INTERACTIVE GRAPHICAL PROJECT SCHEDULING

VERSION 3.2

USER'S GUIDE

MARCH 14, 2008

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CASCAD-e USER'S GUIDE

FOR VERSION 3.2 IN EFFECT 2/28/08

These instructions have been written for use and evaluation of Version 3.2 of the CASCAD-e interactive graphical project scheduling software.

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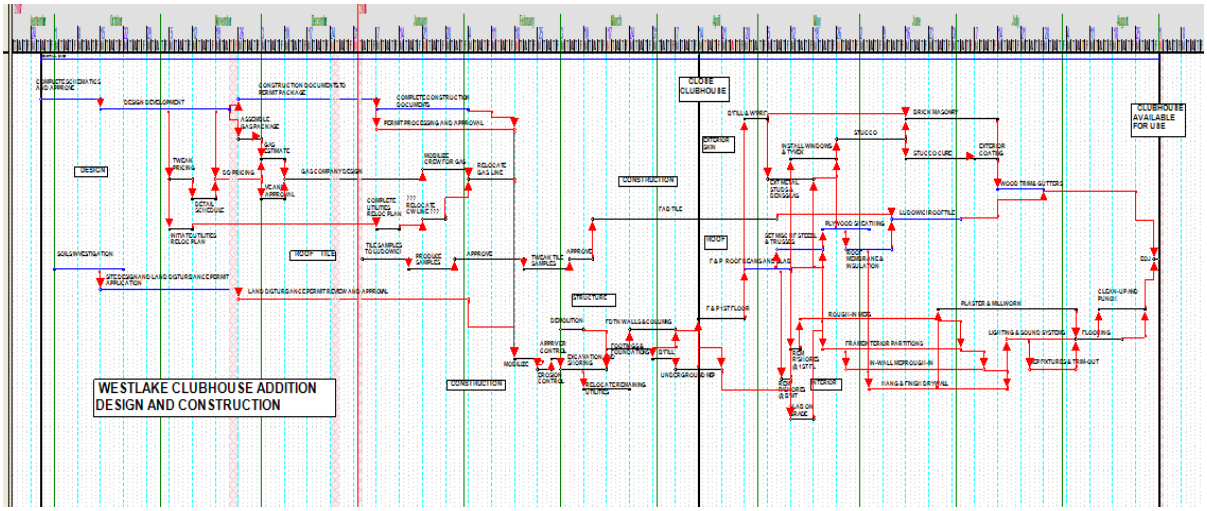
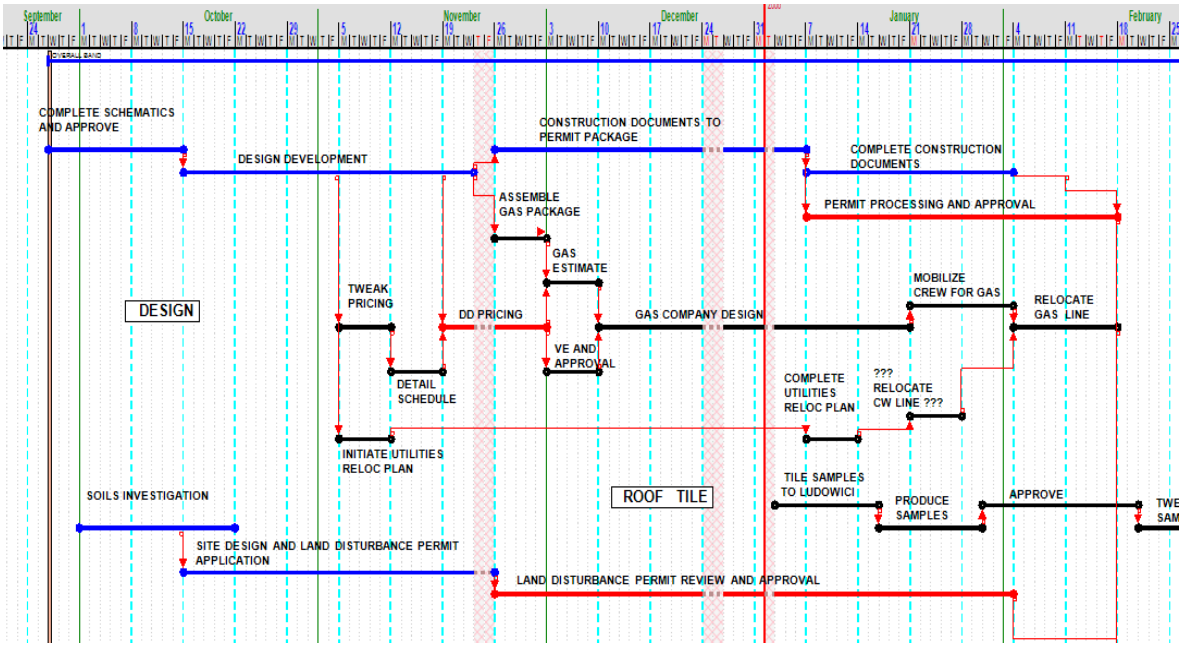
INTRODUCTION

CASCAD-e is an entirely new way to carry out Critical Path Method (CPM) Scheduling for projects. It utilizes Time-Scaled Precedence Diagramming (TSPD) on a calendar time grid and is based on over 40 years of teaching and consulting experience with TSPD scheduling. CASCAD-e is the first version of TSPD scheduling in which precedence relationships automatically and instantly determine the impact of movements or changes in one or multiple activities and or precedence relationships. It is the first project scheduling approach to use a totally graphic approach to developing and utilizing the schedule. Using CASCAD-e gives the newcomer to scheduling a vastly improved understanding of scheduling terms and processes. To the experienced scheduling practitioner, CASCAD-e gives ease of development and vastly improved insight into the emerging schedule.

The appearance of the schedule you can build with CASCAD-e can be varied widely to meet the needs of the user or the audience to which the schedule is to be presented. A basic form of the schedule might look like this:



With a zoomed-in partial view looking like this:



While CASCAD-e can be used by an individual to develop a project schedule in isolation, it has its greatest value in a planning/scheduling conference setting. Used with a high-resolution, high-lumens computer projector,

CASCAD-e creates a venue in which planning and scheduling can be done simultaneously, as in fact they should be. The participants can react and interact in real time in a synergistic manner, creating a level of understanding, creativity, enthusiasm, and buy-in that is simply not available with conventional project scheduling systems.

A single individual, serving as both the System Operator and the Meeting Facilitator, can handle the CASCAD-e planning/scheduling conference. However, the planning/scheduling conference is most efficient when a CASCAD-e -trained Facilitator serves as the session moderator, asking the questions, making suggestions, and monitoring the responses while a CASCAD-e specialist operates the software and generates the on-screen display in response to the information which the Facilitator is eliciting from the group.

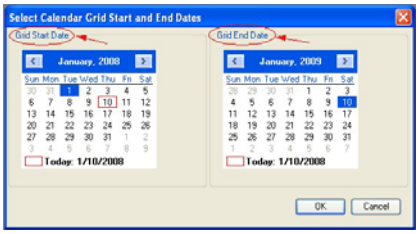
This Manual is directed to the individual who will use the software to produce the schedule as the input moves from the very first activity to the last of hundreds or thousands of activities. Other publications are available from CASCAD-e Systems to assist the Facilitator in mastering his assignment of bringing forth from a mixture of team personalities the essence of a good approach to the execution of a project. CASCAD-e Systems provides in-house training for both System Operators and Facilitators. The Facilitator should have a good operating knowledge of the CASCAD-e software in order take full advantage of all its features while he is being supported by the System Operator.

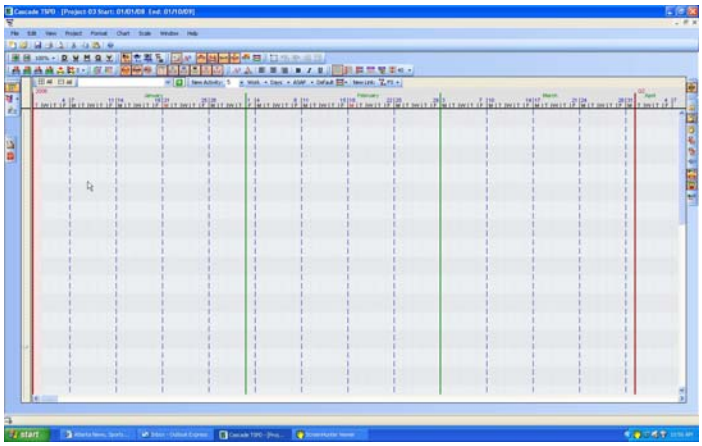
CASCAD-e Quick Start Guide

This Quick Start Guide is intended only as its name indicates, a quick start. It will only cover the very basics of the capabilities of the CASCAD-e program. If the user will take a ***quick tour*** of CASCAD-e by using this quick start guide, one will find how easy CASCAD-e can be to use. However, CASCAD-e is also a very flexible and powerful graphical data base program that requires the further explanations that are provided in the User's Guide. *For a more detailed discussion of any area, please refer to the CASCAD-e User's Guide.* This guide assumes that the user has loaded the software onto their computer.

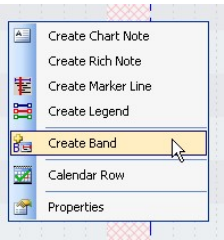
1. Launch the program by a double left click **(DLC)** on the CASCAD-e icon.
2. Select "Create New Project."

3. Set up the calendar parameters within which you will be building your project schedule. Allow extra space by starting about two months before the project start and about six months past the expected project end date. Click "OK" and a calendar grid will appear.

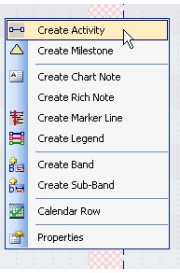


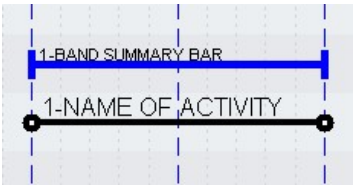


4. Create a band by right clicking **(RC)** on a row near the top inside the display area. *See the User's Guide for a discussion on the use of bands.*



5. Once you have a band created (it will not display until an activity is added) you can begin to add activities on any row under that band. Place your cursor on the date where you want your activity to begin and (RC). Select "create activity" and it will be created with the default duration and a "Band Summary Bar" will appear *(see User's Guide for further discussion).*



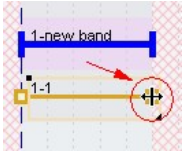


5. You can add a name to your activity with two methods. First, you can just double click in the text box of the activity. Second, and the easiest way for multiple activities, is to make sure the "quick edit button" is turned on. Then all you have to do is simply to start typing when an activity is selected.

The Quick Edit Button – 

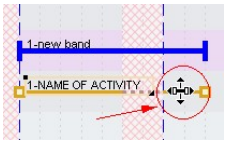
(See the User's Guide on selecting the shape, color, font, and other characteristics of activities.)

6. Edit the duration of an activity by selecting the activity and placing the cursor over one of the ends of the activity. Adjust the duration by holding a **(LC)** on your mouse and dragging left or right. *(See the User's Guide at the end of the "GETTING STARTED" section to become familiar with the various cursor symbols that you will encounter.*

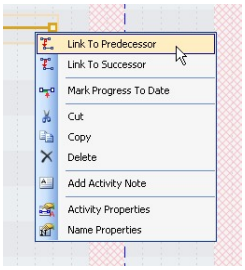


7. To move an activity, select the activity and place the cursor on the activity. The appearance of the cursor will change if you have "day lock" or "row lock" turned on *(see User's Guide)* which restricts the move to either a horizontal or vertical move.

Once your cursor is on the activity, simply hold a **(LC)** and drag to the new position- horizontally, vertically, or diagonally.

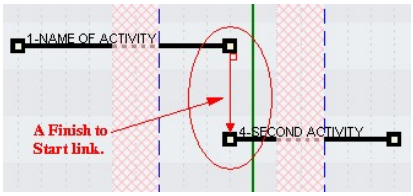


8. Once you have created more than one activity, you can link activities together with "Predecessor" and "Successor" constraints referred to as "links." Select an activity by a **(LC)** and then **(RC)** to get the pop-up menu.

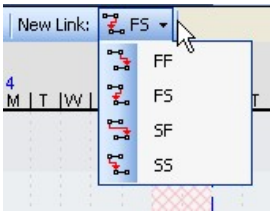


Select either the "predecessor" or "successor" link. Now select the activity with which you want to create the link by a **(LC)** on the activity.

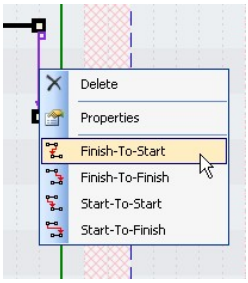
You should now have something similar to this:



To change the default setting for the links use this tool bar:



To edit a link select it with a **(LC)** and then make a **(RC)** to get the pop-up menu:



For further discussions on links and editing their lag factors please refer to the User's Guide.

9. You can maintain or remove the integrity of these links (and clear impacted activities) with the following tool bar buttons:

For a more detailed discussion of integrity moves and impacted activities, please refer to the User's Guide.

10. The critical path can be viewed by utilizing the buttons on the following tool bar:

The use of the "early start" and "late start" buttons should be reviewed in the User's Guide.

11. Printing your schedule. *This is best understood in the User's Guide*, but a quick review is to utilize the following tool bar:

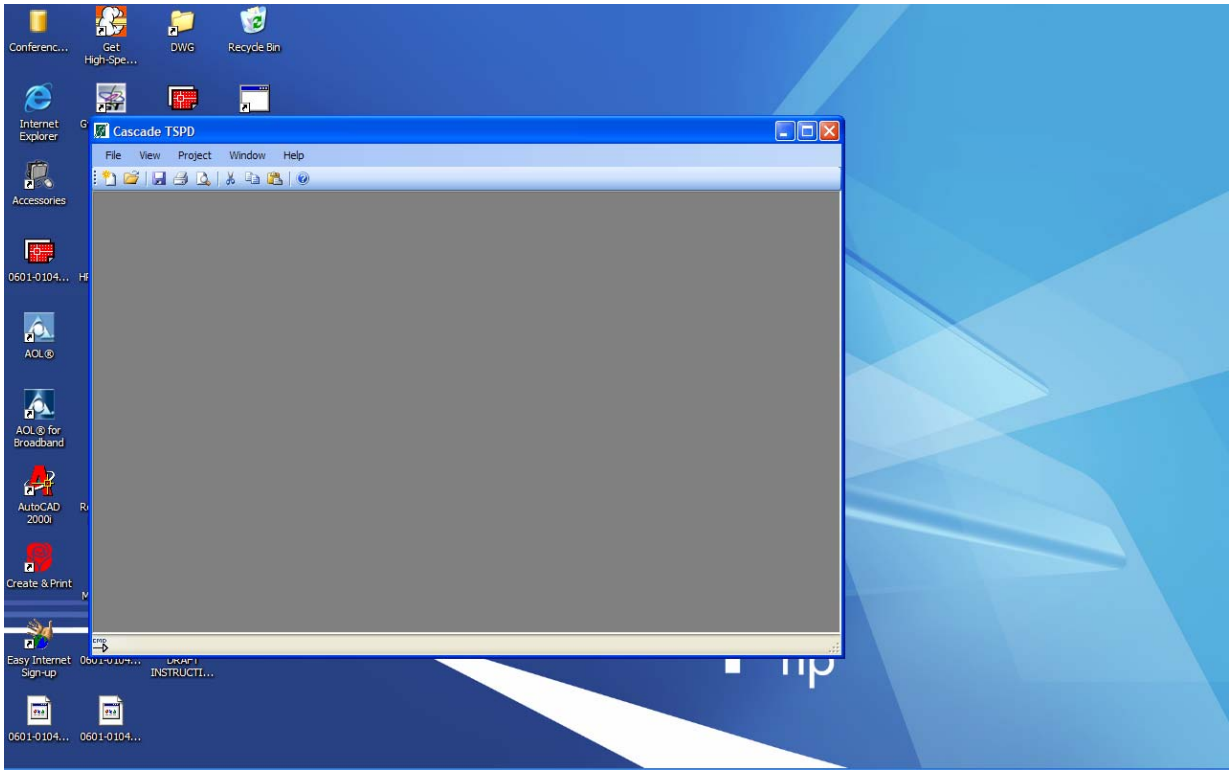
Select the button "create print zone" and then drag a rectangle from top left to bottom right to create the zone or zones. A double **(LC)** inside the zone will cause the Print Pop-up menu display. Set your parameters for the zone(s) within that window. Now select the button at the bottom right titled "print preview." Another window will pop-up showing how the print zone will look once printed. If it is acceptable, then **(LC)** on the printer icon at the upper right corner of the print preview window to send it to the printer you selected.

Please refer to the CASCAD-e User's Guide for more detailed discussions of the above points of interest as well as further capabilities of CASCAD-e Project Schedule software such as zoom, fence selection, copying, adding rows, suppressing numbers, creating classifications, properties, notes, marker lines, milestones, collapsing to a summary schedule (or expanding from), etc.

GETTING STARTED

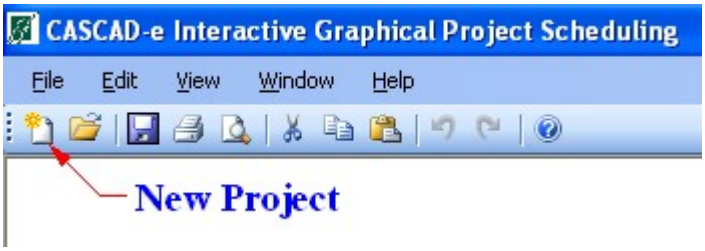
This section covers the typical procedures used to produce a basic schedule. After establishing these initial capabilities, the user can then proceed to examine and use the full range of CASCAD-e features as explained in the later sections of this manual.

After the CASCAD-e program has been installed on your computer, a CASCAD-e icon will be displayed on your desktop. Using your mouse or touch-pad, Double Left Click (**DLC)** on the icon and you will see this screen:

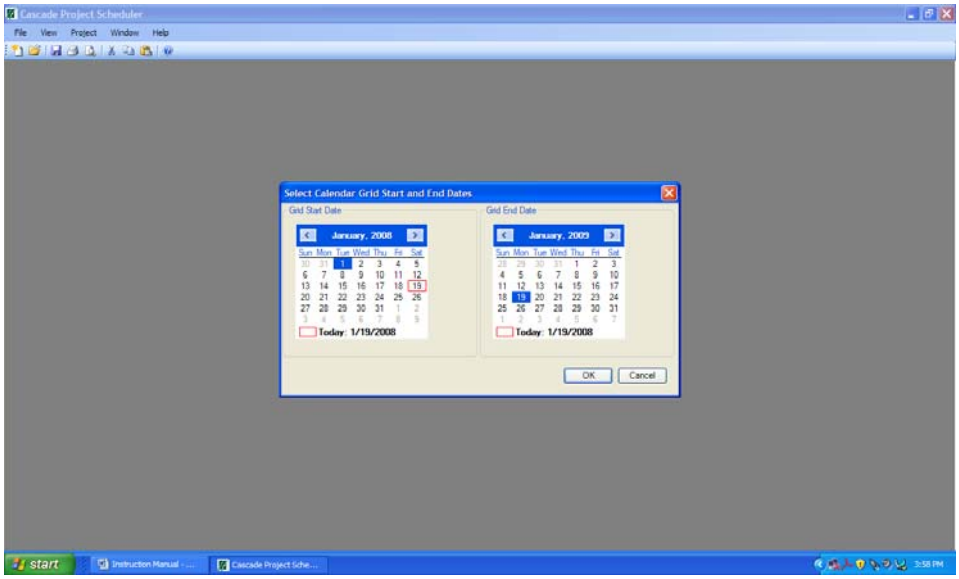


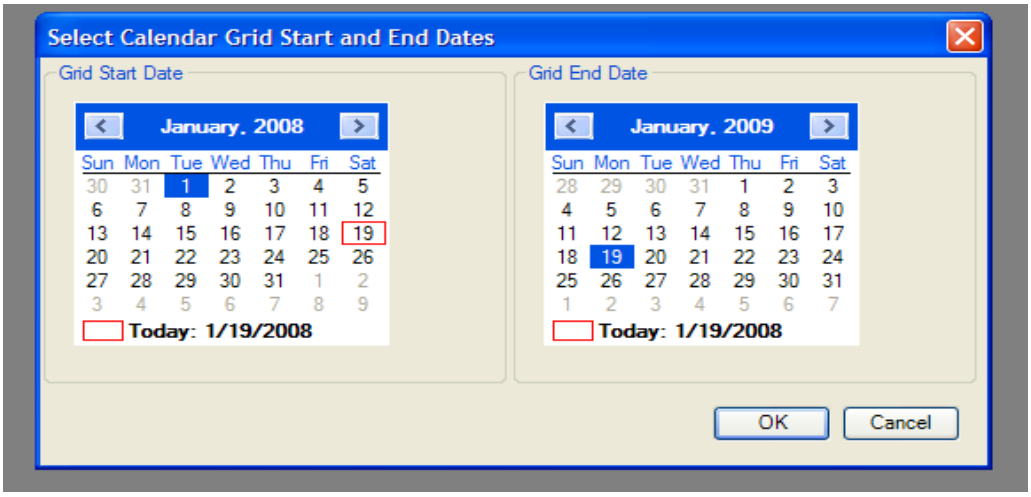
Left click (**LC**) on the "maximize" button to use the full screen

To begin a new project, **LC** on the new project icon button.



Two calendar pages (Grid Start Date and Grid End Date) will appear.

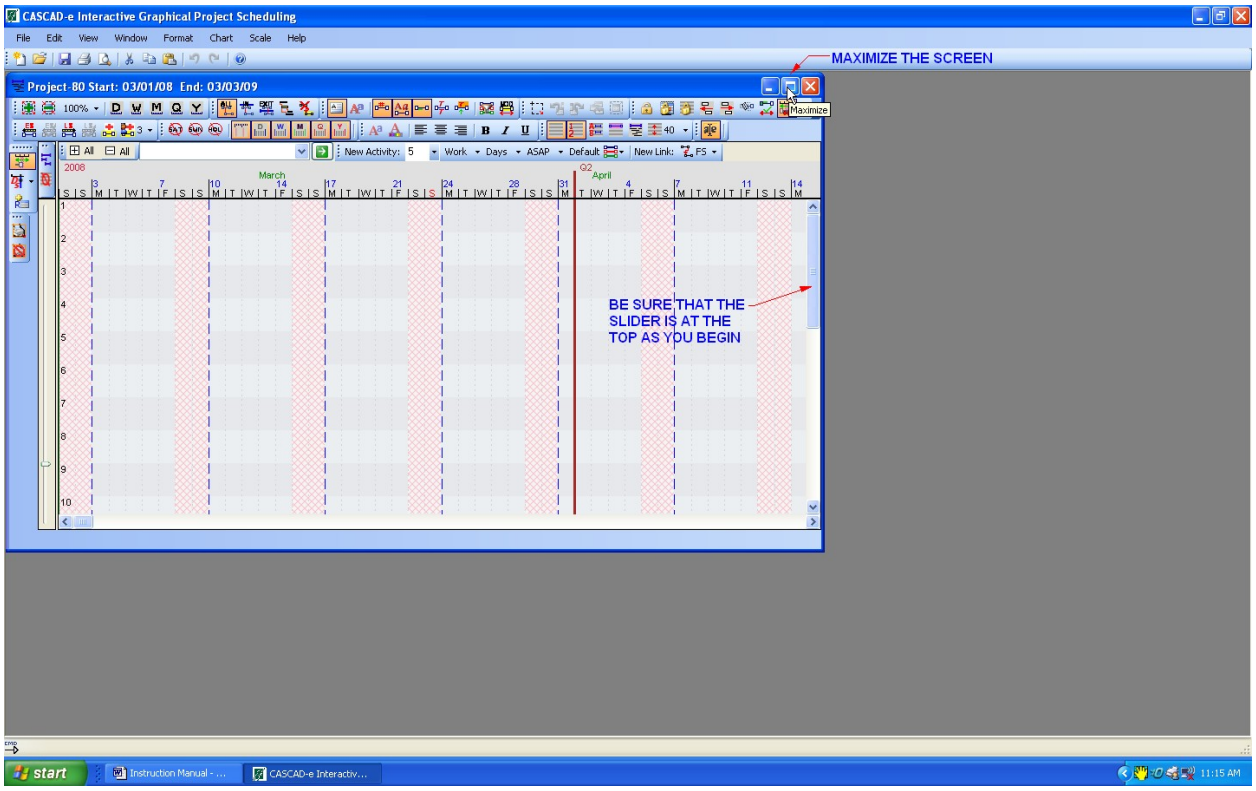




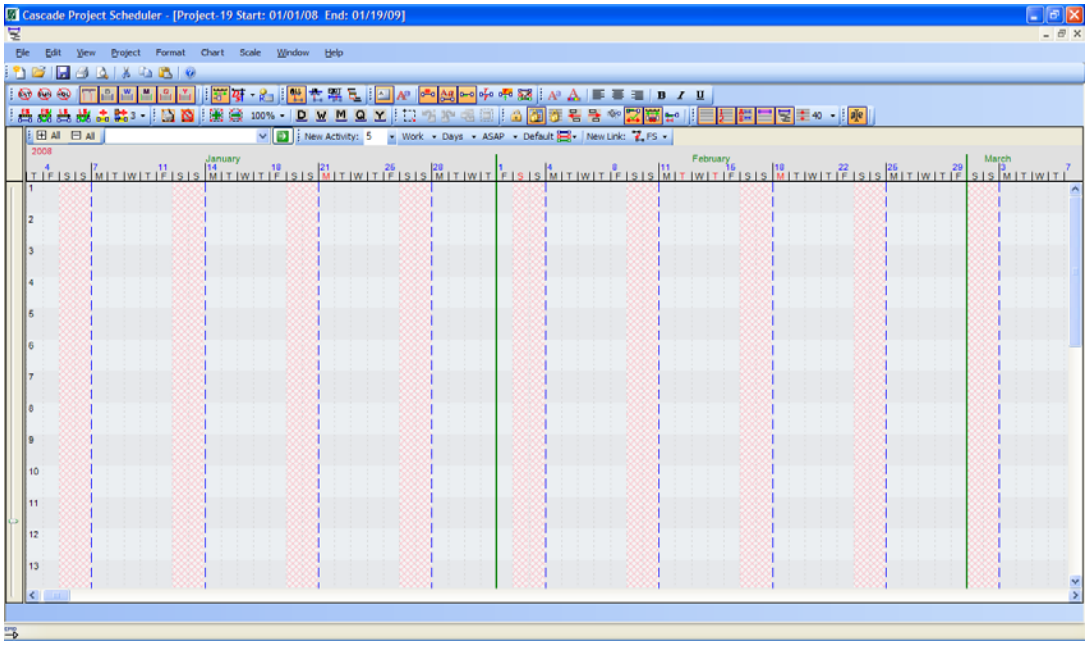
These dates are boundaries for the calendar grid on which you want to develop your schedule. They are not expected to be the start and end dates of your project. The boundary months are adjustable by **LC** on the right or left arrow on either side of the named month. The date within the boundary month can be set by putting the cursor on the date and **LC**. For illustrative purposes, accept the 1/19/08 - 1/19/09 calendar range by **LC** "OK".

