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BRIEF

Updating the submittal activities is always a major task of the schedule update. As the construction activities can be broken down closely to the way the project will be built, this is not true for the submittal activities. The followings are some problems I have experienced:

1. How to break down activities for submittals? Should I create each activity for product data, shop drawing, etc? A set of activities for each specification section? Once all the baseline activities are developed, can they be practically updated accordingly? Often time, when a submittal package was submitted, they often come with a package such as shop drawing, product data, etc. However, they are seldom complete at the first time. Also, a partial submittal is often submitted first so not to delay the schedule. In such case, how can I depict that situation? When come to the submittal package for electrical or mechanical trades, they are often submitted as several packages, which will involve more than a specification section for each package. “Mapping” the actual data according to the baseline is always a frustrating task.
2. Any submittal process can be often described as three phases – Contractor Prepare and Submit to A/E (owner), A/E (owner) Review and Return, and Fabricate/Deliver. In turn, each submittal item will ends up with 3 activities in the schedule at least.
3. How to depict the situation of a re-submittal. Should I keep adding new activities for each re-submittal randomly? Each re-submittal will require two activities at least. More activities are required to “map” the baseline activities if the re-submittal involves more than one item or specification section.
4. How to I relate the information in the schedule to the actual submittal log? Can contractor benefit from updating the schedule, or just for the sake of the requirement? Can owner gain any knowledge proactively by reading a schedule update from contractor, or just an after-the-fact cloud to the schedule?

Over the years, I have developed the following methods to create a baseline schedule and update them accordingly. These methods have proven to be very effective and efficient for any projects, especially the large ones. They formalize a way to communicate between owners and contractors. This bulletin will show you all the methods in detail.

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SOLUTION

1. Baseline Schedule

First, create three activities for each specification section as mentioned before, Prepare/Submit, Review/Return, and Fabricate/Deliver. They can be defined as “Original Baseline Submittal Activities”. Personally, I think that two activities are good enough to do the job. The first two activities can be combined as one and described as “Submit and Receive”. Often time, the actual start dates recorded for “Prepare/Submit” are often fictitious as subcontractors prepare most packages. Some people may refer to the actual start date as the date the submittal was received. In such case, general contractor often turn around and submit to the owner (A/E) promptly, which makes these activities as one-day activities, and serves little purpose. If owners require three activities for each submittal, I often use the “Prepare/Submit” as the lead-time for submitting submittals, and assign the durations of two weeks in general.

Do not create more activities based on the detail of each specification section such as product data, shop drawings, and samples, etc. as it will create mapping problems for the future schedule update. If the owners really want such information, a separate list can be developed from Excel. Do not overburden the schedule with such information.

Here is an example.

Note the followings:

1. Not all submittals need to have a “Fabricate/Deliver” activity, such as CIP concrete, asphalt, etc. Unless the delivery dates can be clearly defined and obtained, or they are continuing in natural, don’t bother to create one.
2. Make full use of Activity ID to embed the specification section so that you can easily identify the activities by just looking at Activity ID. The same concept will be used through out all examples.

