Can I change an activity from an 8-hour workday to a 10-hour workday in my schedule?

During a Primavera P6 training class this month, a student asked me: "If a client wants to see the difference in the construction schedule between an 8-hour work week and a ten-hour work week how can we show that if our durations are in days?" We had a long discussion on how schedules are used and created by all the stakeholders and how a project manager or superintendent should set up the schedule to be most useful as the project progresses. As a background note about Primavera P6, most planner and schedulers will set their default durations to days but the software calculates all durations in hours and minutes.

During the development of a project schedule the subcontractors will typically plan their scopes of work in days and/or weeks as they work through a building. As they, subcontractors, submit their schedule either in Microsoft Project or Primavera P6 the General Contractor (GC) will incorporate or create a schedule based on those durations and relationships. Typically, we see subcontractors submit schedules with activity durations identified as days and their calendars are typically a five-day with eight hours per day for working. Hopefully the durations for each activity are less than five-day increments if we plan to update our schedule on a weekly basis. The GC will take that list of activities and merge them into the master schedule along with the remaining subcontractors' schedules to create a new baseline schedule.
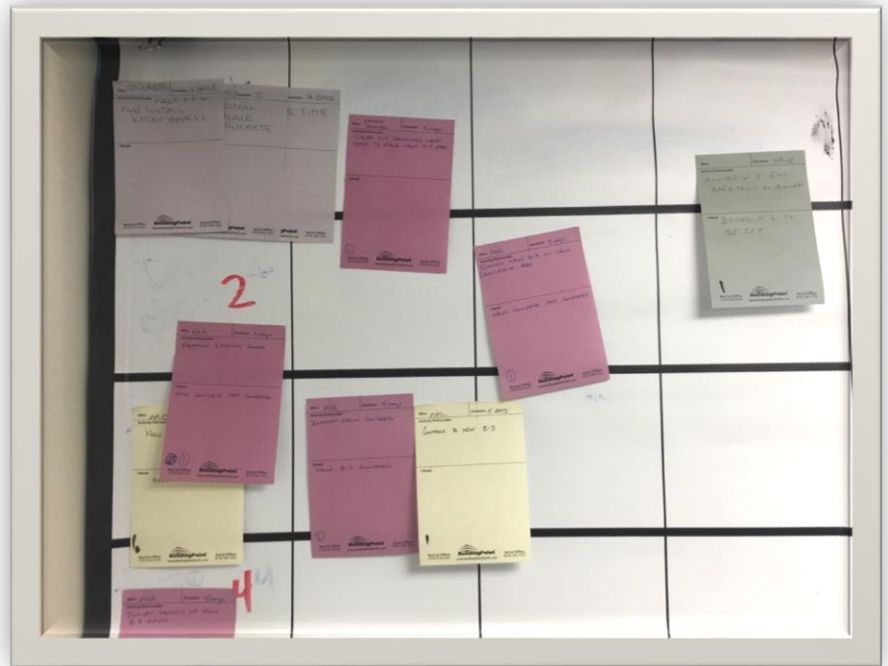
Typically, in vertical construction the GCs and owners chose to work in and display days for their durations. As part of the planning process a decision should have been made by the stakeholders to determine the rate of updating the schedule and if the durations of activities would be in hours, days or months. Subcontractors and GCs will typically build a schedule thinking how many days will an activity need to finish and Primavera P6 will calculate the dates of an activity based the relationships and durations. When a schedule is built using a five-day workweek and an eight-hour work day the calendar activities' are typically assigned durations based on days and not hours. Therefore, the activities durations are thought through using a typical eight-hour workday.

Back to the original questions posed in the beginning: if we built a schedule with the assumption that a work day is eight hours long and our schedule's unit of time is displayed in days, can we just change the calendar from an eight-hour work day to a ten-hour workday and the schedule still be accurate? The hard answer no. It

is easy to change a calendar's working periods from eight hours to ten hours, but that is not what is happening in the field.

