Recommended Practice PS-24
Tracking the Procurement Process
(TCM Framework Reference 7.7)

Final March 31, 2015

Revision 2

AACE International Recommended Practice
PS-24
Tracking the Procurement Process

TCM Framework Chapter 7, Project Control Planning
7.7 Procurement Planning

March 31, 2015

Purpose

This Recommended Practice [RP] is intended to provide guidance for any project that requires the planning, submitting for approval, and final delivery of material and/or equipment, prior to installation, in order to complete that project. This RP provides the following recommendations:

- Defines the Stages within the Procurement Process
- Recommends a Priority System to be used during the Procurement Process
- Recommends a for successful submittal & review of material/equipment submittals
- Recommends a process for handling Submittal Rejections & Resubmittals
- Recommends a processes to track the Procurement Process within the project

Many CPM schedules containing major equipment deliveries show the critical or near-critical path as including the procurement and delivery of major equipment. For this reason, it is essential that this process be defined, monitored, and managed correctly to prevent this process from delaying the project completion.

TCM Framework

TCM Framework Correlation – This Recommended Practice incorporates key planning elements defined in the TCM Framework included in the following:

- Chapter 7 – Project Control Planning
  - 7.7 – Procurement Planning
- Chapter 8 – Project Control Plan Implementation

While this Recommended Practice is written with the Construction Industry in mind, it may be adapted and used with other industries requiring a similar approval process prior to final delivery of material and/or equipment.

The Stages within the Procurement Process:

Many projects that involve the creation of a product from a completed set of plans, specifications, and/or other contract documents must present material and equipment to the project owner or their representative for approval prior to installation of the material and/or equipment within the project. In most cases, the material and/or equipment cannot be ordered, purchased, or fabricated prior to the owner's representative granting approval that the material and/or equipment conforms to the contract documents.

The Procurement Process can be broken down to the following elements:

1. The Specification Process:
   a. Identify Need
   b. Research & Identification of Equipment and/or Material
   c. Specify Equipment and/or Material

i. Specify Manufacturer, Vendor, or Equivalent Information

2. The Submittal Process:
    a. Submittal Preparation & Submit for Approval
    b. Review & Approval of Submittals
    c. Re-Submittals if required
    d. Deferred Approval by the Permitting Agency
3. Ordering, Fabrication, and Obtaining Material & Equipment:
    a. Order & Confirm Approval
    b. Fabrication
    c. Factory Acceptance Testing (FAT)
4. Shipping & Delivery:
    a. Packaging
    b. Shipping (Air, Sea, Land)
    c. Storage for Future Installation
        i. Documentation of Stored Location
    d. Delivery to Project Site
5. Quality Assurance & Control:
    a. Quality Assurance & Quality Control may be required during the Fabrication, Delivery, and Installation phases, during and after the Procurement Process, to ensure that what was designed, submitted, and approved is what is being installed.
    b. Manufacturer's representative for installation oversight, testing, commissioning, and training.

The Submittal Process:

The Submittal Process is the process where the contracted party provides detailed information to the Owner or their representative (i.e. architect, engineer, construction manager, or designer) as to required material and/or equipment to be installed as part of a project. Such detailed information is presented in order to obtain approval that the information meets the requirements of the contract documents and such approval must be obtained prior to installation of the material and/or equipment, and in most cases before the material and/or equipment can be ordered, fabricated, and delivered.

The process ensures that the project is moving forward and it is the goal of tracking this process to ensure that there will be no delays in the project due to late arrival of material and/or equipment when the project is ready for their installation.

It is a common practice for AIA (American Institute of Architects) and other internationally approved specifications to use terminology that is inconsistent with AACE definitions in RP 10S-90. It is recommended that the use of requesting "Critical Submittals" first will be ambiguous and counterproductive. Instead it is recommended to provide a Priority System for the submittal process that will ensure that those submittals with the highest priority be given immediate attention regardless of the process of review status of lower priority submittals.