SETTING UP THE CALENDAR

The following screen (with possibly a different arrangement of tool bars) will appear:



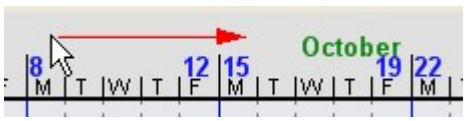
If the right scroll bar is not in the top position, **LC** and hold (GRAB) the scroll bar and move it up to the top position. **LC** on the maximize button to fill the screen and your screen will then look like this:



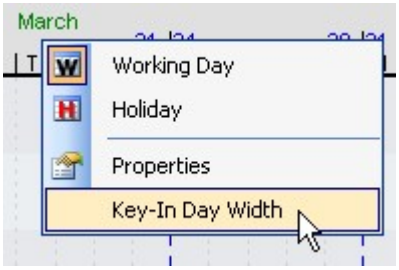
This is necessary to expose all the tool bars. As you gain experience in using the tool bars, you can rearrange them to whatever configuration is most convenient for you, including hiding those you don't need for the stage of schedule development on which you may be working. If the tool bars appear to be scattered inefficiently, **LC** on "View", and on the drop-down menu, **LC** on "Autosize Toolbars". The toolbar arrangement will be tightened up. *A display, definition, and coding of all tool bars is covered in APPENDIX A. The coding is used throughout the manual to better identify the tool bar being referred to.*

You can **GRAB** the bottom scroll bar and move it to view any period within the start-date/end-date range you defined earlier.

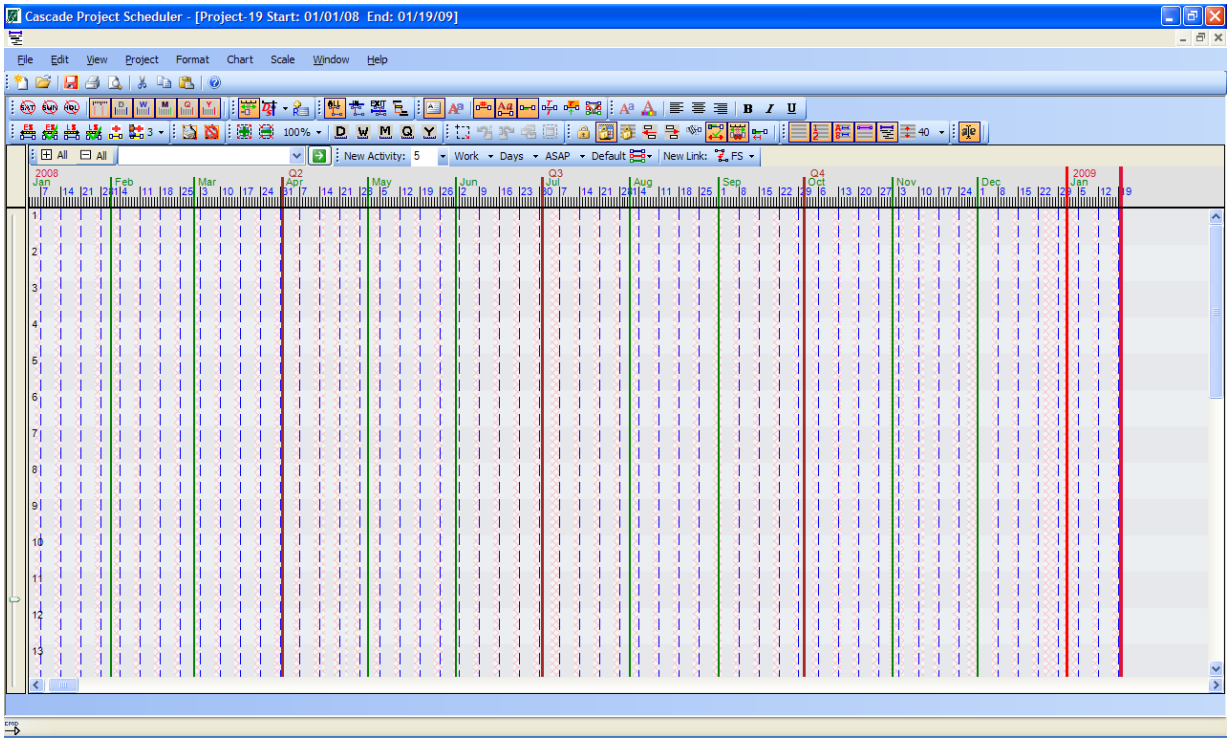
At any time you can **GRAB** any spot on the calendar at the top of the time-grid and move left (to compress the scale) or right (to expand the scale). An example of expanding the scale:



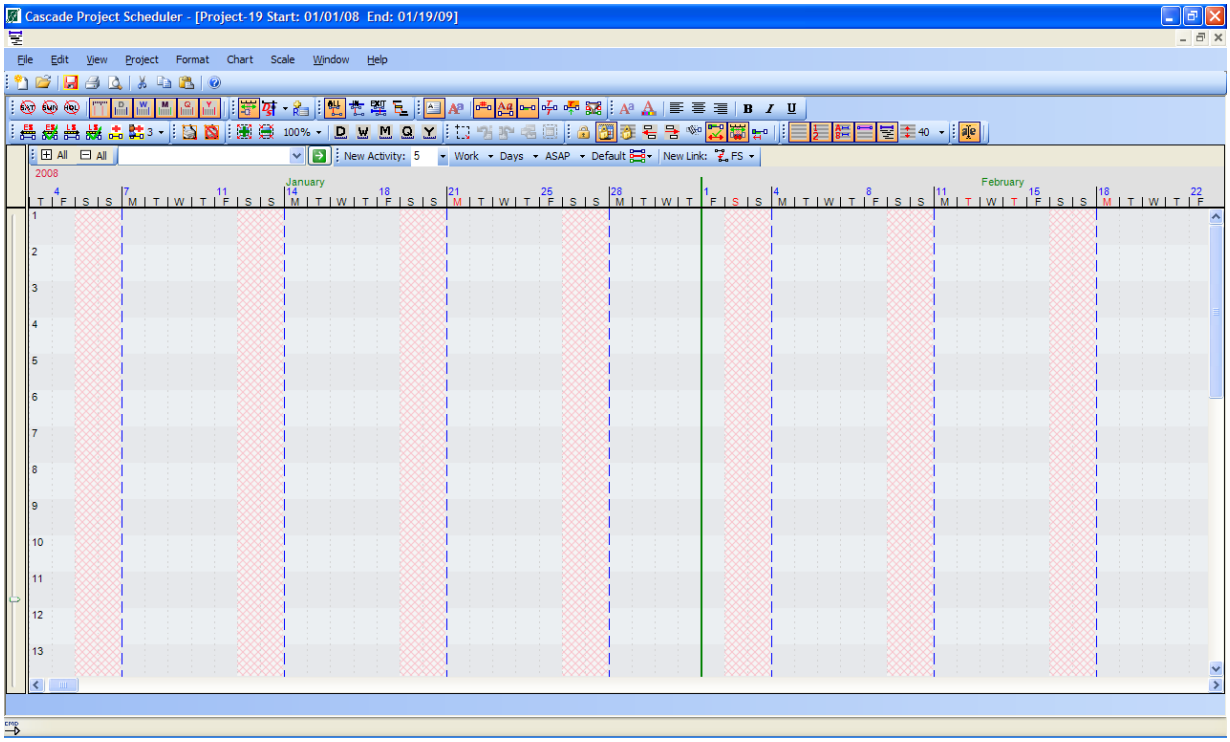
You can also set the "**Day Width Scale"** by placing your cursor anywhere in the calendar band and doing a **RC.** A **LC** on "key-in Day Width" will produce a pop-up menu in which you can set the day width. The default setting is **0.20** inches per day. This is the width that you will see displayed when your zoom is set at 100%.



A more compacted scale may appear like the following:

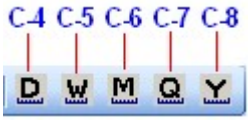


An expanded scale might look like this:

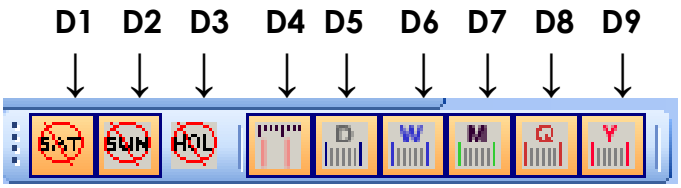


Typical practice is to use the default scale, which appeared earlier and use the "ZOOM " tool (explained later) to view a greater or smaller time period. Zooming does not change the basic time-period vs. row-height proportion. The compression or expansion illustrated above does change these proportions. Only by experimentation can you determine if changing the working scale by the compression or expansion shown above will best allow you to develop and display your schedule.

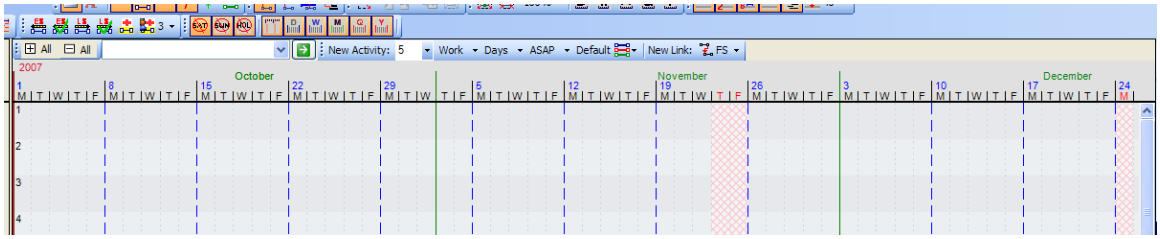
The "Calendar Scale" tool bar will also allow you to quickly change the scale in which you view the display. A **LC** on **C-6**, for example, will display one month on the screen.



When you initially open your grid, all seven days of each week are shown. Saturdays, Sundays, and Holidays are shown as vertically crosshatched days. These non-work days may be left visible or may be hidden by using buttons **D1, D2, and D3.** The vertical lines delineating days, weeks, months, quarters, and years can be turned on or off with buttons **D5-9.**



Hiding Saturday and Sunday would create the following screen image:



This version of the calendar is generally preferable when activities are typically done on a 5-day week basis.

A 6- or 7-day work-days-per-week calendar can be created by displaying Saturdays and /or Sundays and changing them into working days. A working day can be turned into a non-working day, or vice versa, by a **RC** on that day on the calendar and then **LC** on the appropriate symbol below:

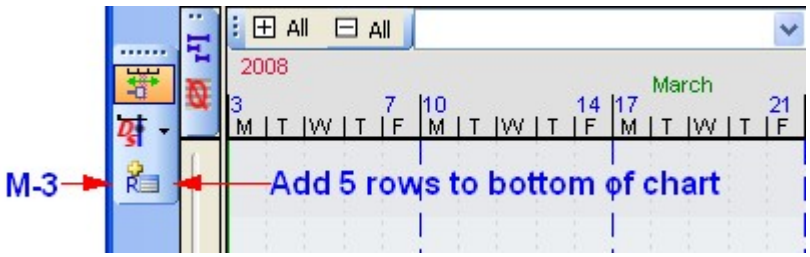
You have now established the horizontal make-up of your calendar grid.

ESTABLISHING THE ACTIVITY GRID SPACE

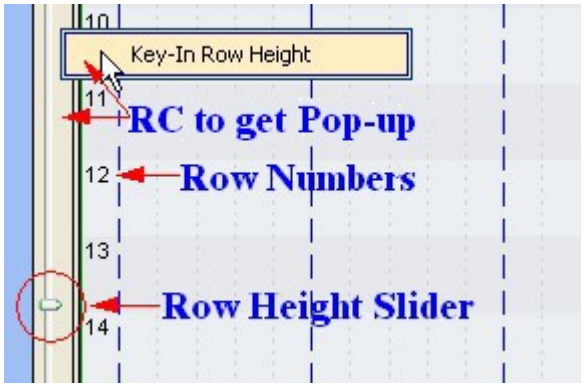
The vertical component of your calendar grid consists of **Bands** (and possibly **SubBands**) and **Rows** within them. **Bands** are means of structuring the organization of the schedule into sub-components, such as floors of a building. This is referred to as establishing the Work Breakdown Structure (WBS). **Rows**

provide space within **Bands** for activities to be located. *(A row can contain multiple activities. This capability makes the CASCAD-e schedule display much more efficient and much more readable than conventional project scheduling software.)* An Activity can only be created within a band, meaning that you must have created at least one band before you can create an activity. This will be discussed in the following section.
Multiple Bands and Sub-Bands are covered in later portions of this manual.

When you start a new project, 25 Rows are automatically established and numbered. Additional rows may be added as needed. Inserting rows (or deleting a row) will be explained later in this manual. At any time, a **LC** on the following button will add 5 rows per click <u>to the bottom</u> of the grid:



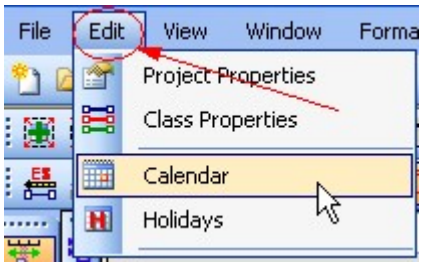
Row heights can be varied as desired by **GRABBING** the Row Height slider on the left and moving it up or down. The height can also be changed in the same fashion as the day width. Place your cursor in the gray area on the left of the display and do a **RC**. This will produce a pop-up in which you can type the setting you desire. The default setting is **0.40** inches per row.



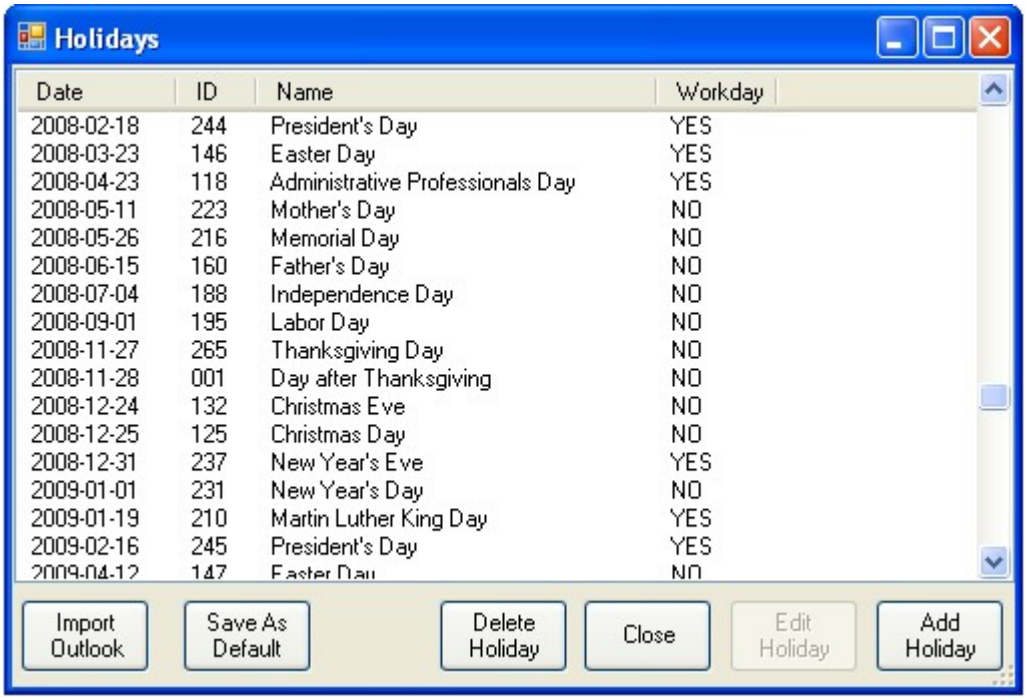
The same cautions expressed for changing the time scale alone apply to changing row height. Both the time scale and the row height can be altered proportionately by the use of the "Zoom" procedure covered later in this manual.

EDITING HOLIDAYS

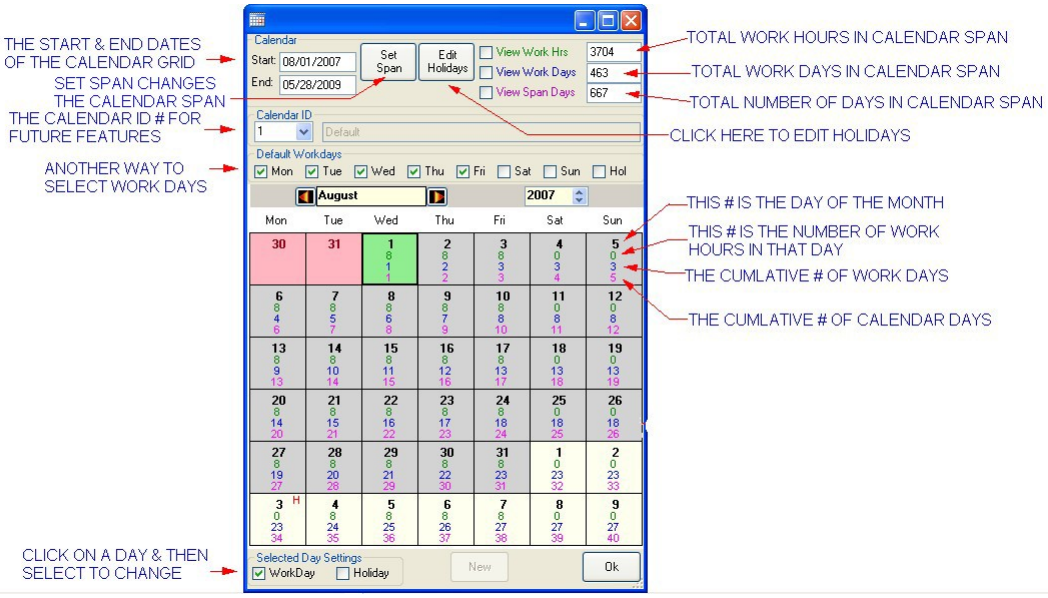
The first time you begin using CASCAD-e software, you may want to edit the default holidays. You do this with a **LC** on "EDIT" and a **LC** on calendar or holidays.



If you click on holidays you will go directly to this screen:

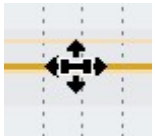


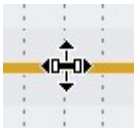
If you click on calendar you will first go to this screen:

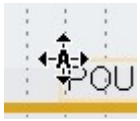


Please note the various types of information you can gather from this screen. By doing a **LC** on the Edit Holidays button you will go to the same holiday edit screen shown above. Please note the information on this screen calculates based on the entire calendar grid that you created earlier and may not be the same for the project start and project end dates that can be set up later.

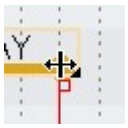
As we prepare to begin developing a project schedule, please review the various cursor shapes and symbols shown below that will be encountered as you move about the display.

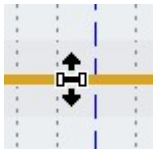

Move band

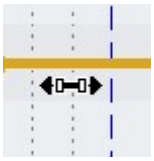

Move Activity


Move Text box


Adjust size of text box


Adjust duration


Day Lock On


Row Lock On


Activity Locked

Use extreme care to assure that the desired symbol appears before making a move. Much heartbreak will be avoided.
You are now ready to start creating your schedule.

CREATING THE BASIC SCHEDULE

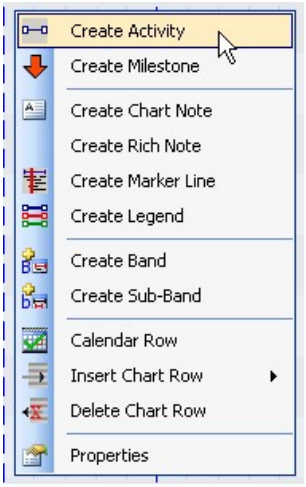
When you begin to develop your project schedule, you will need to organize the activities by some method into areas or sections of interest in which the activities have some type of relationship. These areas of interest may be a department, a building, a floor, a person, etc. In CASCAD-e, we organize the schedule by means of bands and sub-bands. A more complete discussion of this organizational method and its functions are discussed later in this manual. For the moment, as we build our first schedule, we will utilize only one band in which to place our activities.

We start by placing our cursor on any row. Normally this may be the first row and is assigned as the initial (and necessary) first Band Row. You will be prompted to give the band a name. "Summary Band" was typed in as the name of this Band.

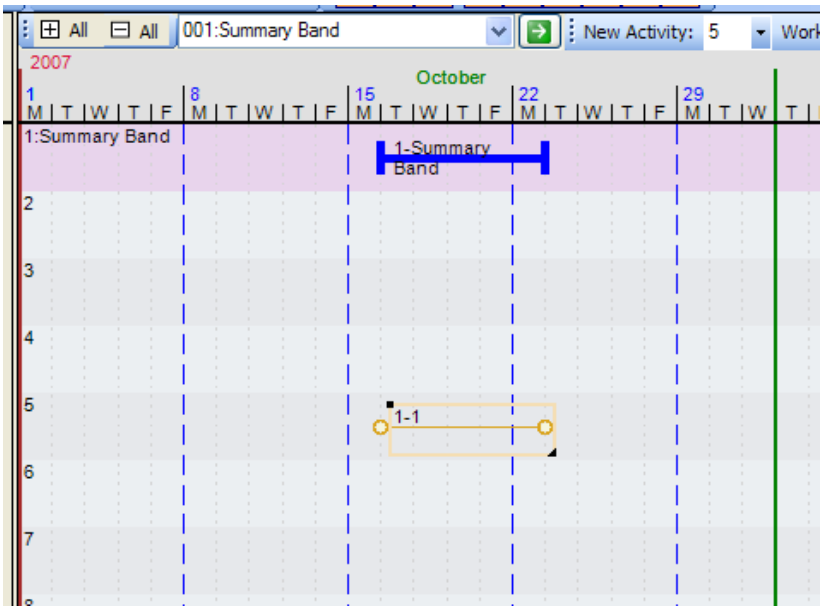
Once you click on "OK" you will notice a color shading appear on the row. You are now ready to begin developing a schedule.

CREATING ACTIVITIES

Place the cursor anywhere on any **Row** other than a **Band Row**. **RC** and the following menu appears:



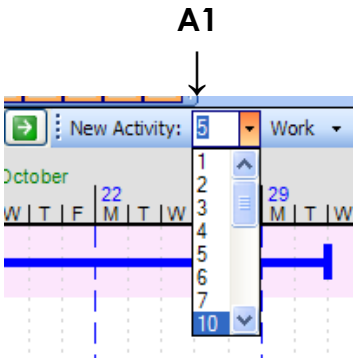
LC on "**Create Activity**" and an activity symbol will appear with its start on the day and row where the cursor was placed.



Note that the creation of the activity caused the appearance of the blue **Band Bar**. This **Band Bar** will extend from the earliest of the displayed start

dates among all the activities in the **Band** to the latest of the displayed completion dates among those activities. It therefore represents a time summary of all the activities in the **Band.**

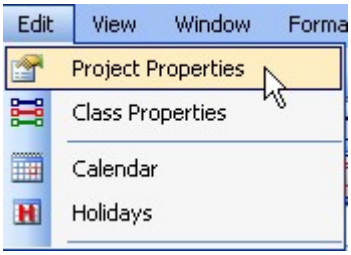
The activity duration is 5 working days because that is the default duration shown in button **A1.**



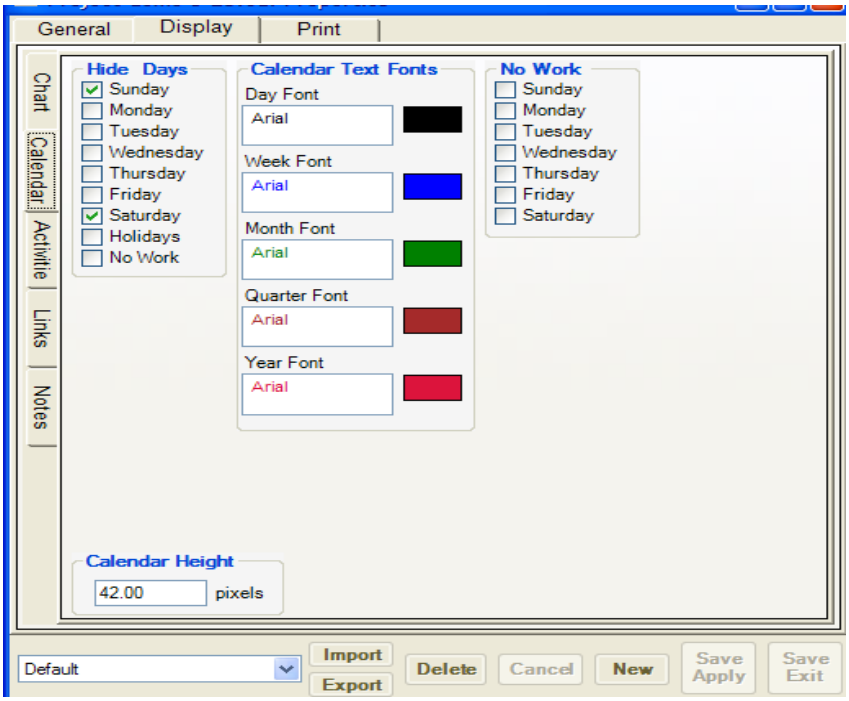
The default duration can be set to any number of days by a **LC** on the down arrow to the right of button **A1** and choosing a duration from the drop-down menu or typing in a duration. The default duration is arbitrary, because the default duration of a created activity can later be adjusted to the specific duration appropriate to that activity. The default duration would ideally be set to the duration from which changes would be minimized. The default duration setting can be changed at any time during the schedule generation process.

