PERCEPTION® PERT-PAC
Integrated Planning & Scheduling

A Training Tutorial

This training tutorial outlines the basic features of the *PERCEPTION* system for planning and scheduling.

It is a supplement to the user manual entitled "*PERCEPTION Integrated Planning & Scheduling*," which provides more details for the user.

Before using this tutorial, the user should first view the preliminary *PERCEPTION* training tutorial, "Getting Started."

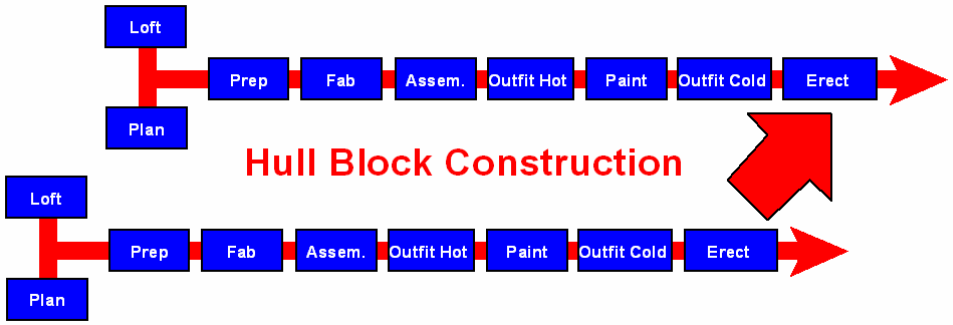
PERCEPTION has features for planning and scheduling all project activities:

- Schedule Design & Engineering Activities
- Schedule Engineering Drawings
- Schedule Production Work Orders
- Schedule Work Order Material Pallets
- Schedule Purchased Material Deliveries
- Schedule Subcontractors
- Schedule Tests & Trials

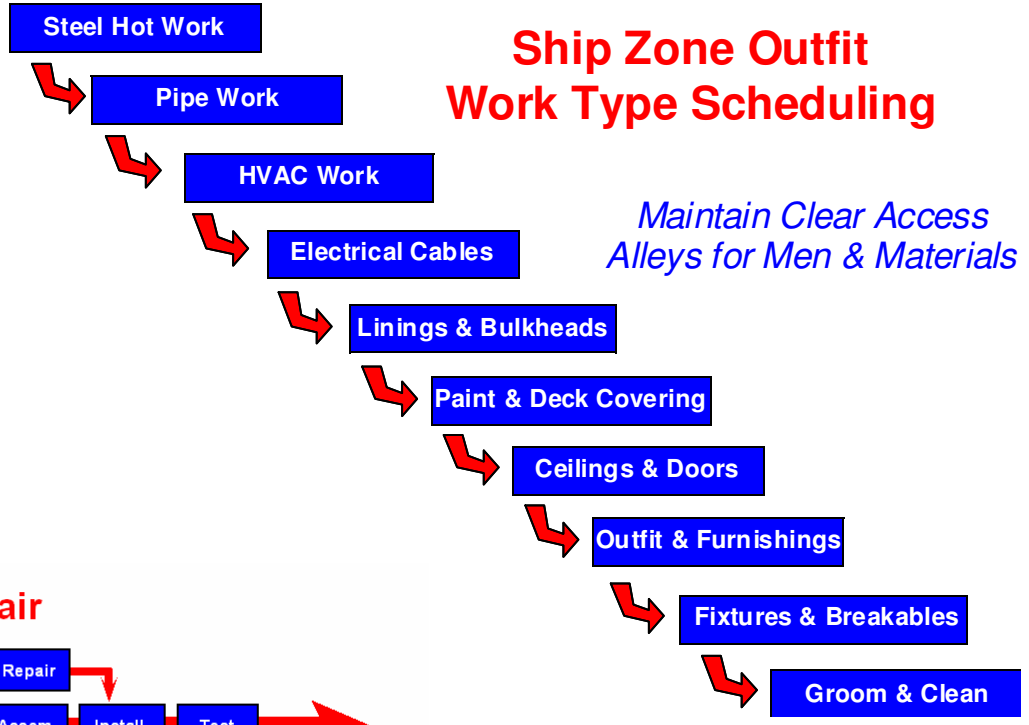
Training Directory

- Continue
- Planning & Scheduling Work Orders
- Planning & Scheduling Material Requirements
- *PERT-PAC* Planning Activities
- Linking Project 2000
- Importing Project 2000
- Attaching Planning Activities to Work Orders
- Attaching Planning Activities to Material Requisitions
- Revising Work Order Schedules
- Revising Material Schedules
- Revising Material Pallet Schedules
- Summary Planning Activity Performance
- Updating Project 2000

Planning & Scheduling
Work Orders



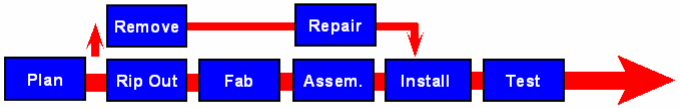
Scheduling requires the proper sequencing of work and related project activities.



Ship Zone Outfit Work Type Scheduling

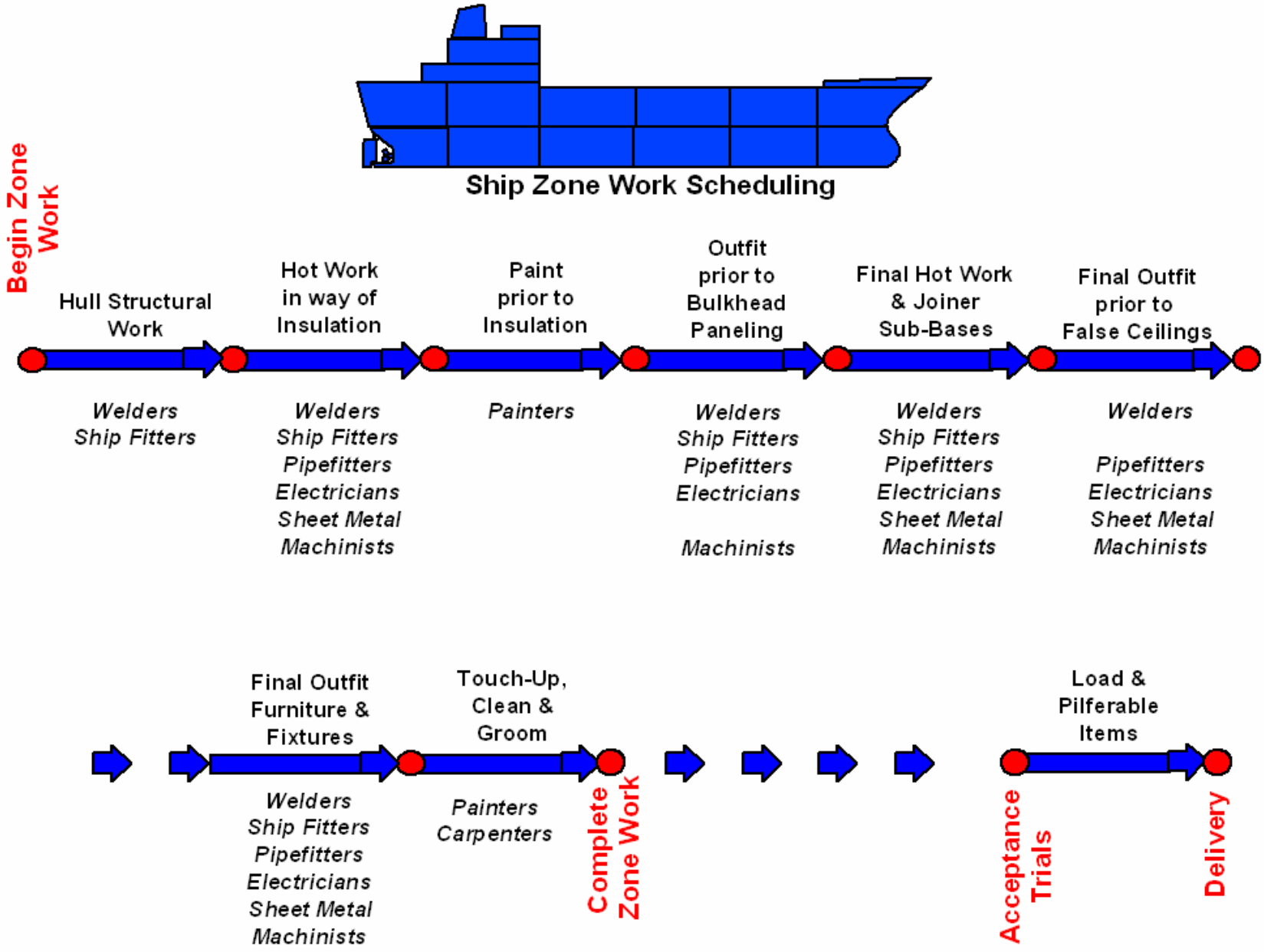
Maintain Clear Access Alleys for Men & Materials

Ship Repair



Work sequencing must reflect the contract's build strategy:

1. **Pre-Outfitted Hull Blocks versus On Board Outfitting**
2. **Hull Block & Modular Construction versus "Stick" Construction**
3. **Out-Sourced Work versus In-House Work**
4. **Group Technology Manufacturing versus On-Demand Manufacturing**

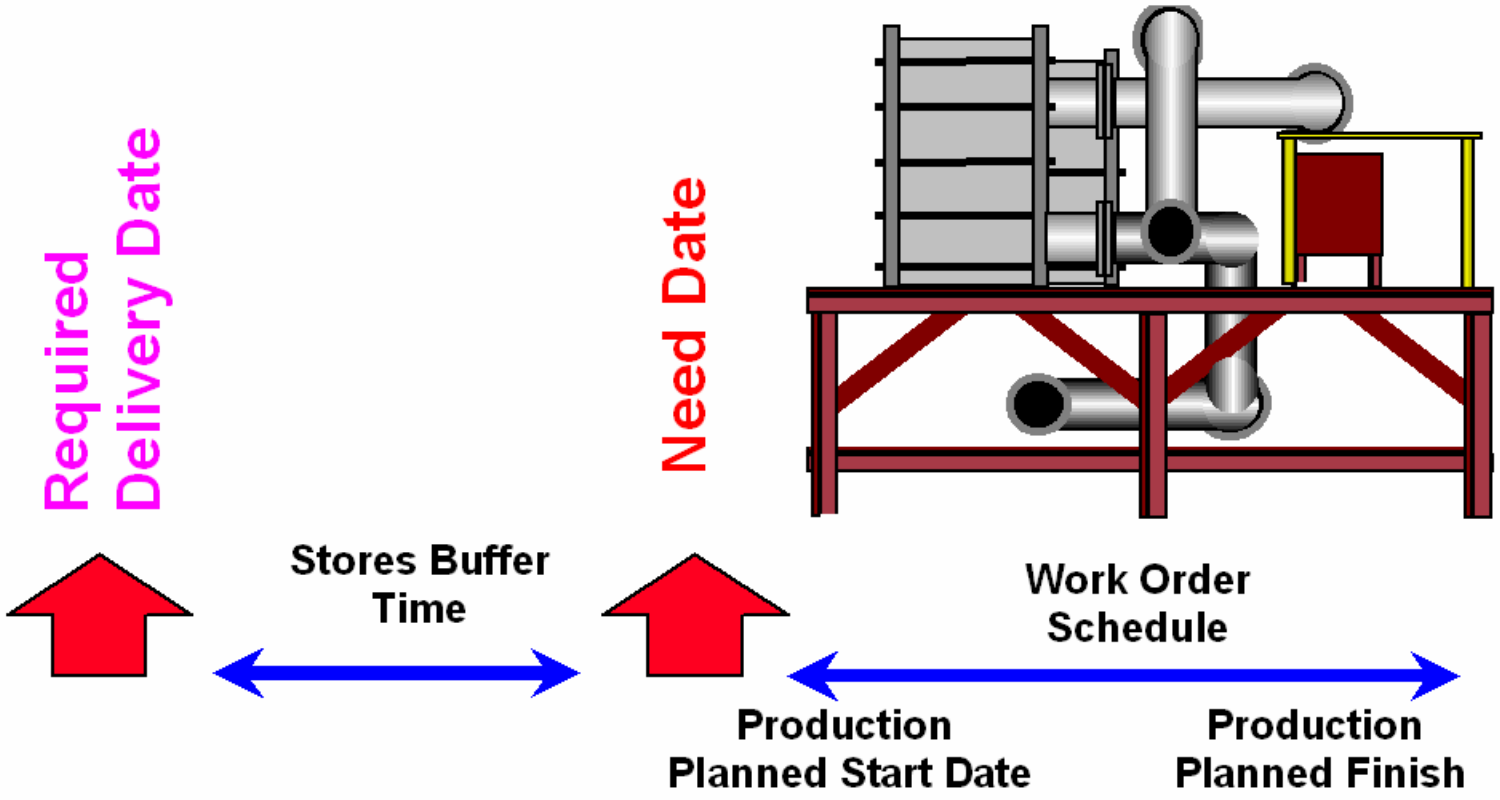

Ship Zone Work Scheduling
Begin Zone Work
Hull Structural Work
Welders
Ship Fitters
Hot Work in way of Insulation
Welders
Ship Fitters
Pipefitters
Electricians
Sheet Metal
Machinists
Paint prior to Insulation
Painters
Outfit prior to Bulkhead Paneling
Welders
Ship Fitters
Pipefitters
Electricians
Machinists
Final Hot Work & Joiner Sub-Bases
Welders
Ship Fitters
Pipefitters
Electricians
Sheet Metal
Machinists
Final Outfit prior to False Ceilings
Welders
Pipefitters
Electricians
Sheet Metal
Machinists
Final Outfit Furniture & Fixtures
Welders
Ship Fitters
Pipefitters
Electricians
Sheet Metal
Machinists
Touch-Up, Clean & Groom
Painters
Carpenters
Complete Zone Work
Load & Pilferable Items
Acceptance Trials
Delivery

