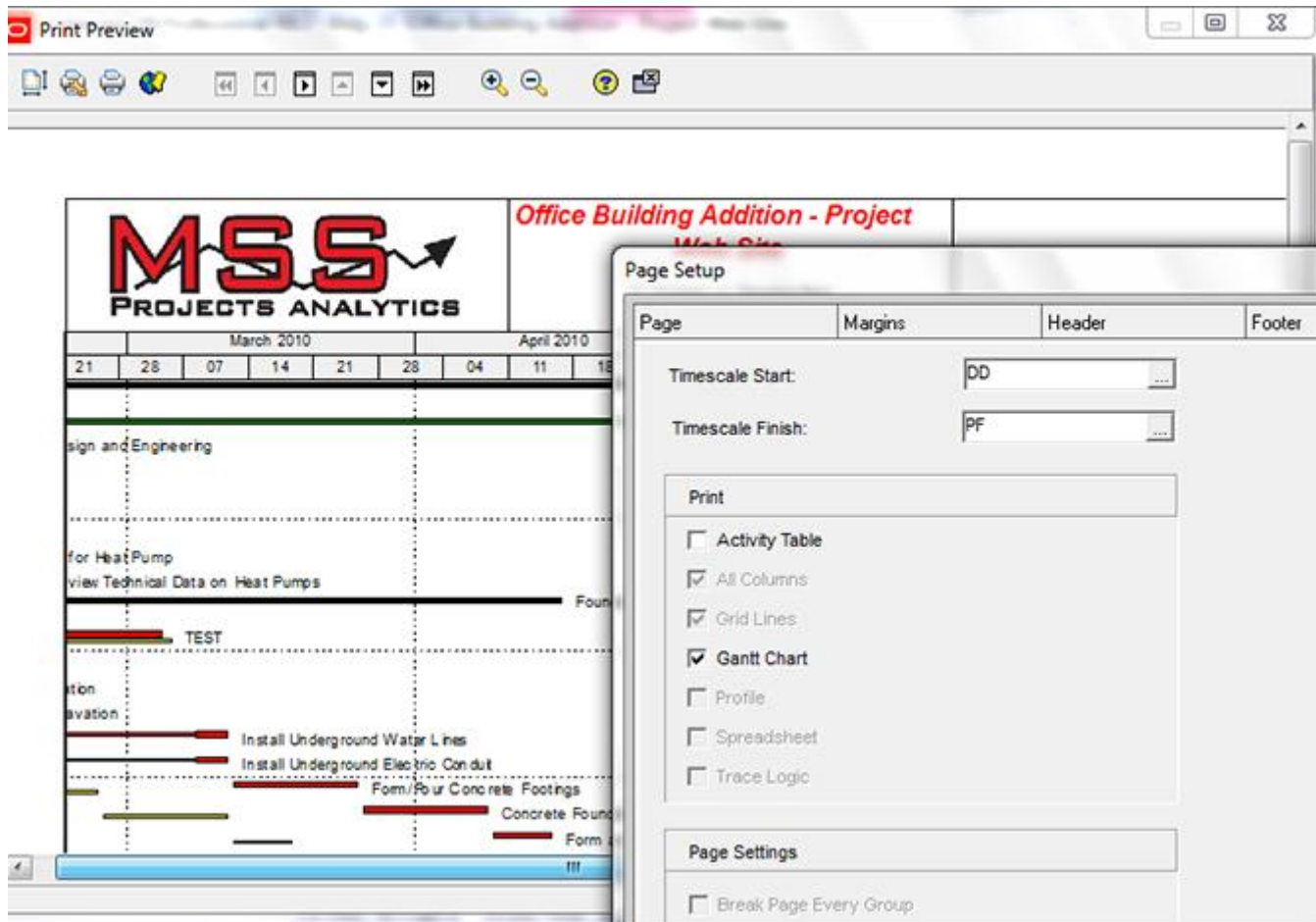
Step 15: The preview below selects to print the Activity Table, displays all columns on the Activity Table, as well as the Gantt chart.

Step 16: The preview below displays only those Activity Table columns visible on the layout versus all columns.

Step 17: This preview displays only the Activity Table (ie. No Gantt chart).

Office Building Addition - Project Web Site

X - Current vs. Baseline Bars

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Activity % Complete	Performance % Complete	Total Float
	Office Building Addition - Project We	1252d	198d	11-Jan-10 A	30-Nov-10		19.63%	-19d
BA-ADMIN	Project Administration	207d	198d	11-Jan-10 A	30-Nov-10	4.35%	4.35%	-19d
	Design and Engineering	30d	0d	11-Jan-10 A	19-Feb-10 A		100%	
BA1000	Building Addition Kickoff	0d	0d	11-Jan-10 A		100%	100%	
BA1010	Design Building Addition							
BA1020	Review and Approve Designs							
BA1030	Assemble Technical Data for Heat Pu							
BA1040	Review Technical Data on Heat Pumps							
	Foundation							
A1000	TEST							
BA2000	Begin Building Construction							
BA2010	Site Preparation							
BA2020	Excavation							
BA2030	Install Underground Water Lines							
BA2040	Install Underground Electric Conduit							
BA2050	Form/Pour Concrete Footings							
BA2060	Concrete Foundation Walls							
BA2070	Form and Pour Slab							

Page Setup

Page	Margins	Header	Footer

Timescale Start: DD   ...

Timescale Finish: PF   ...

Print

☑ Activity Table

☑ All Columns

☑ Grid Lines

☐ Gantt Chart

Step 18: View the finished product. Use arrows on the toolbar to navigate through the preview. Use the print setup & print icons to establish printer options. You can also publish the layout to an HTML file (red arrow identifies the print preview dialog box options).