As previously discussed the majority of vertical construction projects are planned in eight-hour work days. As delays are encountered, the owner and GC often discuss a recovery schedule and will include an extended work week (Saturdays) and/or extended hours.
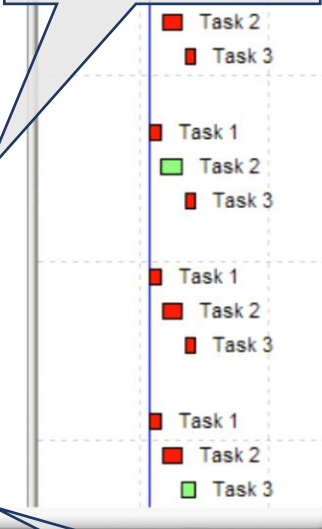
Using a default, five-day calendar, a five-day activity represents forty hours of work. If this calendar were changed to represent ten-hour work days, the duration would be reduced to four days. That easy change sounds nice and convenient. However, there are nuances that must be understood and communicated to the team prior to making such decisions.

During the planning process, the stakeholders will need to know if you are planning work weeks based on four tens, five tens, six eights, etc. For example, what can be accomplished in five eights (eight-hour work days) may be less than what can be accomplished in four tens (or vice versa).

The other complexity introduced when converting work hours on an existing calendar based on day durations is what happens to partial days (hours). For example, a three-day activity (24 hours) on an eight-hour calendar begins Monday morning and finishes Wednesday afternoon (See Example 1 on Figure A). If the calendar of Task 2 is switched to a ten-hour calendar, Task 2 will start Wednesday afternoon and finishes on the following Monday afternoon spanning a total of four days. The successor Task 3 in a finish-to-start relationship would then start at 12:01 on Tuesday. Viewers of the schedule will be confused as to how a finish-to-start relationship could result in a predecessor completing on the same day that the successor should begin. Without displaying hours in the duration column, it would be very confusing for the stakes holders who read the schedule on paper or .PDF and future planning sessions may be hampered by a lack of understanding.

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Calendar
Hours vs Days		9	9	04-03-17	04-13-17	
EXAMPLE 1		9	9	04-03-17	04-13-17	5DX8H DAYS
D8-10	Task 1	3	3	04-03-17	04-05-17	5DX8H DAYS
D8-20	Task 2	3	3	04-06-17	04-10-17	5DX8H DAYS
D8-30	Task 3	3	3	04-11-17	04-13-17	5DX8H DAYS
EXAMPLE 1A		9	9	04-03-17	04-13-17	
H8-10	Task 1	3	3	04-03-17	04-05-17	5DX8H DAYS
H8-20	Task 2	3	3	04-05-17	04-10-17	5DX10H HOUR DAYS
H8-30	Task 3	3	3	04-11-17	04-13-17	5DX8H DAYS
EXAMPLE 2		9	9	04-03-17	04-13-17	5DX10H HOUR DAYS
D10-10	Task 1	3	3	04-03-17	04-05-17	5DX10H HOUR DAYS
D10-20	Task 2	3	3	04-06-17	04-10-17	5DX10H HOUR DAYS
D10-30	Task 3	3	3	04-11-17	04-13-17	5DX10H HOUR DAYS
EXAMPLE 2A		9	9	04-03-17	04-13-17	
H10-10	Task 1	3	3	04-03-17	04-05-17	5DX10H HOUR DAYS
H10-20	Task 2	3	3	04-06-17	04-10-17	5DX8H DAYS
H10-30	Task 3	3	3	04-10-17	04-13-17	5DX10H HOUR DAYS

Original Duration indicates 3 working days but total duration is now 4 working days

