



Project Management



(IENG419)



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Chapter 5

More Details in MSP

- **Correcting the relationships between activities.**
- **Adding a constraint to an activity.**
- **Identifying the Critical Path Activities.**
- **Splitting the activities.**
- **Defining Deadline date for an activity**

Correcting the relationships between activities

- ✓ As you remember, in chapter 2, we defined and applied **FS**, **SS**, **FF** and **SF** relationships between activities.
- ✓ Now, if two activities have **FS** relationship, we can change their scheduling by defining **Lead Time** and **Lag Time** for them.
- ✓ By adding **Lead Time** to an activity, it starts before finishing of its **predecessor activity**.
- ✓ By adding **Lag Time** to an activity, it starts after finishing of its **predecessor activity**. It means there will be some free times between finishing of the predecessor activity and starting of the successor activity.
- ✓ In MSP both of **Lead Time** and **Lag Time** will be added in **Predecessor column** in **Task Information** of each activity and in **Lag part**. But in the **Lag part** for **Lag Time** we enter **positive** number and for **Lead Time** we enter **negative** number. As you see in continue.

Correcting the relationships between activities

The screenshot shows the Microsoft Project interface. The task list on the left includes:

ID	Task Name	Duration	Start	Finis
1	Planning	0 days	Mon 10/11/10	Mon 10/11/10
2	Lining	1 day	Mon 10/11/10	Mon 10/12/10
3	Excavation	3 days	Tue 10/12/10	Thu 10/15/10
4	Grave	1 day	Fri 10/15/10	Fri 10/15/10
5	Molding 1	3 days	Tue 10/12/10	Thu 10/15/10
6	Armature 1	5 days	Fri 10/15/10	Thu 10/20/10
7	Molding 2	2 days	Mon 10/18/10	Tue 10/19/10
8	Armature 2	2 days	Mon 10/18/10	Tue 10/19/10
9	Concrete 1	1 day	Wed 10/20/10	Wed 10/20/10
10	Concrete 2	1 day	Thu 10/21/10	Thu 10/21/10
11	Curing 1	1 day	Fri 10/22/10	Fri 10/22/10
12	Opening the	1 day	Sat 10/23/10	Sat 10/23/10
13	Molding 3	1 day	Sun 10/24/10	Sun 10/24/10
14	Armature 3	1 day	Mon 10/25/10	Mon 10/25/10
15	Molding 4	1 day	Tue 10/26/10	Tue 10/26/10
16	Armature 4	1 day	Wed 10/27/10	Wed 10/27/10
17	Molding 5	1 day	Thu 10/28/10	Thu 10/28/10
18	Armature 5	1 day	Fri 10/29/10	Fri 10/29/10

The 'Task Information' dialog box for 'Armature 1' shows the following predecessor table:

ID	Task Name	Type	Lag
5	Molding 1	Finish-to-Start (FS)	-2d

The screenshot shows the same Microsoft Project interface, but with the 'Armature 1' task corrected. The task list now shows:

ID	Task Name	Duration	Start	Finis
1	Planning	0 days	Mon 10/11/10	Mon 10/11/10
2	Lining	1 day	Mon 10/11/10	Mon 10/12/10
3	Excavation	3 days	Tue 10/12/10	Thu 10/15/10
4	Grave	1 day	Fri 10/15/10	Fri 10/15/10
5	Molding 1	3 days	Tue 10/12/10	Thu 10/15/10
6	Armature 1	5 days	Wed 10/13/10	Tue 10/19/10
7	Molding 2	2 days	Mon 10/18/10	Tue 10/19/10
8	Armature 2	2 days	Mon 10/18/10	Tue 10/19/10
9	Concrete 1	1 day	Wed 10/20/10	Wed 10/20/10
10	Concrete 2	1 day	Thu 10/21/10	Thu 10/21/10

A large blue arrow points to the Gantt chart with the text: "The Lead time in Gantt chart".

Adding some constraints to the activities

➤ Different types of constraints

✓ Flexible Constraints

- ✓ **As Soon As Possible (ASAP):** This constraint will start the activity in the earliest possible date.
- ✓ **As Late As Possible (ALAP):** By using this constraint, the activity will finish in the latest possible date.

✓ Semi Flexible Constraints

- ✓ **Start No Earlier Than (SNET):** It will force the activity to start on the specific date or after that date.
- ✓ **Start No Later Than (SNLT):** By applying this constraint, the activity can not be started after the specific date, but it can be started before that date.
- ✓ **Finish No Earlier Than (FNET):** By using this constraint, the activity can not be finished before the specific date.
- ✓ **Finish No Later Than (FNLT):** In this constraint, the activity can not finished after the specific date.