While the exact method of distinguishing priorities is not significant, it is important to establish and define the priorities at the beginning of the project and ensure that all members of the project team are notified of these priorities. The priorities may be defined numerically (1, 2, 3, etc.), alphabetically (a, b, c…x, y, z) a combination of both, or as for this purpose the priorities are defined as High, Medium, and Low.

- **High:** High Priority Submittals include procurement items with zero or little Total Float, making the delivery and installation a Critical or Near-Critical Activity. Other High Priority Submittals may be for procurement items needed within the early stages of the project's execution (e.g. first 90 days of the Construction Phase). Additional High Priority items may include procurement items with extremely long lead times for fabrication and delivery that may affect the Critical Path.
- **Medium:** Medium Priority Submittals include submittals for procurement items to be installed after the initial start of the project's execution, but not as late as the final (finishes) stage of the project. Procurement items that have a moderate to long lead time for fabrication and delivery, but are not considered to be Critical or Near-Critical activities, may be designated as Medium.
- **Low:** Low Priority Submittals include procurement items with their delivery activity having a high Total Float value and/or may not be required until the final stages of the project (e.g. insulation, control systems, signage & identification, or window blinds) and are not held up by long lead times for fabrication and delivery.

The assignment of procurement item's submittal priority should be identified early in the project's planning phase, and are not always replicated from project to project. The assigned priority to a submittal may change depending on the status of the submittal and how it may affect the project schedule. If a Low or Medium submittal is delayed for one reason or another, it may be necessary to increase its priority to a higher level. Priority assignments should be reviewed and adjusted as necessary depending on their impact to the Project Schedule.

Types of Submittals:

The type of submittal is defined by the Contract Documents. These may include several types of submittals for each Submittal Package, or just a few. Early definition and verification of the Submittal Types is imperative in order to streamline the process and avoid overlooking vital submittals that may delay the fabrication, delivery, and installation of a material and/or equipment in the project.

The Submittal Types can be divided into three categories:

- **Project Start:** Such submittals are required either before work begins or within the first days of the project. These submittals are generally included within the General Requirements of the Contract Documents, and may include, but not limited to:
  - Project Personnel & Qualifications
  - Project Plans & Schedule

- Safety Plan & Procedures
- Mobilization & Site Use Plans
- Environmental & Protection Plans
- Submittal Logs or Registers
- Quality Control Plan & Procedures

- **Prior to Installation:** Such submittals must be submitted and approved by the Owner's Representative prior to the installation of the material and/or equipment within the project itself. In many cases, the material and/or equipment cannot be ordered or begin fabrication until the submittals have been approved. These type of submittals may include, but are not limited to:
  - Product Data
  - Shop Drawings
  - Qualifications
  - Certificates
  - Samples
  - Product *Schedule* or List of Products
  - LEED Submittals
  - Coordination Drawings (BIM)
  - Mock-Ups
  - Piping & Instrumentation Drawings (P&IDs)
  - Incremental Design Drawings
  - 3-D Design Models
- **After Installation:** Such submittals must be provided to the Owner as part of the Project Close-Out procedures. These type of submittals may include, but are not limited to:
  - Quality Assurance Reports
  - Certificates
  - Maintenance Manuals
  - Training Manuals
  - Test Results
  - Warranties and Guaranties
  - As-Built Records

Submittal Preparation:

As with all projects, there is a beginning. Each project, during the semi-controlled chaos of executing contracts and subcontracts, establishing the members of the Project Team, mobilization, and start of the actual work of the project; there is the requirement of preparation and submitting the Submittal Packages to the Owner for approval. Failing to submit for and obtain approval of initial high priority submittals at the beginning of the project can result in avoidable project delays.

