

The critical path: Just how critical is it?



Construction Law

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You've probably heard the term "critical path" many times. But what does it really mean and how can it help or hurt you when it comes to delay claims on a project?

The standard

Nearly all courts recognize what is known as the Critical Path Method ("CPM") as the most readily accepted method of measuring project delays.

CPM is the benchmark that is universally accepted in construction delay claims litigation. It is extremely important for anyone involved in construction to understand how CPM is used for proving delay claims.

If you don't know how a delay is measured, you may find it difficult proving you were really damaged by a delay. Or worse yet, you may find it difficult defending yourself against an unfair delay claim.

A quick history

Commonly known by its initials "CPM," it is a method of estimating how long a project will take to complete. A critical path is determined by taking the key tasks in sequence and adding up the longest time necessary to complete all the tasks to determine the project's total length.

The procedures are the same for small projects or large projects, but larger projects will benefit from the use of project management software, since the software can handle hundreds of tasks and variables with ease.

Most project management software uses a variant of CPM called PERT, which means Program Evaluation Review Technique.

PERT was developed in 1958, a year after CPM was first used, but the name CPM has become synonymous with both methods.

What distinguishes PERT from pure CPM is its use of statistics to predict completion times. Using three time estimates, optimistic, pessimistic and most likely, a more realistic completion time estimate is created.

The basics

Here is a quick primer on what it takes to create a CPM schedule. CPM is focused both on time and sequencing. First, a sequence of work is determined.

Then, assign each sequence a time interval required to complete it and

theoretically you have a critical path. You need to know the following information in order to create any sort of CPM schedule:

1. Specific activities: These are unique tasks that have a distinct length of time for completion. In construction, these are usually straightforward and fairly easy to identify by trade.

2. Milestones: These are events that identify the beginning or end of a task.

3. Sequence: Getting from bare earth to a finished building requires the proper sequence of construction tasks. Some sequences are obvious, and others are not. For example, it is clear that earthwork must come before roofing. But, it may not be so obvious whether finishing the plumbing would come before or after roofing, or whether it really matters.

4. Dependent tasks: Careful analysis is often needed to determine the cause and effect relationships between tasks. Tasks that depend on the completion of another task must be identified.

5. Time estimate: The time required for each activity is needed. An experienced estimator can shoot from the hip and use past experience as his guide, but often input from each trade is needed to get realistic estimates of time for their work. It is at this point that PERT-type statistics would come into play (whether calculated manually, or generated by project management software) in order to arrive at the best estimate for a task time.

The path

With the above information available, a project diagram can be created. Laid out graphically, all the milestones (events) are connected together by a network of activities (tasks) to visualize the entire project from beginning to end.

The critical path would be the longest duration of tasks that must be done in sequence in order to get from the beginning to the end. There may be tasks that can be performed in parallel with other tasks.

There may be tasks that can be performed at any time after achieving a certain milestone but have no specific start date, only a required completion date.

The difference between the time allocated to perform the task and duration of the task is commonly known as float or slack time. All tasks on the critical path have no slack time.

The real world

Once a project is planned out and a critical path defined, there is no guarantee that the course of the project will actually follow the plan. A few examples of why this can happen are:

- Estimates: One of the simple reasons for a schedule deviation is that everything is based on estimates. The schedule is only as good as the quality of the estimates, and for the most part, the people who created the estimates are not the people who actually perform the work.

- Changed conditions: If actual conditions are different from those expected at the time estimates were determined, those estimates may not be realistic.

- Change orders: Almost without exception, projects will have change orders. What needs to be considered very carefully is whether or not the change orders affect just a specific task schedule or the critical path.

Making CPM work for you

Keep in mind though, that just because there may be change orders, changed conditions, sloppy estimating or anything else that causes a delay, if the delays do not affect any of the critical path tasks, the project as a whole, is not delayed.

Also, applying additional resources to activities that are not on the critical path may allow them to be completed early, but it won't benefit the overall

project end date.

Remember, improving the estimated completion date, or getting a project back on track to finish by the promised date, depends on your ability to identify and shorten the tasks or activities that are on the critical path.

If you have a construction question, submit it to: info@construction-laws.com.

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Subcontracts

Work of Interest to Subcontractors of Various Trades, Includes Projects that require Sub bids to Selected General Contractors or Defined Owners.

Please Check Building, Engineering and Specialties for Overlapping Bids

(G) Indicates General Contractor Requesting Sub bids

(S) Indicates Subcontractor

(NA) Indicates Not Available

412 South - 4 Unit Condominium Oceanside

Submit bids to Royster Group Constructions. Royster Group Const., Dale Tompkins, Sr. Proj. Mgr., (619)238-4908 Fax: (619)238-4965 Email: dtompkins@theroystergroup.com. Estimate: N/A.

**Bid Deadline
March 26, 5 pm**

Transcript Plan No. 12

Work Involves: 412 South - 4 Unit Condominium: Upscale 4 unit condominium on the ocean front, w/underground parking & private elevator to each unit. Work includes demolition of existing rental cottages, excavation, shoring, dewatering, fencing, landscaping, concrete foundations & walls, structural steel, masonry walls, gyp-crete on 2 levels, metal railings, gates, & sun-shades, wood framing, finish carpentry, waterproofing below grade & decks, insulation, membrane roofing, standing-seam zinc siding, skylights, zinc fascia, gutters, & downspouts, wood & glass doors, fold-away patio doors, clad wood windows, bathroom mirrors & shower doors, glass & steel railings, plaster & EIFS exterior, interior drywall, ceramic & stone tile, glass block, carpet, painting, cabinets, stone counter tops & sills, 4 elevators, fire sprinklers, plumbing, HVAC, electrical. Plans/Specs available from Royster Group Const., (619) 238-4908. Also available for review at San Diego Daily Transcript Plan Room, 2131 Third Ave., San Diego, CA 92101, (619)232-4381.

Planholders INCLUDE:

S #MTGL, Inc. 2992 E. La Palma Ave., Ste. A, Anaheim(714) 632-2999/FAX -2974

Barona New Government Admin. Bldg. Barona Casino

Submit bids to Bids To CDM Const.. Questions regarding bids, Barbi Manry (619)593-7002 Fax: (619)593-7003 Email: cdmconstruction@cdm.sdcoxmail.com. Please do not contact Barona Casino. Estimate: N/A.

**Bid Deadline
March 29, 12 pm**

Plans Available at <http://plans.sddt.com>

Work Involves: Barona New Government Admin. Building: Work Involves: Construction of New 2-Story 38,000 sq ft Building. (no site work) structural steel, metal roof, masonry-structural concrete, all finishes, etc.

. Plans available through CDM Construction, Inc. please contact Tiffany @ (619)593-7002