Planning & Scheduling Material Requirements

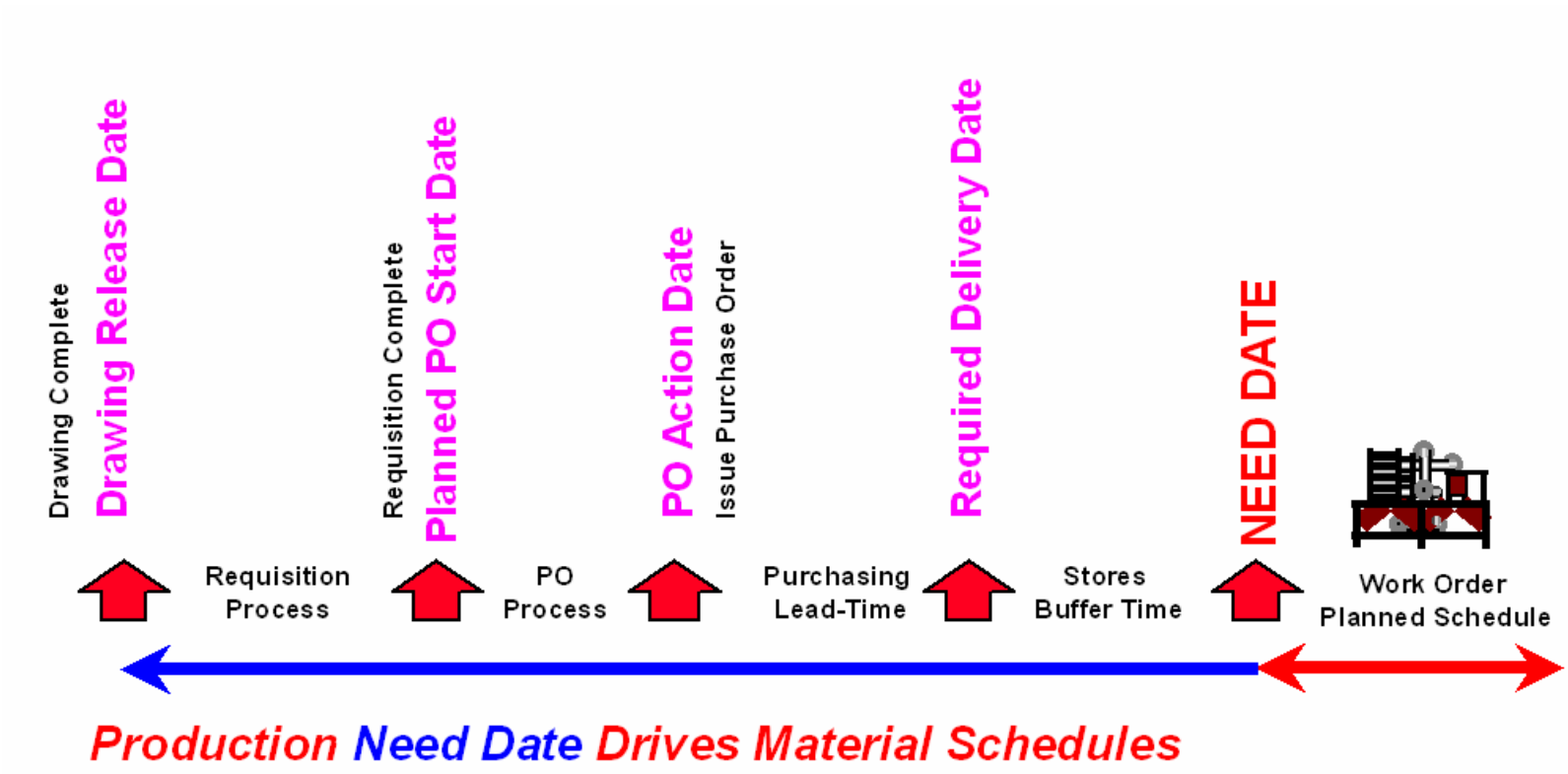
Material Requirements can be scheduled via their Need Dates using:

- Work Order Start Dates, or
- Work Order Pallet Required Dates

Material deliveries must be scheduled to meet Required Delivery Dates



PERCEPTION can schedule and track various stages of material schedules.



Material schedules can be developed manually with user-entered information, or automatically via project

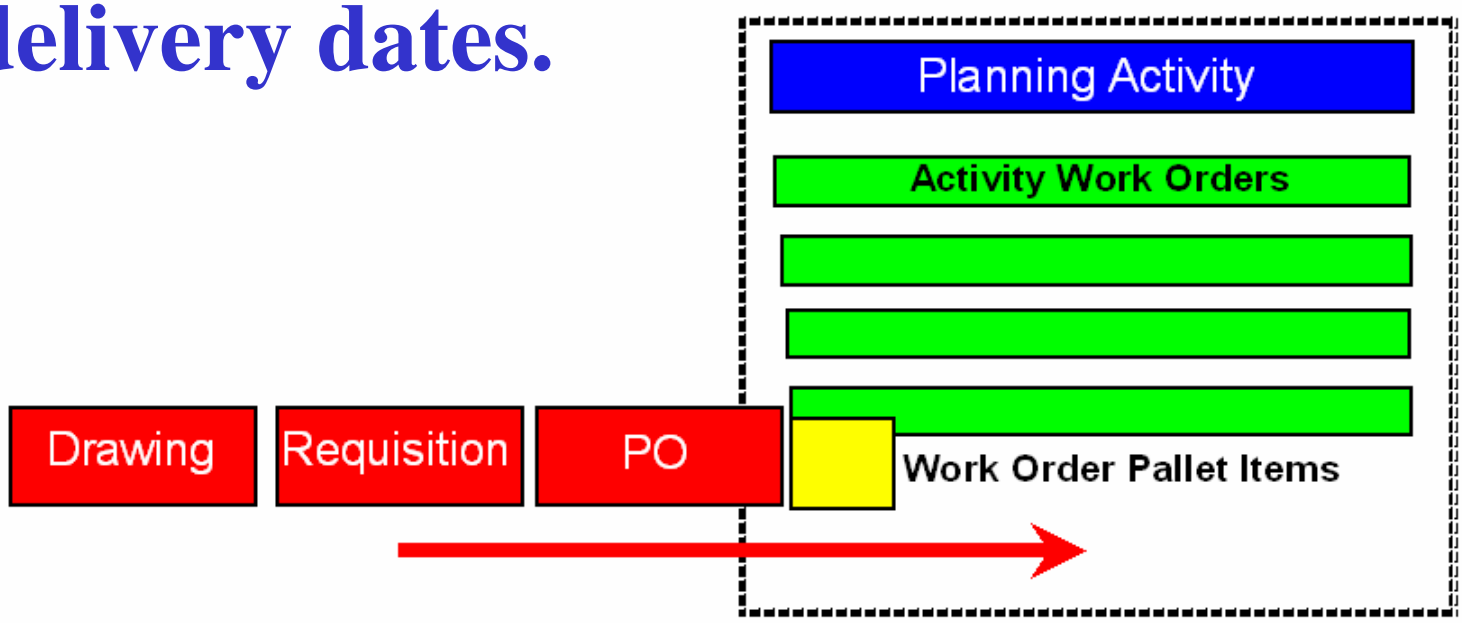
Planning Activities.

PERCEPTION PERT-PAC
Planning Activities

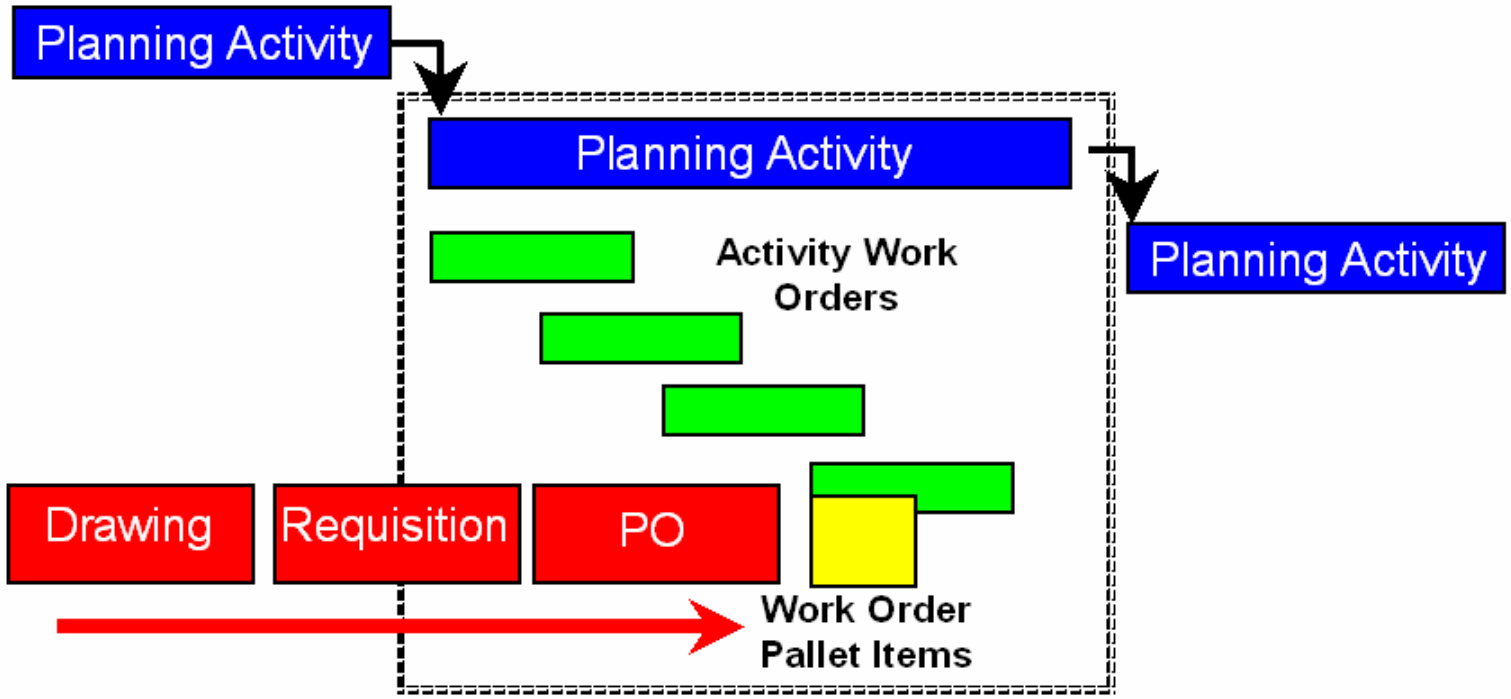
A Planning Activity is a means to develop a set of project baseline budgets and schedules from which detail planning of work orders and material requirements can proceed.

Planning Activities can prescribe the schedules for selected work orders.

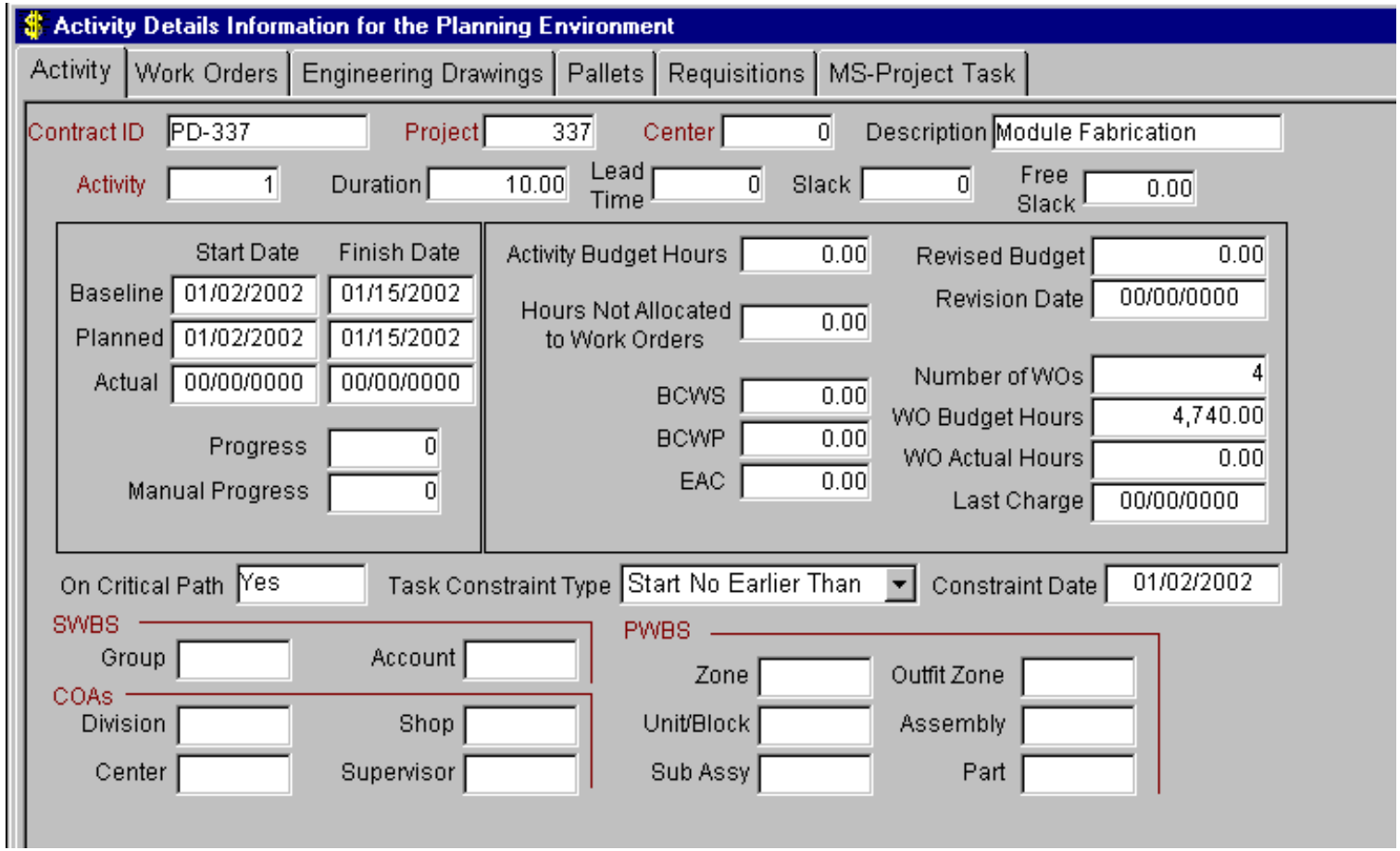
Work orders set the Need Dates for material requirements and required delivery dates.