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Activity ID	Activity Description	Orig Dur	Early Start	Early Finish	Total Float	2004											
						APR	MAY	JUN	JUL	AUG	S						
07411 - Corrugated Fiber Cement Panel Sys																	
S07411S01	Prep/Subm Corrugated Fiber Cement Panel Sys	10	06/01/04	06/14/04	16												
S07411R01	Revw/Retn Corrugated Fiber Cement Panel Sys	10	06/15/04	06/28/04	16												
S07411F01	Fab/Del Corrugated Fiber Cement Panel Sys	40	06/29/04	08/24/04	16												
07420 - Solid Comp Ext Wall Panel Sys																	
S07420S01	Prep/Subm Solid Comp Ext Wall Panel Sys	10	06/01/04	06/14/04	27												
S07420R01	Revw/Retn Solid Comp Ext Wall Panel Sys	10	06/15/04	06/28/04	27												
S07420F01	Fab/Del Solid Comp Ext Wall Panel Sys	40	06/29/04	08/24/04	27												
07460 - Ext Fiber Cement Panel Sys																	
S07460S01	Prep/Subm Ext Fiber Cement Panel Sys	10	04/01/04	04/14/04	29												
S07460R01	Revw/Retn Ext Fiber Cement Panel Sys	10	04/15/04	04/28/04	29												
S07460F01	Fab/Del Ext Fiber Cement Panel Sys	40	04/29/04	06/24/04	29												
07552 - Mod Bitum Memb Roofing Cold Adh Appld																	
S07552S01	Prep/Subm Mod Bituminous Mem Roofing Cold Adhesi	10	06/01/04	06/14/04	12												
S07552R01	Revw/Retn Mod Bituminous Mem Roofing Cold Adhesi	10	06/15/04	06/28/04	12												
07600 - Flashing and Sheet Metal																	
S07600S01	Prep/Subm Facing, and Sheet Metal	10	05/03/04	05/14/04	27												
S07600R01	Revw/Retn Facing, and Sheet Metal	10	05/17/04	05/28/04	27												
S07600F01	Fab/Del Facing, and Sheet Metal	30	06/01/04	07/13/04	27												
07700 - Roof Specialties and Accessories																	
S07700S01	Prep/Subm Roof Spec and Access	10	05/03/04	05/14/04	27												
S07700R01	Revw/Retn Roof Spec and Access	10	05/17/04	05/28/04	27												
S07700F01	Fab/Del Roof Spec and Access	30	06/01/04	07/13/04	27												

2. Schedule Update

In summary, I use all the original baseline submittal activities to drive the successor construction activities. The actual submittal activities are mainly used to support the update of those original submittal activities. Occasionally, I can also use the actual submittal activities to drive the successor construction activities by adding additional ties. However, in normal case, I shouldn't need to add additional logical ties for those actual submittal activities.

The following methods are used to update the schedule:

- Each actual submittal is added into the schedule, which mirrors the exact submittal. Always embed the actual submittal number in the Activity ID so that there will be no confusion. Then, the original submittal activities are updated per the status of the actual submittals. All submittal detail data such as review results can listed in the Log window of the Activity or in the Custom Data Items.
- Each added submittal activity is titled as "Sub/Rec-XXX... (Submit and Received)". The Actual Start date of the activity is used to track the date the submittal is submitted to the A/E (Owner). The Actual Finish date of the activity is used to track the date the submittal received from the A/E (Owner).

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- c. It is very likely that some submittals will be turned in together with other submittals in different specification sections such as Electrical and Mechanical. In such case, each original baseline submittal activity is updated with the same actual start and finish dates. However, the actual submittal activity is only added once under the main specification section. A note such as “See 15500-01R2” can be provided in the Log window of the remaining activities.
- d. No logic ties are required for those actual submittal activities, which are mainly used as reference data in the schedule. Some owners may have problems with this concept. All I can say is, First, all necessary logic ties should have been provided for all the submittal activities in the baseline schedule. Secondly, P3 itself is a database management software designed for the scheduling function. Why couldn't we use it like Access to the best it can do. Thirdly, referencing data becomes very easy when we can combine all data into one source. Logic ties can be used if the schedulers prefer. Occasionally, we may need to provide logic ties to play what-if scenario (See Case 5 below.)

The following examples can clarify more about the methodologies.

Case 1

For example, contractor submitted the first package to A/E on 1/16/04. As of 2/1/04 update, the schedule will be updated as shown below.

1. A new activity representing the actual submittal is added and updated with the actual start date of 1/16/04.
2. The “Prep/Submit” activity is closed by providing the actual start and finish dates.
3. The “Revw/Retn” activity is statused with the same actual start date and remaining duration as the actual submittal activity.