BASIC ACTIVITY PROPERTIES

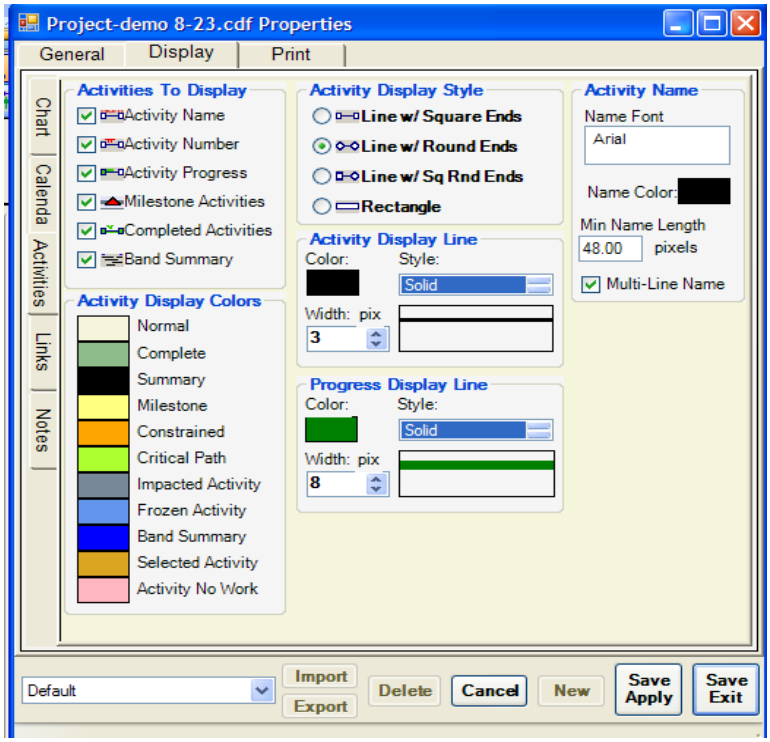
When first *getting familiar with CASCAD-e, the following section on Project Properties can be skipped until later. The (normally preferred) activity style, line with round ends, was chosen by* ***LC*** *on "Edit", then* ***LC*** *on "Project Properties":*



The following screen will appear:

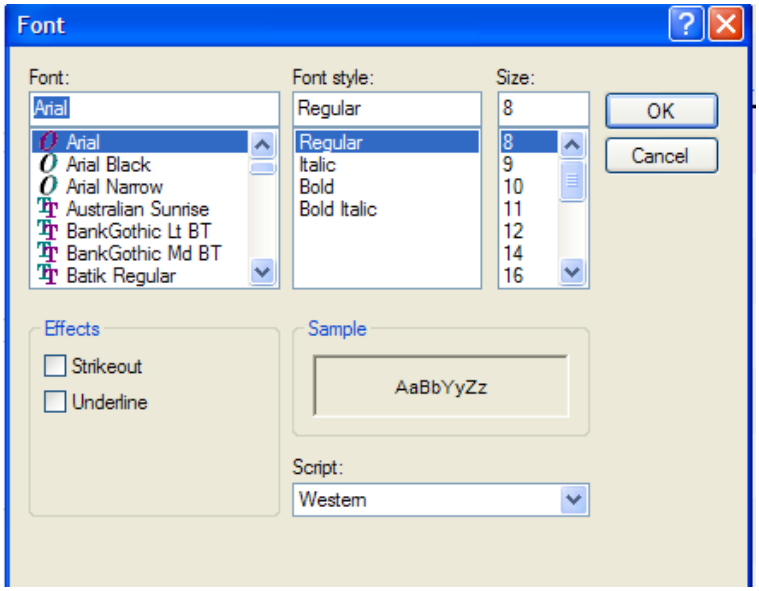


LC *on "Display" on the top and "Activities" on the left. This screen will appear:*

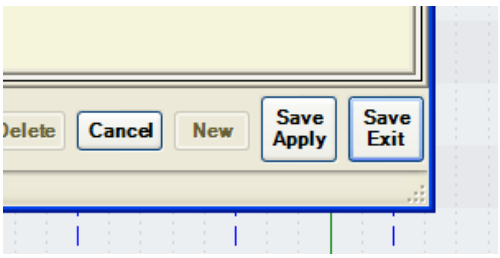


*Under "Activity Display Style", **LC** on "Line with Round Ends" to select the style being used in this manual. You may also select the thickness "Width," style (Solid, Dash, or Dot), and color of the activity line under "Activity Display Line". A solid black line of width 2 or 3 is a good starting selection.*

*Under "Activity Name", **LC** in the box under "Name Font" and the following screen will appear:*



*Selection of activity "Font", "Font Style", and "(font) Size" can be made, followed by **LC** on "OK", which returns you to the previous menu.*



***LC** on "Save Apply" and then close this window to return to your grid.*

After you have gained experience with creating and manipulating a many-activity display, experimentation with line width, font style, and font size will help you modify the appearance of your schedule display to arrive at the appearance best suited for schedule development and that best suited for

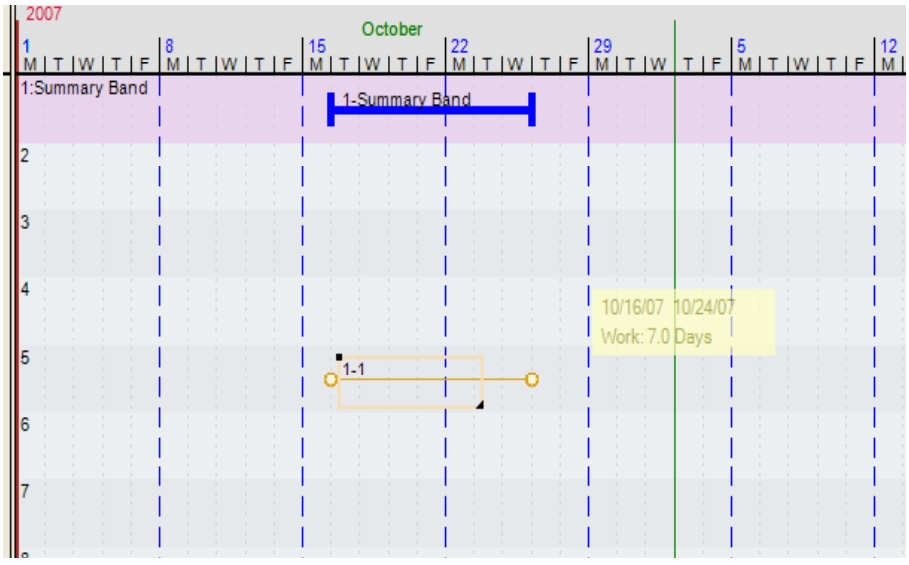
printing and displaying the schedule. These two different uses of the schedule will frequently be best served with two different sets of properties.

More about Project Properties later.

DURATION ADJUSTMENTS

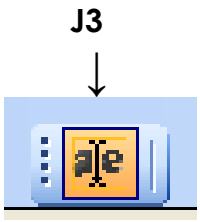
As soon as the activity is created as above, the duration can be adjusted by **GRABBING** the circle (dot) on either end and dragging it in either direction. This will shorten or lengthen the activity bar. Be sure that the following symbol appears on the activity end, to assure that you are moving only the end, not the entire activity:

Below, the activity 1-1 has been lengthened to 7 days by dragging the right activity dot 2 days to the right. Note the information box to the upper right of the activity. It tells you the length to which you have adjusted the activity duration, as well as the start and end dates of the activity. It disappears when you **LC** anywhere off the activity.

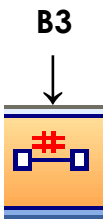


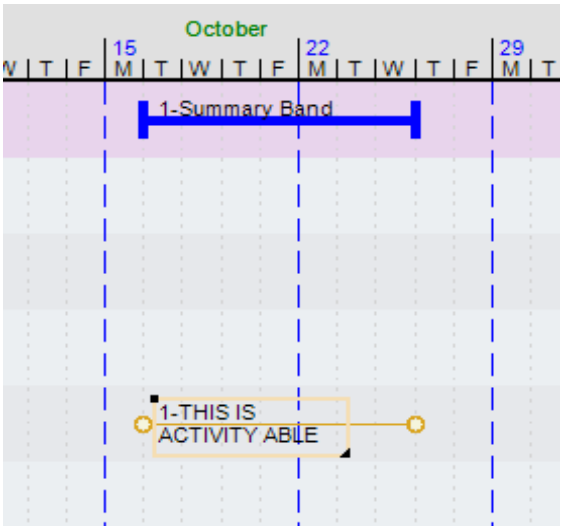
ADDING THE ACTIVITY DESCRIPTION

Either before or after the duration adjustment, with the "QUICK EDIT" button, **J3**,



turned on, typing the activity description will cause it to appear immediately in the description box with the dark square in its upper left corner and the dark triangle in the lower right corner. The activity had automatically been given an identification number and that number was repeated as a temporary activity description, awaiting your activity description input. Your activity description replaces the repeated number. The activity identification number remains unless you turn off all activity ID numbers by using tool button **B3**.



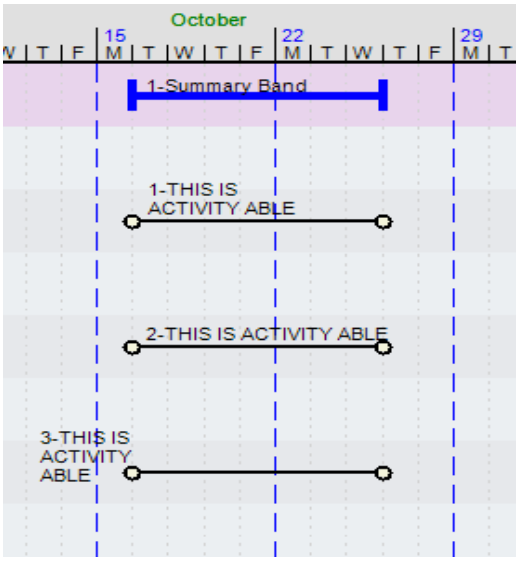


This description can be moved to any other position relative to the activity by grabbing the small black square in the upper left-hand corner of the

description box (*Note the selection symbol which appears when the cursor is on the small black box*) and moving the description box as desired. It will stay in that relative position as the activity moves. The shape of the activity text box can be varied by grabbing the black triangle in the lower right corner (*Note the selection symbol which appears when the cursor is on the small black triangle*)

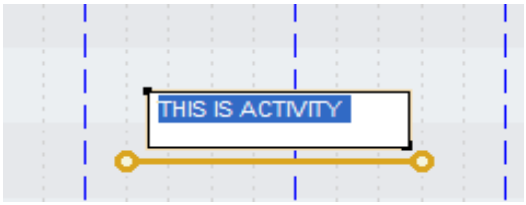
and moving it up to put all of the description on one line, down to allow the description to occupy more than the original two lines, and right or left to lengthen or shorten the description box. **LC** away from the activity deselects the activity and displays it in its assigned configuration and color (the default color, black, for our example).

The following represents three of many possible arrangements of the description relative to the activity.

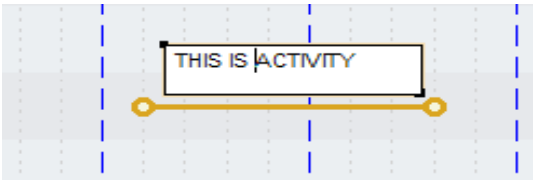


At any time, you can return to and select an activity by **LC** anywhere just under the activity bar and between (but not touching) the end dots. (*Note the selection symbol, which appears when the cursor is properly located to select the activity*) The activity description box will appear and be available for location and configuration changes. A **DLC,** followed by a **LC,** both inside the description box, allows modification of the description language.

A **DLC** gives:



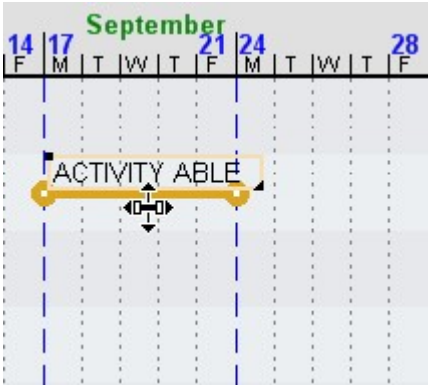
Then a **LC** gives:



Typing now will insert characters before "ACTIVITY"

MOVING ACTIVITIES

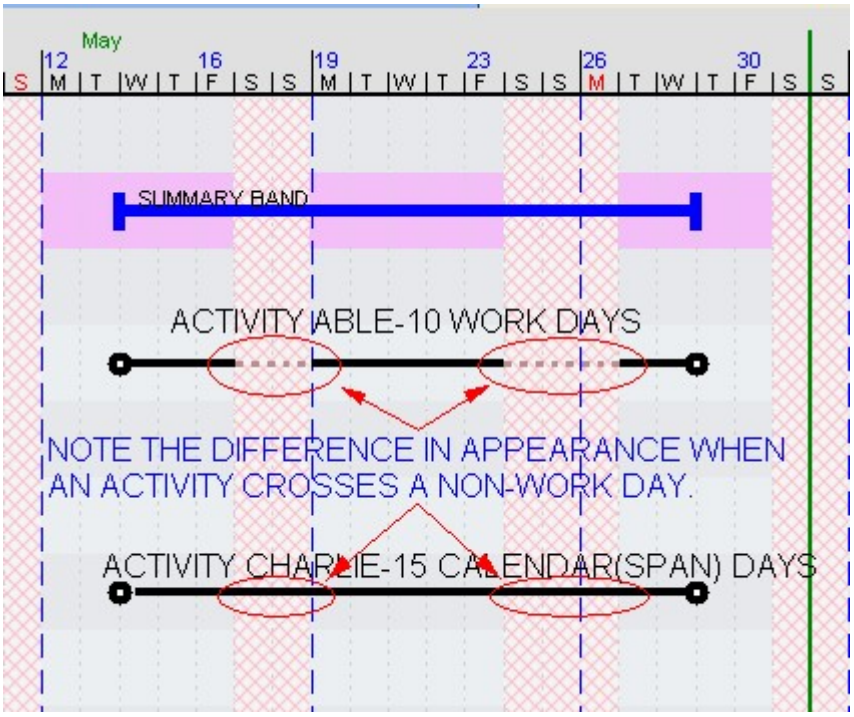
Once an activity has been created, it (and, automatically, its description) may be moved to any existing **Row** and any point in time. Move the cursor (note cursor shape) to any point just under the activity bar and between (not touching) the activity end dots. **GRAB** the activity and move it horizontally, vertically, or diagonally. When the activity is in the desired location, release the button and **LC** away from the activity to deselect it.



With "Day Lock" turned on (tool button **E2**), your activity movements are restricted to vertical moves. This helps prevent accidentally moving an activity to another day when moving a group of activities vertically in your display. Note the shape of the cursor.

With "Row Lock" turned on (tool button **E3**), your activity movements are restricted to horizontal moves. Note the shape of the cursor.

The appearance of the activity bar will change when it crosses a displayed non-working day such as a weekend or holiday. The software will automatically adjust the length of the bar to account for these non-working days even when you toggle these days on and off by using the tool buttons **D1** & **D2**. This occurs only if the activity has been designated with a **WORK** calendar as opposed to a **CAL** (Calendar or span) calendar.



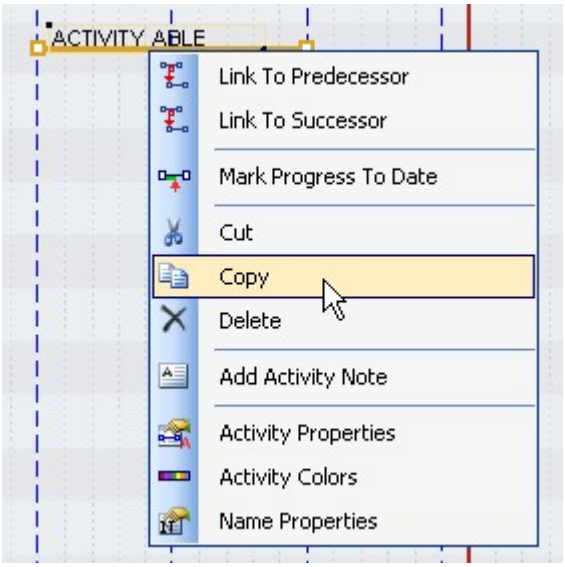
There may be times that you want to "FREEZE" an activity (or entire band) so that it cannot move. To accomplish this, select the activity (or band) that you need to freeze with a **LC** and then select the **E1** tool bar button "Lock-in-Place."

This will prevent that activity (or band) from moving even if the integrity buttons are on. You "UNLOCK" by reselecting the activity (or band) and then toggling the "Lock-in-Place" button off.

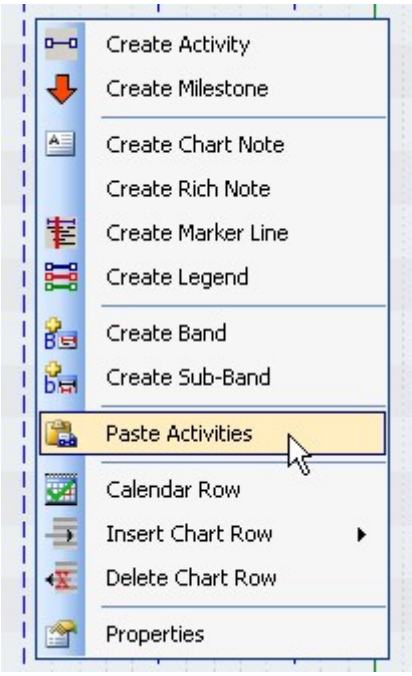
COPYING ACTIVITIES

There are three ways to copy activities. You can copy one select activity, a fenced group of activities, or a complete band of activities. To copy one activity, select the activity with a **LC** and you will note the color of the activity

changes. Place your cursor over the activity and **RC** to produce the following drop down menu:

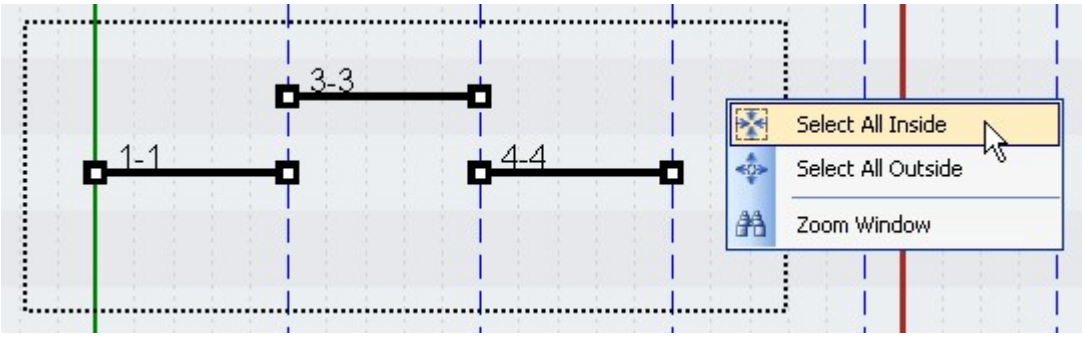


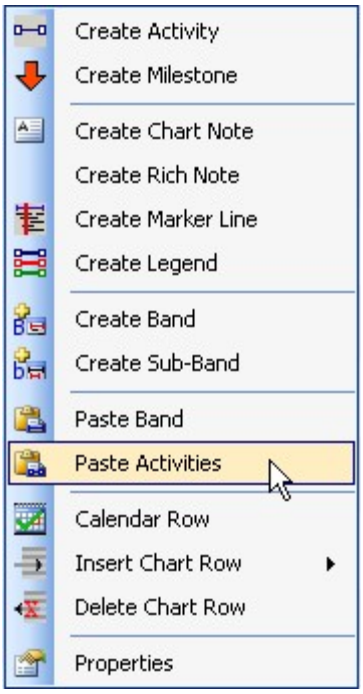
LC on "copy" and the activity is placed on your clipboard. Now place your cursor on the day and position that you want the copied activity start date to begin. A **RC** will produce the following drop down menu and then **LC** on "Paste Activities." This same procedure will be used whether you are copying and pasting single activities, a group of activities, or a complete band. **A word of caution:** If you have multiple bands, you need to select which band you want the group to be associated with before pasting. This is true with any copy and paste. If you paste it in the wrong band, you can change which band it is associated with. More information about band association is provided under the section on bands.



To copy a group of activities, use the fence tool by selecting the fence button, **H1**.

Now draw a fence from top left to bottom right around the group of activities that you need to copy (see pages 44-45). **RC** inside the fence and "Select All Inside." The color of all the selected activities will now change. Now do a **LC** on any one activity and your cursor will change. Now **RC** and select "copy." Pasting is the same as with a single activity. The activity with the earliest start date will be started where you place your cursor. You can paste this group as many times as you need until you copy something else to your clipboard.





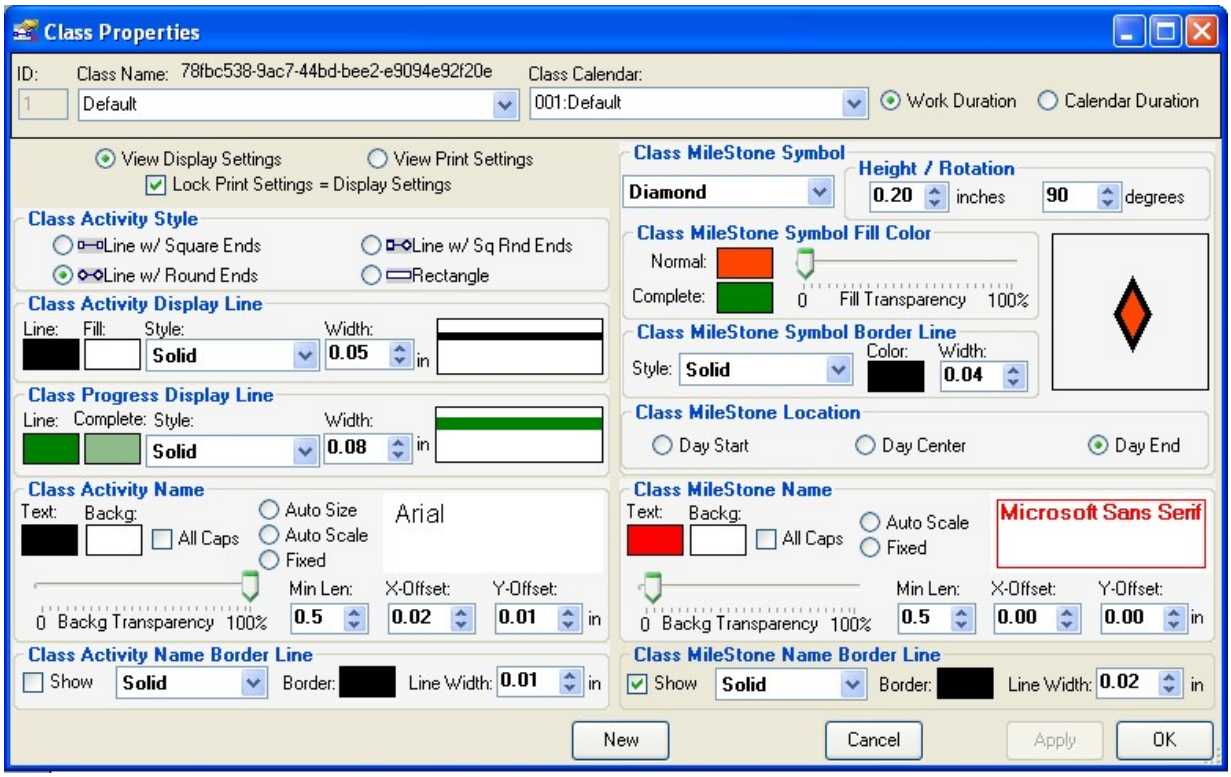
You can also select several activities to copy (or move) by holding down the "shift" and selecting the activities with a **LC** on each one. Follow the same directions at this point as with the fence.

A discussion about copying an entire band of activities will be covered in the section on bands.

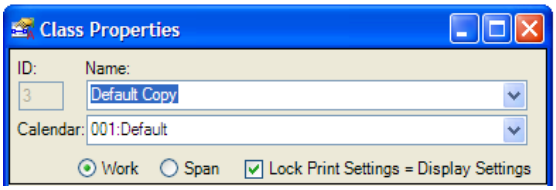
ASSIGNING ACTIVITY CLASSIFICATIONS (PROPERTIES)

Up until this point, all activities have been in the same classification. You may, however, want to label certain activities as being in a unique classification. This might involve identifying all Governmental Approval activities, or all Electrical Contractor activities. You can make a selected activity classification stand out graphically by giving that classification a unique activity line color, pattern, or thickness and/or a unique font, font size, or font color. You can also display a selected classification while suppressing any or all other classifications. You may also use colors, line widths, patterns or other activity characteristics as classifications, allowing you to use these characteristics to arbitrarily add variety and readability to your display.

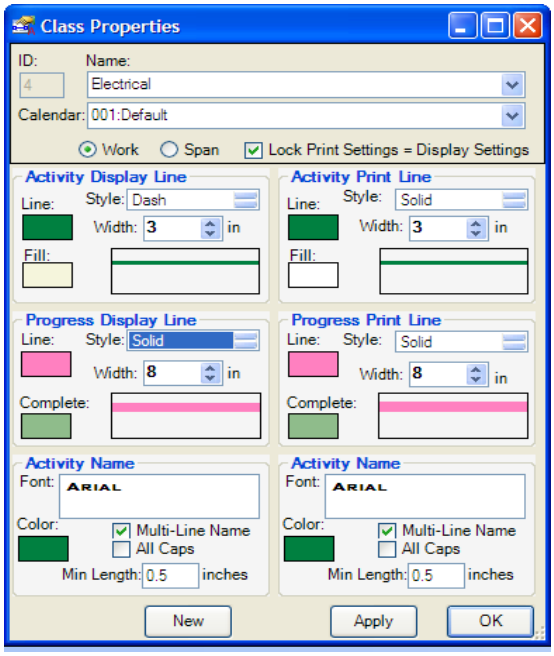
To set up one or more classifications beyond the "Default" classification, a **LC** on "Edit", then "Class Properties". The following menu will appear:



The top line indicates that the "Default" category of activities is being described. Ignore "Calendar" for now, as a different calendar for different categories of activities is a feature currently under development. You may check "Lock Print Settings = Display Settings" unless you have a particular reason for the two to be different. On the left ("Display") side, you may make selections in any of the characteristics listed. A **LC** on "Apply" and all "Default" activities will now have the selected characteristics. To create a second classification of activities, select "**New**" and do a **LC** on "Default Copy" to highlight the name. The menu will look like this:



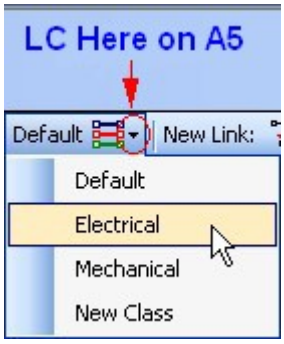
Type in the name of the new classification and make all the selections of characteristics, which you elect. Your menu could look like this:



Now **LC** on "Apply" and the Electrical Classification is established. In a similar manner, a Mechanical Classification is created.

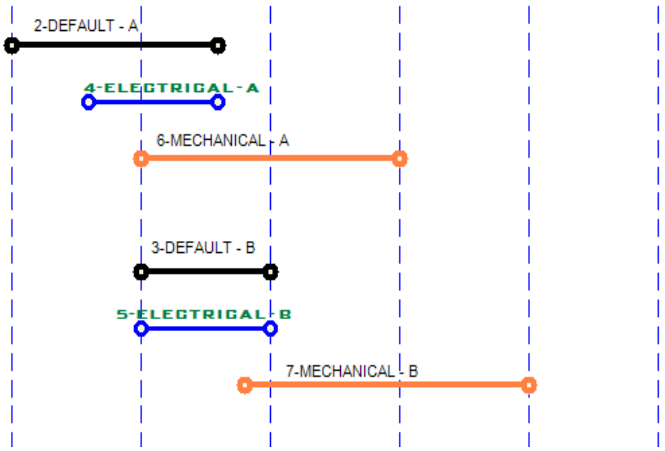
When you have finished creating your classifications select "OK." At any time you can return to this menu to create new classifications or edit the ones you have. You can also create a **New Class** by selecting "New Class" in the menu as seen just below.