High Priority submittals require preparation and submittal at the earliest opportunities. In many cases, this may only require product data that is readily available from the Supplier and may be produced quickly after request. These types of submittals may include:

- Concrete Mix Designs (one submittal for each mix required)
- Plumbing or Electrical piping required for underground installation
- Mechanical Unit product data

Other High Priority submittals may require additional time for preparation and may require multiple meetings and additional information before these submittals may be ready for review. This may include:

- Structural Steel Shop Drawings
- Coordination Drawings with multiple subcontractors (BIM)
- Baseline Schedule
- Specialty Items requiring collaboration between material or equipment suppliers

There are times when submittals may require multiple sub-submittals as part as a whole Submittal Package to be complete instead of waiting for the entire package to be complete before being submitted for approval. Breaking up the Submittal Package to submit the shop drawings for steel anchor bolts and embeds may be more productive than waiting until every column and beam is detailed before submitting the entire package as a whole, and will allow for the fabrication when they are needed with the installation of foundations and walls. The Contractor and Design Team should coordinate the intent and desires of how and when submittals will be broken up, combined, submitted, and reviewed at the beginning of the process.

The number of copies of each submittal is usually defined in the Contract Documents, but there should be enough copies to ensure multiple copies are distributed throughout the Project Team, including the Design Team, Quality Control, General Contractor, and Subcontractors, as well as a record copy at the project site after the submittals have been approved. Some projects require review and approval by multiple agencies simultaneously or after the design team's review, while other project may require that all submittals be submitted electronically (using electronic data/drawings sent through computers via the internet or network) instead of making physical paper "hard copies". The Contractor should ensure there are adequate copies for all reviewers are provided at the appropriate time, in the approved format, to ensure that there are no delays in the approval process.

The process of preparing and submitting technical submittals should be completed quickly to allow the project team to work on completing the project. It is recommended that the preparation and submitting of all submittals be completed approximately within the first 25% of the project duration (e.g. 2-year project duration should have all submittals to the Owner for review within the first 6-months of the project). This will ensure that there will be no procurement issues late in the project, and the Project Team can concentrate on other management issues through the rest of the project.

Review & Approval of Submittals:

The review process is an essential part of the submittal process that ensures that the materials and/or equipment to be installed in the project conform to the Project Documents and to physical constraints. This process can move quickly or slowly depending on the requirements, resources, and cooperation between the members of the Project Team.

As the flow of submittals going to and from the Design Team increases, cooperation between all of the Project Teams needs to ensure they are working toward a common goal (Complete the Project) and work together in completing that goal. Communication of priorities and critical nature of submittals between all parties can contribute to a cooperative atmosphere that will assist the project team to allocate resources in a manner that best serves the overall success of the project. Adversarial contention should be avoided at all costs.

The first step in the review process includes that of the Contractor reviewing all submittals from Suppliers & Subcontractors to ensure the specification requirements have been met before forwarding them to the Design Team. This step ensures that the submittals are complete, meet the requirements, and does not waste the time of the Design Team with incorrect and/or incomplete submittals. However the review of submittals that include design and/or calculations as part technical submittals are the responsibility of the Engineer of Record and not the Contractor.

Early in the process, the Owner or Owner's Representative should establish a formal submittal process, defining a single point of contact to receive all submittals. Received submittals should be entered into the procurement log for tracking and quality control purposes (the Procurement Log is defined later in this RP).

Once the Design Team has received the submittals; Time is of the essence and all efforts should be made to review and return each submittal as soon as possible. Processing time for the submittal review is usually defined in the project documents. The processing time limit ensures that the review of each submittal is reviewed and returned quickly, but also allows sufficient time for the reviewer. The Design Team should ensure that enough personnel are available and to quickly distribute to the appropriate team member(s) for review.

The Priority System should be observed at every step of the process with higher priority submittals reviewed and returned before those of lower priority. In some cases, depending on project conditions, it may be prudent to process high priority submittals in less time than specified in the contract documents. However, lower priority submittals should be reviewed and returned in a timely manner.