✓ Inflexible Constraints

- ✓ **Must Start On (MSO):** The activity must be started on the specific date.
- ✓ **Must Finish On (MFO):** The activity must be finished on the specific date.

Adding some constraints to the activities

- ✓ For example for adding **“Must Start On”** constraint to an activity we will follow these steps:

The screenshot shows the Microsoft Project interface with the 'Task Information' dialog box open for the 'Excavation' task. The dialog is set to the 'Advanced' tab. The 'Name' field contains 'Excavation', and the 'Duration' is '3d'. The 'Constraint type' is set to 'Must Start On' and the 'Constraint date' is 'Wed 10/20/10'. The 'OK' button is highlighted.

Blue arrows and numbers indicate the steps for adding the constraint:

- 1: Select the task in the Gantt chart.
- 2: Click the 'Task Information' icon in the ribbon.
- 3: Click the 'Advanced' tab in the dialog.
- 4: Select the 'Must Start On' constraint type.
- 5: Enter the specific date in the 'Constraint date' field.

Task ID	Task Name	Duration	Start	Finish
1	Planning	0 days	Mon 10/11/10	Mon 10/11/10
2	Lining	1 day	Mon 10/11/10	Mon 10/12/10
3	Excavation	3 days	Tue 10/12/10	Thu 10/15/10
4	Concrete 1	1 day	Fri 10/15/10	Fri 10/15/10
5	Concrete 2	3 days	Tue 10/19/10	Thu 10/22/10
6	Armature 1	5 days	Fri 10/22/10	Mon 11/01/10
7	Armature 2	2 days	Mon 10/25/10	Wed 10/27/10
8	Armature 3	2 days	Mon 10/25/10	Wed 10/27/10
9	Concrete 1	1 day	Wed 10/20/10	Wed 10/20/10
10	Concrete 2	1 day	Fri 10/22/10	Fri 10/22/10
11	Curing 1	16 days	Mon 10/25/10	Mon 11/08/10
12	Opening the mold 1	2 days	Tue 11/16/10	Wed 11/17/10
13	Molding 3	3 days	Thu 11/18/10	Mon 11/22/10
14	Armature 3	3 days	Tue 11/23/10	Thu 11/25/10
15	Molding 4	5 days	Thu 11/18/10	Wed 11/24/10
16	Armature 4	5 days	Thu 11/25/10	Wed 12/01/10
17	Molding 5	3 days	Thu 11/18/10	Mon 11/22/10
18	Armature 5	3 days	Tue 11/23/10	Thu 11/25/10

Identifying the Critical Path Activities

- ✓ As you know there is no **Slack** for activities on the **Critical Path** but there may be **Free Slack** or **Total Slack** for other activities:
 - ✓ **Free Slack:** The time interval that an activity can be postponed without causing any delay in other activities.
 - ✓ **Total Slack:** The time interval that an activity can be postponed without causing any delay in the finish time of the project.
- ✓ You can see the **Critical Path** and some other details of Critical Path in **Detail Gantt view** in the following slides.

Identifying the Critical Path Activities

✓ By following these steps you can see the **Detail Gantt view**:

The screenshot shows the Microsoft Project interface with the following steps highlighted:

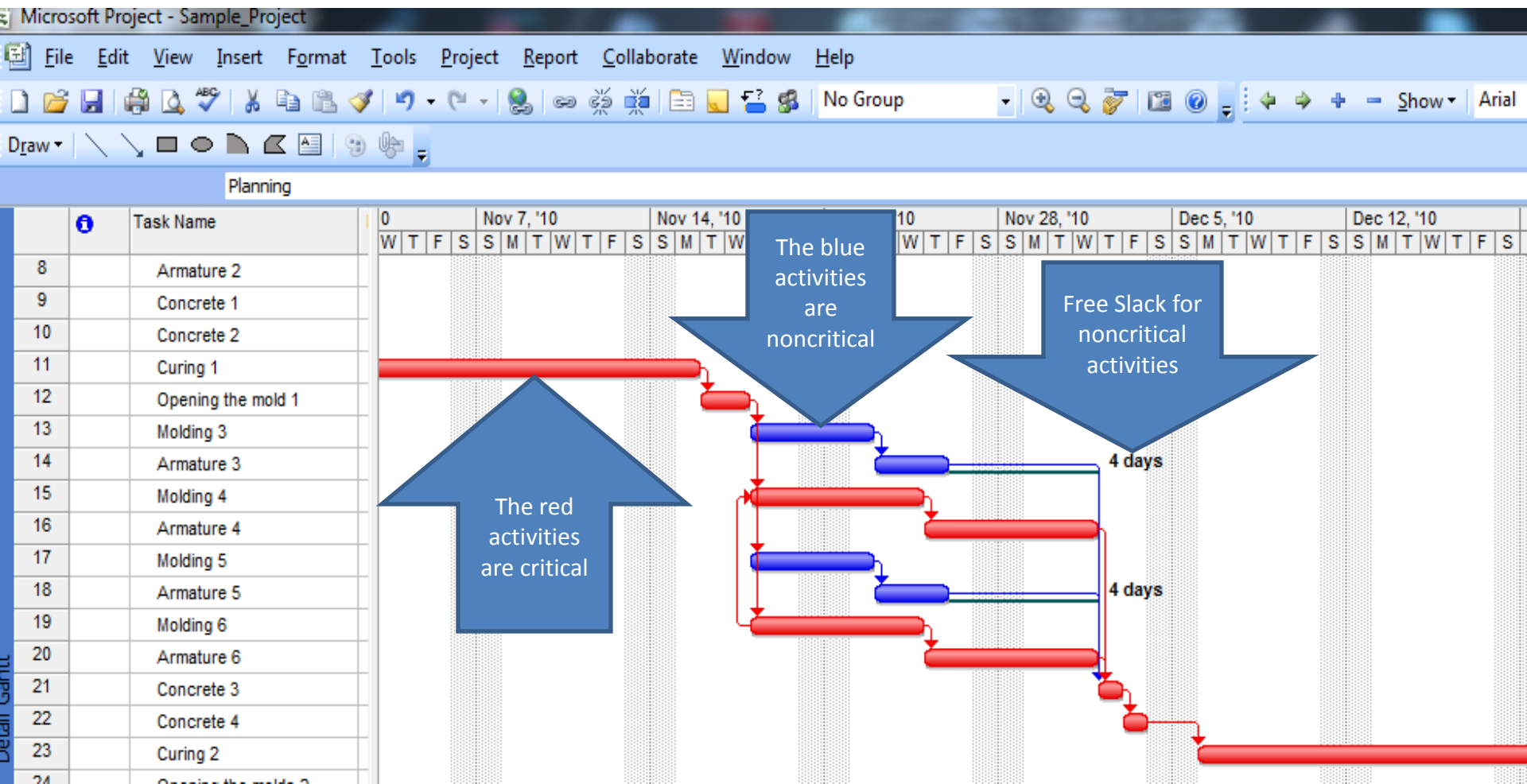
- Step 1: The **View** menu is selected.
- Step 2: The **More Views...** option is selected from the View menu.
- Step 3: The **Detail Gantt** view is selected in the **More Views** dialog box.
- Step 4: The **Apply** button is clicked in the **More Views** dialog box.

The background shows a Gantt chart with a task list table:

	Start	Finis	Oct 3,
			S M
1	on 10/11/10	Mon 10.	
2	on 10/11/10	Mon 10.	
3	ue 10/12/10	Thu 10.	
4	Fri 10/15/10	Fri 10.	
5	ue 10/12/10	Thu 10.	
7	on 10/18/10	Tue 10.	
8	on 10/18/10	Tue 10.	
9	ed 10/20/10	Wed 10.	
10	Fri 10/22/10	Fri 10.	
11	on 10/25/10	Mon 11.	
12	ue 11/16/10	Wed 11.	
13	hu 11/18/10	Mon 11.	
14	ue 11/23/10	Thu 11.	