To use these three classifications, **LC** on the following symbol and choose (ELECTRICAL chosen in example) from the resulting menu:



DISPLAYING SELECTED CLASSIFICATIONS ONLY

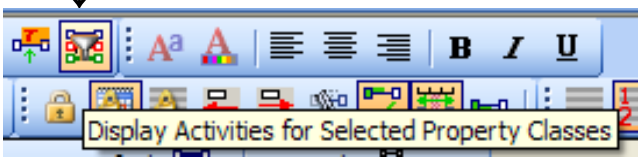
Until a different classification is selected, all activities created will have the characteristics of "MECHANICAL". Using all three classifications, the following schedule was created (for clarity, precedence links are not shown):



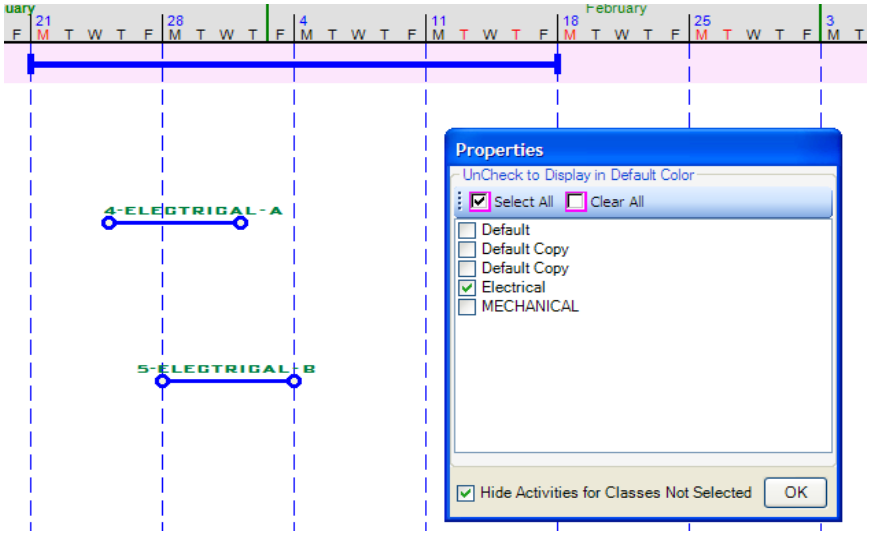
In addition to the ability this gives to see a given classification within the context of other classifications, you have the capability to suppress all but a selected classification, or to show all but a selected classification(s) with the default characteristics.

Do a **LC** on a similar tool button, **B8,** located on a different tool bar.

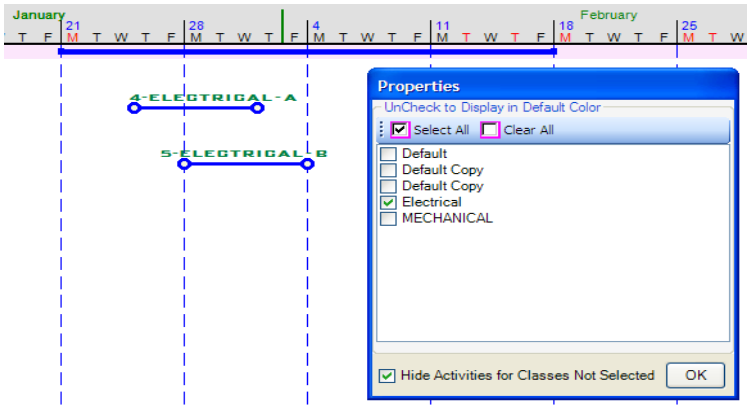
LC on B8



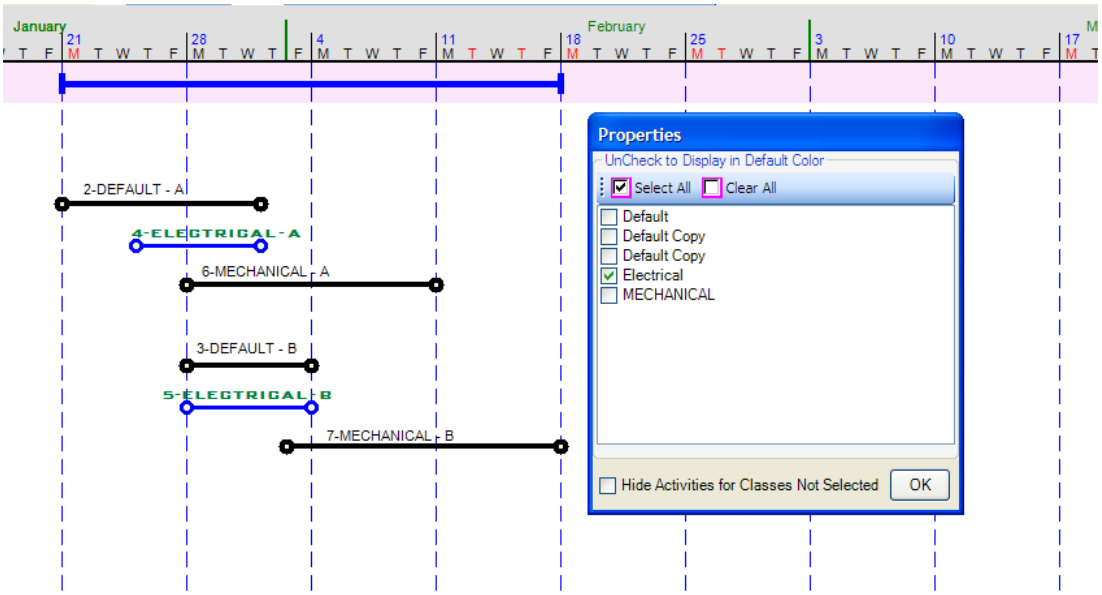
The menu that appears allows you to show only a selected classification when the choices are made as below. Note the check by "Hide Activities for Classes not selected".



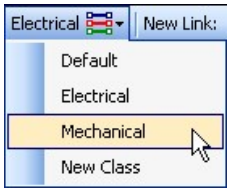
If only Electrical activities were displayed, the row heights could be compressed to give a more compact display, print, or plot.



The schedule below shows the effect of un-checking all but Electrical so that all unchecked classifications are displayed with the Default characteristics.

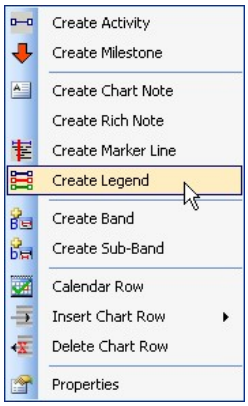


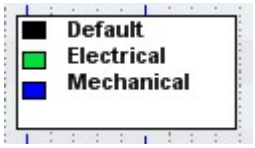
What you are doing above represents three versions of graphical sorting.



When creating new activities, you can select beforehand which class it will be associated with from the list of available classes.

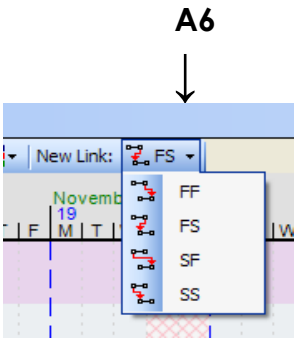
You can place a "Legend" anywhere on your display by placing your cursor at the location you desire, do a **RC**, then a **LC** on "Create Legend" and a legend will be placed on your chart. It has properties that can be edited just like a chart note.





ESTABLISHING PRECEDENCE RELATIONSHIPS

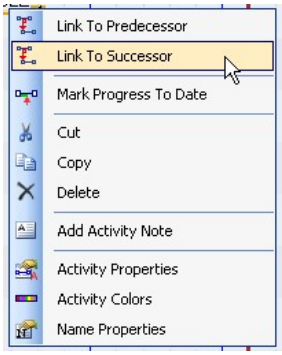
When two or more activities are placed on the display, you may wish to start determining the precedence relationships (required sequencing) that exist among them. The "New Link" button (**A6**) allows you to select the type of precedence relationship you wish to incorporate. Do a **LC** on the down arrow to the right of the precedence type being displayed. The drop-down menu will display the following choices: Finish-to-Start (**FS**) (default), Start-to-Start (**SS**), Start-to-Finish (**SF**), and Finish-to-Finish (**FF**).



A **LC** on any one of the four and that precedence type will be in effect until another is selected.

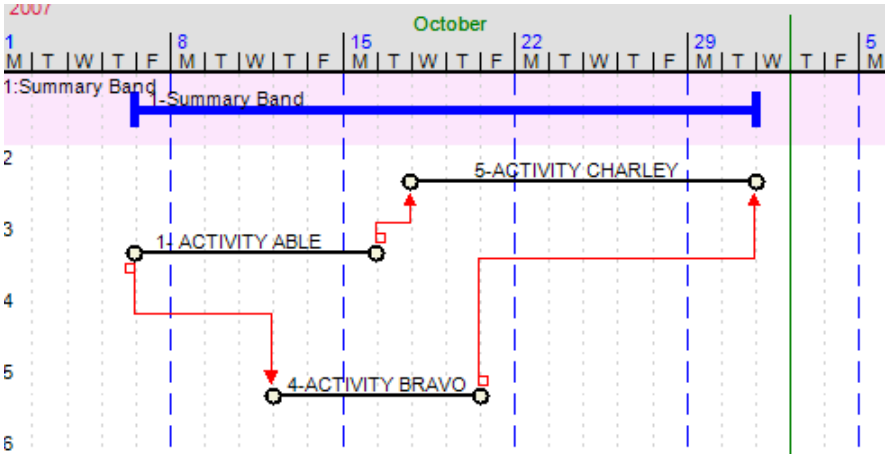
The default precedence type is Finish-to-Start **(FS)** with no lag factor. Many schedules are created using only this precedence relationship. However, the other precedence options allow additional flexibility in describing the desired relationships among activities.

Having picked a precedence type to link two activities, **RC** on either the predecessor or the successor activity. The following display appears:



If you selected the predecessor activity, **LC** on "Link To Successor". Then **LC** on (select) the successor activity. The same result will occur if you select the

successor activity, then **LC** on "Link To Predecessor", then **LC** on the predecessor activity. The precedence arrow will appear between the two, with zero lag. The following display shows the results of linking (with all lag factors set to zero (default)) three previously intuitively placed activities:

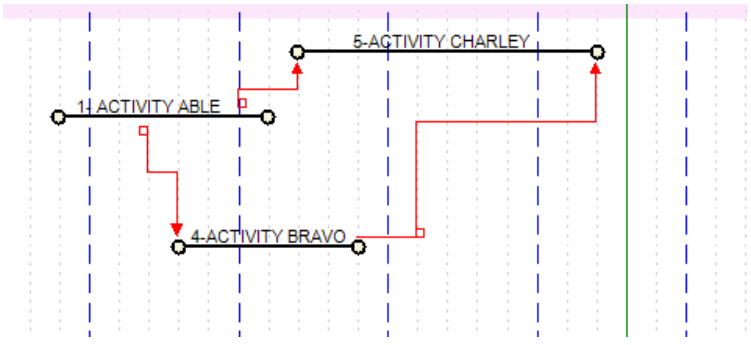


Activity 1 is a **S-S** predecessor of Activity 4 and a **F-S** predecessor of Activity 5. Activity 4 is a **F-F** predecessor of Activity 5. An alternative statement of these relationships would be that Activity 4 is a successor to Activity 1 and Activity5 is a successor to both Activity 1 and Activity 4.

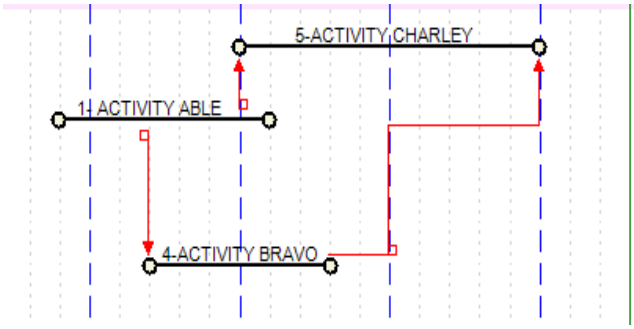
If **lag factors** were involved such as:

- The Activity 1 to Activity 4 precedence relationship is **S-S** with a **3-day lag**,
- The Activity 1 to Activity 5 precedence relationship is **F-S** with a negative **1-day lag**, and
- The Activity 4 to Activity 5 precedence relationship is **F-F** with a **2-day lag**,

You could establish these lag factors by selecting the small red boxes at the start of the precedence arrows and moving them to positions such as shown below:



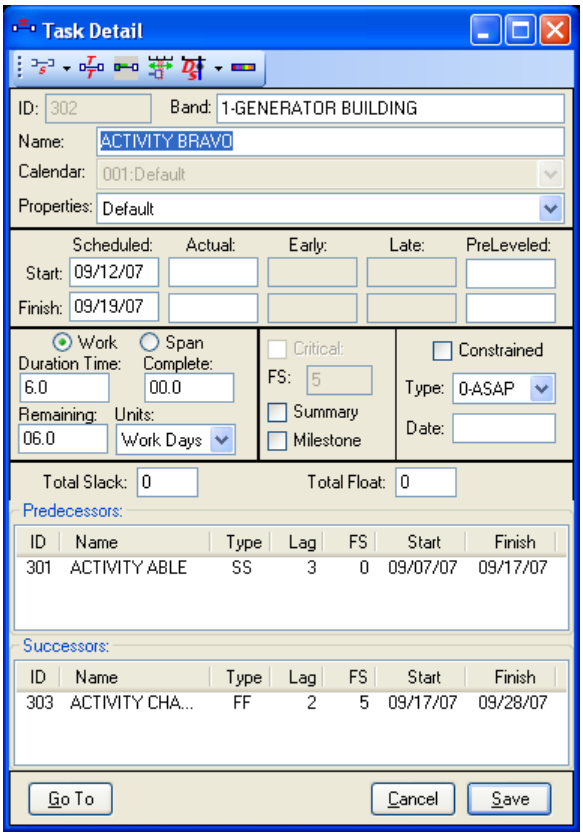
You can observe that Activities 4 and 5 could both be started earlier. By selecting Activity 4 and moving it until its precedence line from Activity 1 is vertical, you have put it in its earliest position relative to Activity 1. Then moving Activity 5 to the left will cause the Activity 1-to-Activity 5 precedence arrow to go vertical before the Activity 4-to-Activity 5 arrow goes vertical. This is that final result:



TASK DETAIL INFORMATION

The details on any given activity can be viewed in one of two ways. Any time you select an activity with a **LC** you will notice at the bottom of the screen a bar that gives much of the details concerning that task.

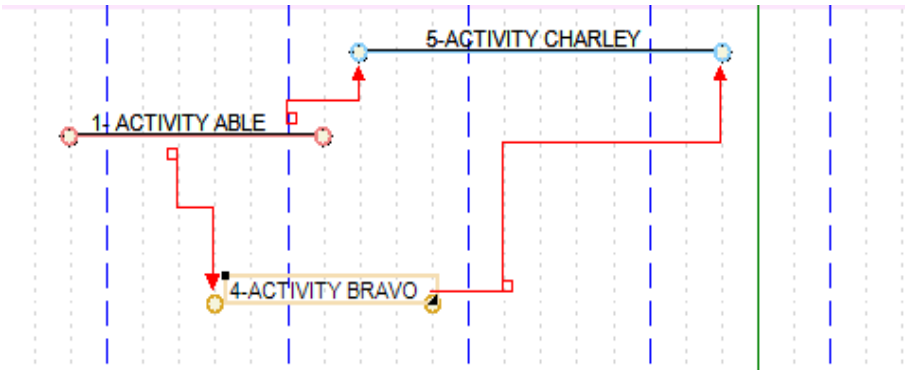
The **Task Detail Box** will give a little more information. You get this pop-up dialog box by a double **LC** on a selected activity. In this dialog box is a variety of useful information that should be self-explanatory.



ACTIVITY MOVES AND PRECEDENCE IMPACTS

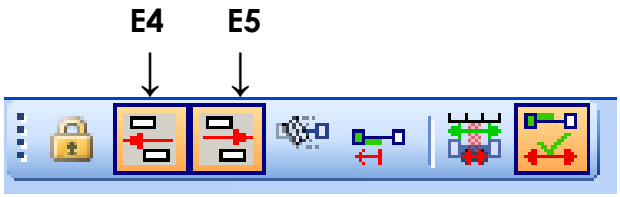
MANUAL MOVES WITH PRECEDENCE LINKS IN PLACE

When an activity is selected, it is highlighted in one color, its predecessors in another, and its successors in a third color. Looking at the original schedule:



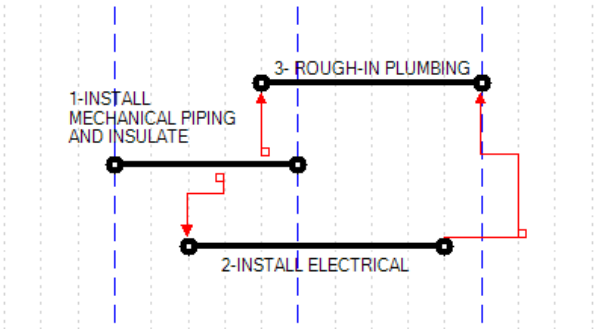
Activity 4 is the selected activity. Its **S-S** predecessor is Activity 1 and its **F-F** successor is Activity 5. This highlighting helps you see the probable impact of manually moving an activity.

CASCAD-e can further let you see what happens when you move an activity. With buttons **E4** and **E5** turned on, CASCAD-e makes sure that the integrity of precedence relationships is maintained as you move an activity. This will be illustrated shortly.



With **E4** and **E5** turned off **(the recommended process while developing the schedule)**, you can move an activity to any location without causing any other activity to move. The precedence arrows will show any illogical activity schedule location, but will display the activity where you placed it

Using a slightly different example project, the following illustrates activity locations that violate the logic that you imposed with the precedence arrows you created:



Activity 2 is shown starting one day earlier than would be permitted by its assigned relationship with Activity 1, which is start-to-start (**S-S**) with a three-day lag. Similarly, Activity 3 is shown finishing one day later than Activity 2, but the precedence relationship shown requires that Activity 3 finish at least two days later than Activity 2.

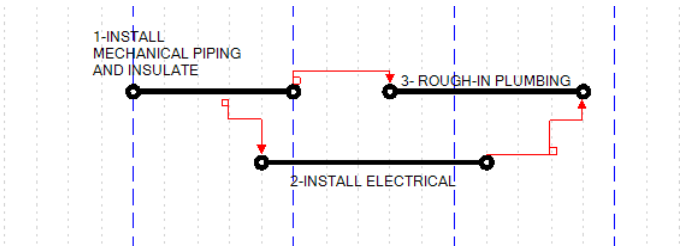
Note the one-day negative finish-to-start (**F-S**) relationship between Activity 1 and Activity 3. The position shown does not represent a precedence violation. Negative finish-to-start is available to show how much two activities can overlap. Slight overlapping of two critical activities which are traditionally thought of and shown as end-to-end (finish-to-start with zero lag) is frequently the easiest, least expensive, and most realistic way to reduce project length.

You may want to explore some alternative activity positioning in this manner before having CASCAD-e make the moves necessary to restore relationship integrity.

LETTING CASCAD-e MAINTAIN THE PRECEDENCE INTEGRITY DURING MOVES

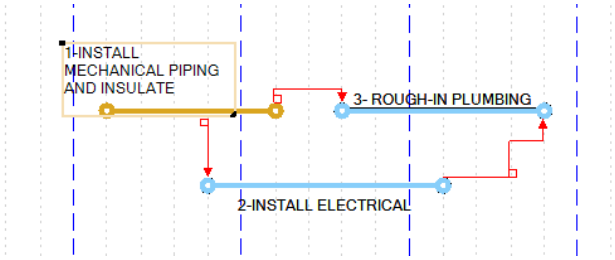
With **E4** and **E5** turned on, the following examples (using slightly different durations and precedence relationships than were used in the prior example) show Activity 1 being moved in one-day increments and the effect of those moves on successor activities.

Starting Position:



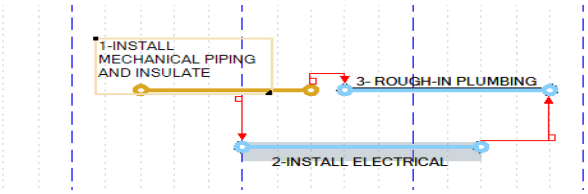
Activity 1 selected and moved to a one-day-later position:

(Successors colored, but no impact on Activities 2 and 3)



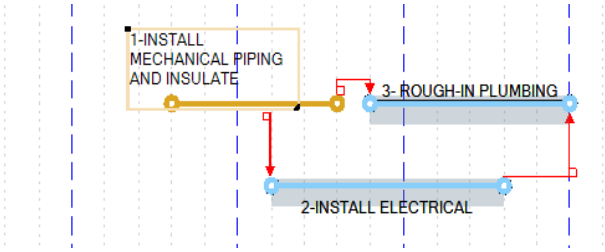
Activity 1 moved one more day:

(Activity 2 moved one day later and highlighted as being impacted – forced to move. Activity 3 near impact)

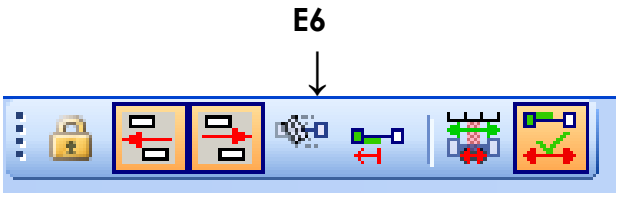


Activity 1 moved one more day:

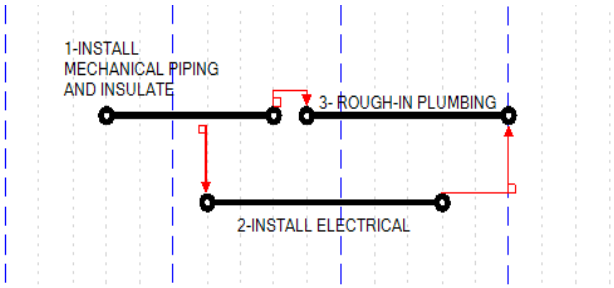
(Activity 2 moved one more day, Activity 3 moved one day and also highlighted as being impacted)



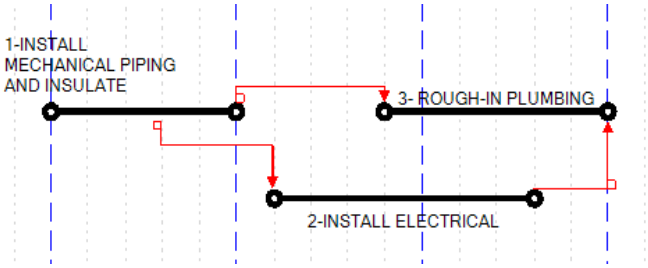
LC away from Activity 1 and **LC** on button **E6** to clear highlighting:



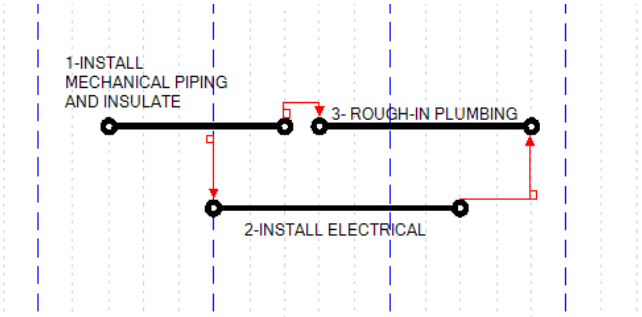
The highlighting disappears and the activities are shown in their original colors:



If Activity 1 is now selected and moved back to its original position, Activities 2 and 3 do not move with it. Successor integrity is not violated by this move.



Going back to the preceding schedule, moving Activity 3 back to its original position would push Activity 2 back with it, and Activity 2 would push Activity 1 back the same 1 day.



If you remembered what the original (pre-move) positions were, each activity could be selected (in any order) and moved to its original position. However, this rapidly becomes very challenging. You can utilize the "Undo-Redo" feature described below, if the moves only involve a few activities or a few moves. If it will be more complex, then refer to the section below on "Save" and "Save As" to decide which best meets your situation.

USING "UNDO" AND "REDO"

You can use the "Undo" and " Redo" buttons that are found on the standard tool bar at the top. At this time, these buttons will only work for activity moves. If you move an activity, a fenced group of activities, or an entire band, then you can "Undo" the move with the click of the "Undo" button. If you decide that the move is what you desired, then you can "Redo" the move with the "Redo" button.

Later this "Undo" and "Redo" feature will be expanded to include other functions such as notes and copy/paste.

USING "SAVE AND "SAVE AS"

If the activity moves (and/or durations, precedence relationships and other changes) being contemplated (but not committed to) appear likely to be too numerous or too complex to allow you to easily restore them to their original configuration after seeing the impact of the changes, hit the "File" button and select " Save As" **before** making and examining the changes. Name the "Save As" "Alternative X ". Close the "Original Project" file, open the "Alternative X" file, and make the changes. If the changes examined under "Alternative X" are not acceptable, close the "Alternative X" file and reopen the "Original Project" file. If the changes are accepted, save "Alternative X" as "Original Project" and continue to develop the schedule.

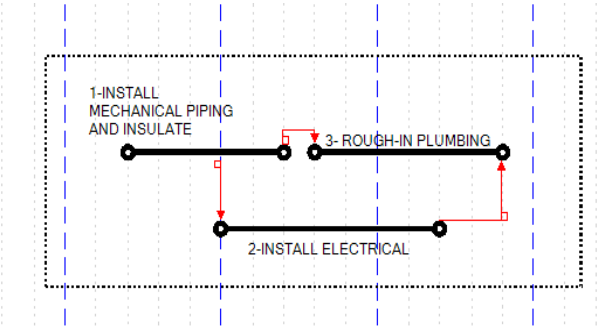
During the course of generating or modifying a schedule, the chances of accidentally making an unintended and significant error are significantly greater than zero, particularly during your initial familiarization with CASCAD-e. Saving your work periodically will allow you to go back to that saved stage of your work and start over from there. You may hit the "Save" button as frequently as you wish to determine how far back you will have to go to wipe

out your error and pick up your work. CASCAD-e will alert you to do this by starting to flash the "Save" button five minutes after your last "Save". You may ignore the flashing alert or hit "Save" and turn off the flashing.

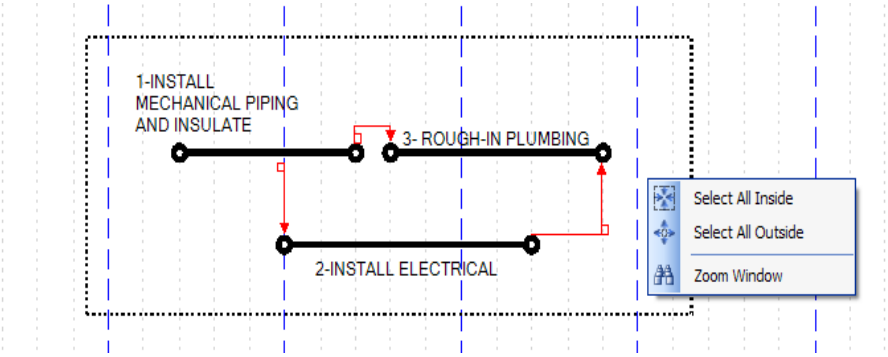
MOVING ACTIVITIES AS A GROUP

The "Fence" button, **H1**, allows you to put a rectangle of any size and proportions around a group of activities and their precedence relationships and move them to, or copy them in, any location in your schedule grid.