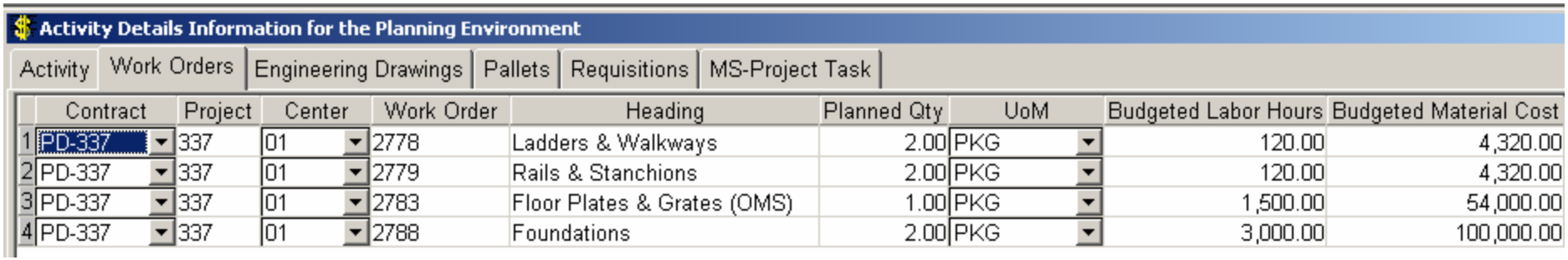
Once work orders have been linked to a planning activity, they may have their planned schedules fine-tuned and adjusted to suit production scheduling requirements.



The Planning Activity "Detail" data window has tabs to display all information related to it.



Sample Planning Activity list of linked Work Orders.



Activity Details Information for the Planning Environment

Activity | Work Orders | Engineering Drawings | Pallets | Requisitions | MS-Project Task

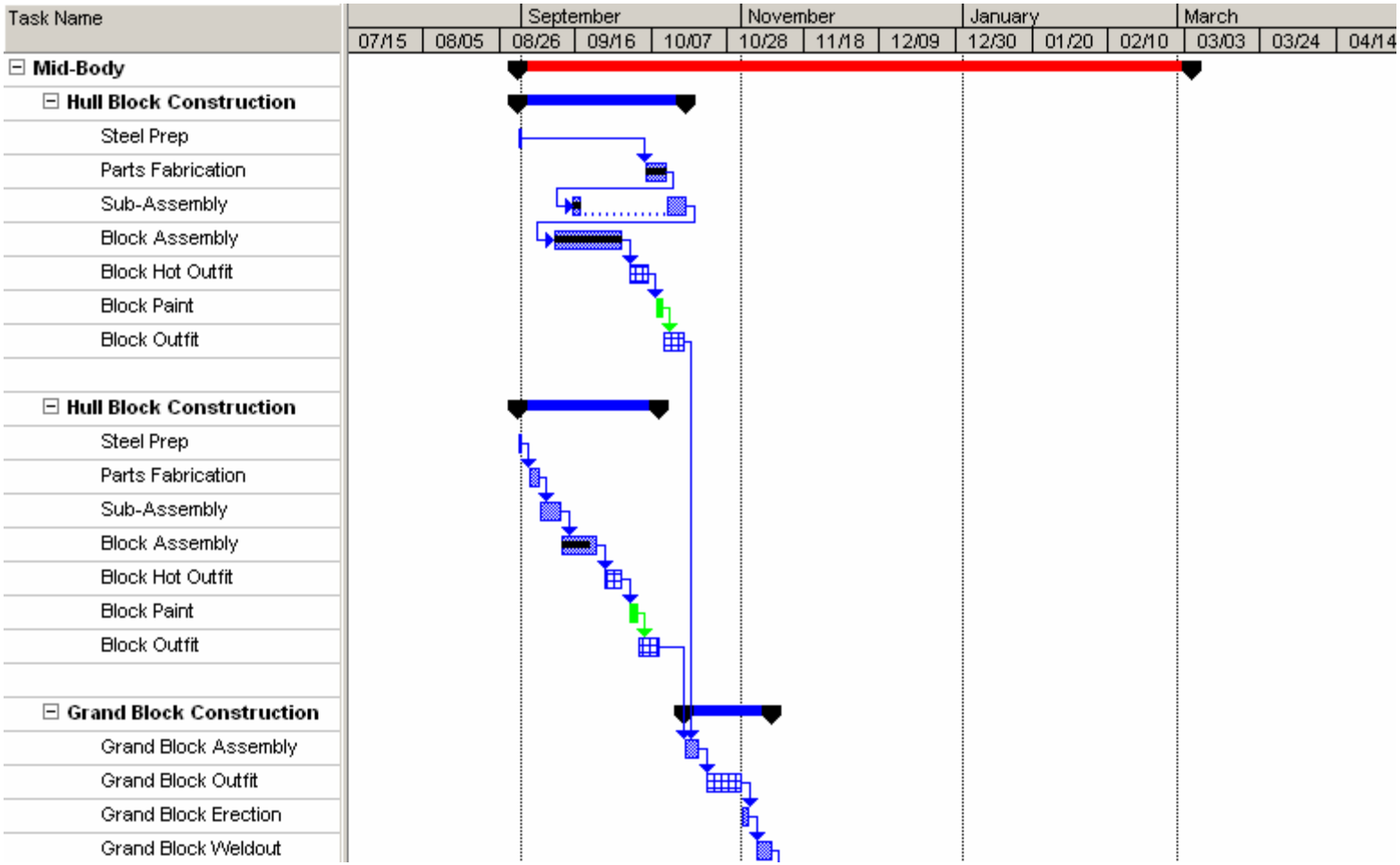
	Contract	Project	Center	Work Order	Heading	Planned Qty	UoM	Budgeted Labor Hours	Budgeted Material Cost
1	PD-337	337	01	2778	Ladders & Walkways	2.00	PKG	120.00	4,320.00
2	PD-337	337	01	2779	Rails & Stanchions	2.00	PKG	120.00	4,320.00
3	PD-337	337	01	2783	Floor Plates & Grates (OMS)	1.00	PKG	1,500.00	54,000.00
4	PD-337	337	01	2788	Foundations	2.00	PKG	3,000.00	100,000.00

The Planning Activity also can schedule

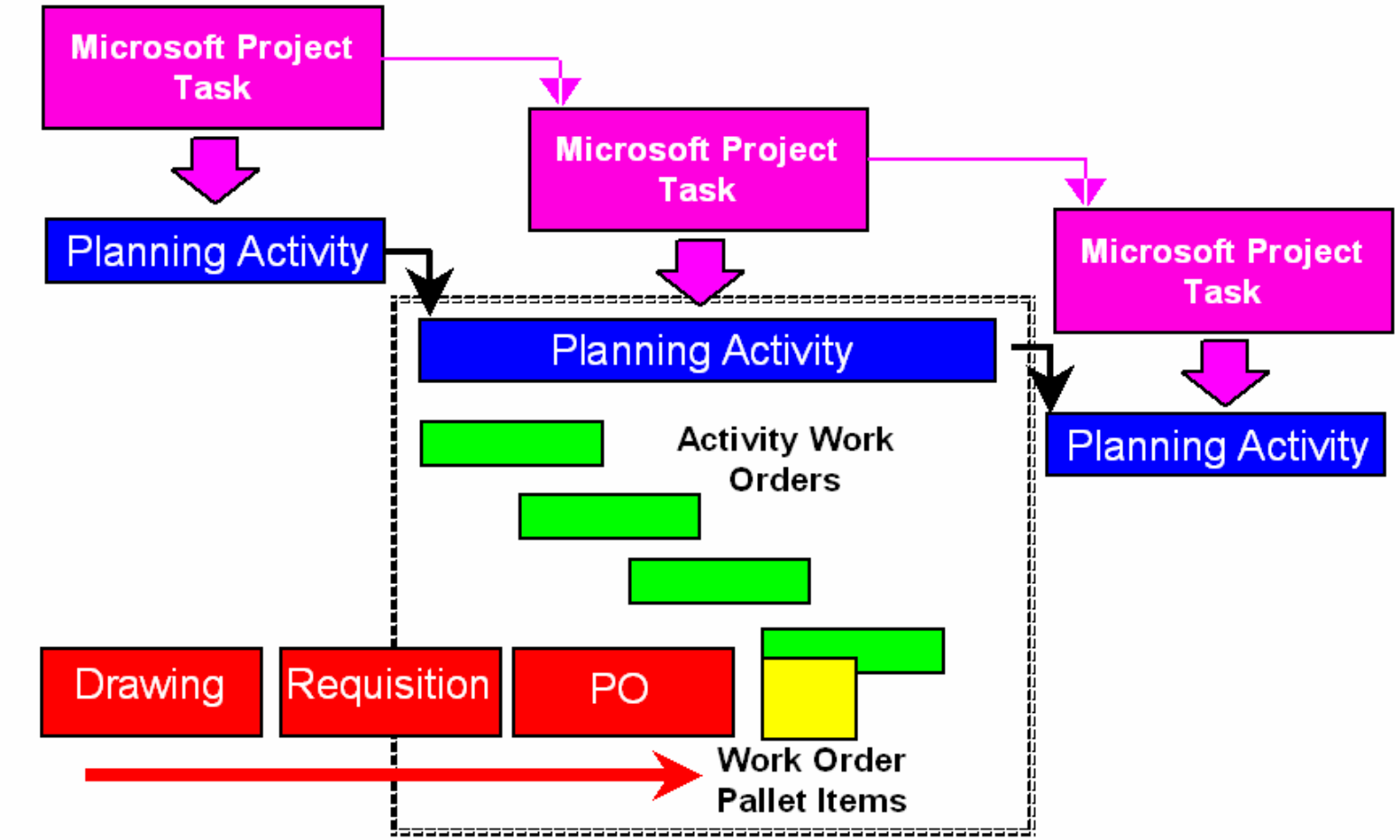
- **Drawings**
- **Pallets**
- **Requisitions**

PERCEPTION
can be linked directly to
Microsoft's *Project 2000*
to automate
***PERCEPTION*-managed**
schedules.

Project 2000 Scheduling Tasks Sequencing & Scheduling Project Activities



Project 2000 Tasks are linked directly to *PERCEPTION*'s Planning Activities.



In order for *Project 2000* to link with *PERCEPTION*, the user must map columns of *Project 2000* information with corresponding columns of *PERCEPTION* information.

Microsoft Project Column Name	**User Column Name**	*Microsoft Project Column Name*	**User Column Name**
Unique ID	Activity	Text6	SWBS Account
Name	Description	Text7	PWBS Zone
Duration	Duration	Text8	PWBS Outfit Zone / Grand Block
Early Start	Planned Start	Text9	PWBS Unit
Early Finish	Planned Finish	Text10	PWBS Assembly
Baseline Start	Baseline Early Start	Text11	PWBS Sub Assembly
Baseline Finish	Baseline Early Finish	Text12	PWBS Part
Total Slack	Slack	Text13	COA Group
Free Slack	Free Slack	Text14	COA Sub Group
Delay	Lead Time	Text15	COA Item
% Complete	Progress	Text16	COA Supervisor
Actual Start	Actual Start	Text17	COA IPT
Actual Finish	Actual Finish	Number1	Budget Hours
Text1	Contract Number	Number2	Actual Hours
Text2	Project Number	Number3	Budget Labor Cost
Text3	Work Center	Number4	Actual Labor Cost
Text4	Activity Number	Number5	Budget Material Cost
Text5	SWBS Group	Number6	Actual Material Cost

Sample user-defined *Project 2000* column names versus internal *Project 2000* column names.

Project Column Name:	Number1	Text4	Text3	Text2	Text1	Unique ID	Name			
	Budget Hours	Center	Block/Unit	Zone	SWBS Account	Activity ID	Task Name	Duration	Start	Finish
1	**800**	**800**	**101**	**M**		**33**	**Block 101**	**32 days**	**Tue 01/05/99**	**Wed 02/17/99**
2	24	D-PE01	101	M	910	2	Lofting	3 days	Tue 01/05/99	Thu 01/07/99
3	24	D-PE02	101	M	920	3	Planning	3 days	Tue 01/05/99	Thu 01/07/99
4	32	D-HB01	101	M	110	4	Preparation	2 days	Fri 01/08/99	Mon 01/11/99
5	32	D-HB02	101	M	120	5	Parts Fabrication	2 days	Tue 01/12/99	Wed 01/13/99
6	32	D-HB03	101	M	130	6	Sub-Assembly	2 days	Thu 01/14/99	Fri 01/15/99
7	100	D-HB04	101	M	141	7	Assembly	6 days	Mon 01/18/99	Mon 01/25/99
8	160	D-PF01	101	M	150	8	Pre-Outfit Hot	4 days	Tue 01/26/99	Fri 01/29/99
9	16	D-PT01	101	M	160	9	Block Paint	1 day	Mon 02/01/99	Mon 02/01/99
10	160	D-PF02	101	M	170	10	Pre-Outfit Cold	4 days	Tue 02/02/99	Fri 02/05/99
11	128	D-HB05	101	M	180	83	Erect	4 days	Mon 02/08/99	Thu 02/11/99
12	128	D-HB06	101	M	190	84	On-board Weld-out	4 days	Fri 02/12/99	Wed 02/17/99

Global Templates in *Project 2000*

Create a standard setup of column names that can be mapped directly to *PERCEPTION*.