There are many types of submittals that may be reviewed in minimal time, and should be returned quickly and not wait until the contractual review time has elapsed before beginning and finishing the review. While other submittals require additional time (e.g. Shop Drawings) and require careful review by an engineer, or may require review of multiple disciplines or coordination with other trades.

Regardless of the type or priority of the submittal, the project team should be working toward the common goal of completing the submittal process in a timely manner; in a way that will not delay the fabrication and delivery of the procurement items in time to be installed without impacting the project schedule. Careful steps should be made to ensure that submittals do not stack up while the processing time expires without review. Regular review of the Procurement Log in the weekly coordination meeting will reduce the number of unexpected delays in the procurement process.

Once the Owner's Representative has completed their review of the submittal, it should be returned to the Contractor properly coded to ensure the proper actions that will ensure the advancement in the Procurement Process. These codes may include the following:

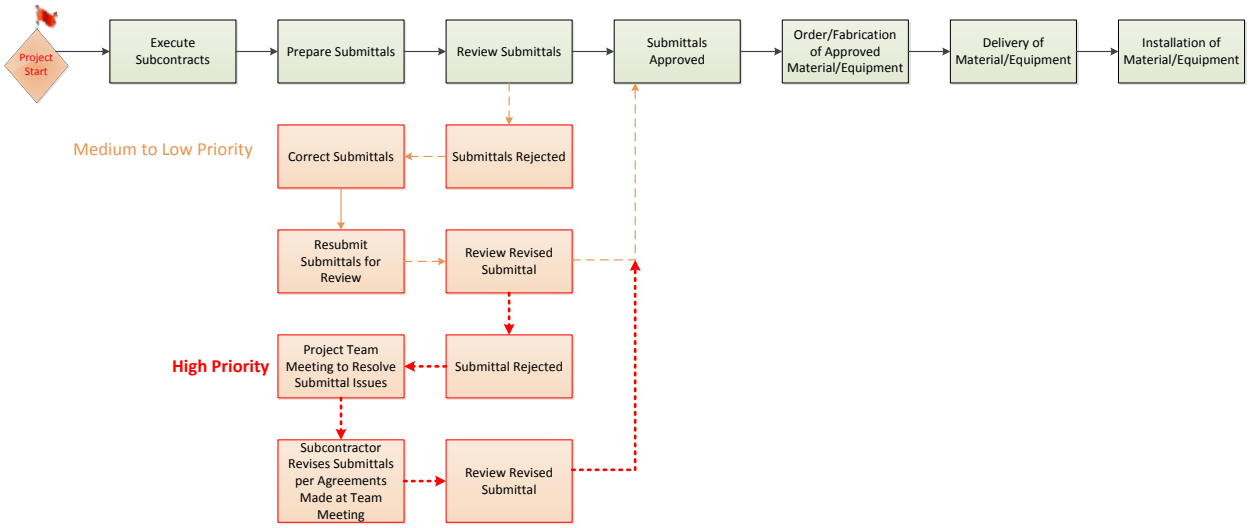
- Approved
- Approved As Noted
- Accepted
- No Exceptions Taken
- Make Corrections Noted
- Revise And Resubmit
- Rejected

Re-Submittals:

While it is hoped that submittals would be approved after their first review, there will be some that require corrections and resubmittal. Such rejections should be the exception, and high numbers of re-submittals required in the project may be an indication of a failure to communicate throughout the Project Team.

However, there are some submittals that the Project Team can identify as historically requiring multiple resubmittals in order to obtain full approval and can plan on the additional time that may be needed before the ordering and fabrication of the procurement item may begin.