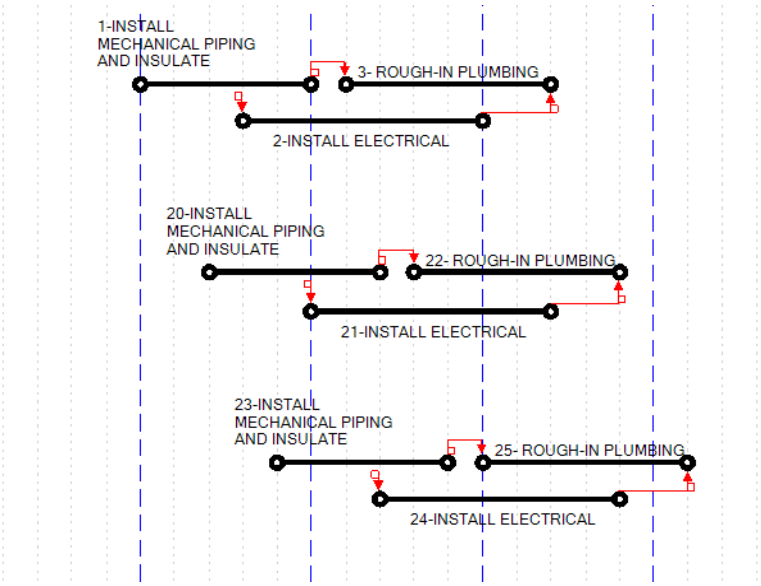
LC on button **H1** and position the cursor at the upper left corner of the Fence you wish to construct. **LC**, hold the left mouse button down and drag the lower right corner of the Fence to the position which lets the Fence contain all the activities you wish to move. Activities not totally inside the fence will not be affected by what is done to the totally fenced activities.



By doing a **RC** anywhere inside the Fence, the following menu will appear:

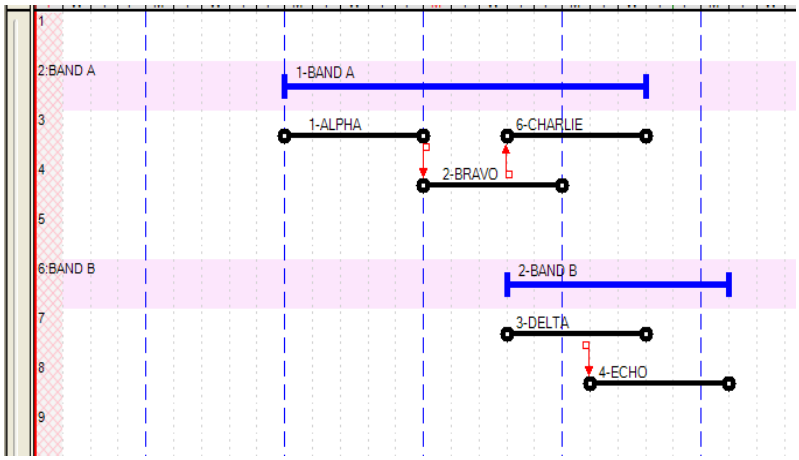


Now do a **LC** on "Select All Inside". To ***move*** the "Fenced" group, select any activity inside the Fence and drag it just like a single activity, and with it, all the "Fenced" group wherever you like. **LC** off the activity and the group is in place, with integrity preserved for any precedence relationships crossing the Fence boundaries. By doing a **RC** on ***any*** activity, you may select from the drop down menu "copy" or "delete" for the group. If you copy a group, it stays on your clipboard until you copy something else. You may paste the group into as many locations as you wish.



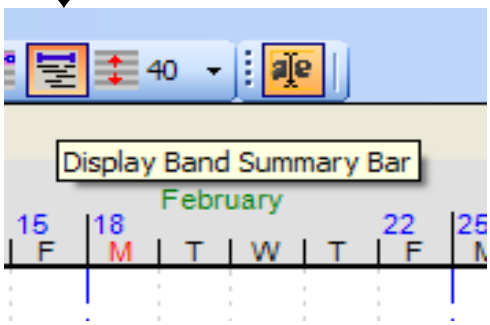
USING BANDS

Bands have been mentioned briefly earlier and illustrated above. You are not required to have any bands in addition to the initial Band that you must create in order to start creating activities. However, Bands and Sub-Bands can serve a valuable function of helping you organize your schedule into groups and sub-groups. This organization of the schedule is often referred to as the "Work Breakdown Structure". A simple example is:

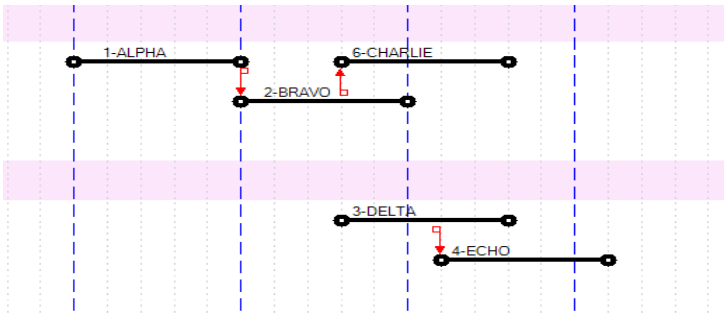


BAND A is the summary representation of Activities 1, 2, and 6. It was created by **RC** in row 2, selecting "Create Band" from the resulting menu, and typing "BAND A" when prompted to give the Band a name. No Band representation appeared until you created Activity 1. At that point, the blue Band Bar appeared in row 2, equal in length to Activity 1. As Activities 2 and 6 were added, the Band Bar lengthened to span all three activities. In a similar manner, **BAND B** was created and populated with Activities 3 and 4. At that point, you have both the summary schedule and the detailed schedule displayed. To hide the Band Bars, LC on the "Display Band Summary Bar" tool button **(G5)** to turn it off.

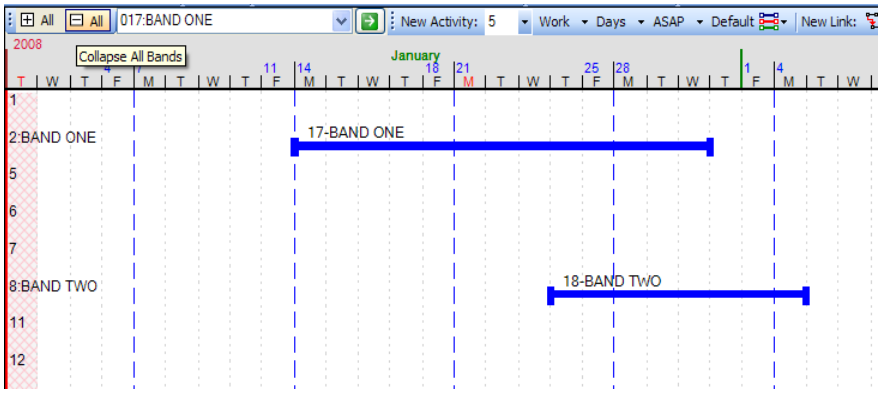
G5



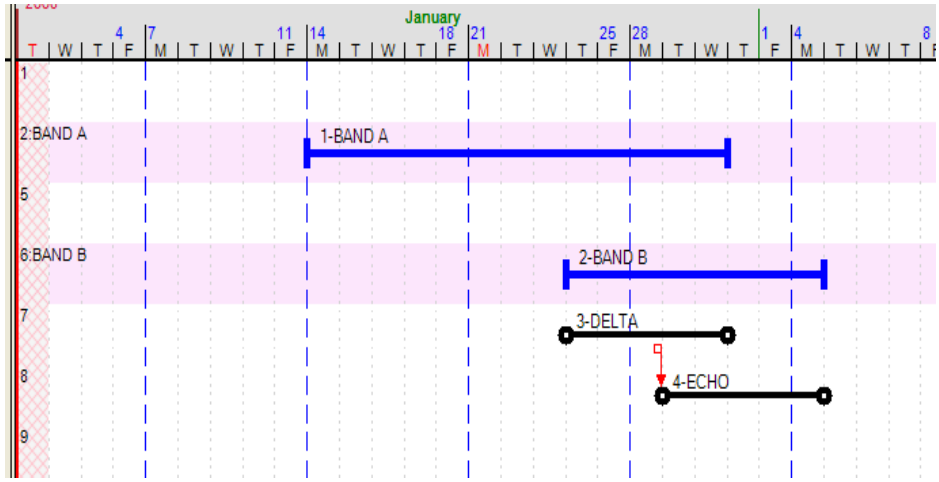
The schedule will look like this:



Another option is to collapse all activities into their Band Bars. The schedule would then appear as follows:



A **LC** on the plus (+) sign will re-include the detailed activities (expand the band). You can collapse any band again, individually, by a **RC** on the Band Bar (Band A in this example) and clicking on "Collapse" in the menu that appears. The resulting schedule is a selected mix of detailed and summary information:

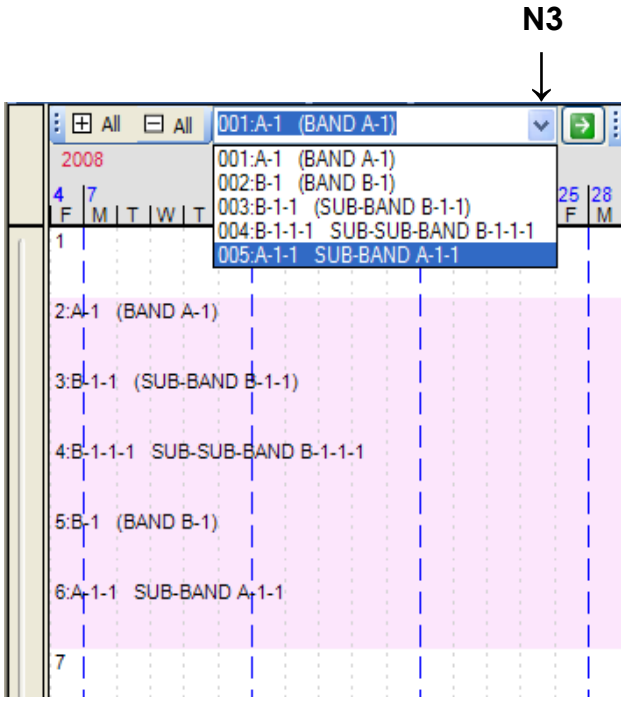


The " Collapse All" button will collapse sub-bands into their parent band. If you would like to just turn off the display of activities and still see the sub-band

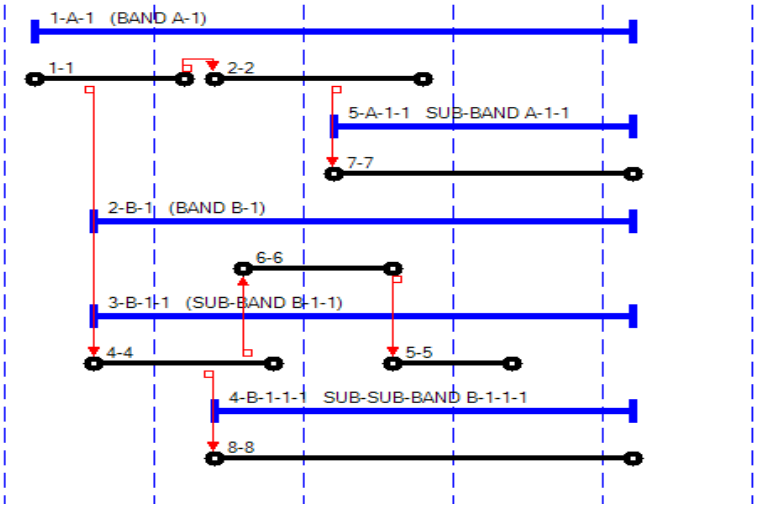
summary bars as well as the parent band bars, then the following tool bar button **(O1)** would be used, which is located to the left of the collapse all button. With the bands collapsed, you may want to hide **(O2)** the rows that now have hidden activities on them. This may be useful during a meeting to collapse the view in order to view the summary bars in close proximity to each other.

Collapsing a Band or Sub-Band summarizes all activities and Sub-Bands that were created under the collapsed Band/Sub-Band.

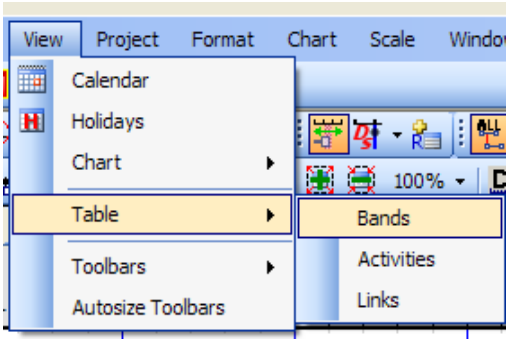
The creation of an activity or Sub-Band will cause that creation to be organizationally assigned to the Band or Sub-Band that is active at the time of the creation, regardless of the location in which you place the creation. You can select the Band or Sub-Band you wish to have active by **LC** on the down arrow **(N3)** to the right of the "Active Band" window to see all the entities, then selecting the one you wish to activate.



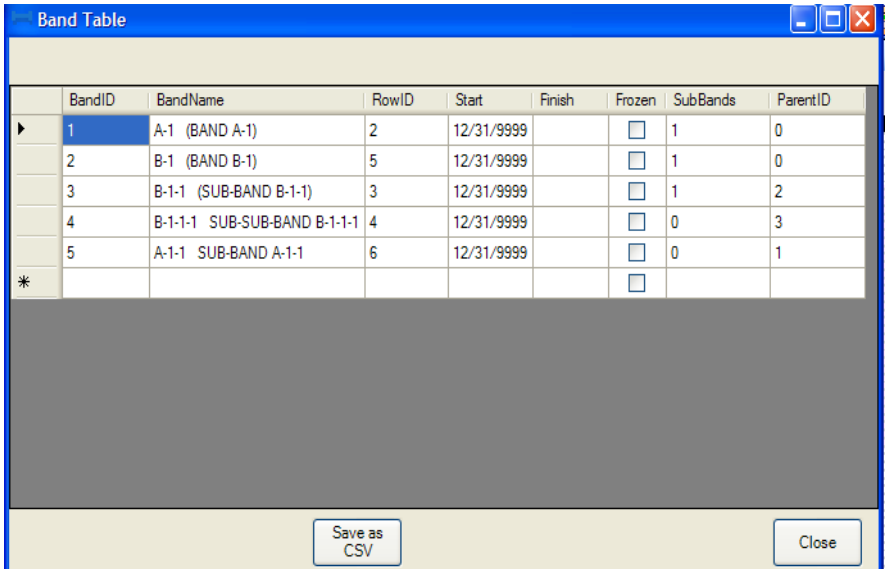
By adding activities to this WBS and reordering the Bands vertically, you might come up with a display such as:



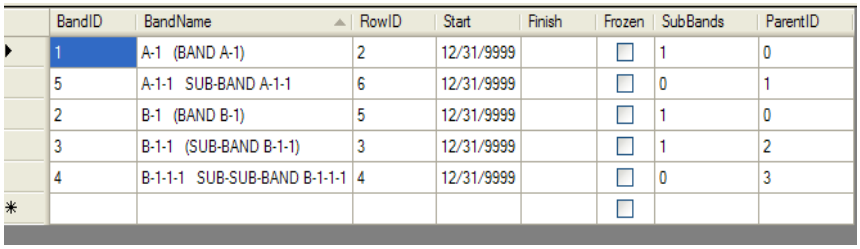
These Bands, Sub-Bands, and Sub-Sub-Bands were originally created somewhat haphazardly down the page. The program assigns the ID numbers in the order in which the entities are created. However, the first portion of the name was used to structure the entities into a Work Breakdown Structure (WBS). The components of the WBS can be displayed in a Table that can be displayed by a **LC** on "View", scroll over "Table", and then **LC** on "Bands":



The following Table is displayed:



The Bands are in the same order as before, but now they can be sorted by Band Name (in fact, by the WBS numbering system you set up) and thereby the WBS can be displayed and printed as a key to the overall structure you have used in developing the schedule. The following shows the sorted information obtained by **LC** in the "BandName" column heading:



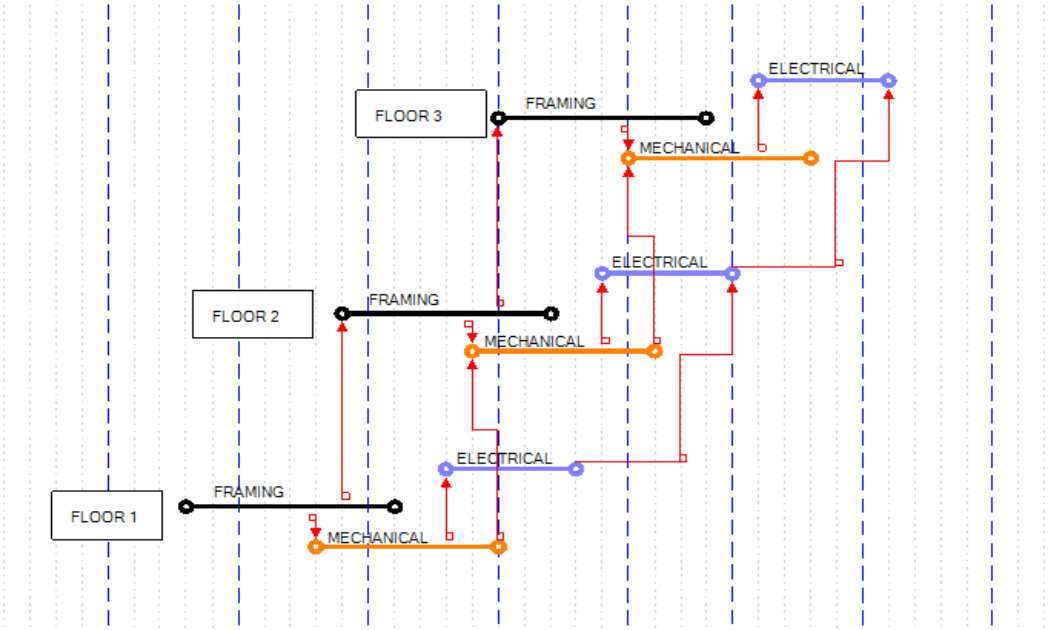
COPYING ACTIVITIES AMONG BANDS

To copy activities from one band to another, select the activity(ies) with a RC to get the drop down menu on which you LC on "copy." The "active band" window will display the band from which you are copying. Do a LC on arrow N3 to display the list of bands. Select the band into which you want to paste your selection. Place your cursor on the day you want the start date of the earliest activity to start. Now RC for the drop down menu and select "Paste." If you accidentally paste with the wrong band as the active band, leave the activities selected (or reselect them), change the active band to the one desired, and select "yes" when asked, "Do you wish the selected activities to be placed in (this) band?" In a similar fashion, you can associate existing activities with a newly created band.

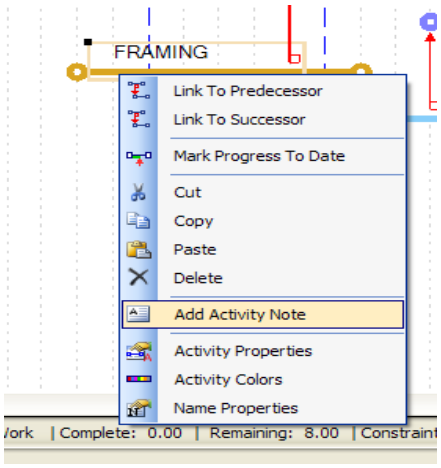
ADDING MORE INFORMATION TO THE SCHEDULE DISPLAY

ACTIVITY NOTES

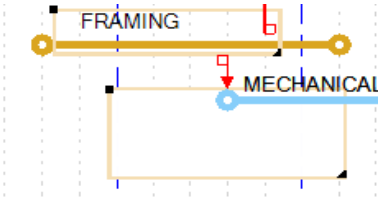
Activity Notes are written material in rectangular boxes that can be placed anywhere relative to a given activity. When that activity is moved, the activity note moves with it, staying in the same relative position. The following example shows Activity Notes added to the "Framing" activity on each of 3 floors:



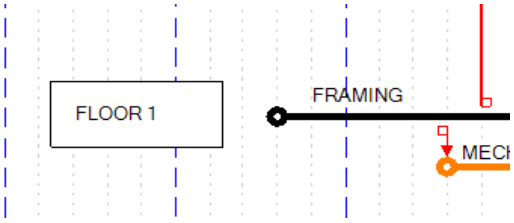
An Activity Note can be added by a **RC** on "Framing" and then a **LC** on "Add Activity Note" from the resulting menu.



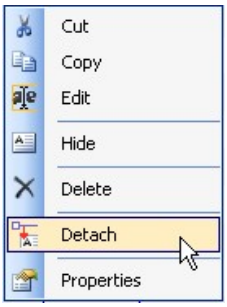
The following note box will appear below "Framing":



Now double **LC** inside the box and type in the desired information. As soon as you start typing, the box can be moved and shaped just as you did with activity description boxes.



Notes of any kind (activity, band, chart, milestone, or marker line) can either be detached from its parent item or attached to an item. To detach a note, select the note with a **LC**, do a **RC** to get the following menu and then select "Detach."



To attach (or reattach) a note to an object, select the note with a **LC**, do a **RC** to get the following menu, select "Attach," and now **LC** on the object (activity, marker line, or band bar) that you want the note associated with. It is now attached to that object and will move with that object.

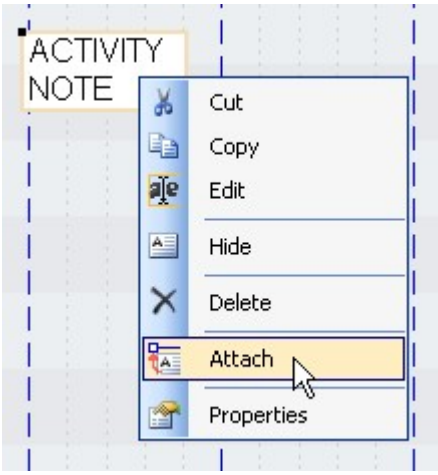
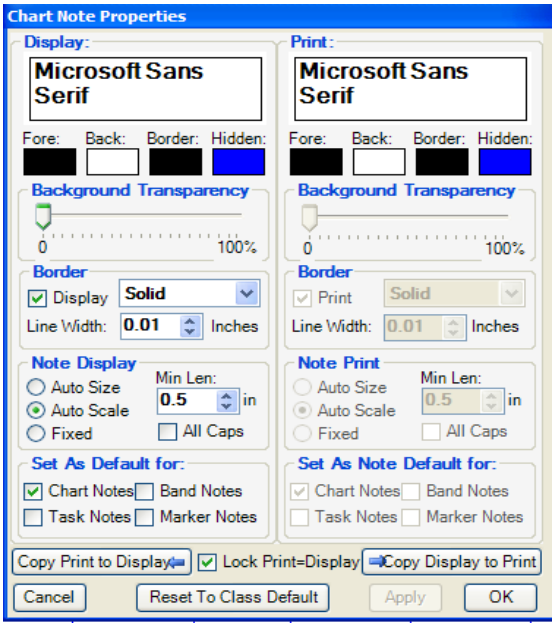
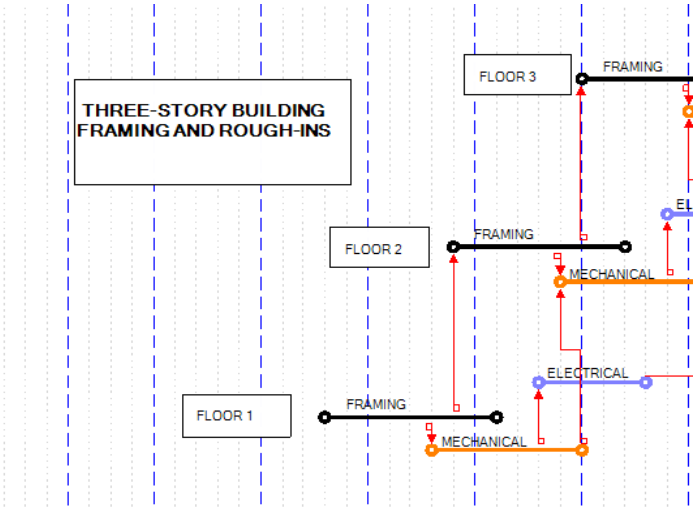


CHART NOTES

Chart Notes are written material in rectangular boxes which can be placed anywhere on the grid to aid in reading and interpreting the schedule. They will remain in their assigned location, regardless of activity moves. This can be a mixed blessing, but once you see how this works, you can avoid problems that would otherwise annoy you. Do a **LC** in the vicinity of the desired Chart Note. A Chart Note box will appear. Now double **LC** inside the box and type in the Chart Note material. Adjust the font size, style, and color by **RC** in the Chart Note, then LC on "Properties". The following menu will appear:



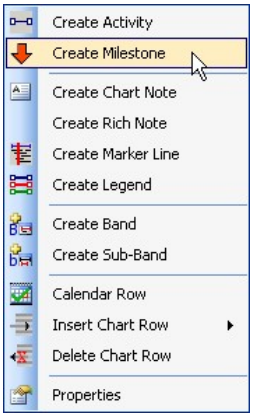
LC on the font box right under "Display" and proceed in the same fashion as you did with Activity Description font selection on pages 16-17. The following example shows a Chart Note created in that manner:



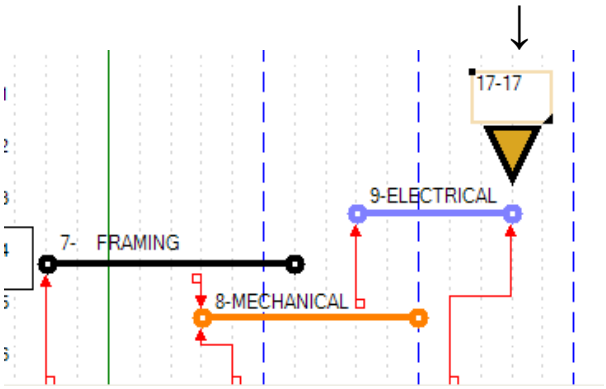
USING EVENTS (Milestones)

One way to improve the readability of a schedule is to incorporate events into the display. An event is a point in time, as opposed to an activity, which conveys the image of something going on over time. An event normally represents the time at which an activity, or group of activities gets underway; it also can represent a condition of completion of one or more activities. As an example, an activity, "Dig Ditch" might have an event shown at its completion that reads, "Ditch Dug". Key events may be designated "Milestone Events", normally identifying important stages in the completion of a project. Tracking the changes over time in the occurrence date of a Milestone (Trend Charting) gives quick insight into the schedule performance on the project. The inclusion of events is generally an arbitrary decision. Use an event only if you think the schedule is thereby made more comprehensible. You may find events helpful during schedule generation, then decide to remove some of them from the finished version of the schedule.