SPAR provides a standard global *Microsoft Project* template (SparProject2KTemplate.mpt).

When a project is created using this template, the *PERCEPTION* synchronizer will use the WBS elements defined in these columns.

It is strongly recommended that the user use this global template to ensure that an integration of *Microsoft Project 2000* and *PERCEPTION* is performed properly.

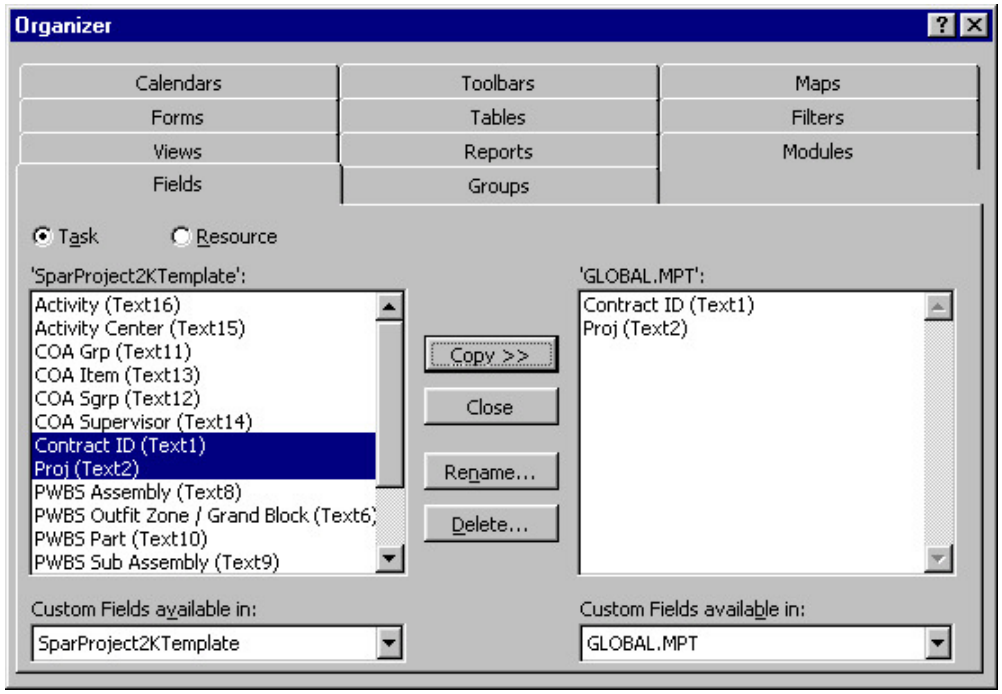
The SPAR template maps the following *Project 2000* text columns to the full set of *PERCEPTION* WBS descriptions to make a more user friendly interface:

Text1	Contract Number
Text2	Project Number
Text3	Work Center
Text4	Activity Number
Text5	SWBS Group
Text6	SWBS Account
Text7	PWBS Zone
Text8	PWBS Outfit Zone / Grand Block
Text9	PWBS Unit
Text10	PWBS Assembly
Text11	PWBS Sub Assembly
Text12	PWBS Part
Text13	COA Group
Text14	COA Sub Group
Text15	COA Item
Text16	COA Supervisor
Text17	COA IPT

Note that *PERCEPTION* does not require that all of these text fields be used to plan and schedule in Microsoft *Project 2000*, but only those that are necessary:

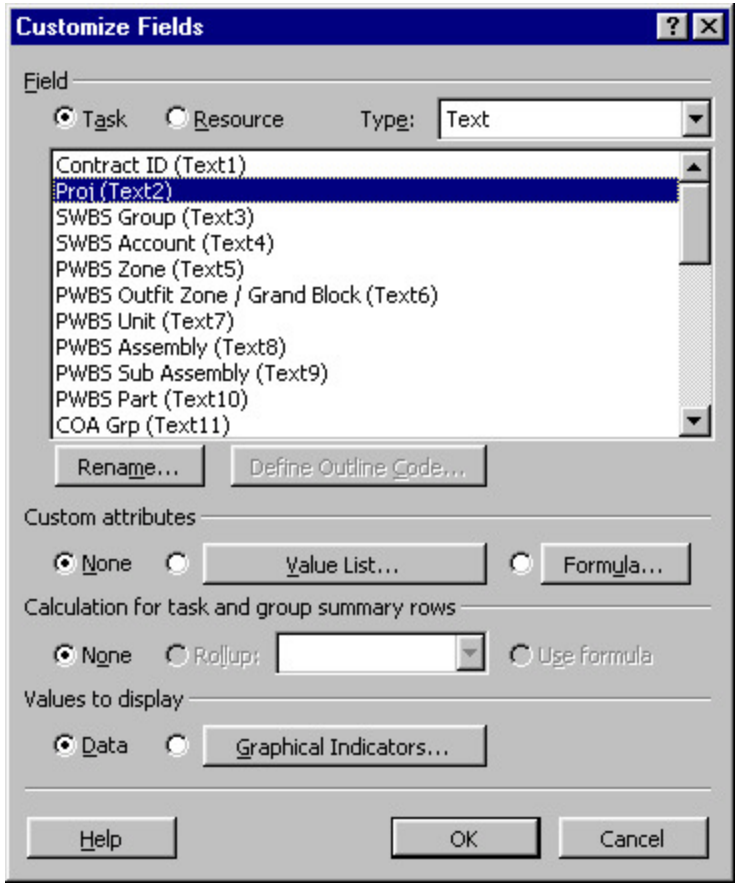
- **Activity Number**
- **Activity Work Center Number**

The template allows the user to apply the SPAR naming conventions to the *Project 2000* text fields using the *Project 2000* Template Organizer.



The Organizer is found under *Tools/Organizer* on the *Project 2000* menu.

If you decide not to use the template, or if you need to import a *Microsoft Project* file already created, then you can rename the columns manually using the *Microsoft Project Tools/Customize/Fields…* interface



Importing *Microsoft Project 2000* Schedules into *PERCEPTION*

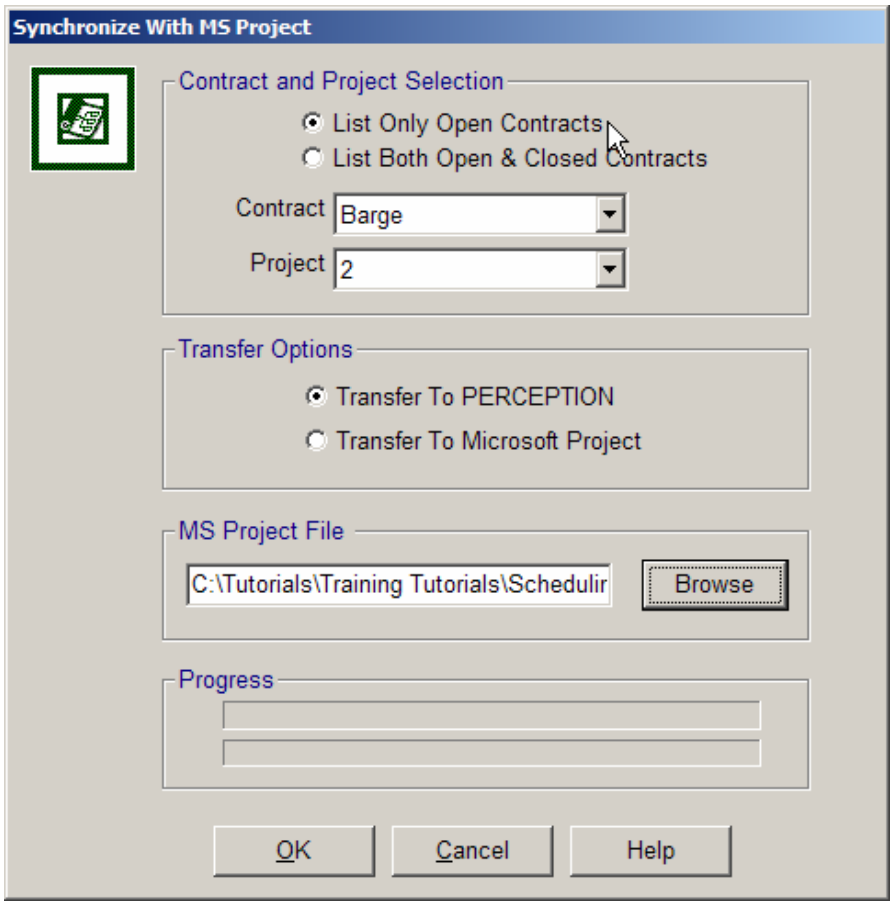
Transfer Tasks To *PERCEPTION*

When the tasks in *Microsoft Project 2000* have all been scheduled, they can be transferred to *PERCEPTION* as project Planning Activities.

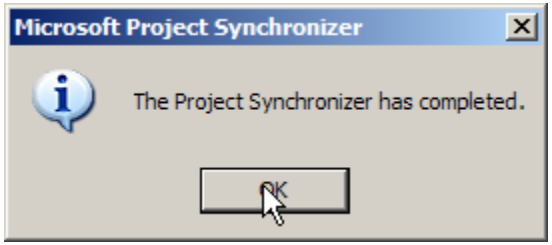
This process transfers the *Project 2000* data from the MPD or MDB files (created by the *Save As* function in *Project 2000)* into the *PERCEPTION* database.

It also transfers *PERCEPTION* data back into these files for later use by *Project 2000*.

1. Select *Environment/ Planning & Scheduling/ Synchronize Schedules to MS Project* from the main menu.
2. Identify the contract and project in the *PERCEPTION* database
3. Turn on the *Transfer To PERCEPTION* option
4. Identify the *Microsoft Project 2000* file
5. Click on the *OK* button.



When the Project Synchronizer has finished the transfer, all *Microsoft Project 2000* tasks have been transferred as Planning Activities onto the *PERCEPTION* database.



Planning Activities Created (Transferred) From *Microsoft Project 2000*

Planning Activities Information for the Planning Environment

	Contract	Project	Center	Activity	Description	Budget Hours	Planned Start	Planned Finish	Slack
1	Barge	2	0	1	Estimate	0.00	03/05/2003	03/17/2003	0
2	Barge	2	0	3	New Design	0.00	03/17/2003	04/16/2003	0
3	Barge	2	0	4	Detail Engineering	0.00	04/17/2003	08/26/2003	42.0000
4	Barge	2	0	5	Planning	0.00	04/17/2003	10/30/2003	0
5	Barge	2	0	6	Drawing Lists	0.00	04/29/2003	05/08/2003	54.0000
6	Barge	2	0	7	Drawing BOMs	0.00	05/08/2003	08/05/2003	54.0000
7	Barge	2	0	8	Requisitions	0.00	05/08/2003	07/14/2003	60.0000
8	Barge	2	0	9	Purchase Orders	0.00	05/20/2003	07/24/2003	60.0000
9	Barge	2	0	10	Work Orders	0.00	05/08/2003	06/23/2003	0
10	Barge	2	0	11	Work Order Pallets	0.00	06/02/2003	07/14/2003	67.0000
11	Barge	2	0	12			00/00/0000	00/00/0000	
12	Barge	2	0	14	Steel Prep B01 STERN	150.00	06/25/2003	06/30/2003	0
13	Barge	2	0	15	Steel Parts Fab B01 STERN	700.00	06/30/2003	07/09/2003	0
14	Barge	2	0	16	Block Sub-Assembly B01 STERN	500.00	07/09/2003	07/16/2003	0
15	Barge	2	0	17	Block Assembly B01 STERN	900.00	07/28/2003	08/12/2003	0
16	Barge	2	0	18	Block Prefit Hot B01 STERN	25.00	08/12/2003	08/13/2003	0
17	Barge	2	0	19	Block Blast & Paint B01 STERN	200.00	08/13/2003	08/18/2003	0
18	Barge	2	0	20	Block Outfit B01 STERN	25.00	08/18/2003	08/18/2003	0
19	Barge	2	0	21			00/00/0000	00/00/0000	
20	Barge	2	0	23	Steel Prep B02 MID	112.50	06/23/2003	06/25/2003	7.0000
21	Barge	2	0	24	Steel Parts Fab B02 MID	225.00	06/25/2003	06/27/2003	7.0000
22	Barge	2	0	25	Block Sub-Assembly B02 MID	525.00	06/27/2003	07/07/2003	7.0000
23	Barge	2	0	26	Block Assembly B02 MID	1,275.00	07/07/2003	07/29/2003	7.0000
24	Barge	2	0	27	Block Prefit Hot B02 MID	75.00	07/29/2003	08/01/2003	7.0000
25	Barge	2	0	28	Block Blast & Paint B02 MID	150.00	08/01/2003	08/05/2003	7.0000
26	Barge	2	0	29	Block Outfit B02 MID	10.00	08/05/2003	08/05/2003	7.0000
27	Barge	2	0	30	Block Erection - Tack & Fit B02 MID	937.50	08/18/2003	08/25/2003	0
28	Barge	2	0	31	Block Erection Welding B02 MID	525.00	08/25/2003	09/09/2003	19.0000

The following information is transferred from *Microsoft Project* to *PERCEPTION*:

If a planning activity does not exist for the task, then one will be created and the following information transferred to it:

- Planning activity number
- Planning activity work center number
- WBS as specified in the Renamed Text Fields (If a template was used or Project columns assigned alias names)
- Description
- Planned Start
- Planned Finish
- Budget Hours
- Baseline Budget Hours
- Baseline Start
- Baseline Finish
- Duration
- Total Slack
- Free Slack
- A flag denoting whether the activity is on the critical path or not.
- *Microsoft Project* Project ID
- *Microsoft Project* Unique Task ID

If a *PERCEPTION* planning activity exists for the *Microsoft Project* task, the planning activity will be updated with the following information:

- WBS as specified in the Renamed Text Fields (If a template was used or Project columns assigned alias names)
- Description
- Planned Start
- Planned Finish
- Budget Hours
- Baseline Budget Hours
- Baseline Start (updated if specified by the user using *Microsoft Project*)
- Baseline Finish (updated if specified by the user using *Microsoft Project*)
- Duration
- Total Slack
- Free Slack
- A flag denoting whether the activity is on the critical path or not.