When a submittal has been coded as rejected or in need of correction and re-submittal, the entire Procurement Process is halted for that particular material and/or equipment. Time is lost from the time the submittal was anticipated to be approved until the Contractor can receive the rejected submittal, process and forward to the Subcontractor, the Subcontractor to make corrections for re-submittal, then the Contractor to receive, review, and forward the corrected submittal to the Owner's Representative for a new review, and hopefully final approval. The time lost for the rejection and resubmittal process can be devastating to the project schedule and may result in a delay of the project completion by essential material and/or equipment not being delivered to the project site on time for installation. Consider the following flow chart:



The rejection and/or request for re-submittal of any technical submittal should be discussed in a face-to-face meeting with all of the parties involved, including such parties as the Subcontractor, Supplier, Detailer, and the reviewing Engineer. Such face-to-face meetings may be accomplished physically, in person, or virtually, via web-conferencing or other technology. Depending on the priority of the submittal, such a meeting should be scheduled immediately, or it may wait until the next regularly scheduled progress meeting when most of the Project Team is already together. Multiple meetings may be necessary throughout the process, and the decision to hold additional meetings should be continuously evaluated.

The first process the Project Team should consider when dealing with rejected submittals, is determining whether or not the Procurement Process should be halted due to the rejection of the submittal. Normally the Contractor or Subcontractor is unable to order or begin fabrication until the submittals have been approved by the Owner's Representative. However, there are times when the request for re-submittal is the result of a housekeeping issue, such as incomplete calculations, and all parties may agree that the designation can be changed to "Approved as Noted" and do not affect the fabrication process.

Other issues to review include:

- Why the submittal was rejected and what is needed for a successful re-submittal
- The project schedule; when the subject material and/or equipment is required for installation, whether there is float, or slack, to the installation activity
- The anticipated fabrication time
- Possible back-log or demand for the same material and/or equipment from other projects before fabrication can begin
- Escalation costs for materials involved in the fabrication process.

The end of this Procurement Meeting should leave all parties understanding:

- What is needed to correct and reach approval of the submittal in question
- Who is responsible
- When the re-submittal will be completed and ready for a new review
- How the project schedule will be affected and what can be done to alleviate any negative impact
- Should the priority assigned to the submittal be adjusted
- Can fabrication begin immediately or must it wait until the submittal is corrected and approved

In many cases the time lost due to a rejected submittal can be alleviated by getting the parties together to discuss the issues and how to get back on track. If the Engineer and the Subcontractor are in disagreement over the submittal, valuable weeks can be lost, and a Low or Medium Priority submittal can turn into a High Priority with the chance of negative impact to the project schedule. A little effort by the Project Manager early in the process could resolve the issues before that time is lost.

Deferred Approval by the Permitting Agency:

A common practice in the permitting of a project by the Permitting Agency is to defer certain aspects of the construction after the construction contract has been awarded. For example, "it is not efficient to design elevator guide rails until after an elevator supplier has been chosen" (DSA, 2013).

In such cases, detailed performance specifications and other criteria may be deferred until after the contracts are executed and in many cases after start of the project. However, the approval of the required submittal information must be approved by the Permitting Agency either before the systems in question are installed, or in some cases, before Certificate of Occupancy is issued.

Building systems that require Deferred Approval may include, but are not limited to:

- Access Floors
- Bleachers
- Elevators or Escalators
- Exterior Walls Systems
- Skylights
- Window Wall Systems or Storefronts
- Fire Suppression Systems
- Stage Rigging
- Selected Structural Components, such as
    - Stairs
    - Canopies

> *"Note: Deferred approval does not mean that the [Architect/Engineer] A/E of Record may refer the design of the component to the contractor. [Agency] requires that the A/E of Record accept responsibility for verifying that all components (including those granted deferred approval) of the project are properly designed by appropriately licensed design professionals. The A/E of Record is also responsible for coordination of all components of the project. Finally, the A/E of Record is responsible for designing connections to the structure for all deferred approval components and verifying that all interactions (deflection compatibility, drift compatibility, vertical and lateral loads, etc.) are adequately addressed and in conformance with good engineering practices and the [State] Building Standards Code" (DSA, et al, 2013).*

In cases with Deferred Approval submittals, it is strongly recommended that the submittals be reviewed by the Owner's Representative prior to being submitted to the Permitting Agency. Once submitted to the Permitting Agency, there may be a backlog of submittals from other projects that are reviewed in order of when they were submitted to the Agency. With Owner review, waiting time, Agency review, resubmittals, and final approval by the Permitting Agency, it may take many weeks, months, or more to obtain approval by the Permitting Agency for the deferred approval submittal.