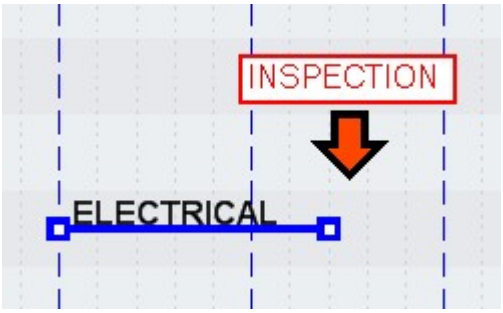
Pick a point on the schedule such as the last day of an activity. **RC** and the following menu will appear:



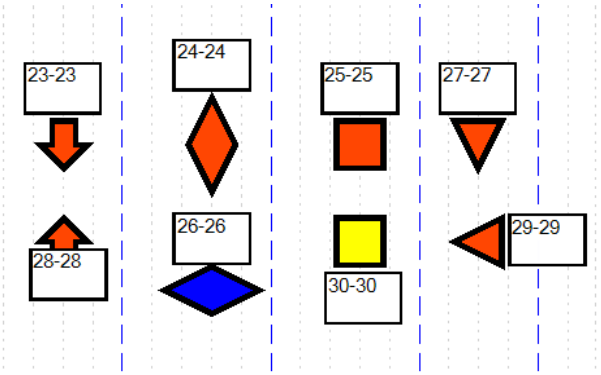
LC on "Create Milestone and the following icon will appear:



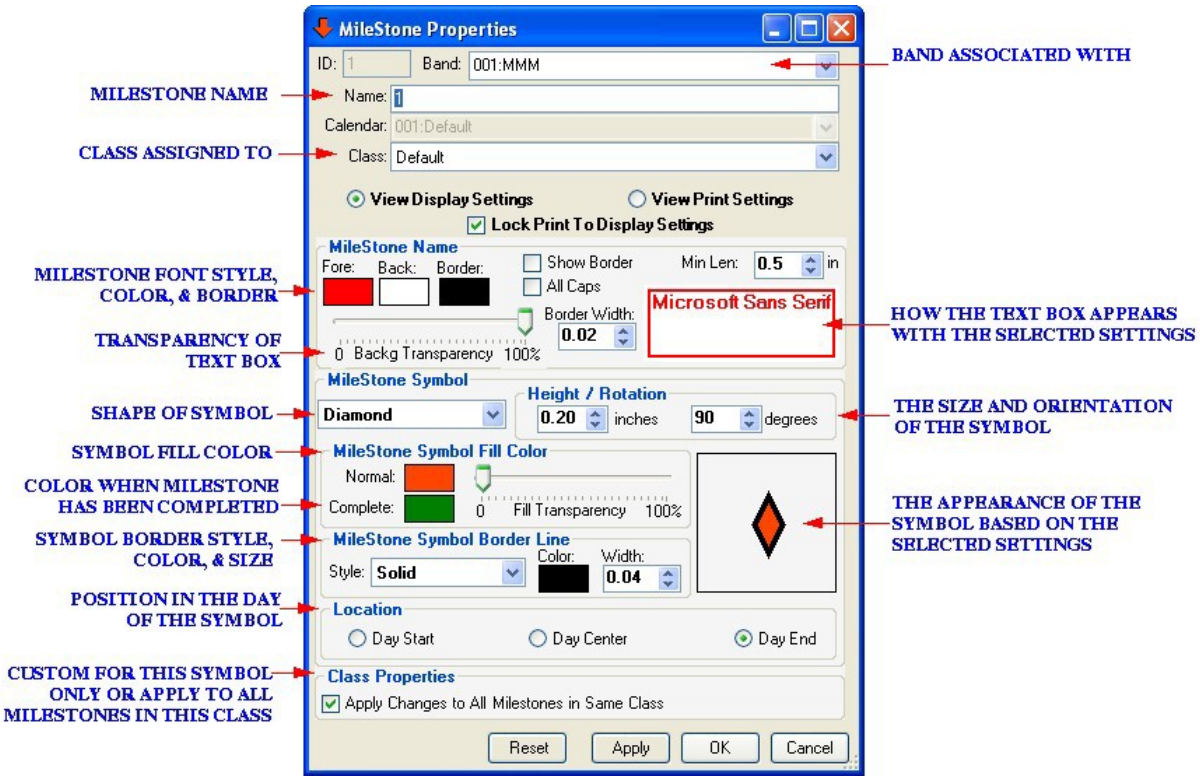
Just as when creating an activity description, typing now will place your event description in the box above the milestone symbol. That box can be reshaped and moved in the same manner as you manipulate an activity description box.



An event (milestone) behaves as a one-day activity. The symbol can be positioned at the start, middle, or end of the day. Events can be used by themselves to create a "sticky note", time-free, precedence diagram. Events (Milestones) are available in a variety of shapes, colors, configurations, and orientations:



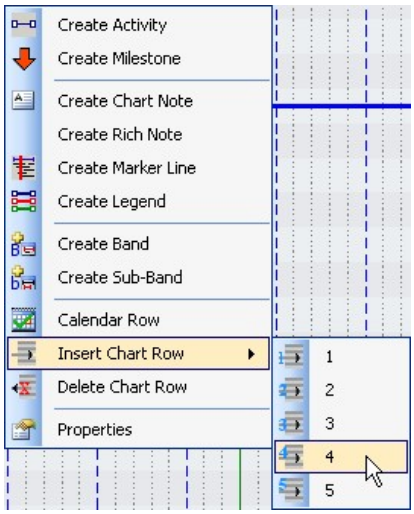
These may be selected by creating, then selecting, a milestone, **RC,** selecting "Milestone Properties" from the resulting menu, and then using this menu:



Note the checked box in the lower left corner. If you want to change only the milestone you have selected, **LC** on this box to remove the check. After making your choices, **LC** on "Apply", then "OK", to implement your choices.

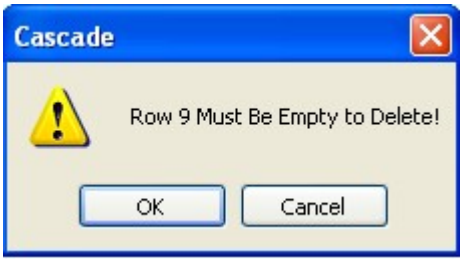
INSERTING ROWS OR DELETE A ROW

You can **insert** from one (1) to five (5) rows into your chart at any place. A **RC** on a row will produce the following menu:



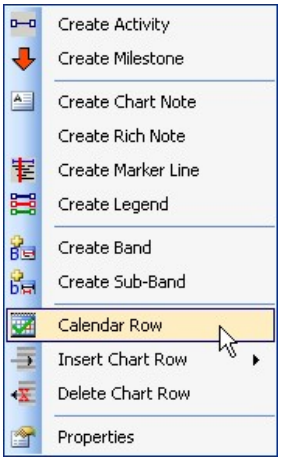
Scroll your cursor over "Insert Chart Row" then go over and **LC** on the number of rows you want to add. These rows will be added above the row where you placed your cursor. Note that this may cause a space separation of activities that may have been just below and above this insertion point. You may need to move some of these to get the look you desire.

To **delete** a single row, **RC** on the row you want to delete. The same menu will appear as above and this time you will need to select "delete chart row." This will delete one row at a time. If there are any activities on this row (even some that may be out of view), you will be given a warning box and not be allowed to delete that row until you move that activity or delete it. In other words, the row must be empty in order to delete it.

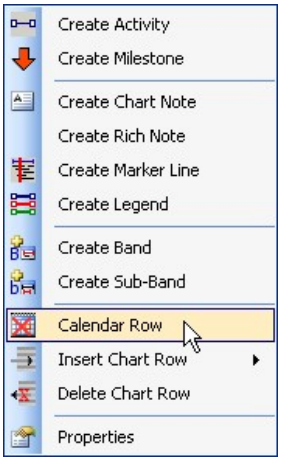


ADDING OR DELETING A CALENDAR ON A CHART ROW

As you are building a schedule the calendar at the top of the display is usually adequate. However, as you prepare to print your schedule, you may find it helpful to place calendars on various rows for ease of reference. By default, a calendar will be placed at the top and bottom of your page. More about this will be discussed in the section on printing. To add a calendar in the chart area, place your cursor on the row where you want to create a calendar. A **RC** will provide the same menu that you should be becoming familiar with by now. A **LC** on "Calendar Row" will place a calendar on the row where your cursor was. To delete a calendar that is on a row, follow the same procedure by clicking on the row where the calendar is. You will note that the icon beside "Calendar Row" now has a Red X on it. A **LC** will now remove the calendar from that row.



ADD

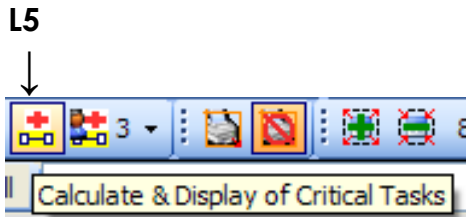


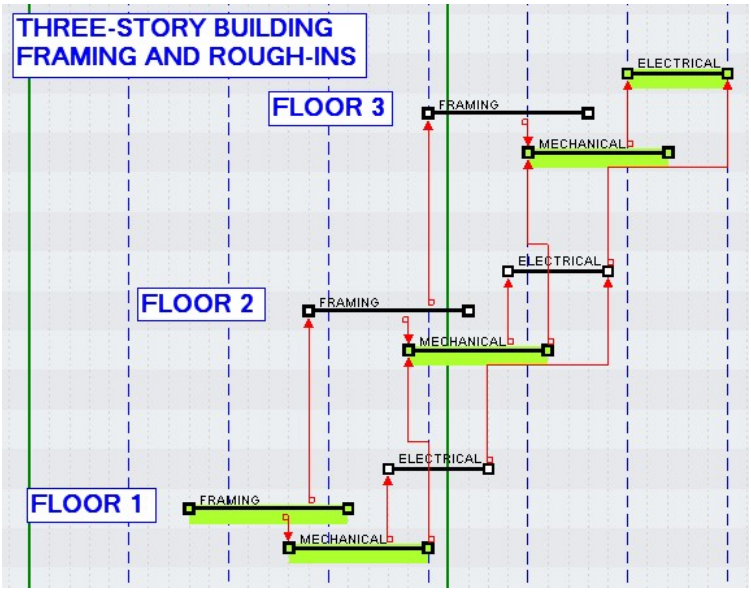
DELETE

HIGHLIGHTING THE CRITICAL PATH

The question, "What activities are on the Critical Path?" arises frequently and must be addressed, even though it is rarely the critical question that needs to be raised. CASCAD-e will display the critical path (or paths) by highlighting the path(s), allowing you to examine and critique the selection, sequence, and durations of the critical activities. This critical path is the sequence of activities that determines the minimum total length of the schedule. Consider the following schedule:

A **LC** on the tool button **(L5)** below, will highlight the critical path:



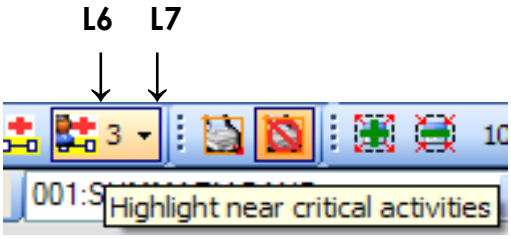


Note that the critical path is based on calculations and is not affected by any illogical positioning of activities such as is shown above for the floor 2 and floor 3 mechanical activities.

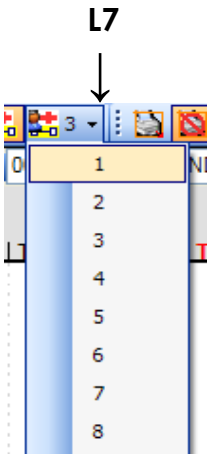
EXPANDING THE HIGHLIGHTING TO INCLUDE NEAR-CRITICAL ACTIVITIES

Because Near-Critical activities can quickly become critical as actual durations vary from their estimates or activities don't start when they should, or for a variety of other reasons, Near-Critical activities deserve Near-Critical attention. CASCAD-e allows you to highlight all activities that have total slack within X days of the total slack of the critical path. The following tool buttons **(L6 & L7)** allow you to select the level of criticality that you wish to highlight. If you are satisfied with the default number of **3** as the amount of slack above that of the critical path that you would like to choose in determining which

activities to highlight, **LC** on the red cross **(L6)** to the left of "3", and all activities within 3 days of the total slack of the critical path will be highlighted.



If you wish to highlight a greater or lesser degree of criticality, LC on the down arrow **(L7)** to the right of "**3**" and the following menu will appear:

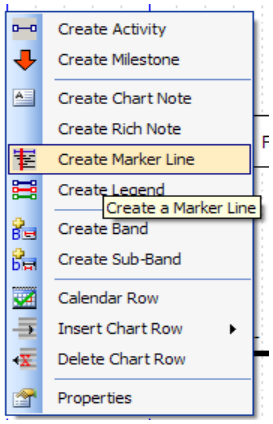


Choose your degree of criticality to highlight by selecting the number ("1" in the example) from the drop-down menu. **LC** on that selection and the "3" will change to "1" and the highlighting will include all activities within 1 day of the criticality of the critical path. Because the project may have some "Project Slack", the critical path could have 5 days of total slack and all activities with 6 days of total slack would be considered Near-Critical when "1" is selected.

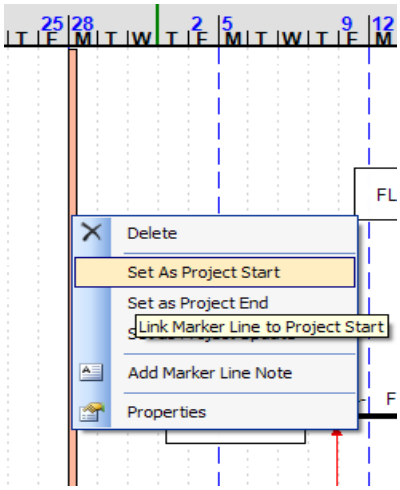
DISPLAYING THE "ALL-ES" AND "ALL-LS" SCHEDULES

It may be desirable to show what the schedule would look like if all the activities were scheduled at the earliest possible time, or if all the activities were scheduled at the latest possible time. In order for CASCAD-e to calculate and display these schedules, you must select an earliest start date and a latest completion date for the project. To accomplish this, do a **RC** in the chart display area on the date that you want to establish as the start of the

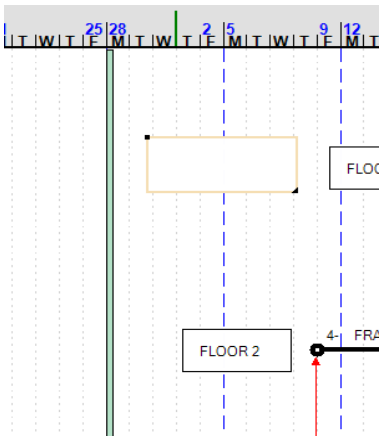
project or the completion date of the project. When you do so, you will see the following menu:



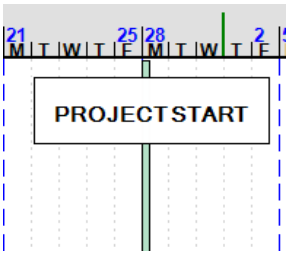
LC on "Create Marker Line", and when the marker line appears, **RC** on it and you will get the following menu:



Now do a **LC** on "Set As Project Start" or "Set As Project End". To identify this marker line, or any other marker line you will find it useful to include a descriptive note. A **RC** <u>on</u> the marker line will again give the above menu. A **LC** on "Add Marker Line Note" and the following preliminary marker line note will appear:

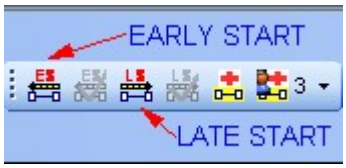


Use the same procedure as you did earlier with Chart Notes to enter a description of this Marker Line and move the Chart Note into a position such as:

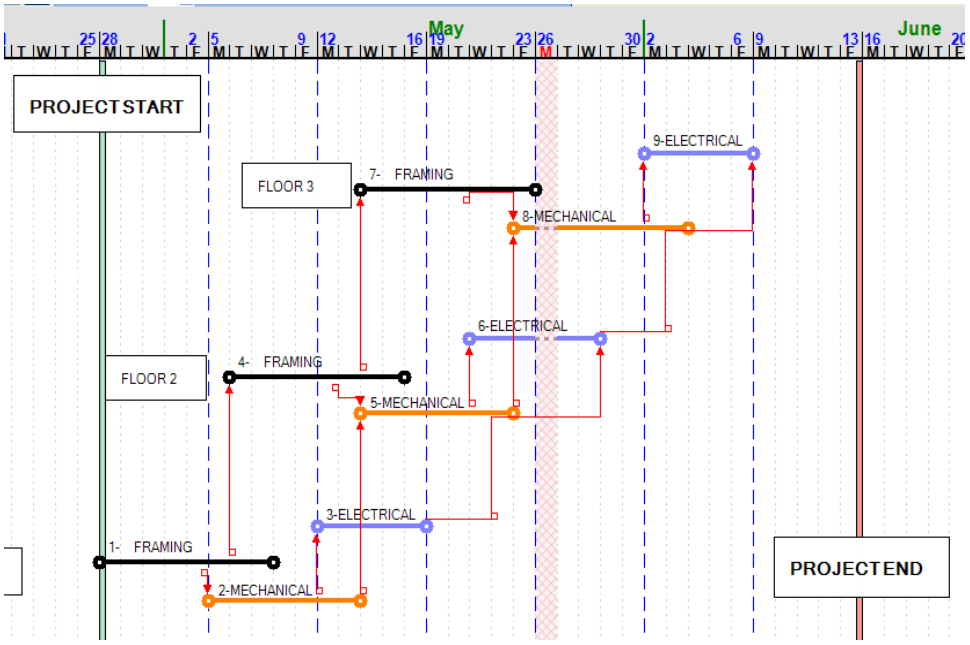


By selecting "Properties" from the above menu, you can customize the Marker Line's colors, style, width, and position in the day.

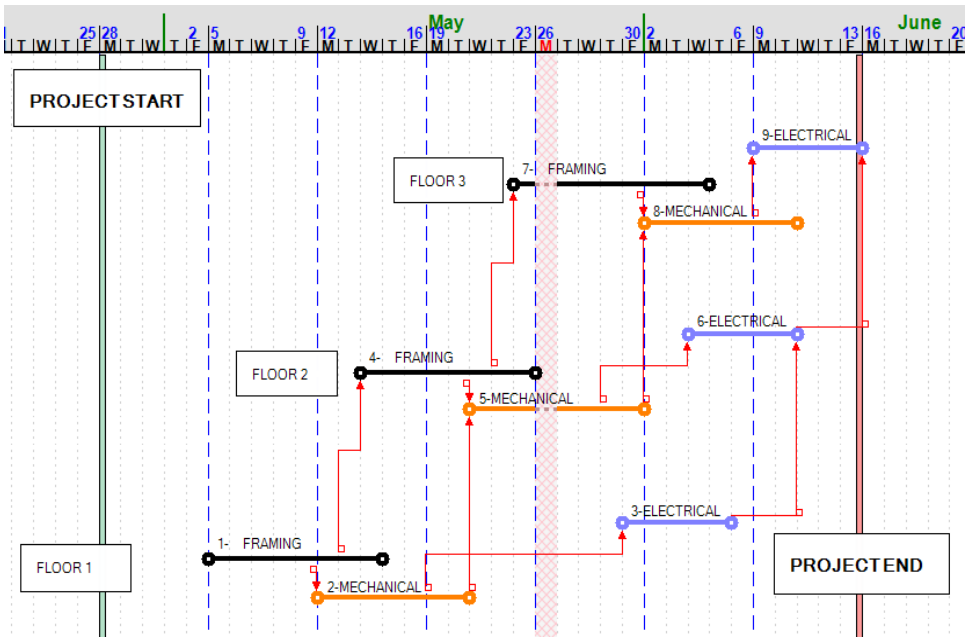
With a "Project Start" and a "Project End" Marker line in place, you may select "ES" **(L1)** (or "LS"**(L3)**) from the toolbar below, **LC**, and the All-ES (or All-LS) schedule will be displayed:



ALL EARLY STARTS SCHEDULE



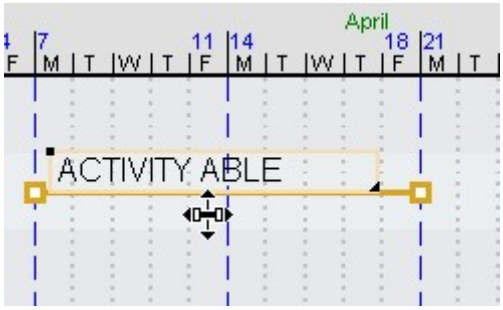
ALL LATE STARTS SCHEDULE

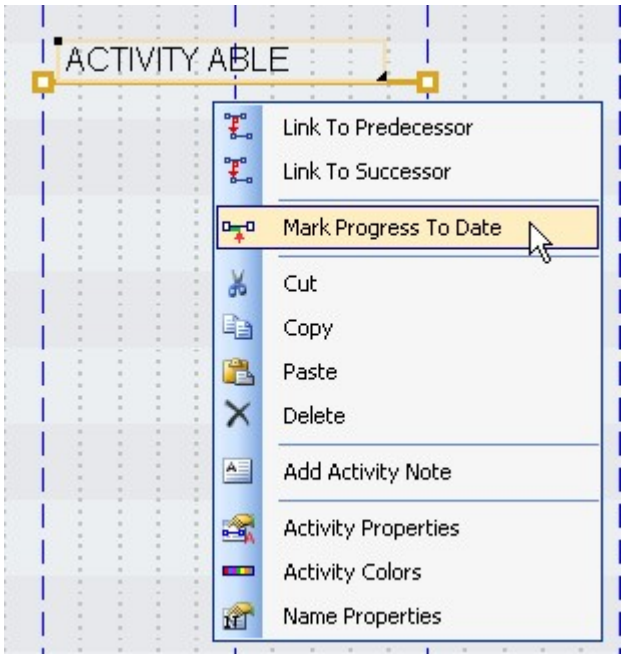


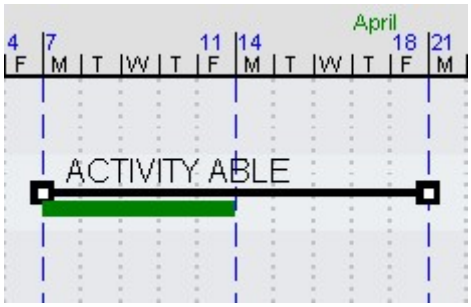
In order to return to the schedule display in effect before displaying the All-ES or All-LS schedule, **LC** in any unoccupied space on the grid. A future feature will allow you to accept either of these choices as the new schedule.

MARKING PROGRESS

When you are ready to begin updating progress on your schedule, you can do it all with clicks from your mouse. Start by selecting the activity that you want to add progress to by a **LC** on that activity. The activity will change color and your cursor will change as usual. Position your cursor on the day that you want to add progress up to. In the case below, the progress will be updated to show a remaining duration of five (5) days (Do not show days worked). With the cursor position on the day you need do a **RC** and the following menu will appear. Now select "Mark Progress to Date." The result will be the green line below the activity bar as shown below. To add more days later, you simply do the same procedure on the day you need it updated to. If for some reason you need to clear the progress, simply use the button **(E7)** for clearing marked progress as illustrated below.

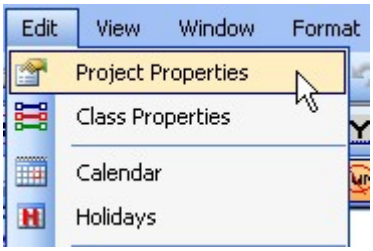






If for some reason you want to move an activity that has started without revising the logic to show a split in the activity, you can do so by a **LC** on the **E7** button shown below.

You may have need on occasion to turn off marked progress during a meeting. To do so, **LC** on **"Edit"** then select "Project Properties", select the activity tab on the left side, and then uncheck the box for "Activity Progress." Be sure to remember to turn this back on.

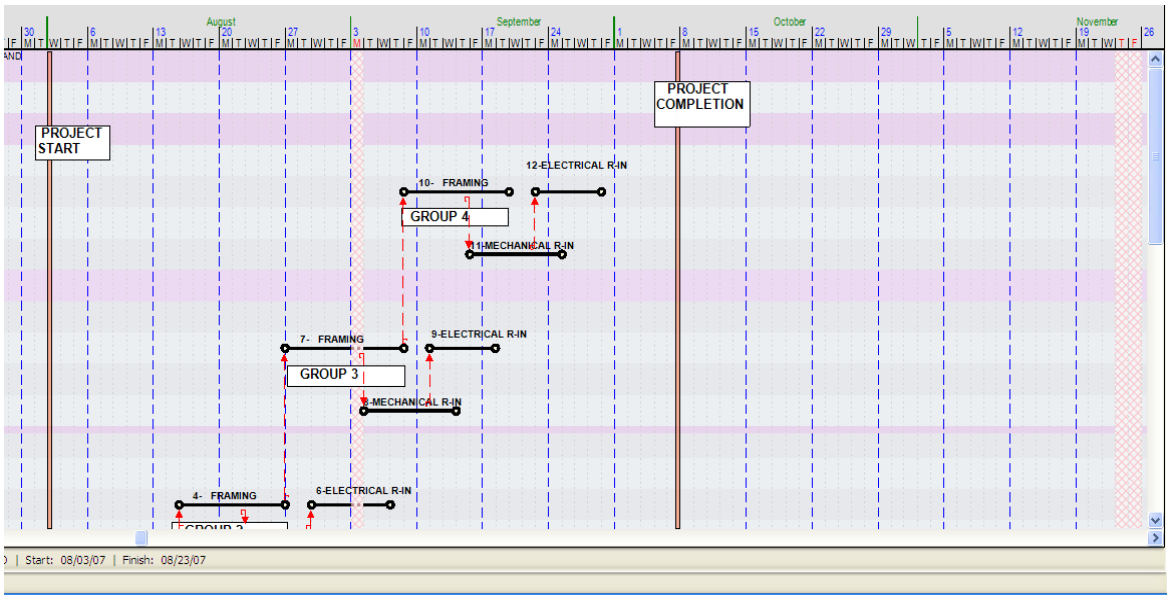


MOVING AROUND THE SCHEDULE DISPLAY

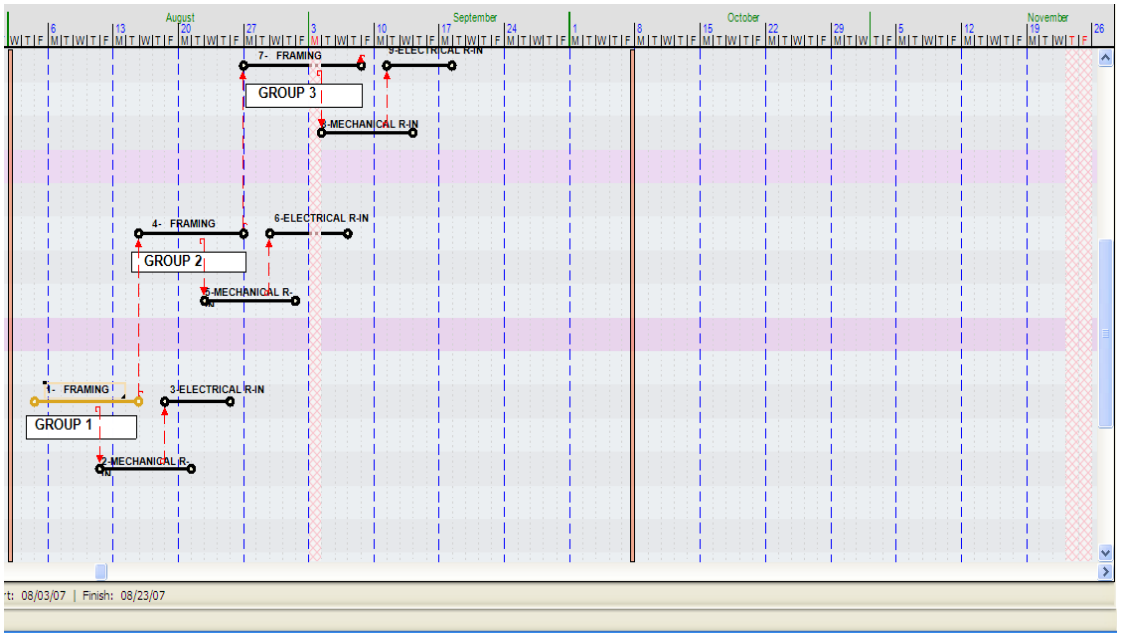
SCROLLING

When the schedule display becomes larger than the screen can accommodate, you can move to any hidden part of the schedule display by using the vertical scroll bar on the right side of the screen and/or the horizontal scroll bar on the bottom of the screen. The time scale and the row heights will be unchanged. In this manner you can see all of the schedule display in increments dictated by the screen size.