Identifying the Critical Path Activities

✓ Some details of **Critical Path**:

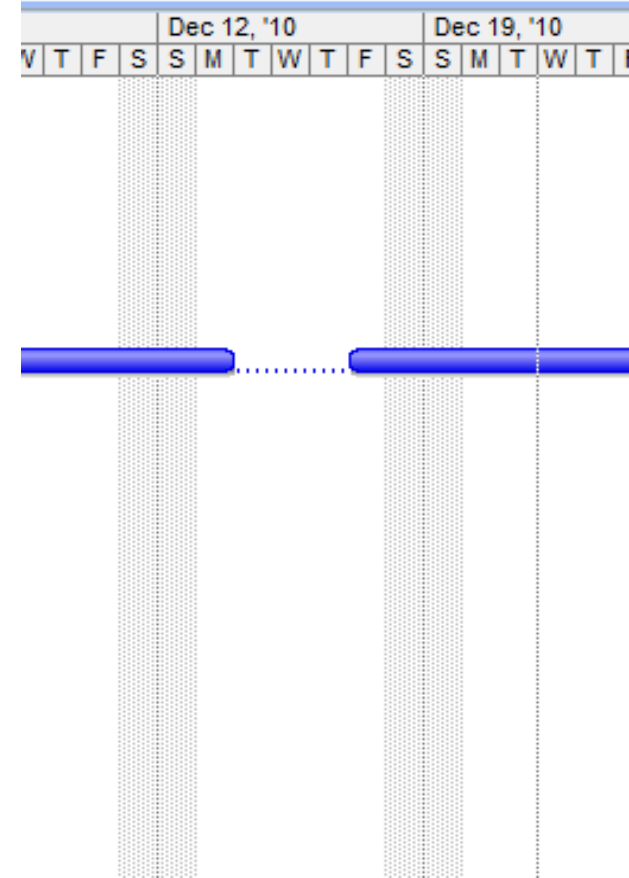
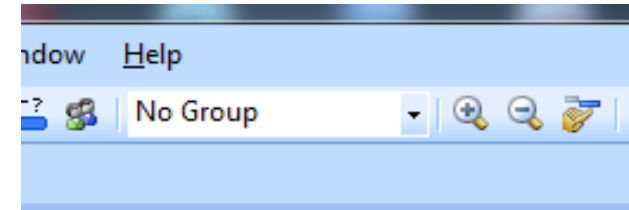