If a *Microsoft Project* task is a milestone type task, then it will be transferred into *PERCEPTION* as a milestone and the following information transferred

- **Contract number**
- **Project number**
- **Description**
- **Milestone date**
- **Imposed start (*Microsoft Project* constraint date)**
- **Baseline start**
- **Baseline finish**
- ***Microsoft Project* Project ID**
- ***Microsoft Project* Unique Task ID**

***PERCEPTION* project milestones may be viewed by opening the project detail window, milestone tab.**

Any number of different Project 2000 Databases can be linked to *PERCEPTION*.

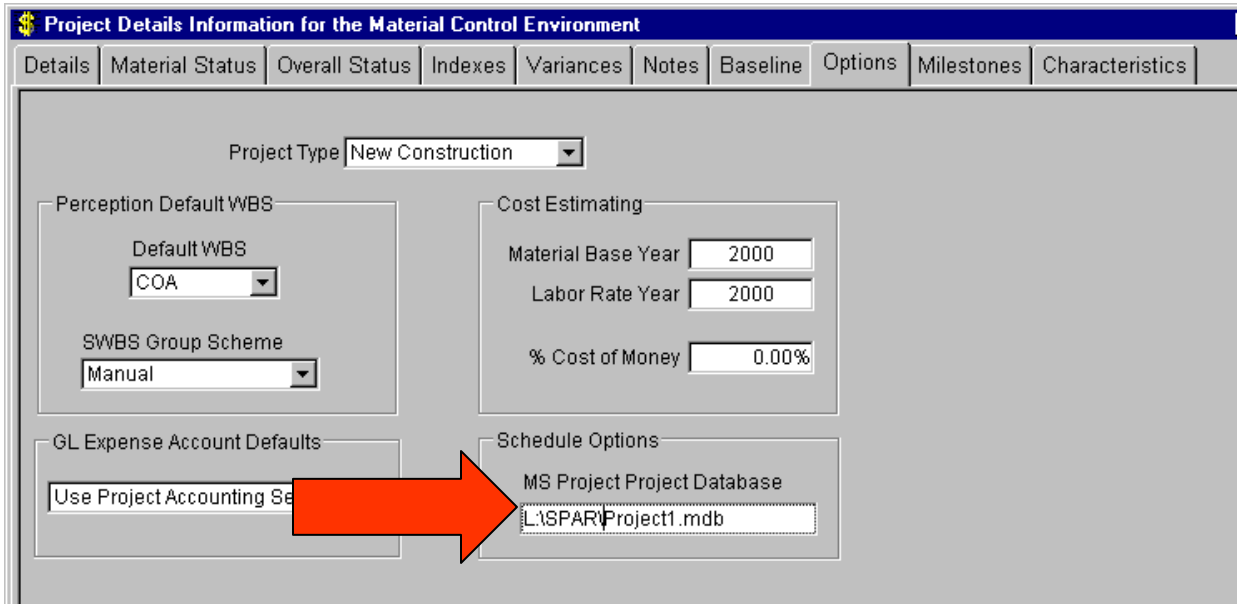
If a *Microsoft Project* task is a recurring summary or rolled up or summary type of task, it will not be transferred to *PERCEPTION*.

In reverse, <u>when updating the *Microsoft Project*</u> database, the following information is transferred from *PERCEPTION* to *Microsoft Project*:

- ***PERCEPTION* planning activity WBS**
- **Actual start**
- **Actual finish**
- **Actual hours**

Identifying *Microsoft Project 2000* Database For *PERCEPTION*

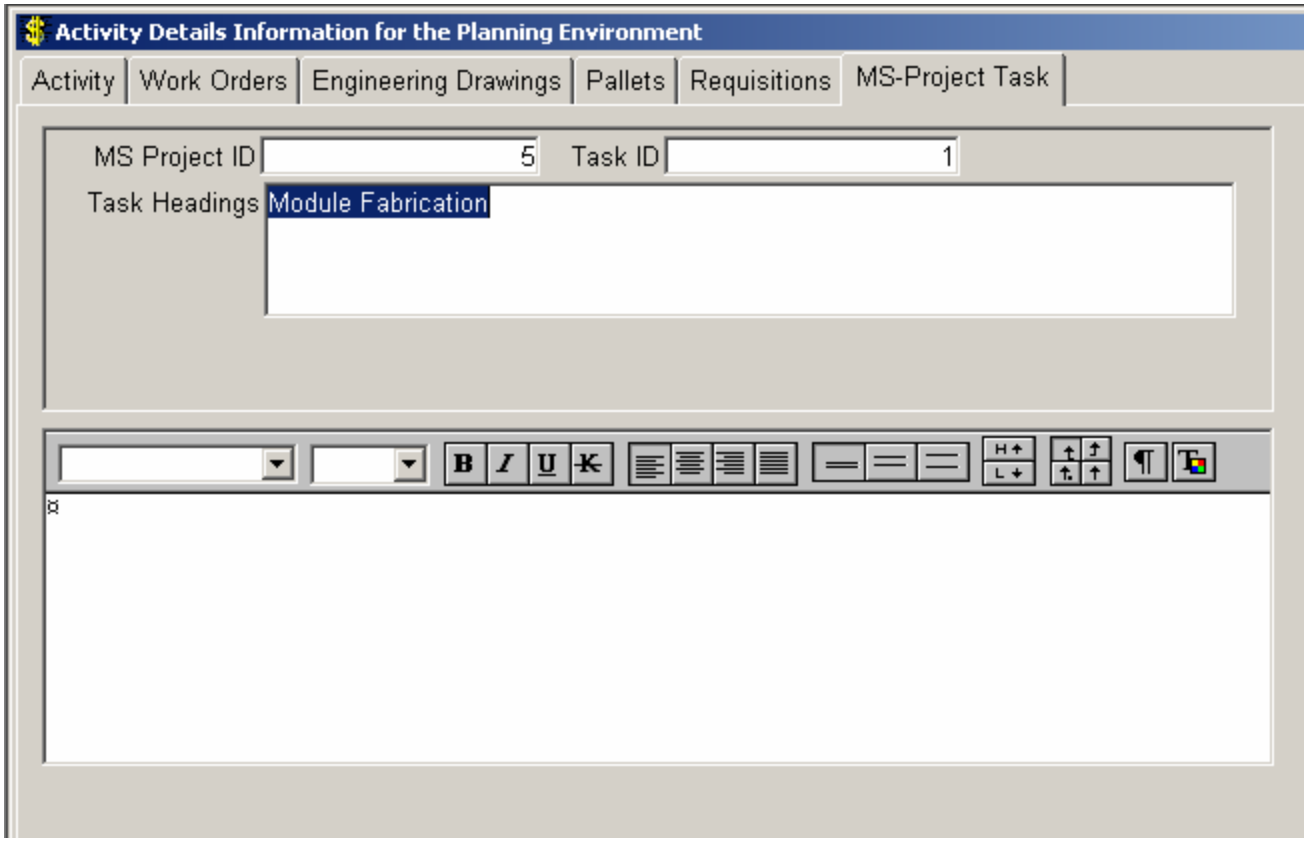
Typically each *Microsoft Project* schedule is stored in its own file on the user's hard drive. In order for the users to be able to identify which *Microsoft Project* file is being used, the *Microsoft Project* file should be noted on the Contract-Project details window.



The *Microsoft Project* file name can be filled in by direct user entry or by right clicking on the name field and choosing "*Browse for files…*" from the pop up menu.

This field is limited to Microsoft's set limit for a file and pathname length not to exceed 255 characters.

To see the Project 2000 Task assigned to the *PERCEPTION* Planning Activity, drill down to the planning activity "Detail" window, then click on the MS-Project Task tab.

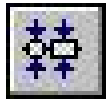


Attaching Planning Activities to Work Orders

Open the work order worksheet and retrieve selected work orders.

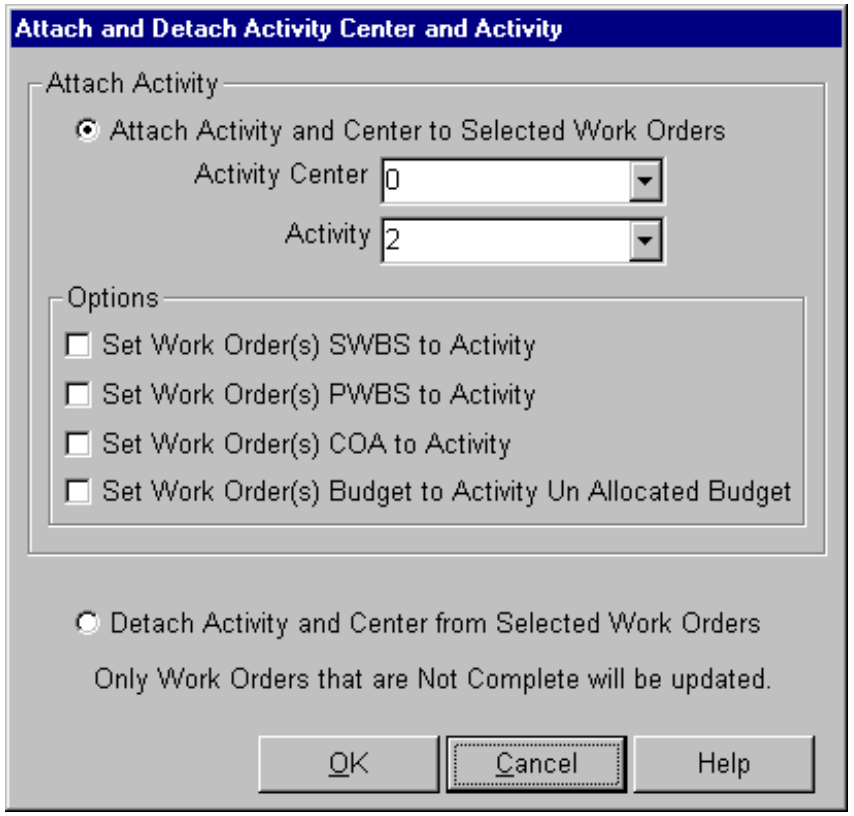
Work Orders Information for the Planning Environment

	Contract	Project	Center	Work Order	Heading	Planned Qty	UoM	Budgeted Labor Hours
1	PD-337	337	01	2768	Aft Bulkheads	265.00	KG	265.00
2	PD-337	337	01	2769	Aft Hull Decks	211.00		21,064.00
3	PD-337	337	01	2770	M/S Platforms and Flats	91.00		163,884.00
4	PD-337	337	01	2771	Midbody Shell Units	2,846.00		86,803.00
5	PD-337	337	01	2772	Midbody Bulkheads	929.00		45,056.50
6	PD-337	337	01	2773	Midbody Decks	1,024.00		42,178.00
7	PD-337	337	01	2774	Fab Portable Decks	1.00		1,032.00
8	PD-337	337	01	2775	Fab Stern Ramp	1.00		1,947.00
9	PD-337	337	01	2776	Misc. Outfit Foundations	1.00	PKG	450.00
10	PD-337	337	01	2777	Portable Decks - Fab	4.00	PKG	1,120.00
11	PD-337	337	01	2778	Ladders & Walkways	2.00	PKG	120.00
12	PD-337	337	01	2779	Rails & Stanchions	2.00	PKG	120.00
13	PD-337	337	01	2780	Ladders and Walkways	4.00	PKG	360.00
14	PD-337	337	01	2781	Rails & Stanchions	4.00	PKG	160.00
15	PD-337	337	01	2782	Ladders & Walkways OMS	1.00	PKG	100.00
16	PD-337	337	01	2783	Floor Plates & Grates (OMS)	1.00	PKG	1,500.00
17	PD-337	337	01	2784	Shell Doors	1.00	PKG	900.00
18	PD-337	337	01	2785	Water and Gas Tight Doors	1.00	PKG	50.00
19	PD-337	337	01	2786	Laders & Walkways	1.00	PKG	2,550.00
20	PD-337	337	01	2787	Rails & Stanchions	1.00	PKG	1,000.00
21	PD-337	337	01	2788	Foundations	2.00	PKG	3,000.00
22	PD-337	337	01	2789	Ladders & Walkways	1.00	PKG	750.00
23	PD-337	337	01	2790	Railing & Stanchions	1.00	PKG	350.00

Highlight those work orders to be scheduled by a planning activity. Then select *Edit/Modify Selected Records/Attach/ Detach Planning Activity* from the main menu (or  on the toolbar).

1. **Identify whether to attach or detach.**
2. **For attaching a planning activity, identify it in the data fields provided:**

   activity center and the activity number are both required.
3. **Identify whether or not to transfer the planning activity's WBS (SWBS, PWBS, and COA) to the work orders.**
   - **If these options are selected (by clicking in the check boxes), the work orders will have their WBS set to be what is provided by the planning activity.**
   - **If these options are not selected, then the existing WBS assignments on the work orders will prevail.**
4. **Click on the *OK* button.**



The system will then proceed to schedule the selected work orders according to the planning activity's planned start and finish date.

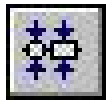
A similar process can be performed to attach Planning Activities to Drawings, Pallets and Requisitions.

Attaching Planning Activities to Material Requisitions

Open the Requisition worksheet and retrieve selected requisitions.