Below is a project schedule that appears to be partially hidden in the lower left corner:

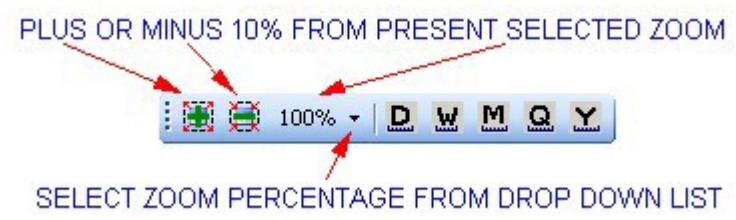

August
September
October
November
PROJECT START
PROJECT COMPLETION
10- FRAMING
12-ELECTRICAL R-IN
GROUP 4
11-MECHANICAL R-IN
7- FRAMING
9-ELECTRICAL R-IN
GROUP 3
8-MECHANICAL R-IN
4- FRAMING
6-ELECTRICAL R-IN
Start: 08/03/07 | Finish: 08/23/07

By clicking in the white part of the scrollbar on the right side, we can see the rest of the schedule:

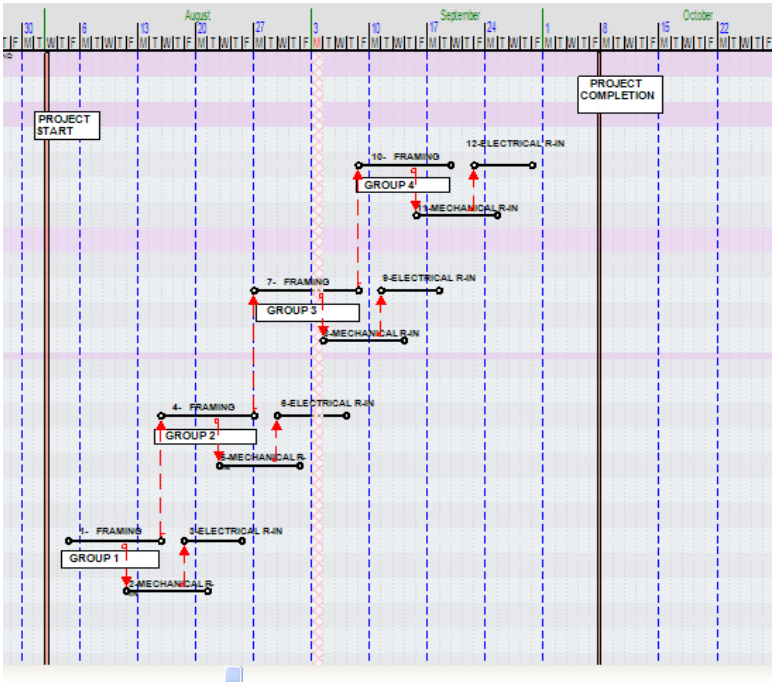


ZOOMING

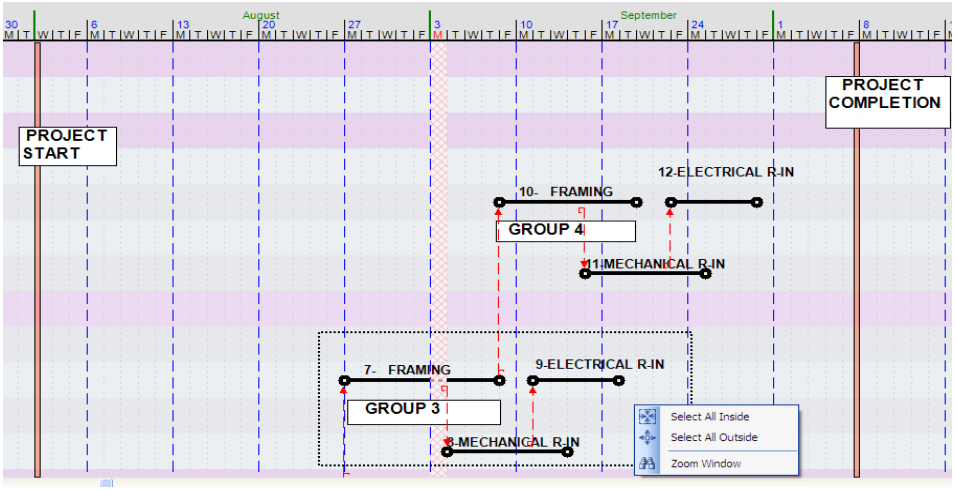
A different way to see all or more of the actual schedule is to use the **ZOOM** feature, using the toolbar below:

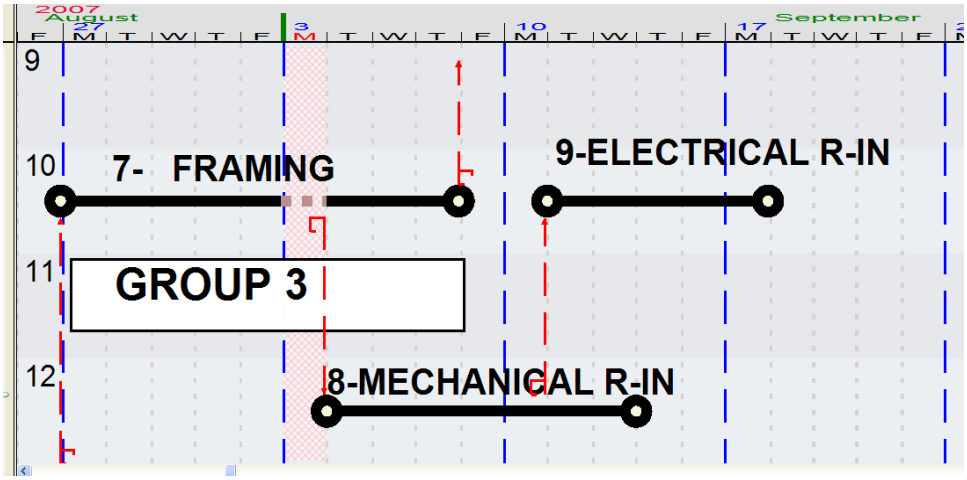


Zooming out from the previous schedule gives a view of the overall schedule:

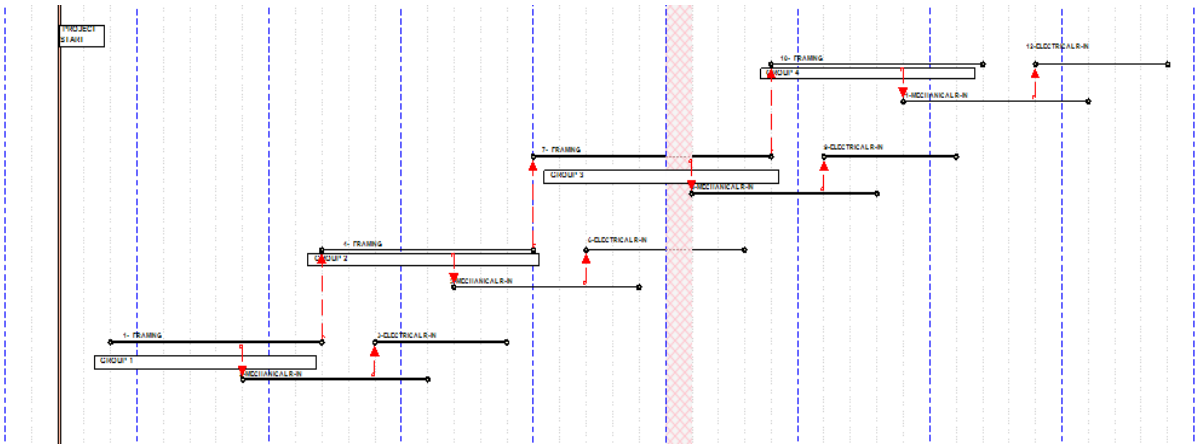


Zooming in gives a detailed look at a portion of the schedule. If you zoom in or out using the tool bar, the view will maintain the upper left corner of the screen as the fixed point of the zoom. You can also zoom in on a selected portion of the screen display by FENCING the portion of the display you wish to bring up to full screen display, then selecting "Zoom Window".





Zooming changes the horizontal and the vertical scale proportionately. You may change either of these independently by compressing or expanding the calendar as previously described, or by changing the row heights, using the row height toolbar or using the slide on the left side of the schedule display. The resulting skewed visuals may nevertheless be useful in achieving a plotted/printed/projected display that maximizes the use of space (or gives a special effect).

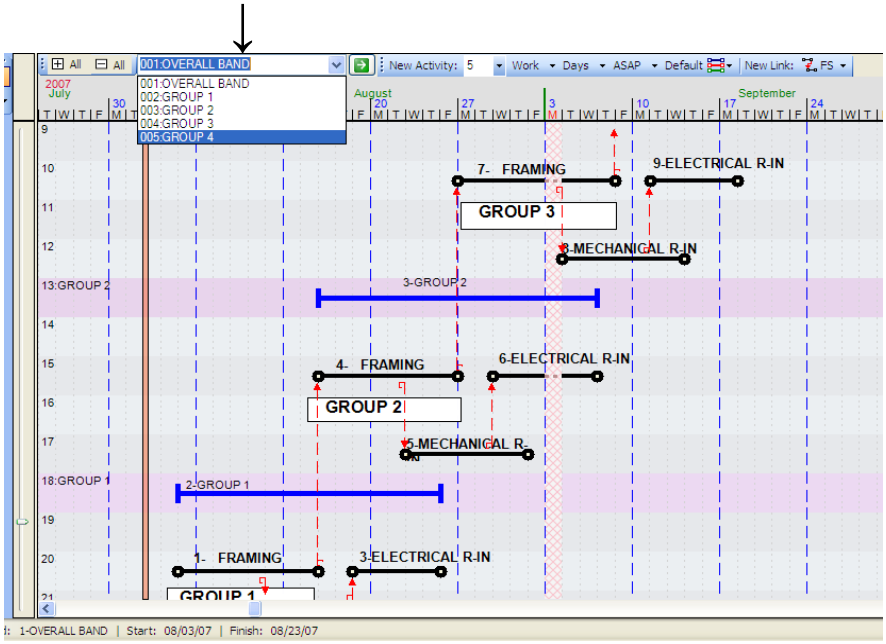


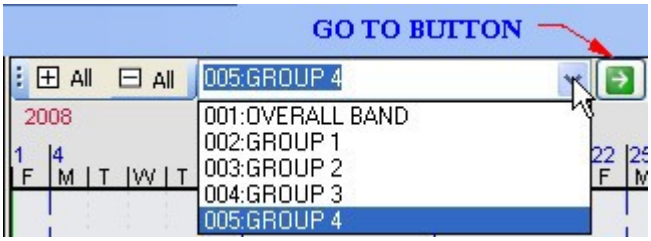
"GO TO" OR JUMPING TO A SECTION OF THE SCHEDULE

You can also select any Band, Sub-Band, or activity that you have created and have that selection brought into the screen display to the extent that it can be accommodated. This is not a Zoomed view.

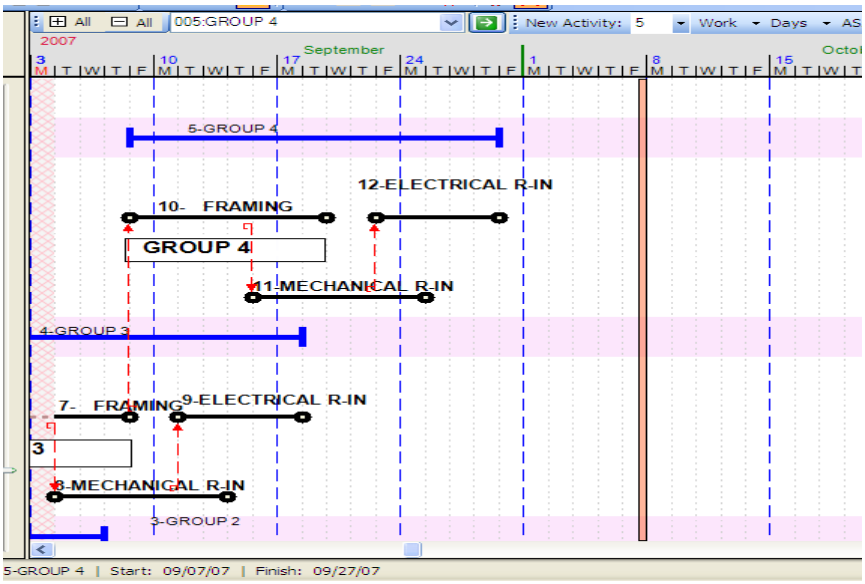
To "GO TO" a band or sub-band, select the one you want to jump to from the band drop menu. Now **LC** on the **Green** arrow button to the right and you will be taken to the selection.

SELECTING SUBBAND "GROUP 4"

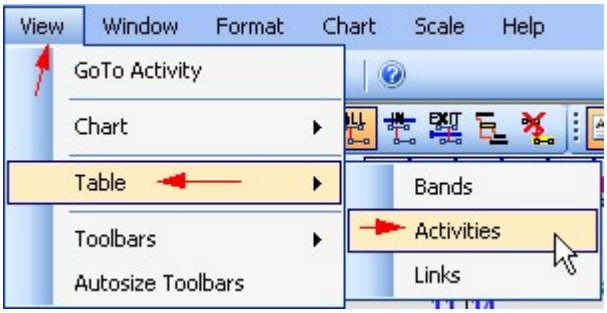




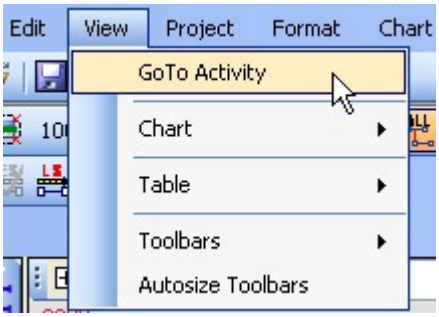
GIVES:



To "GO TO" an activity, you must know the activity's "ID" number. This number can be found one of three ways. The activity ID number is found in the upper left corner of the task detail box. See the section earlier in this manual for information concerning this box. Another place to view this number is any time you select an activity, the activity detail band at the bottom of the screen shows the ID number. However, unless you remember the number, you cannot see these dialog boxes without selecting the activity. Another way to find the "ID" number is from a table. You can view (or print out) this table by a **LC** on **VIEW**, scroll over **TABLE,** and **LC** on activities. This will produce a list of all of your activities with the ID numbers. A more detailed discussion of these tables is covered in the section on **Tables.**



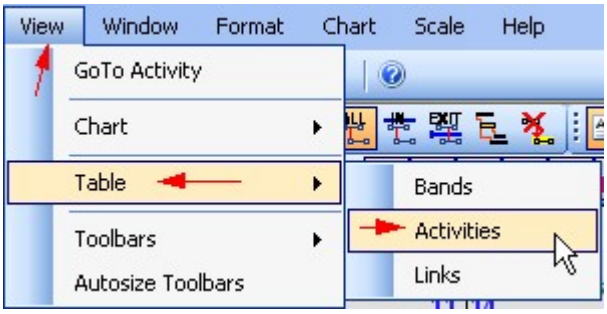
When you know the "ID" number of the activity that you want to "GO TO," **LC** on **VIEW** and then **LC** on **"Go To Activity."** A pop-up window will appear. Now type in the "ID" number of the activity that you want to jump to and then **LC** on the **GO** button. See the illustration below.

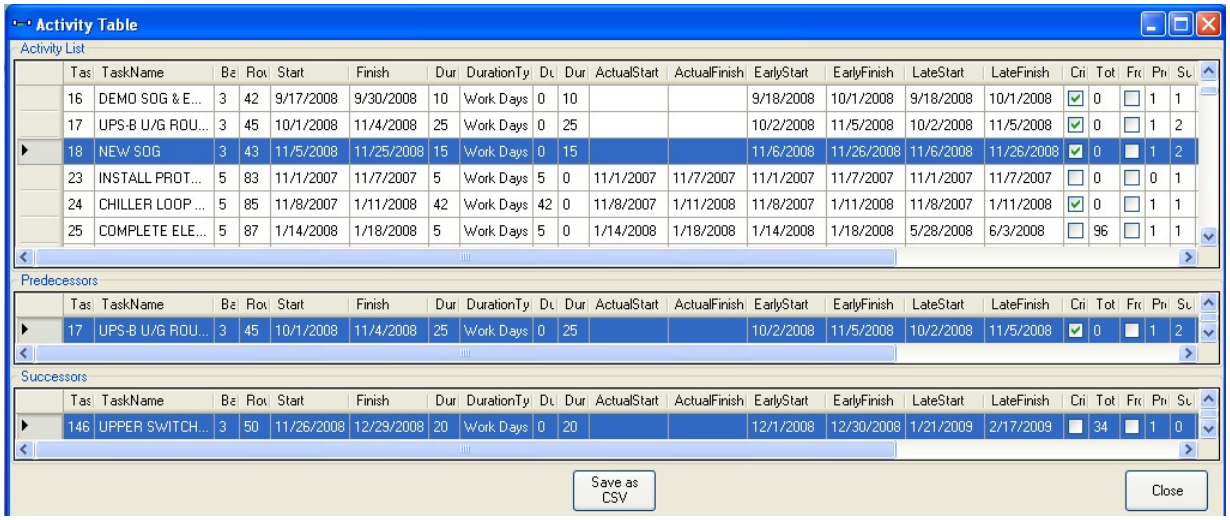


PRINTING AND PLOTTING YOUR SCHEDULE

TABULAR PRINTOUTS

CASCAD-e is designed to take advantage of the almost universal superiority of graphical representation of the project schedule. However, **CASCAD-e** has the capability of providing a tabular printout of the schedule. You can select three different tables to view and save to a file. To view (or print out) these tables, **LC** on **VIEW**, scroll over **TABLE,** and **LC** on activities, bands, or links. This will produce a list of your selection.



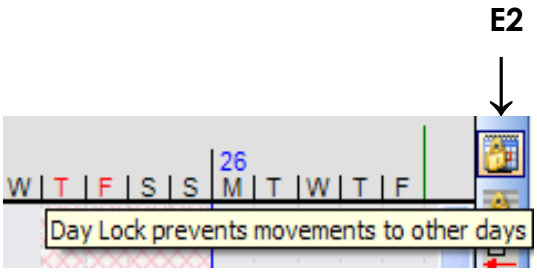


This Table, or Activity Report, has 28 columns of information available. You may configure the report to suit your needs by expanding, compressing, or hiding columns. You may sort on any useful column, such as Early Start, Total Slack, Band Number, Properties, or others by **LC** on that column heading. Similar Successor and Predecessor reports are also available in this format from the Activities Table. Any of these tables can be saved in a Comma Delimited File (.csv) format and later opened by most spreadsheet programs.

GETTING READY TO PRINT CASCAD-e GRAPHICS

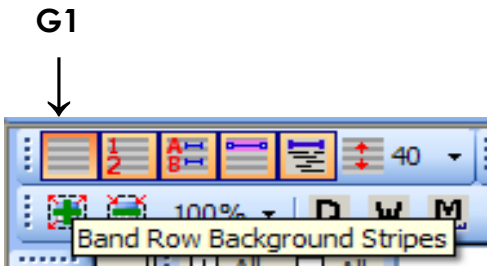
After you have created a schedule that you wish to use in a graphic hard copy version, or if you are at an interim point in the scheduling process and wish to give the team a hard copy of the schedule to that point to use for review or reference, you will need to go through the **PRINTING** (Or **PLOTTING**) process (the steps are essentially the same).

Review your schedule display to clean up activity placements and description placements. Often, vertically swapping the positions of two activities will reduce precedence line confusion. When swapping out activities or groups of activities, it is helpful to turn on the "Day Lock" tool button **(E2)**, which allows activities to be moved vertically, but not horizontally. This assures that you will not accidentally modify the scheduled dates.

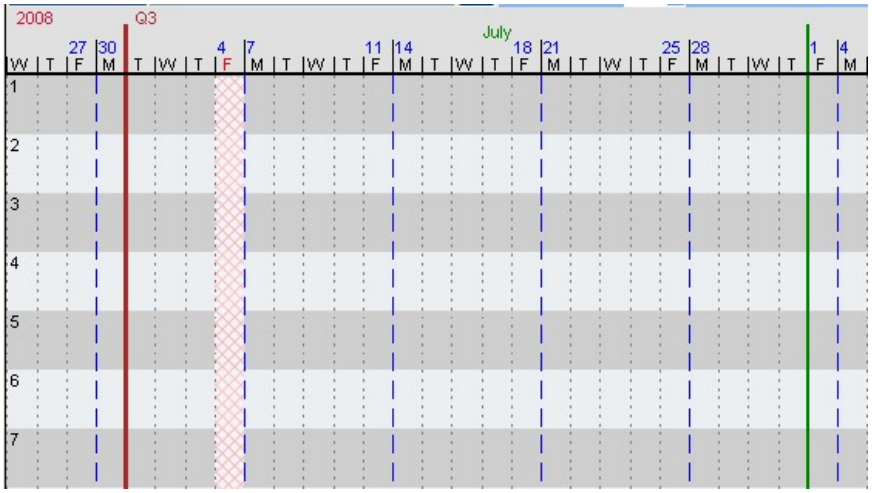


What was a suitable display while working on the schedule may be subject to significant improvement for printed schedule readability. Additional chart notes, or modifying the content, size, and placement of existing notes will often enhance the schedule usefulness. Adding or deleting day, week, month, quarter, or year lines needs to be considered. In particular, day lines consume considerable plotter memory and will slow up the plotting process. Similarly, the row shading should most often be eliminated when plotting. Printing is much less affected by these two features.