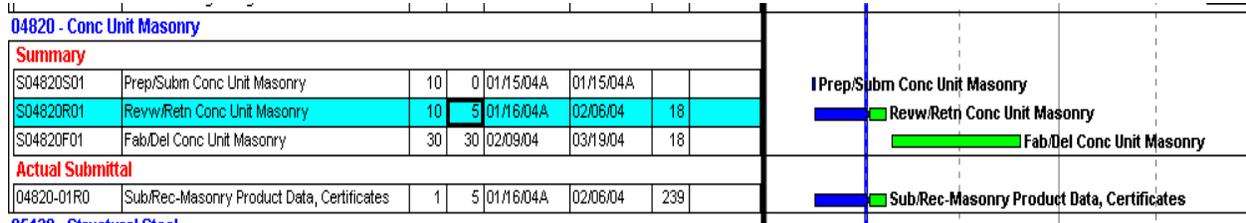
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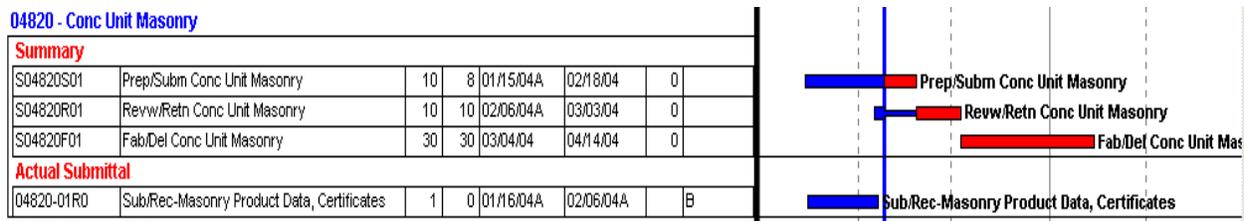
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Case 2

As of 2/9/04, A/E returned the submittal with the status “B-Approved as noted” on 2/6/04, and requesting samples. Now, the ball is in contractor’s court. The schedule is then updated as shown below.

1. The actual submittal activity is updated with the actual finish date of 2/6/04.
2. Since a new cycle begins, the “Prep/Submit” activity “is re-open.” The original actual finish date is removed and the remaining duration of 8 days is used to depict the time the second submittal will be turned in to A/E. At this point of time, contractor still can’t proceed with the procurement yet.
3. To depict the fact that A/E has returned the first package, the “Revw/Retn” activity is updated with the actual start date of 2/6/04.
4. Assuming the first package is returned with “C-Rejected and Resubmit”, the schedule will be updated with the same method. Now, It’s a lot easier to depict any situations without any burden. Any people can read the schedule and make sense out of it.



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Case 3

As of 2/26/04, contractor rushed to submit the second package on 2/12/04. Now, the ball is in A/E's court again. The schedule is updated as shown below.

1. Again, a new activity representing the actual submittal of the package 2 is added and updated with the actual start date of 2/12/04.
2. The "Prep/Submit" activity is closed again.
3. The "Revw/Retn" activity is statused with the same actual start date and remaining duration as the actual submittal activity, which is a forecast returned date of the submittal.

04820 - Conc Unit Masonry

Summary						
S04820S01	Prep/Subm Conc Unit Masonry	10	0	01/15/04A	02/12/04A	
S04820R01	Revw/Retn Conc Unit Masonry	10	8	02/06/04A	02/25/04	5
S04820F01	Fab/Del Conc Unit Masonry	30	30	02/26/04	04/07/04	5
Actual Submittal						
04820-01R0	Sub/Rec-Masonry Product Data, Certificates	1	0	01/16/04A	02/06/04A	B
04820-02R0	Sub/Rec-Masonry Samples	1	8	02/12/04A	02/25/04	226

Case 4

As of 2/23/04, A/E has approved all submittals. Contractor can then start to order materials. The schedule is updated as shown below.