Requisition Information for the Planning Environment

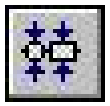
	Contract	Project	Reqn	Heading	Drawing	Drawing File Name
56	PD-337	337	55	Ship Stores & Equipment Handling		
57	PD-337	337	56	Cargo Handling		
58	PD-337	337	57	Anchor Handling & Stowage		
59	PD-337	337	58	Mooring & Towing		
60	PD-337	337	59	Mechanically Operated Doors Gates & Ra		
61	PD-337	337	6	Deck House Structure		
62	PD-337	337	60	Hull Designating & Marking		
63	PD-337	337	61	Rails Stanchions & Lifelines		
64	PD-337	337	62	Non-Structural Bulkheads		
65	PD-337	337	63	Floor Plates & Gratings		
66	PD-337	337	64	Ladders		
67	PD-337	337	65	Non-Structural Closures		
68	PD-337	337	66	Airports Portlights & Windows		
69	PD-337	337	67	Painting		
70	PD-337	337	68	Cathodic Protection		

Highlight those requisitions to be attached to a planning activity. Then select *Edit/Modify Selected Records/Attach/ Detach Planning Activity* from the main menu (or  on the toolbar). Indicate whether or not to apply changes to the requisition items also.

If only selected items on a requisition are to be attached to the planning activity, drill down to the Requisition Items worksheet.

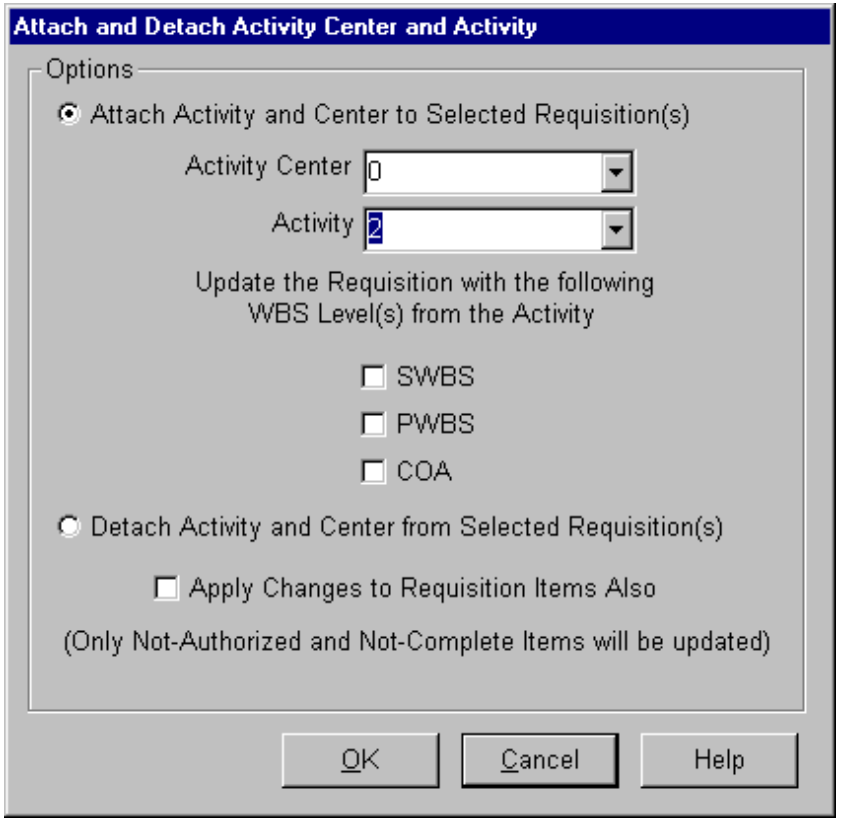
Requisition Items Information for the Planning Environment

	Contract	Project	Req	Req Item	Description	Part ID	Drawing	Drawing Item	Part Type
1	PD-337	337	64	2778	Ladders & Walkways	337642778			Direct Purchase
2	PD-337	337	64	2780	Ladders and Walkways	337642780			Direct Purchase
3	PD-337	337	64	2782	Ladders & Walkways OMS	337642782			Direct Purchase
4	PD-337	337	64	2786	Laders & Walkways	337642786			Direct Purchase
5	PD-337	337	64	2789	Ladders & Walkways	337642789			Direct Purchase
6	PD-337	337	64	2800	Metal Ladders & Walkway	337642800			Direct Purchase
7	PD-337	337	64	2804	Metal Grates	337642804			Direct Purchase
8	PD-337	337	64	2805	Metal Ladders & Walkways	337642805			Direct Purchase
9	PD-337	337	64	2808	Metal Grates	337642808			Direct Purchase
10	PD-337	337	64	2809	Metal Grates	337642809			Direct Purchase

Highlight those requisition items to be attached to a planning activity. Then click on the *Attach/Detach Planning Activity* button. 

1. **Identify whether to attach or detach.**
2. **For attaching a planning activity, identify it in the data fields provided:**

   activity center and the activity number are both required.
3. **Identify whether or not to transfer the planning activity's WBS (SWBS, PWBS, and COA) to the requisitions. If these options are selected (by clicking in the check boxes), the requisitions will have their WBS set to be what is provided by the planning activity.**
4. **If these options are not selected, then the existing WBS assignments on the requisitions will prevail.**
5. **Click on the *OK* button.**



- **The system will then proceed to schedule the selected requisitions/requisition items according to the planning activity's planned start and finish date.**

The system sets the requisition "Need Date" as the planning activity's start date.

The purchasing schedules for "Required in Yard," "PO Action Date" and "Drawing Release Date" are each computed by the system according to the sequence times defined on the requisitions.

For details on these sequence schedules, refer to the "*Material Planning, Purchasing, & Inventory Control*" user manual.

Revising Work Order Schedules

PERCEPTION **work order schedules can be revised using several different methods:**

- **Manual rescheduling**
- **Manually using the global rescheduling tool**
- **By rescheduling planning activities**

Manually Rescheduling Work Orders

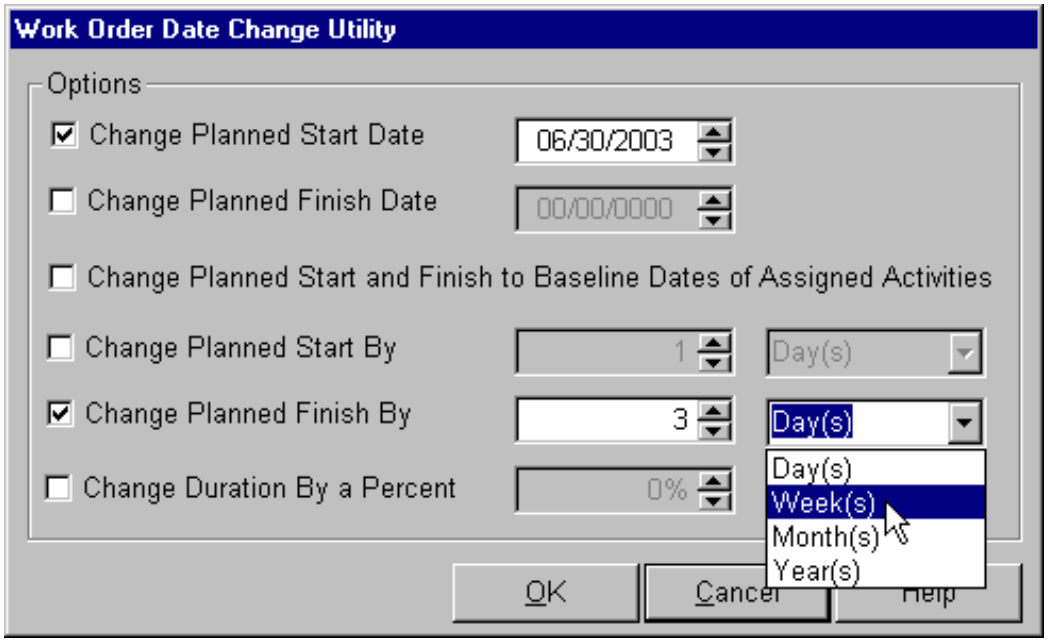
The most direct method to revise work order schedules is simply to modify the schedules manually, work order by work order.

Rescheduling Work Orders Using Global Reschedule Function

The global rescheduling feature of the system:

- **Either applies a new start and/or finish date to the selected work orders, or**
- **Increases/decreases existing schedules by a specified number of days, weeks, or months.**

1. Select *Environment/ Production Engineering/ Work Orders* from the main menu.
2. Retrieve and highlight those work orders that need to be manually rescheduled
3. Click on the *Reschedule Work Orders* button  on the toolbar.
4. The system will respond with a pop up window



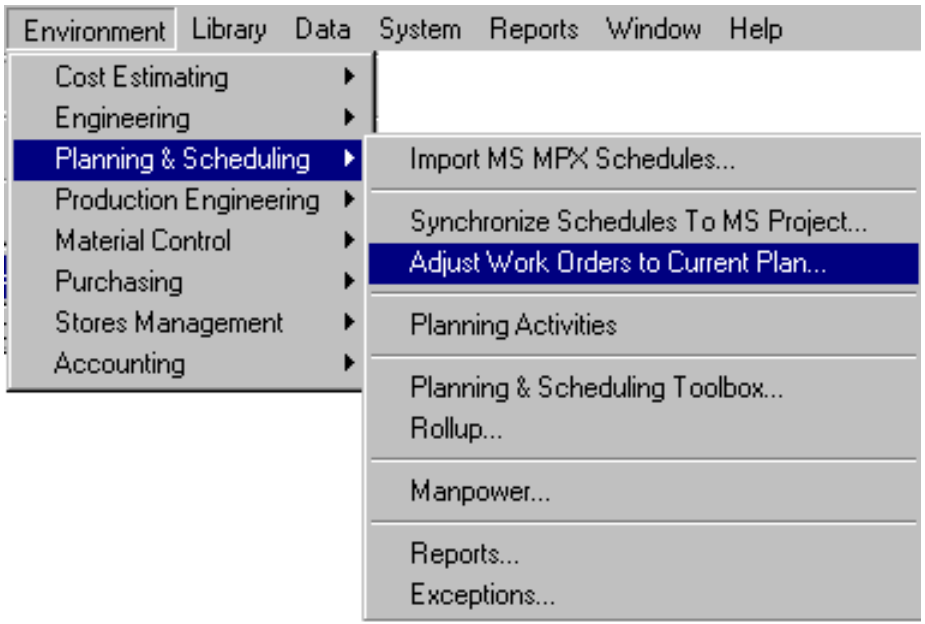
Change the planned start and/or finish dates for the work orders as provided with the displayed options.

Rescheduling Work Orders With Attached Planning Activities

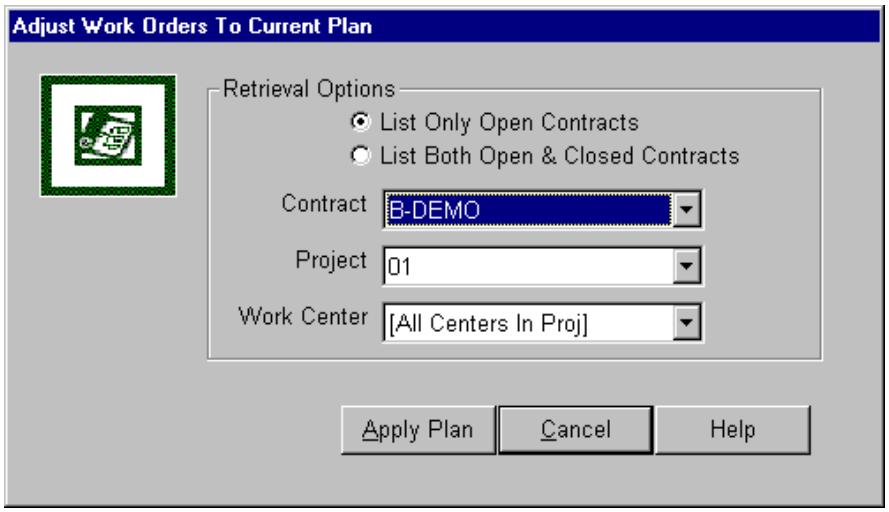
First, reschedule the planning activities:

- **Either manually in the Planning Activity worksheet, or**
- **Via *Project 2000*, after which the revised Project 2000 task schedules need to be synchronized with *PERCEPTION* planning activities.**

With the planning activity schedules revised, the attached work order schedules can be revised automatically.



From the menu select *Environment/ Planning & Scheduling/Adjust Work Orders to Current Plan.*



1. **Select the Contract, Project, and Work Center you wish to reschedule**
2. **Now click on the *Apply Plan* button. The system will now update the work orders attached to activities.**

If the work order has been started, the system will not alter its schedule.

If an un-started work order is a time-phased or incremental process type work order, the system will not alter its schedule.