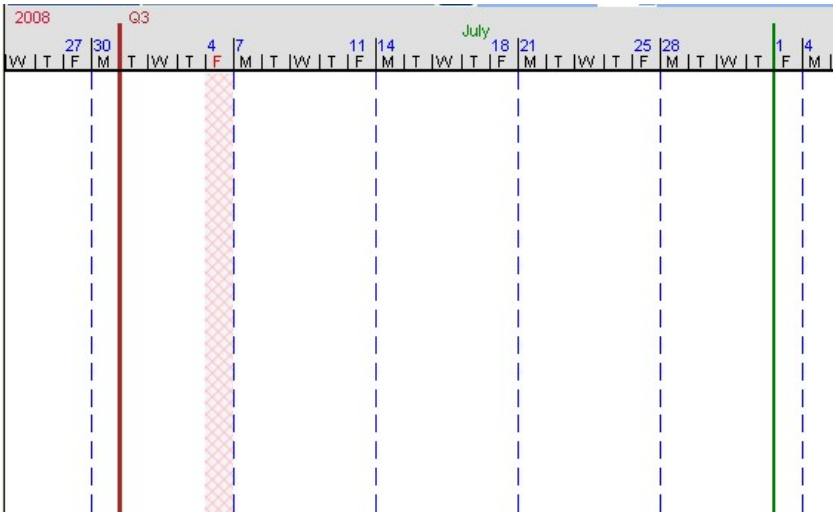
The row shading can be turned off and on by the use of the Band Row Shading tool button **(G1)**:



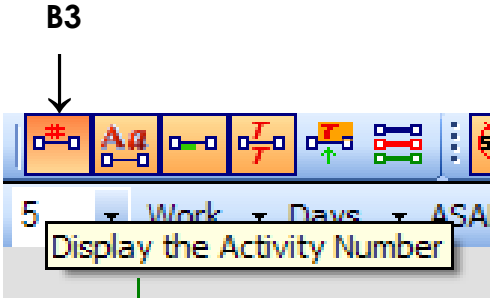
The alternative appearances are (Band Row shading and Day Lines on):



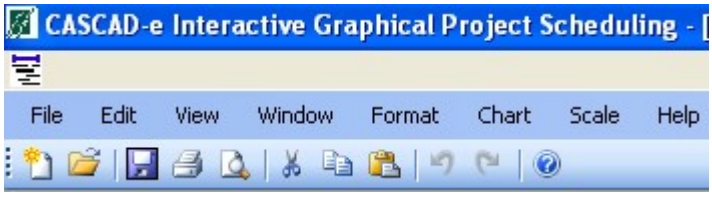
And (Band Row shading and Day Lines off):



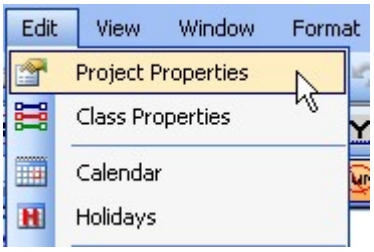
Another "clean-up" option is to turn Activity Numbers off with the use of the Activity Number Display button **(B3)**:



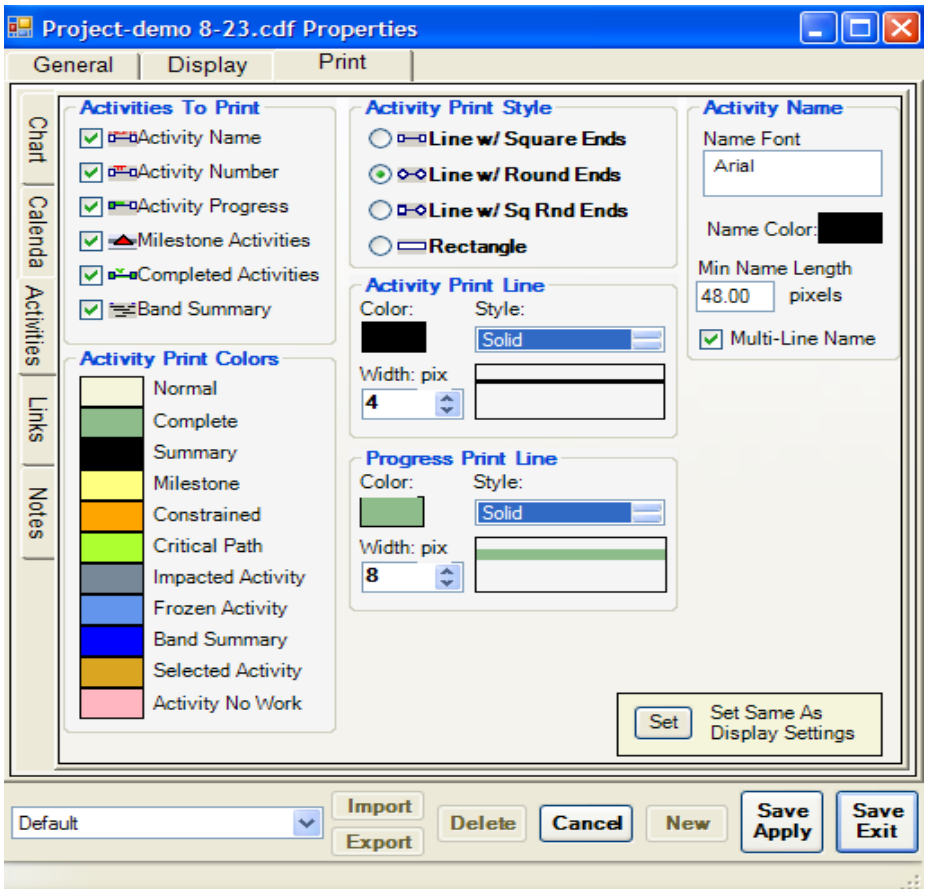
Further modification of the appearance can be achieved by altering the font type and size and the activity line width. **LC** on "EDIT":



Then **LC** on "Project Properties":

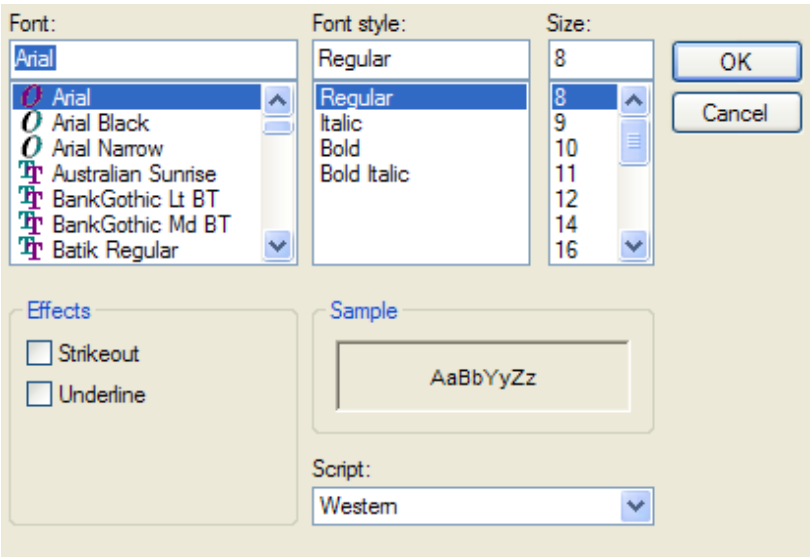


The following menu will appear:

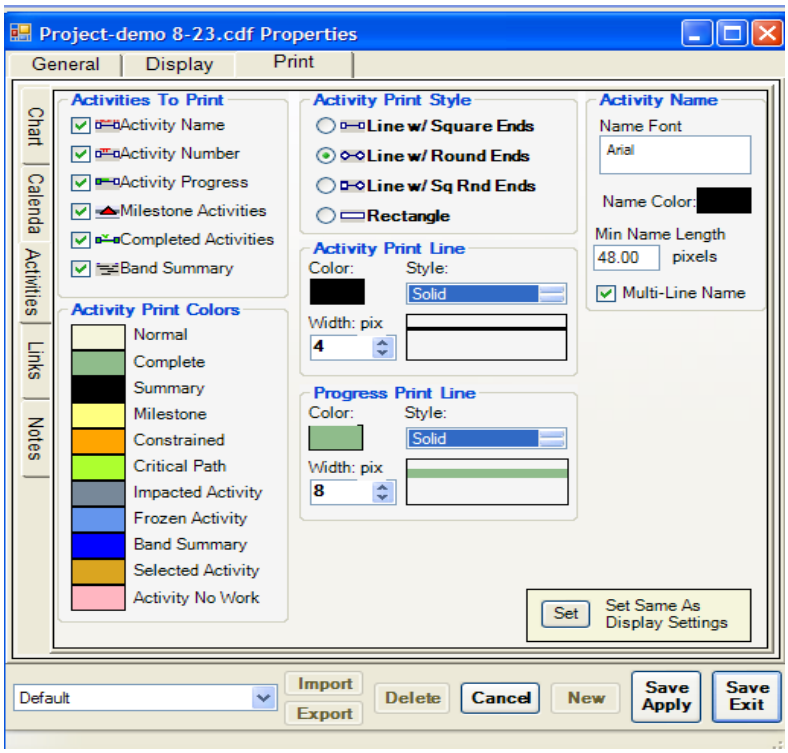


You are looking at the "Print" selection, which controls what your printed and plotted images will look like. The "Display" selection controls what your screen (and projected) images will look like. Your "Print" choices can be "Set" to be the same as your screen image ("Display"), or can be different. Within the "Print" section, you are looking at the "Activities" print options.

For purposes of this "clean-up" discussion, look at the "Activity Print Line" section. In the "Width" section, the up and down arrows allow you to change thickness of the activity line. In the "Activity Name" section, **LC** in the "Name Font" box and the following menu will appear:



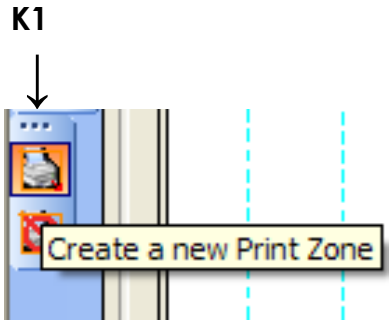
You may now change from the "Font", "Font Style", and "Size" options that were previously in effect (in this case, the default settings), to your choices. When you have made your selections, **LC** on "OK" and you will be returned to the previous menu:



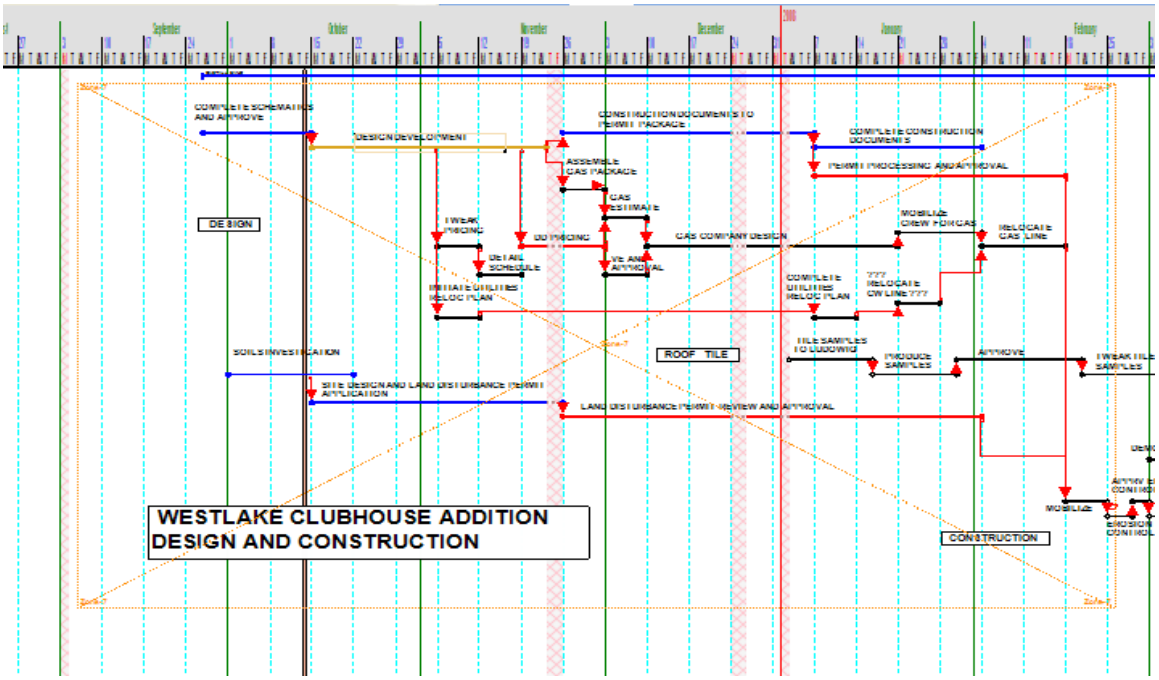
LC on "Save Apply" and your print images will reflect these selections. These "clean-up" options are the most frequent means of improving the print or plot appearance beyond the "Display" selections which were in effect at the end of your scheduling session.

SELECTING THE PRINT/PLOT SIZE AND SHAPE

You are now ready to create the page(s) on which your schedule will appear. Go to "New Print Zone" **(K1)** and **LC:**



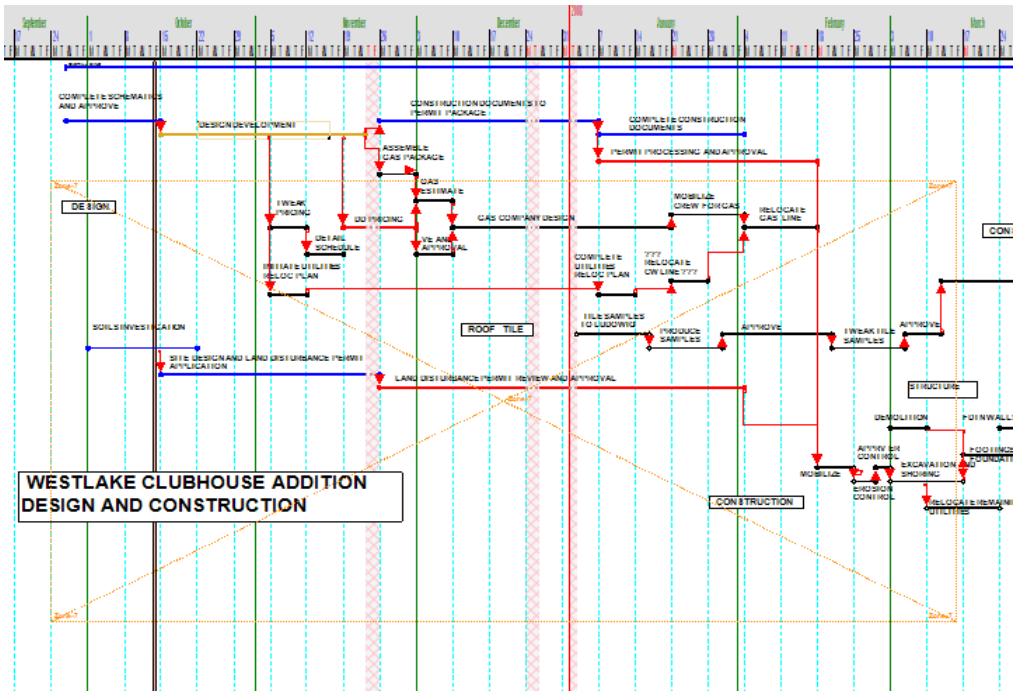
The hourglass "wait" symbol will appear for a few seconds. When it disappears, put the cursor where you want the upper left corner of the print zone to be located. LC, hold down, and drag to the point at which you want the lower right corner of the print zone to be located. Release.



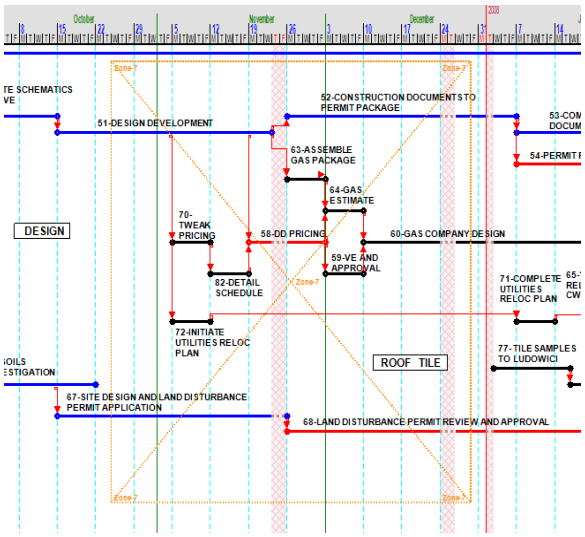
The print zone you have defined is shown in a fence with diagonals and is named "Print Zone 1". *(Because several print zones had been created and*

deleted for the example, the one shown is actually named "Print Zone 7") This print zone covers only a portion of the schedule and is approximately suited (shaped) for printing to an 8 ½ X 11 or 11 x 17 sheet. If the readability requires a larger sheet size, you can make that selection and plot onto a sheet size that works better. You have the option of printing onto multiple sheet sizes to fit multiple user needs.

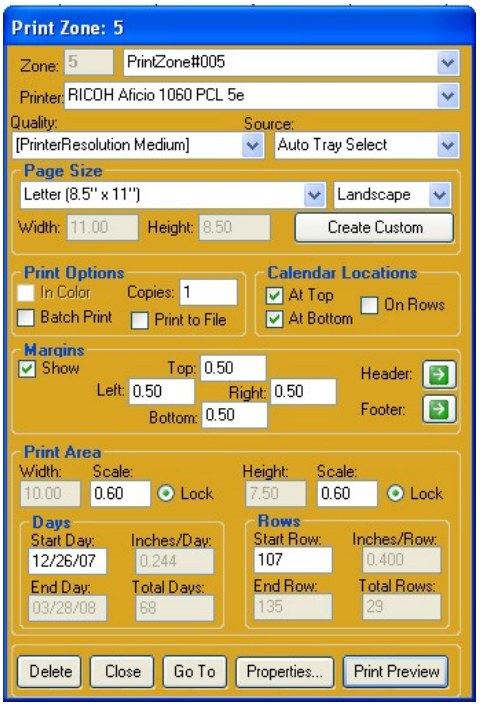
You can move the print zone, maintaining its dimensions, by **LC** anywhere in the print zone, holding, and moving.



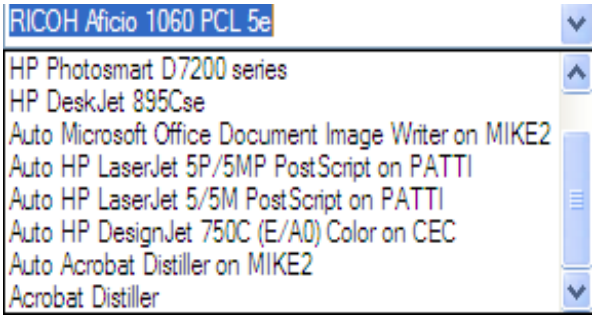
Or you can change the shape of the print zone by grabbing any boundary (a two-directional arrow will appear on the boundary line) and moving in either of the directions on the arrow.



Multiple print zones can be created and can exist simultaneously to make possible overlapping printed sheets that cover the total schedule. You can also cover the entire schedule with one print zone and print/plot to a page size large enough to allow readability. With multiple print zones, you should assure that there is a small area that is unique to each zone and in which that zone can be selected without conflict with an overlapping zone.
Now do a **LC** anywhere inside a selected print zone. However, if you click in an area overlapped by two or more zones, you will be able to select only the lower numbered one. The following menu will appear:



The print zone you selected is identified. Your printer/plotter options can be seen by a **LC** on the down arrow on the right side of the "Printer" row.



You may print or plot directly to a device for which your computer has the driver, or you may store the material defined by the print zone in a pdf format such as would be done if you selected "Acrobat Distiller" from the available options shown.
Depending on the printing/plotting device selected, you will have a variety of "Page Size" options from which to choose. You also have the option of creating a custom-sized page by **LC** on "Create Custom", choosing "Width" and "Height" dimensions and **LC** on "Accept". In this area of the menu, you can also choose between "Landscape" and "Portrait" as the orientation options for your page.

In "Calendar Locations", you can choose to automatically display the calendar at any or all of "At Top", "At Bottom", and "On Rows". "On Rows" will cause any calendar rows you inserted within the body of the schedule to be shown on the printed page just as they appear in the screen display.

The "Margins" section allows you to pull back the automatically printed border around the schedule page to the location dictated by your selection of the size of the four margins. If you **LC** "Display", you will see the margin highlighted around the print zone.

In the "Print Area" section, you will see the "Width" and "Height" after the borders have been subtracted from the page size. The "Scale" of each is useful in judging the extent to which your print zone is proportionate to your page size. If the page size (after borders are established) and the print zone were exactly proportionate, the width and height scales would be identical. A small difference in scales will have little observable impact on the appearance of the printed page as compared to the screen display. If the scales are markedly different, you can restore as much proportionality as you wish by changing the larger scale to, or closer to, the smaller scale. The printed

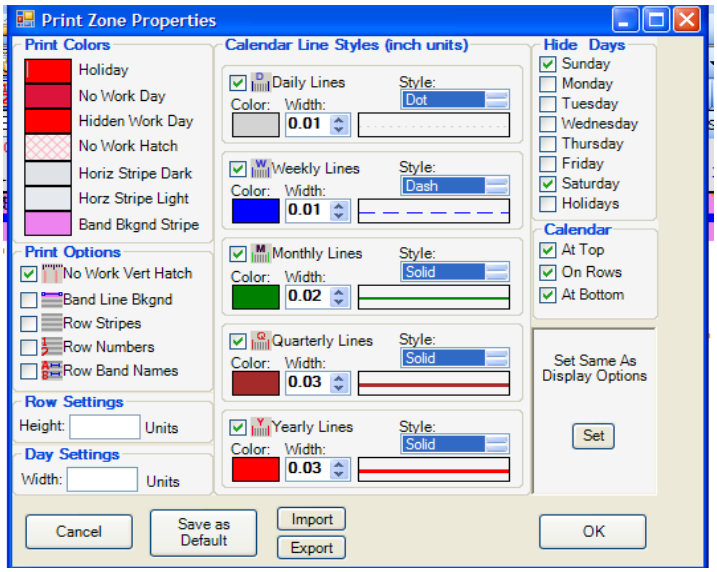
schedule will not fully utilize the page space in the dimension for which the scale was reduced. A future CASCAD-e feature, currently in development, will allow you to select print zone proportions, which exactly match selected page sizes, so that screen display proportions and print proportions are matched and the printed page is fully utilized.

The "Days" and "Rows" sections of the menu are informational as to the actual size of the two dimensions of the print zone you are preparing to print. You will find it useful to print out as a catalogue several samples of different row height and day width choices, along with alternate font sizes in bold or regular and alternate activity line sizes.

You may also find that the color, font, precedence line, and activity line selections that work best for a projected image during schedule generation are different from those that work best for the printed schedule. By experimentation, you can arrive at your personal choices and set them up in the Project Properties section in advance of actual usage.

The "Header" and "Footer" buttons allow you to place information above and below the borders of your print page.

LC on "Properties" on the bottom of the Print Zone menu to assure that the print parameters are what you desire, even though you made "Display" and "Display= Print" selections along the way during your schedule generation.



PRINTING/PLOTTING

When you are ready to print, **LC** on "Page Preview". *("Page Preview" is currently under modification to remove the disproportionate sizing of precedence arrowheads, which is effectively blocking much of the preview display.)*

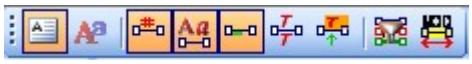
LC on "Print" and your selected print zone will plot/print. If you are "printing" to Acrobat Distiller, you can save the pdf to any selected file for e-mail distribution or for downloading to a memory stick and printing through another computer on a device for which your computer has no driver.

TOOL BAR IDENTIFICATION

A-NEW ACTIVITY

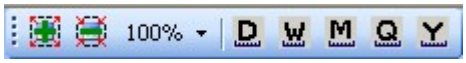
1. DEFAULT DURATION SETTING WHEN CREATING NEW ACTIVITIES.
2. DURATION TYPE: CALENDAR SPAN OR WORK SPAN.
3. DURATION UNITS
4. CONSTRAINT TYPE
5. PROPERTY CLASS ASSIGNED TO NEW ACTIVITIES
6. LINK SETTING

B-ACTIVITY DISPLAY ITEMS



1. SHOW/HIDE ALL NOTES
2. EDIT SELECTED TASK FONT
3. DISPLAY THE ACTIVITY NUMBER
4. DISPLAY ACTIVITY NAMES
5. DISPLAY ACTIVITY PROGRESS
6. PERMIT ACTIVITY NAMES TO SPAN MULTIPLE LINES
7. RESET SELECTED ACTIVITY NAME TO DEFAULT SETTING
8. DISPLAY ACTIVITIES FOR SELECTED ACTIVITY CLASSES
9. HIGHLIGHT ALL ACTIVITIES MODIFIED AFTER A SELECTED DATE

C-CALENDAR SCALE



1. INCREASE DISPLAY VIEW BY 10%
2. DECREASE DISPLAY VIEW BY 10%
3. SELECT DISPLAY VIEW
4. CALENDAR DAY SCALE
5. CALENDAR WEEK SCALE
6. CALENDAR MONTH SCALE
7. CALENDAR QUARTER SCALE
8. CALENDAR YEAR SCALE

D-CALENDAR DISPLAY ITEMS

1 2 3 4 5 6 7 8 9

1. DO NOT DISPLAY SATURDAYS
2. DO NOT DISPLAY SUNDAYS
3. DO NOT DISPLAY HOLIDAYS
4. DISPLAY NO WORK VERTICAL HATCH
5. DISPLAY VERTICAL DAY LINES
6. DISPLAY VERTIVAL WEEK LINES
7. DISPLAY VERTICAL MONTH LINES
8. DISPLAY VERTICAL QUARTER LINES
9. DISPLAY VERTICAL YEAR LINES

E-ACTIVITY MOVEMENT

1 2 3 4 5 6 7 8 9

1. TOGGLE “LOCK-IN-PLACE” FOR SELECTED ACTIVITY OR BANDS
2. DAY LOCK PREVENTS MOVEMENTS TO OTHER DAYS
3. ROW LOCK PREVENTS MOVEMENTS TO OTHER ROWS
4. MAINTAIN PREDECESSOR INTEGRITY ON ACTIVITY MOVE
5. MAINTAIN SUCCESSOR INTEGRITY ON ACTIVITY MOVE
6. CLEAR IMPACTED ACTIVTIES
7. CLEAR ACTIVITY PROGRESS COMPLETED
8. WHEN AN ACTIVITY IS MOVED, KEEP ACTIVITY DURATION CONSTANT BY CHANGING ACTIVITY FINISH DATE TO ACCOUNT FOR NON-WORKING DAYS
9. ALLOW AN ACTIVITY THAT HAS STARTED TO BE MOVED

F-LINK DISPLAY MODE

1 2 3 4 5

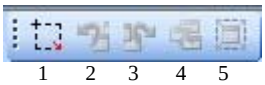
1. DISPLAY ALL ACTIVITY RELATIONSHIPS
2. DISPLAY RELATIONSHIPS WITHIN THE SELECTED BAND
3. DISPLAY RELATIONSHIPS EXITING THE SELECTED BAND
4. HIGHLIGHT ALL LINKS FOR SELECTED ACTIVITY
5. HIGHLIGHT ACTIVITIES WITH NO PREDECESSORS

G-CHART ROWS

1 2 3 4 5 6

1. ROW BACKGROUND SHADING
2. DISPLAY ROW NUMBERS
3. DISPLAY BAND NAMES ON ROWS
4. TOGGLE DISPLAY OF BAND SUMMARY BACKGROUND COLOR
5. TOGGLE DISPLAY OF BAND SUMMARY BAR
6. ROW HEIGHT

H-FENCE VIEWS



1 2 3 4 5

1. CREATE NEW FENCE/DELETE SELECTED FENCE
2. DISPLAY PREVIOUS VIEW (NOT ACTIVATED)
3. DISPLAY NEXT VIEW (NOT ACTIVATED)
4. DELETE SAVED VIEWS
5. FIT ALL BANDS AND ACTIVITIES INTO VIEW

I-TEXT SETTINGS

1 2 3 4 5 6 7 8

1. SELECT TEXT STYLE
2. SELECT TEXT COLOR
3. LEFT JUSTIFY
4. CENTER JUSTIFY
5. RIGHT JUSTIFY
6. BOLD TEXT
7. ITALICS
8. UNDERLINE TEXT

J-ACTIVITY SETTINGS

1

1. QUICK EDIT MODE FOR ACTIVITY NAMES

K-PRINT ZONES

1 2

1.CREATE NEW PRINT ZONES
2.HIDE/SHOW PRINT ZONES

L-CRITICAL PATH

1 2 3 4 5 6 7

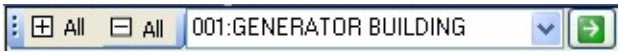
1. DISPLAY EARLY START/FINISH
2. ACCEPT EARLY START/FINISH AS SCHEDULED START/FINISH- (NOT ACTIVATED)
3. DISPLAY LATE START/FINISH
4. ACCEPT LATE START/FINISH AS SCHEDULED START/FINISH- (NOT ACTIVATED)
5. CALCULATE AND DISPLAY CRITICAL ACTIVITIES
6. CALCULATE AND DISPLAY CRITICAL AND “NEAR CRITICAL” ACTIVITIES
7. SELECT THE NUMBER OF DAYS OF TOTAL SLACK DETERMINING WHICH ACTIVTIES ARE CONSIDERED “NEAR CRITICAL”

M-SNAP MODE

1 2 3

1. PREVENT CALENDAR SPAN ACTIVITIES FROM START OR FINISH ON NON-WORKING DAYS
2. FORCR PROJECT ACTIVITY START OR FINISH TO SNAP TO TIME UNIT
3. ADD FIVE (5) ROWS TO BOTTOM OF CHART

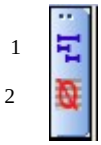
N-BAND VIEWS



1 2 3 4 5

1. EXPAND ALL BANDS
2. COLLAPSE ALL BANDS
3. SHOWS THE ACTIVE BAND
4. DISPLAYS DROP DOWN LIST OF BANDS AND SUBBANDS
5. “GO TO” SELECTED BAND

O-SUMMARY DISPLAY



1
2

1. TOGGLE TO DISPLAY ACTIVITIES
2. HIDE EMPTY ROWS

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