



SRM Construction Master Schedule (Critical Path Method - CPM)

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 - a. Brief page-turn of the plans
 - i. Mainly Architectural & Civil “Site Plans” to get familiar with the general design concepts
 - ii. Architectural elevations
 - iii. Structural to know how many PT Decks, if it is steel or wood, etc.
 - b. Initial site visit
 - i. Fly a drone
 - ii. Walk around the site and vicinity to get a general lay of the land
 - A. Best ways to get to/from the site from the freeway
 - B. Obstacles
 - 1) Overhead cables
 - 2) Bus Stops
 - 3) Large Trees (on or near site)
 - 4) Height of neighboring buildings (tower crane height)
 - c. Deeper level or plan review
 - i. This is to get into the broad details
 - A. Unit count
 - B. How many stairs
 - C. How many elevators (and elevator shafts)
 - 1) Traction? Hydraulic w/ Jack Shaft? Hydraulic w/ Telescoping Jack?
 - D. What type of exterior façade
 - E. Types of Common Area finishes
 - 1) Balconies?
 - 2) Canopies?
 - d. Create illustrations that will correspond with the CPM’s WBS
 - i. Pull plan sheets into separate PDFs
 - A. Pick your favorite “site plan” for Site Logistics illustrations
 - 1) Haul routes
 - 2) Hoist zone(s)
 - 3) Tower crane, material hoist & trash chute locations
 - B. Architectural & Structural floorplans
 - 1) Decide on flow of construction
 - i. Based on topography, building design etc., decide where construction will start and the direction it will take.
 1. Ie. Starts at the NW corner, flows counterclockwise
 2. Use this to determine the slab & PT deck sequencing and nomenclature
 - a. Sometimes the design dictates which PT Deck needs to be poured first which then dictates the flow of construction
 3. Framing should flow similarly to the concrete to help expedite building top-out



- e. CPM Building
 - i. Owner Contract (Schedule)
 - A. Review the section in the Owner's Contract relating to Schedule
 - 1) What is expected to be shown, communicated, etc.?
 - i. Who owns the Float
 - ii. How to track or illustrate Weather Delays
 - iii. Most contracts use Calendar Days to track overall duration.
 - 1. Be aware of what amount this is (typically based off of a Preliminary CPM).
 - 2. Calendar Days can adjust a little here and there as you revise the CPM. This is due to the CPM now reaching out over another weekend/holiday.
 - ii. Work Breakdown Structure (WBS)
 - A. Break the CPM into key elements of the project such as "Concrete", "Framing", "Envelope", "Interiors" and "Site", etc.
 - B. Break each of those elements down into SOG#s & PT#s, areas/zones, floors, etc.
 - C. Include "Demo" if that needs to be shown.
 - D. Provide a "Milestone Summary" at the top of the CPM to highlight when the most critical elements are starting/finishing. Not limited to these.
 - 1) Notice to Proceed (NTP)
 - 2) Concrete Complete
 - 3) Framing Complete
 - 4) Roofing Complete
 - 5) Interiors Complete
 - 6) Electrical Energized
 - 7) Substantial Completion/Temporary Certificate of Occupancy (TCO)
 - iii. Activities & Logic
 - A. Fill in activities under each header of the WBS
 - B. Assign durations for each activity
 - C. Link activities together (logic)
 - 1) Finish Start (FS)
 - 2) Finish Finish (FF)
 - 3) Start Finish (SF)
 - 4) Start Start (SS)
 - D. Adjust the "Lag" to push/pull activities start dates
 - 1) Ie. 4 days of "Excavate Footings" with FS logic to "Form Footings" could have -2 days of lag. This would show "Form Footings" to start 2 days after the excavation started to allow the trades to chase each other.
 - iv. General Rules of CPMs
 - A. Relationships/Logic
 - 1) Only ONE activity is allowed to not have a Predecessor. This is the first activity in the CPM (typically the NTP)



- 2) Only ONE activity is allowed to not have a Successor. This is the last activity in the CPM (typically the TCO or CofO)
- 3) This means that ALL OTHER activities MUST be connected with Predecessors & Successors .
 - i. Not following this rule will result in an inaccurate Critical Path as this is calculated by the “longest path” through the CPM. This “longest path” can drastically change if an unlinked activity is found later and then linked.
 - ii. Run filters or reports to find unlinked activities before publishing.

B. Float

- 1) Float is defined as the number of days an activity can be delayed prior to that activity turning critical (pushing the end date).
 - i. Activities with Zero Float are currently on the Critical Path.
 - ii. Best practice is to have all activities (with a few exceptions) to have no more than 10 days of Float

C. Constraints

- 1) With very few exceptions, do NOT set “Constraints” on activities.
 - i. Constraints are how finish or start dates can be locked in. Use this sparingly and understand its impact to the Critical Path
 1. Do NOT set the TCO with a “must finish by” constraint. Doing so, will lock it in time and start to reveal multiple critical paths and not show the accurate completion date your current conditions are heading towards.
 2. You can use this constraint to help highlight all of the multiple “critical” areas that need to be accelerated, but this can also be found by filtering to show the Critical Path and all activities with Float of 5 days or less (or some other variation of this).

D. Calendars

- 1) Make sure to adjust your calendars BEFORE starting to build your CPM
 - i. Make sure all Holidays, Weekends, etc. are shown as Nonwork days.
 1. Missing this step will provide a very inaccurate CPM duration.
 - ii. P6 works in “shifts”
 1. Make sure each workday is set for 8 hours (or 10 if that is spelled out in the owner contract)