If the un-started work order is a discrete or distributed type work order, the system will change its planned schedules as follows:

The relative proportion of time between the activity's original start and the work order's original start (defined as the work order start offset from the activity start) to the original total duration of the activity will be maintained by the system:

$$\textit{Work order start offset} = \textit{[work order start – activity start}$$

$$\textit{Activity duration} = \textit{[activity finish – activity start]}$$

$$\textit{Work order start offset}_{new} = \textit{Work order start offset}_{original}$$

$$\textit{Activity duration}_{new} = \textit{Activity duration}_{original}$$

Or,

$$\textit{Work order start}_{new} = \textit{Activity start}_{new} + \Delta_s$$

Where

$$\Delta_s = [\textit{Activity duration}_{new} / \textit{Activity duration}_{original}] \times \textit{Work order start offset}_{original}$$

The ratio of the work order's original duration to the activity's original duration also will be maintained by the system:

$$\textit{Work order duration} = \textit{[Work order finish – Work order start]}$$

$$\textit{Work order duration}_{new} = \textit{Work order duration}_{original}$$

$$\textit{Activity duration}_{new} = \textit{Activity duration}_{original}$$

Or,

$$\textit{Work order finish}_{new} = \textit{Work order start}_{new} + \Delta_{fs}$$

Where

$$\Delta f_s = [\textit{Activity duration}_{new} / \textit{Activity duration}_{original}] \times \textit{Work order duration}_{original}$$

Revising Material Requisition Schedules

PERCEPTION **schedules for material requirements can be revised using several different methods:**

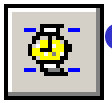
- **Manually rescheduling requisition Need Dates**
- **Manually rescheduling requisitions using the global rescheduling tool**
- **Rescheduling work orders attached to the requisitions**
- **Rescheduling planning activities attached to the requisitions**

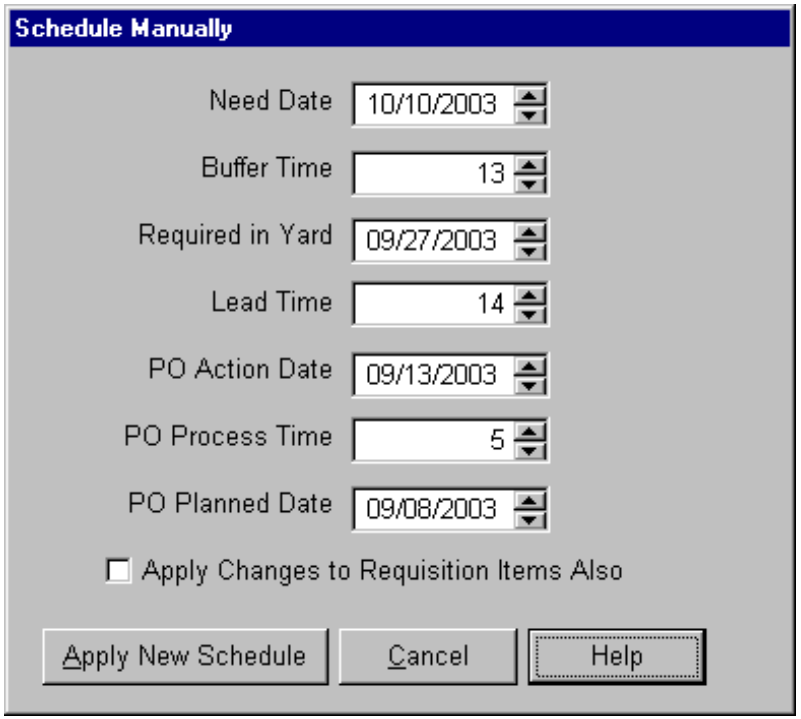
Manually Revising Material Requisition Schedules

The most direct method to revise requisition and purchasing schedules is simply to modify them manually, requisition by requisition.

Rescheduling Material Requisitions Using Global Rescheduling Functions

The global rescheduling features enable the user to re-define Need Dates and the various sequencing times for purchasing.

1. Select *Environment/Material Control/Requisitions* from the main menu.
2. Retrieve and highlight those requisitions that need to be globally rescheduled
3. Click on the *Reschedule Requisitions* button  on the toolbar.
4. The system will respond with a pop up window.
5. Make the adjustments to the rescheduling information.
6. Click on the *Apply New Schedule* button.



Manually Revising Material Requisition Item Schedules

The procedure described for revising requisitions can at the same time be applied to all the related requisition items.

However, if requisition items require different sets of schedules, the rescheduling procedure is also available at the requisition item level of detail.

Automated Rescheduling Of Material Requisitions

The Need Date on requisition items can be set manually or set/reset automatically by association with a pallet, work order, or planning activity.

The following outlines these automated scheduling effects for requisition item Need Date:

- **If scheduled by a Pallet:**

  Requisition Item Need Date = Pallet Need Date – Pallet Buffer Time

- **If scheduled by a Work Order:**

  Requisition Item Need Date = Work Order Planned Start Date

- **If scheduled by a Planning Activity:**

  Requisition Item Need Date = Activity Planned Start Date

The priority order for determining the requisition item Need Date is as follows:

1. **Pallet Need Date always takes first precedence**
2. **Work Order Planned Start Date takes second precedence**
3. **Planning Activity Planned Start Date takes third precedence.**

If the item is scheduled by association, by one of these documents (i.e., pallet, work order, or planning activity), the user cannot change the Need Date on that item.

To reschedule the item, the user must change the date on the attached document that schedules the item.

Any change to the Need Date, either manual or automatic, will cause a recalculation of the schedule and all other dates that are dependent upon that date (for example, Required In Yard Date, PO Date, etc.).

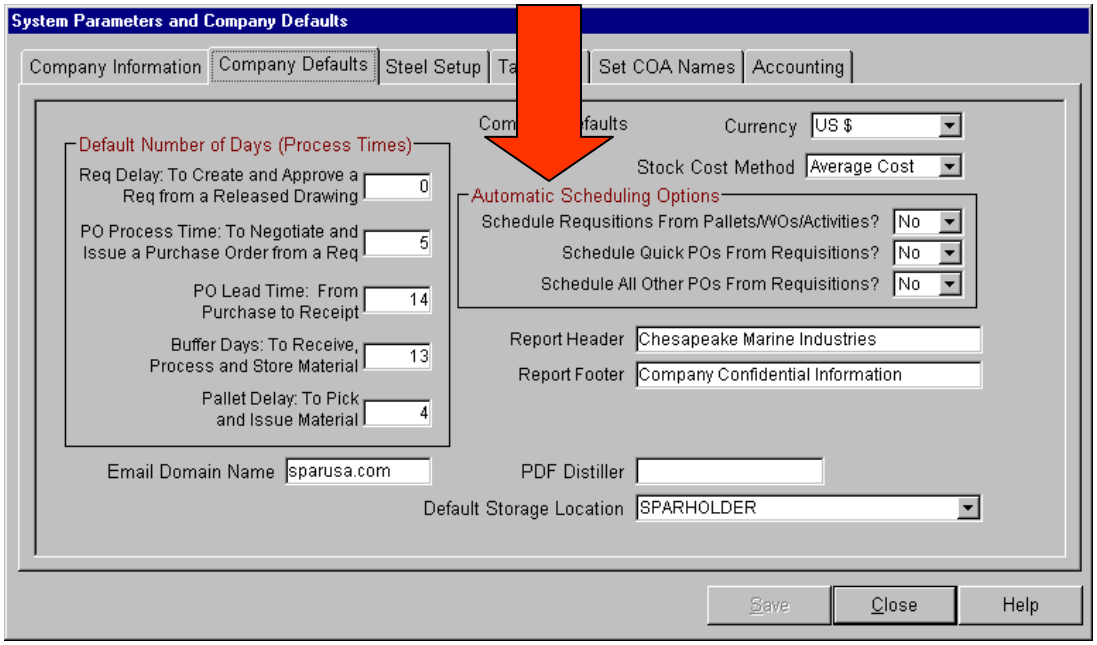
NOTE: A requisition item may be associated with a work order or planning activity that has not yet been defined in the system.

In this case, the item will *not* be scheduled by the non-existent work order or activity until that work order or activity is defined and given a Planned Start Date.

The requisition item Need Date will then be updated automatically.

Whenever the planning activities, work orders or pallets are rescheduled, the system may be authorized to automatically reschedule requisitions attached to these documents.

This authorization can be prescribed on the company parameters and defaults (*Library/Company Parameters/Company Defaults* tab. See the options provided in the *Automated Scheduling Options* section.



The user should refer to the SPAR manual titled "*Material Planning, Purchasing & Inventory Control*" and review the scheduling rules described for material functions.

Revising Material Pallet Schedules

PERCEPTION schedules for material pallets can be revised using several different methods:

1. Manually rescheduling pallet Need Dates
2. Rescheduling work orders attached to pallets
3. Rescheduling planning activities attached to pallets

Rescheduling Pallets From Work Orders

Pallets that are attached to work orders will automatically have their Need Dates revised when the work order Planned Start Dates are modified.

This means that the material pallet schedules can be modified directly whenever work order schedules are changed.

Rescheduling Pallets From Planning Activities & Work Orders

The Pallet Need Date is when the material is planned to be issued to production. When a pallet is created, if it is not associated with a work order, its Need Date may be set manually.

Once it has been associated with a work order, and while it remains open, its Ned Date will always be set by the system to be equal to the work order Planned Start Date.

If the pallet is not attached to a work order, but is attached to a planning activity, the pallet's Need Date will always be set equal to the activity's Planned Start Date.

If the pallet is scheduled by a work order or a planning activity, the user cannot change the Need Date on the pallet.

To reschedule the pallet, the user must change the date on either the work order or the planning activity that schedules it.

If a change is made to the associated work order or planning activity Planned Start Date, the system will recalculate the schedule for all attached, not complete, material items.

The following outlines these automated scheduling effects for pallet Need Date:

1. **If scheduled by a work order: Need Date = Work Order Planned Start Date**
2. **If scheduled by an activity: Need Date = Activity Planned Start Date**

When a planning activity has its baseline start or finish changed, the system will re-schedule its associated work order material pallets as follows:

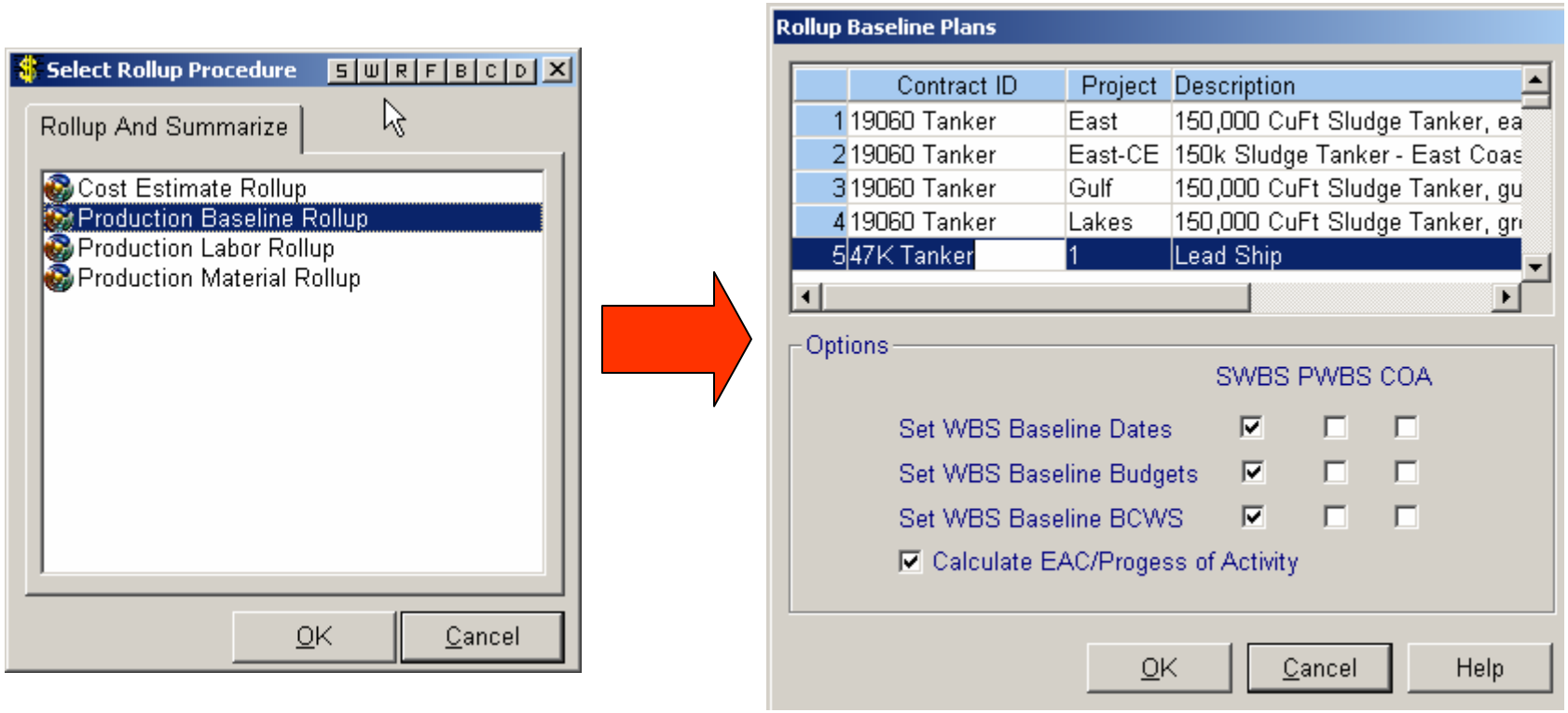
1. **All pallets attached to schedule-adjusted work orders will have need dates coinciding with the new start dates of the work orders.**
2. **If the material requisition scheduling option is turned on, then all schedule adjustments of the pallets will be reflected back to need dates for the corresponding requisition items that are incomplete (i.e., not fully used in production).**
3. **If requisition items are not attached to a pallet item but are attached directly to a schedule-adjusted work order, the schedule adjustment will be applied to the need date for these requisition items.**
4. **If the purchase order scheduling option is turned on, then rescheduled requisition items attached to purchase orders that are incomplete (i.e., not fully received in delivery) will have required delivery dates adjusted.**

Summarizing Planning Activity Cost & Schedule Performance

PERCEPTION **automatically updates the status of project planning activities.**

The *Production Baseline Rollup* summarizes progress, cost and schedule performance information from linked work orders and material requisitions.

Select *Environment/Planning & Scheduling/Rollup* from the main menu.



Select *Production Baseline Rollup* to open the rollup project and options selections window.

The options for the Baseline Rollup are as follows:

1. Summarize the planning activity baseline dates and copy to the project WBS (SWBS, PWBS & COA) as defined on the activities.

2. Summarize the planning activity baseline budgets (labor hours, labor and material costs) and copy to the WBS

3. Compute the baseline Budgeted Cost of Work Scheduled - BCWS (labor hours) using the planning activities, their baseline budgets and baseline schedules. Copy the baseline BCWS to the project WBS.