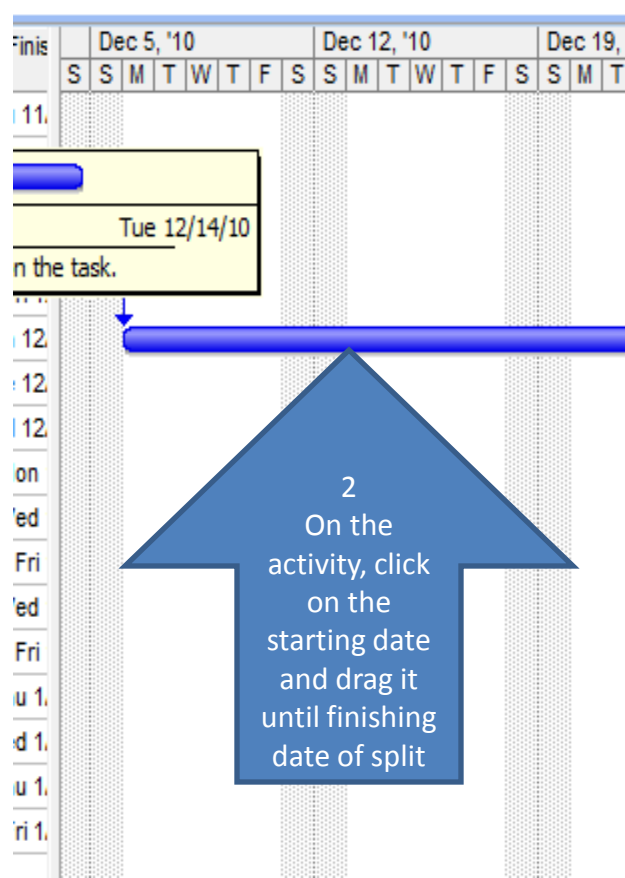
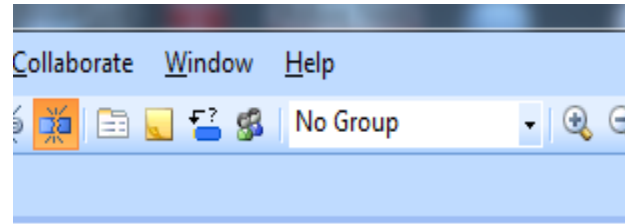
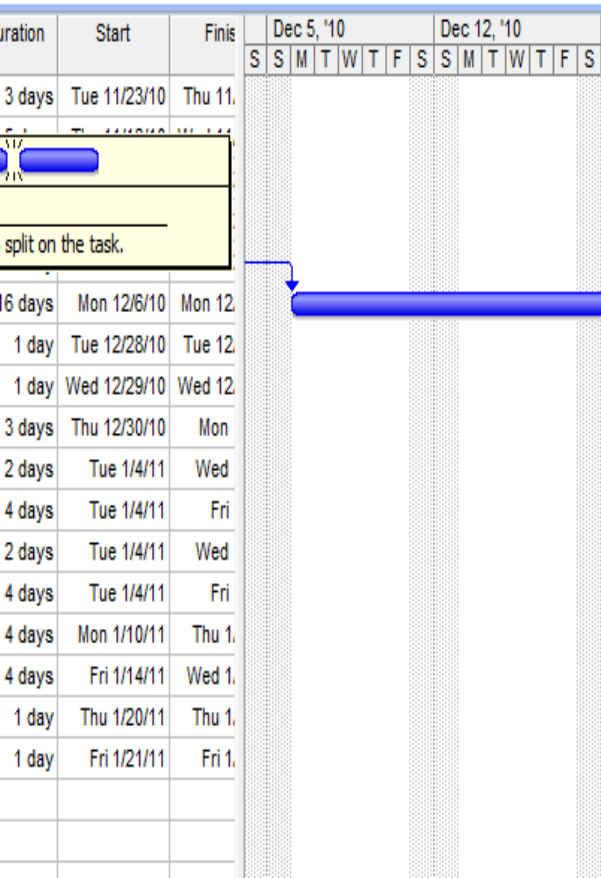
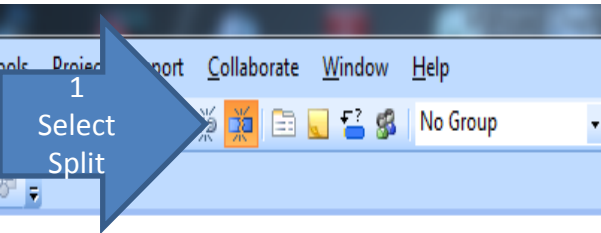