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Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Calendar		Mar	Apr
Hours vs Days		9	9	04-03-17 08:00 AM	04-13-17 07:00 PM				
EXAMPLE 1		9	9	04-03-17 08:00 AM	04-13-17 05:00 PM	5DX8H DAYS			
D8-10	Task 1	3	3	04-03-17 08:00 AM	04-05-17 05:00 PM	5DX8H DAYS			Task 1
D8-20	Task 2	3	3	04-06-17 08:00 AM	04-10-17 05:00 PM	5DX8H DAYS			Task 2
D8-30	Task 3	3	3	04-11-17 08:00 AM	04-13-17 05:00 PM	5DX8H DAYS			Task 3
EXAMPLE 1A		9	9	04-03-17 08:00 AM	04-13-17 05:00 PM				
H8-10	Task 1	3	3	04-03-17 08:00 AM	04-05-17 05:00 PM	5DX8H DAYS			Task 1
H8-20	Task 2	3	3	04-05-17 05:00 PM	04-10-17 05:00 PM	5DX10H HOUR DAYS			Task 2
H8-30	Task 3	3	3	04-11-17 08:00 AM	04-13-17 05:00 PM	5DX8H DAYS			Task 3
EXAMPLE 2		9	9	04-03-17 08:00 AM	04-13-17 07:00 PM	5DX10H HOUR DAYS			
D10-10	Task 1	3	3	04-03-17 08:00 AM	04-05-17 07:00 PM	5DX10H HOUR DAYS			Task 1
D10-20	Task 2	3	3	04-06-17 08:00 AM	04-10-17 07:00 PM	5DX10H HOUR DAYS			Task 2
D10-30	Task 3	3	3	04-11-17 08:00 AM	04-13-17 07:00 PM	5DX10H HOUR DAYS			Task 3
EXAMPLE 2A		9	9	04-03-17 08:00 AM	04-13-17 05:00 PM				
H10-10	Task 1	3	3	04-03-17 08:00 AM	04-05-17 07:00 PM	5DX10H HOUR DAYS			Task 1
H10-20	Task 2	3	3	04-06-17 08:00 AM	04-10-17 05:00 PM	5DX8H DAYS			Task 2
H10-30	Task 3	3	3	04-10-17 05:00 PM	04-13-17 05:00 PM	5DX10H HOUR DAYS			Task 3

In order to find out why an activity that is scheduled for a duration of three days is actually taking four days is by displaying the time with my dates under **User Preferences.** We can see by showing the time along with the dates that H8-20 starts at 5:00 p.m. on April 5, 2017. Therefore, H8-20 will have two hours on April 5, 2017 and will carryover through Friday, April 6 and end at 5:00 p.m. on Monday, April 10, 2017.

Yet another element of complexity is introduced with capturing percent complete instead of remaining duration. If you update the percent complete with a value that does not result in a whole number, the remaining duration will result in remaining hours instead of days. This in turn will result in the same situation described in the previous paragraph. Example: In order for a three-day activity to have a full day remaining, it

Activity ID	Activity Name	Original Duration	Remaining Duration	Duration % Complete	Start	Finish	Calendar		Mar	Apr
Hours vs Days		90h	60h	33.33%	04-03-17 08:00 AM A	04-13-17 07:00 PM				
EXAMPLE 1		90h	60h	33.33%	04-03-17 08:00 AM A	04-13-17 07:00 PM	Workweek w/ Basic Holidays			
D8-10	Task 1	30h	0h	100%	04-03-17 08:00 AM A	04-05-17 07:00 PM A	5DX10H HOUR DAYS			Task 1
D8-20	Task 2	30h	30h	0%	04-06-17 08:00 AM A	04-10-17 07:00 PM	5DX10H HOUR DAYS			Task 2
D8-30	Task 3	30h	30h	0%	04-11-17 08:00 AM	04-13-17 07:00 PM	5DX10H HOUR DAYS			Task 3
EXAMPLE 1A		75h	45h	40%	04-03-17 08:00 AM A	04-12-17 02:00 PM	Workweek w/ Basic Holidays			
H8-10	Task 1	30h	0h	100%	04-03-17 08:00 AM A	04-05-17 07:00 PM A	5DX10H HOUR DAYS			Task 1
H8-20	Task 2	30h	15h	50%	04-06-17 08:00 AM A	04-07-17 02:00 PM	5DX10H HOUR DAYS			Task 2
H8-30	Task 3	30h	30h	0%	04-07-17 02:00 PM	04-12-17 02:00 PM	5DX10H HOUR DAYS			Task 3
EXAMPLE 1B		80h	50h	37.45%	04-03-17 08:00 AM A	04-13-17 08:06 AM	Workweek w/ Basic Holidays			
H8-40	Task 1	30h	0h	100%	04-03-17 08:00 AM A	04-05-17 07:00 PM A	5DX10H HOUR DAYS			Task 1
H8-50	Task 2	30h	20h	33%	04-06-17 08:00 AM A	04-10-17 08:06 AM	5DX10H HOUR DAYS			Task 2
H8-60	Task 3	30h	30h	0%	04-10-17 08:06 AM	04-13-17 08:06 AM	5DX10H HOUR DAYS			Task 3

can only be updated as 33% or 66% complete. If the activity is updated to 50% complete, the remaining duration is twelve hours or 1.5 days.