It is essential that the Project Team plan and organize the Deferred Approval process early in the project so as not to delay the project due to not obtaining proper approval by the Permitting Agency.

It is recommended that all parties involved in the Deferred Approval process meet to establish guidelines and procedures that will be used in obtaining deferred approval by the Permitting Agency in a timely manner. This meeting should be attended by representatives of the Contractor, Design Team, and Subcontractors that are required to provide the deferred approval submittals. The Deferred Approval Meeting should establish, at a minimum:

- What approvals are required by the Permitting Agency
- Who is responsible to provide the deferred approval submittals
- What approval is required by the Design Team prior to submitting to the Permitting Agency
- What is the process of submitting deferred approval submittals to the Permitting Agency
- Who is responsible for submitting the deferred approval submittals
- Who is responsible for tracking the deferred approval process through the Permitting Agency and reporting to the Project Team
- How the deferred approval submittals will affect the Project Schedule
- What priority should be assigned to each deferred approval submittal
- At what point will the Contractor/Subcontractor be able to begin fabrication and installation
- How often will the Project Team meet to review the Deferred Approval process

The Project Team should meet regularly during the Deferred Approval process to ensure there are no issues that will delay the project schedule, and the process is moving smoothly. The Project Team should

continue to meet until all of the Deferred Approval submittals have been approved by the Permitting Agency.

Procurement of Owner Furnished Material and/or Equipment:

Many projects require coordination with the Owner on Owner Furnished Owner Installed (OFOI) or Owner Furnished Contractor Installed (OFCI) materials and/or equipment with their procurement and installation. Such material and/or equipment do not fall into the submittal process. Instead coordination between the Owner and Contractor on when the OFOI or OFCI material and/or equipment is required for installation within the normal sequence of activities within the Project Schedule.

While the Owner is required to monitor the procurement process of their own material and/or equipment, it is important that the Contractor is aware of any issues related to the on-time delivery, and that the Owner is notified of any changes in the Project Schedule that would affect when the material and/or equipment is required for installation. Such coordination should have its own time within the regularly scheduled progress meetings during the course of the project.

Activities for Owner Furnished materials should be incorporated into the Project Schedule the same as Contractor furnished procurement items. While some may be tempted to insert a milestone activity and assume the material and/or equipment furnished by the Owner will arrive at the appropriate time; it is recommended that the schedule activities are tasks with realistic durations that are constantly tracked for actual delivery and how it corresponds with the installation activities within the rest of the Project Schedule. The Owner should have a representative responsible for tracking their procurement items and reporting its progress the Contractor on a regular basis.

The Owner also needs to be sure all pertinent information regarding the Owner Furnished material and/or equipment is provided to the Contractor that will assist in the preparation and installation of that material and/or equipment when that time comes. Product Data, Shop drawings or installation drawings should be made available to the Contractor for review early in the project instead of waiting until the material and/or equipment is delivered. Many times this information is needed at the early stages of the project for coordination, rough in, and any required subsurface preparations long before the actual installation of the material and/or equipment.

The Owner should coordinate with the Contractor to be sure appropriate time is allowed within the project schedule for the procurement of the Owner Furnished material and/or equipment that is directly tied to the installation activity.

Design/Build Projects

Design/Build (DB) projects, sometimes referred as Engineer/Procurement/Construction (EPC) projects, have a unique perspective of the Design Team and Construction Team being the same organization. In these cases it is recommended that a hybrid of both practices of the normal Owner/Contractor relationship and Owner Furnished Contractor Installed relationship in coordinating and tracking of the procurement process. This may include formal submittals for approval, or a direct procurement of designed equipment and/or material to be tracked for their desired delivery in time for installation, or a

combination of the two methods that will be defined by the Project Team at the planning stages of the project.