4. Compute the planning activity Estimate At Completion - EAC and percent progress from a system-developed analysis of attached work order cost (labor hours) and schedule performance.

Multiple projects can have rollups performed in a single process by holding down the CTRL key while clicking and highlighting the desired project(s) in the project list sub-window.

When all the options and project selections have been made, click on the *OK* button.

The system will proceed with the rollup process.

Updating Microsoft *Project 2000*

PERCEPTION **provides a function to automatically update the Microsoft *Project 2000* database with the current status of project planning activities.**

With this information, *Project 2000* will automatically update schedules according to the progress status provided by *PERCEPTION*.

1. Select *Environment/Planning & Scheduling/Synchronize Schedules To MS-Project* from the main menu.

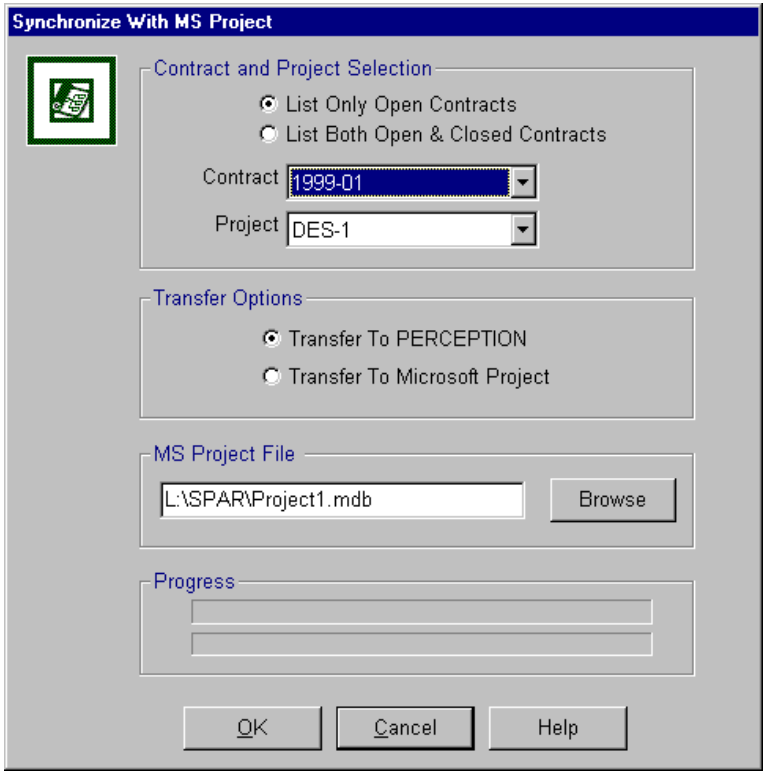
   This will open the "Synchronize with MS Project 2000" window

2. Select the contract and project to be synchronized.

3. Click on *Transfer to Microsoft Project.*

4. Enter the path and name of the *Microsoft Project* database file.

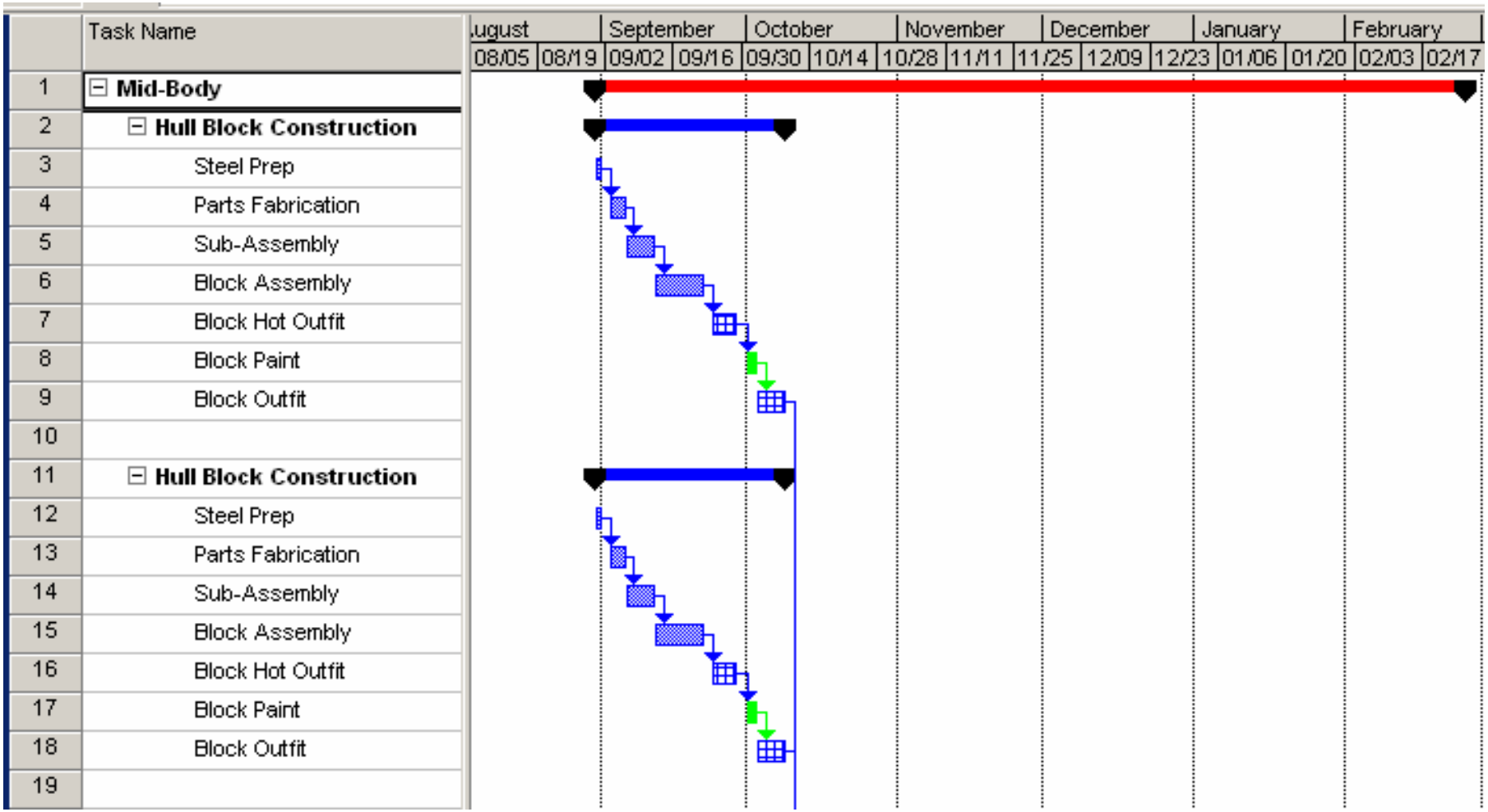
5. Click on *OK.*



***PERCEPTION* transfers the following information into the Microsoft Project 2000 database:**

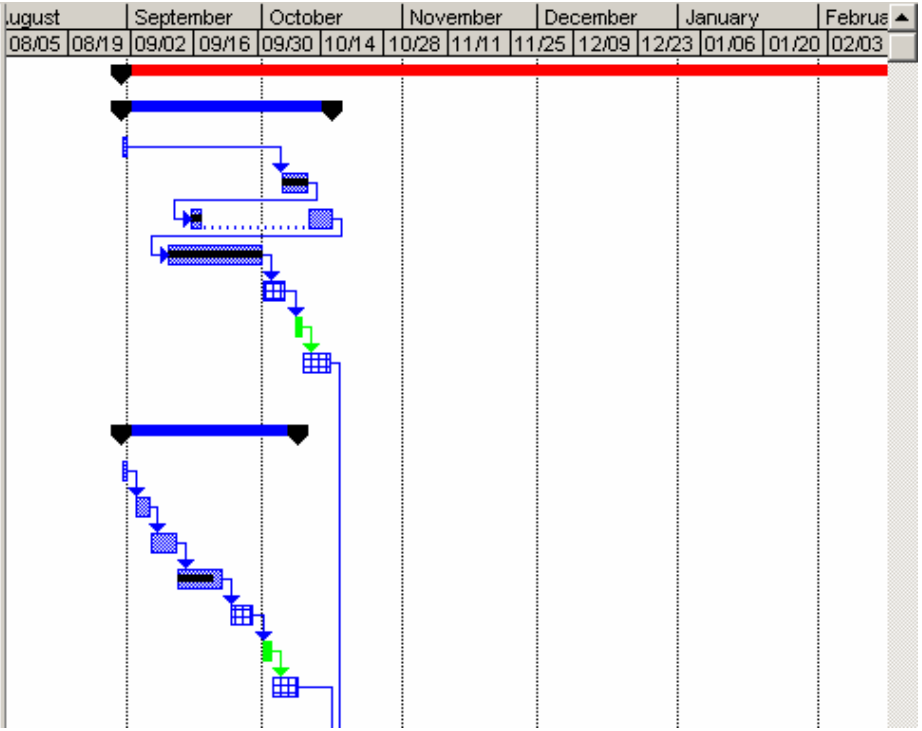
1. ***PERCEPTION* Planning Activity WBS**
2. **Actual start date (if available from time charges)**
3. **Actual finish date (if available from time charges)**
4. ***PERCEPTION %* complete**
5. **Actual hours from time charges**

Microsoft *Project 2000* Schedule Status Before A *PERCEPTION* Synchronizing Update



Microsoft *Project 2000* Schedule Status After A *PERCEPTION* Synchronizing Update

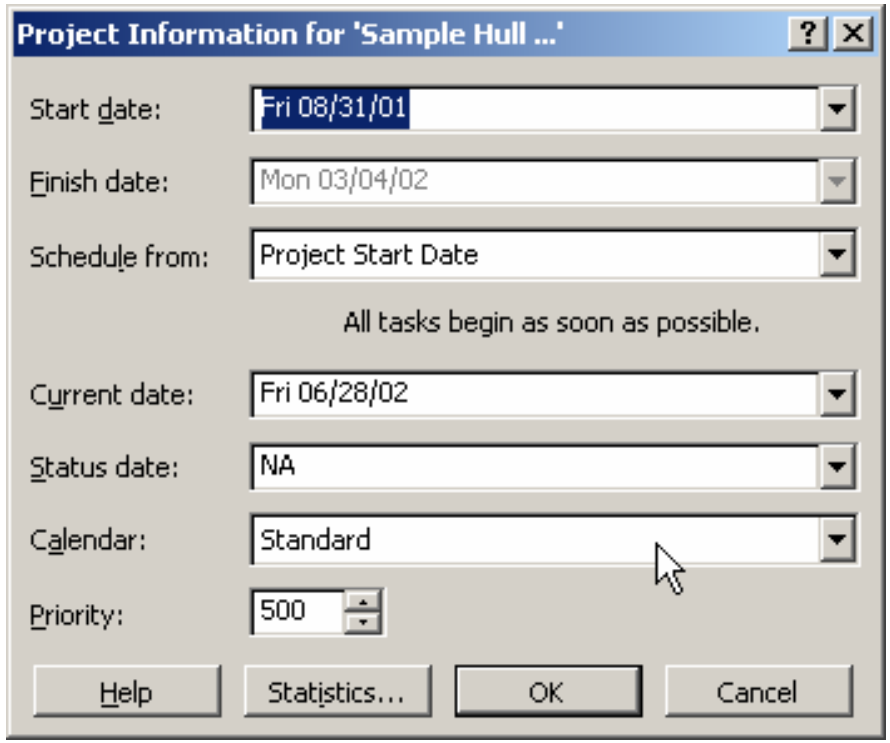
	Duration	Actual Start	Actual Finish	% Complete	Start	Finish
1	**132 days?**	**Fri 08/31/01**	**NA**	**16%**	**Fri 08/31/01**	**Mon 03/04/02**
2	**32.6 days?**	**Fri 08/31/01**	**NA**	**55%**	**Fri 08/31/01**	**Tue 10/16/01**
3	1 day?	NA	NA	0%	Fri 08/31/01	Fri 08/31/01
4	4 days	Fri 10/05/01	Wed 10/10/01	100%	Fri 10/05/01	Wed 10/10/01
5	4 days	Sat 09/15/01	NA	10%	Sat 09/15/01	Tue 10/16/01
6	15 days	Mon 09/10/01	Sun 09/30/01	100%	Mon 09/10/01	Sun 09/30/01
7	5 days	NA	NA	0%	Mon 10/01/01	Fri 10/05/01
8	2 days	NA	NA	0%	Mon 10/08/01	Tue 10/09/01
9	4 days	NA	NA	0%	Wed 10/10/01	Mon 10/15/01
10						
11	**27 days?**	**Fri 08/31/01**	**NA**	**22%**	**Fri 08/31/01**	**Mon 10/08/01**
12	1 day?	NA	NA	0%	Fri 08/31/01	Fri 08/31/01
13	3 days	NA	NA	0%	Mon 09/03/01	Wed 09/05/01
14	4 days	NA	NA	0%	Thu 09/06/01	Tue 09/11/01
15	8 days	Wed 09/12/01	NA	75%	Wed 09/12/01	Fri 09/21/01
16	5 days	NA	NA	0%	Mon 09/24/01	Fri 09/28/01
17	2 days	NA	NA	0%	Mon 10/01/01	Tue 10/02/01
18	4 days	NA	NA	0%	Wed 10/03/01	Mon 10/08/01
19						



Microsoft *Project 2000* automatically adjusts the schedules according to the actual schedule information provided by *PERCEPTION*.

Microsoft *Project 2000* also displays the percent complete information as a measured solid line bar inside the bar representing the task schedule.

The overall impact of these updates on the project can be viewed by clicking on *Project/Project Information* on the main menu of Microsoft *Project 2000*.



If re-planning of the project is warranted, it can be re-scheduled using Microsoft *Project 2000*.

When the schedules have been revised, the *PERCEPTION* Synchronizer can be used again to re-schedule the project Planning Activities.