A crucial and critical conversation must occur before these dramatic changes are made to a schedule, to change fundamentally how the schedule was constructed from day-duration thought process to scheduling in hours. The buy-in from all subcontractors and stakeholders will be required before these changes are made to a schedule. After the buy-in process from the stakeholders a new schedule and baseline will be required to adequately track changes over time.

Tip: The best and most accurate way is to assign activities in a schedule as eight-hour work day or a ten-hour work day is by using specific calendars. To change a calendar for an activity the project must have the correct calendars set up under **Enterprise** in P6 menu toolbar. After clicking on Enterprise, a drop-down menu will follow and scroll down to **Calendars**.

After creating the project calendars for the schedule the scheduler must assign the correct working day duration calendar to the activities that will be on an eight-hour work day vs. the ten-hour work day. As the activities are assigned the correct calendar the scheduler must be calculated (scheduled [F9]) in order to see the new activities' start and finish dates.
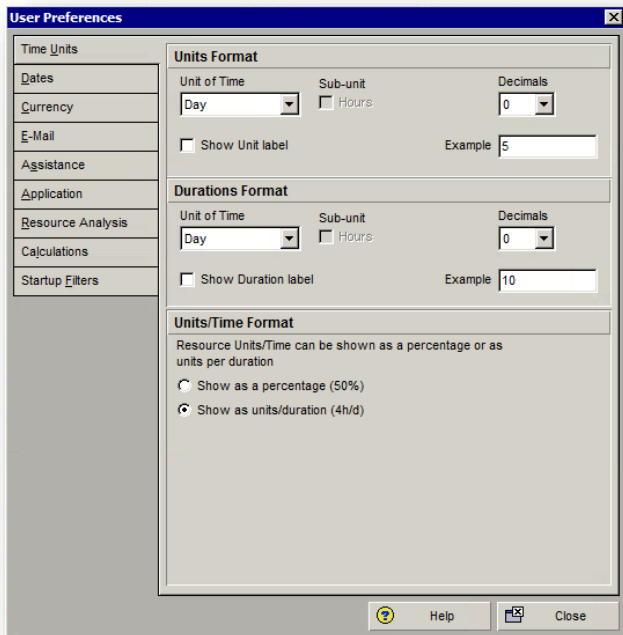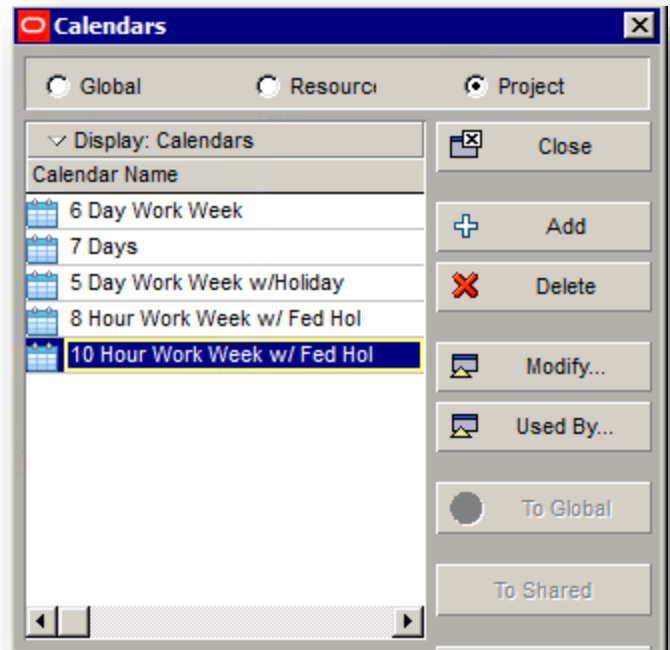
In order to see how many hours an activity will take in the duration column(s) make sure the **Unit of Time** defaults is changed to **Hours** in the **Duration Format** section of **User Preferences**.

To quickly change activities assigned calendars show the column **Calendar** in your activity view and you will be able to change the assigned calendar to each activity quickly. Assign the first activity the correct calendar and by highlighting the activities that will use the same calendar use the **Fill Down** option. Once the activities are chosen right click on one of the activities highlighted and choose **Fill Down** from the drop-down menu. This will change the calendars of the highlighted activities.

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