Splitting the activities

- ✓ Assume that we are completing an activity, but because of any reason we can not can not work on it and we are in force to spend our time and resources on another activity that is more important for us. In this case we will stop working on the first activity and we will **split** it for some days in order to work on another activity.

- ✓ Following the next slide steps will help you to split an activity.

Splitting the activities



Defining Deadline date for an activity

- ✓ **Deadline** is the last date that we are allowed to finish an activity (maybe we must finish an activity in a specific date). So that activity can be finished before Deadline date.
- ✓ Sometimes instead of defining **MFO constraint**, it is better to define a **Deadline date** for an activity.
- ✓ Because, if we use **MFO** for an activity with 5 days duration, the start time that **MSP** considers for this activity, must be exactly 5 days before the **MFO specific date**. But if we use **Deadline** for this activity, **MSP** may consider the **sooner** start day according to relationship of this activity with other activities.

Defining Deadline date for an activity

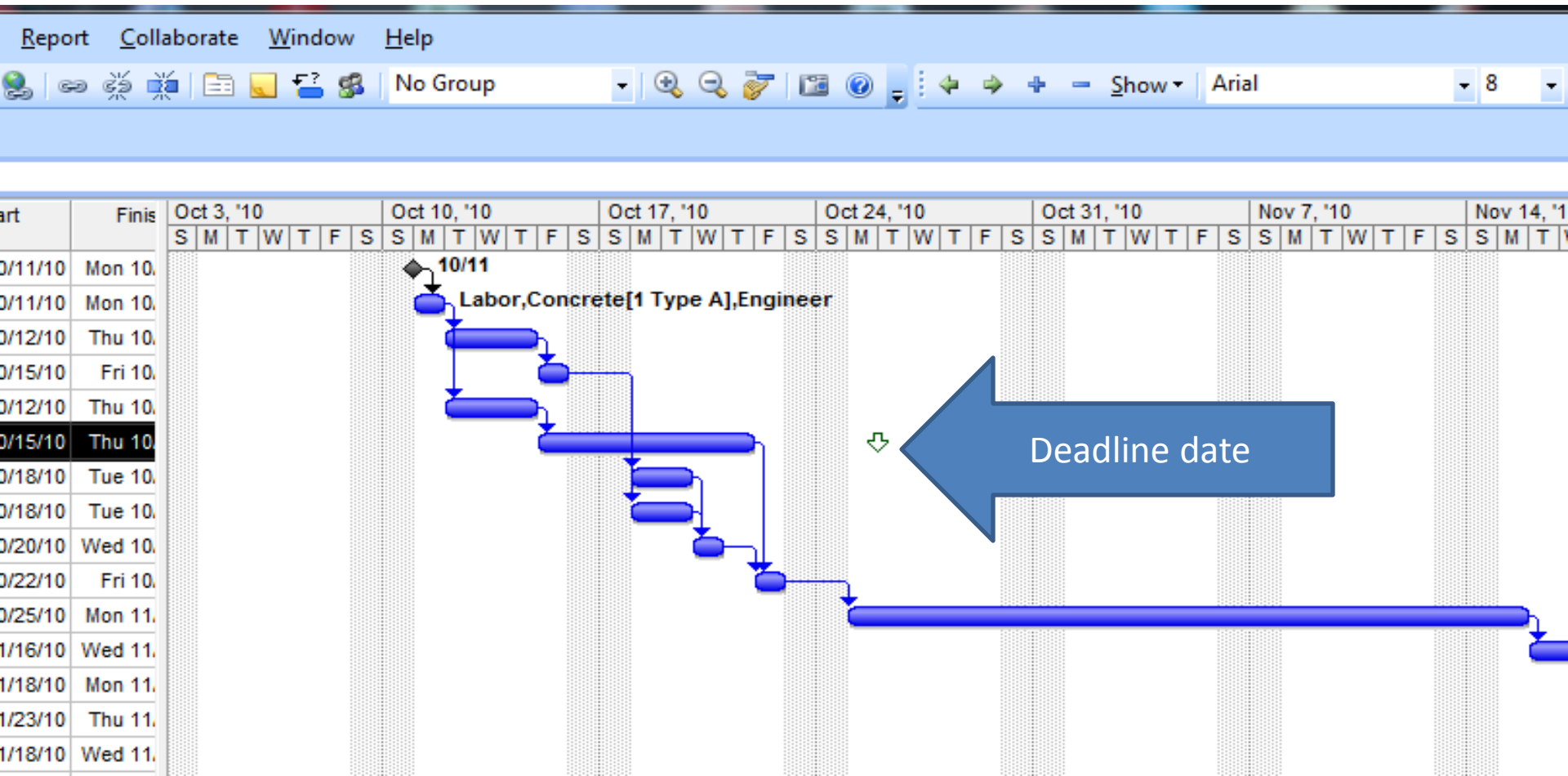
✓ Following these steps will help you to define Deadline for an activity.

The screenshot shows the Microsoft Project interface. The 'Task Information' dialog box is open for the task 'Armature 1'. The 'Advanced' tab is selected, and the 'Deadline' field is set to 'Mon 10/25/10'. A calendar is open, showing the date '25' selected. The 'OK' button is highlighted.

Task Name	Duration	Start	Finish
Planning	0 days	Mon 10/11/10	Mon 10/11/10
Lining	1 day	Mon 10/11/10	Mon 10/11/10
Excavation	3 days	Tue 10/12/10	Thu 10/14/10
Grave	1 day	Fri 10/15/10	Fri 10/15/10
Molding 1	3 days	Tue 10/12/10	Thu 10/14/10
Armature 1	5 days	Fri 10/15/10	Thu 10/21/10
Molding 2	2 days	Mon 10/18/10	Tue 10/19/10
Armature 2	2 days	Mon 10/18/10	Tue 10/19/10
Concrete 1	1 day	Wed 10/20/10	Wed 10/20/10
Concrete 2	1 day	Fri 10/22/10	Fri 10/22/10
Concrete 3	16 days	Mon 10/25/10	Mon 11/8/10
Concrete 4	2 days	Tue 11/16/10	Wed 11/17/10
Molding 3	3 days	Thu 11/18/10	Mon 11/22/10
Armature 3	3 days	Tue 11/23/10	Thu 11/25/10
Molding 4	5 days	Thu 11/18/10	Wed 11/24/10
Armature 4	5 days	Thu 11/25/10	Wed 12/1/10
Molding 5	3 days	Thu 11/18/10	Mon 11/22/10
Armature 5	3 days	Tue 11/23/10	Thu 11/25/10
Molding 6	5 days	Thu 11/18/10	Wed 11/24/10
Armature 6	5 days	Thu 11/25/10	Wed 12/1/10
Concrete 3	1 day	Thu 12/2/10	Thu 12/2/10

Defining Deadline date for an activity

- ✓ **MSP** will show Deadline date on the Gantt Chart:



Any Question???

Good Luck!!!