04820 - Conc Unit Masonry

Summary						
S04820S01	Prep/Subm Conc Unit Masonry	10	0	01/15/04A	02/12/04A	
S04820R01	Revw/Retn Conc Unit Masonry	10	0	02/06/04A	02/20/04A	
S04820F01	Fab/Del Conc Unit Masonry	30	30	02/23/04	04/02/04	8
Actual Submittal						
04820-01R0	Sub/Rec-Masonry Product Data, Certificates	1	0	01/16/04A	02/06/04A	B
04820-02R0	Sub/Rec-Masonry Samples	1	0	02/12/04A	02/17/04A	B
04820-03R0	Sub/Rec-Subs Resume	1	0	02/17/04A	02/20/04A	B

Case 5

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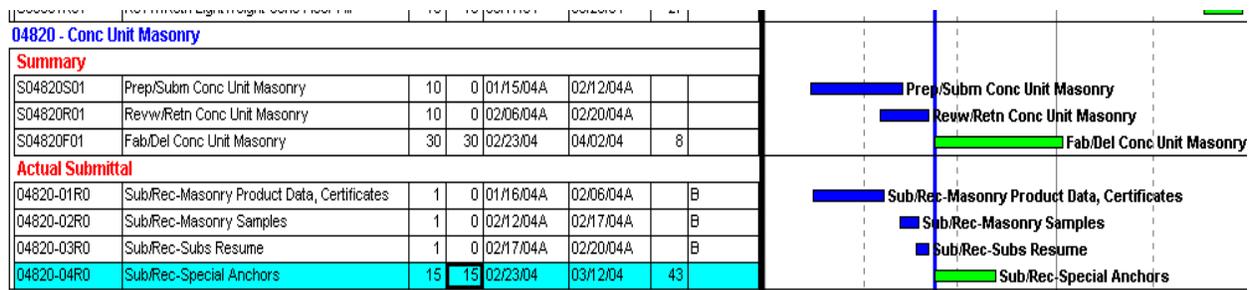
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The actual situation can be more complicated sometimes. For example, after contractor ordered the materials, A/E request additional information. Assuming this does not impact the procurement, however, this may impact the schedule at one area. To depict this situation, the scheduler can then create a new activity representing the future submittal and provide proper ties to the successor construction activities to play what-if scenario.



Benefits

1. This method emphasizes not only the Baseline schedule, but also the schedule update process.
2. Actual submittal log is combined with the schedule as one data sources. As-built data become a by-product of the update process.
3. A systematic approach, rather than random.
4. Efficient and effective - There is no need to devote unnecessary effort in the beginning.
5. Flexible – This method resolves the common “mapping” problems of the schedule update, and can depict any situations easily.
6. Improve the quality of the schedule update – By adding the actual submittals to the schedule, the accuracy of the schedule update for submittals can be ensured even though this requires some efforts.

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Suggested Specification

The following paragraphs can be inserted into the scheduling specification section to make these methodologies enforceable by the owner.

Baseline Schedule

Contractor shall provide a set of the submittal related activities for each specification section as follows: Prepare/Submit, Review and Return, Fabricate and Delivery, and assign proper durations and logic ties to the successor construction activities.

Activity ID and description shall provide adequate information to identify the scope.

Schedule Update

Contractor shall maintain an actual submittal log in the schedule by adding them as a set of new activities, which shall be updated along with the schedule monthly. Each added submittal activity is titled as “Sub/Rec-XXX... (Submit and Received)”. Activity ID shall provide adequate information to identify the actual submittal number and scope. The Actual Start date of the activity is updated with the date the submittal is submitted to the A/E (Owner). The Actual Finish date of the activity is updated with the date the submittal received from the A/E (Owner). Record the submittal status by using a Custom Data Item. Upon request, an actual submittal log shall be provided directly from the schedule.

The baseline original submittal activities shall be updated and mapped to the actual submittal ones accordingly.