In addition to the normal submittal and approval process, a Design/Build or EPC contractor may be required to provide completed Contract Drawings or Engineering for various elements of the work prior to beginning the submittal process for a procurement item. These time frames should be considered when estimating the time of accusation, along with the actual fabrication and delivery durations of the procurement items in question.

Procurement of Material and/or Equipment from Outside Sources:

There may be times within projects where an outside source will be required to provide material and/or equipment that is essential to the completion of the project. One example is the procurement of the electrical transformer by the Electrical Utility before permanent power is provided to the project.

The procurement of such equipment will be out of the control of both the Owner and the Contractor, but needs to be carefully coordinated with the Outside Source and in the Project Schedule in order to not negatively affect the Project Schedule. In many cases specific work in the field as well as specific inspections are required prior to the authorization to begin the procurement process for such equipment within the Outside Source's own system.

The Owner and Contractor should coordinate carefully during the planning and schedule creation to ensure that all of the requirements for the Outside Source procurement process are anticipated, and enough time is allotted in the schedule to allow for this sometimes uncertain process. The Owner is encouraged to insert such required minimum durations into the Contract Documents to ensure their use in the project schedule.

Coordination Meetings:

Throughout the procurement process, the Project Team should be meeting regularly for the Project Coordination Meeting or Progress Meeting. This meeting is the time that all Project Team members review and discuss all aspects of the progress of the project and all of the issues that have arisen or may arise at a later date.

The submittal status should be reviewed at the regularly scheduled coordination meeting as an agenda item. While this should be a minimum, both parties are encouraged to use this occasion to do more than this minimum and use this time as an opportunity to review and discuss ways to mitigate future potential problems in the procurement process.

The Project Team should review the Submittal Logs for potential or real problems in the submittal, fabrication, or delivery process. This time can be well served by pointing out problems with submittals that have not been submitted or reviewed on time, fabrication issues (including Quality Assurance/Quality Control problems), or issues pertaining to the delivery and storage of the material and/or equipment once fabrication is complete.

There may be times where a separate meeting required with select members of the Project Team to discuss issues such as Deferred Submittals, Submittal Rejections and Re-Submittals, Owner Furnished or Outside Sources procurement issues. By separating these meetings from the normal Progress Meetings, non-affected Project Team members will not be required to attend, and those in attendance will be able to discuss each of the issues in great detail in order to resolve the issues to keep the procurement process moving forward. A Project Manager should not hesitate to call a special procurement meeting when the goal is to complete the procurement process in a way that will not delay the Project Schedule.

Tracking the Procurement Process:

The procurement process should be tracked by two separate methods. The entire process will be tracked with the Procurement Log, which is a detailed list of all items requiring submittal and approval prior to order and fabrication, and their progress. The second method is the Procurement Schedule which is included in the project CPM Schedule.

Once a project has been awarded, the Contractor should review all contract documents in detail and create a list of all required procurement items and submittals. This list should also document the source or sources describing submittal and acceptance requirements.

The Procurement Log:

The Procurement Log (which may also be known by many other names, such as an expediting log, or procurement register, and similar to the submittal log, or submittal register) that is a detailed list of all items required during the procurement process of the project, including requisition, submittals, approval, fabrication, and delivery to the project site or secondary storage location. At a minimum, a Procurement Log should include such information as:

- Priority
- Submittal Package Number
- Submittal Number
- Revision Number (Resubmittals)
- Description of the Submittal
- Responsible Party
- Received Date
- Sent Date
- Returned Date
- Forwarded Date
- Ordered Date
- Delivery Date
- Required Delivery Date (scheduled installation date)
- Procurement Status

- Remarks
- Copy Sent

The Procurement Log should be reviewed by both the Owner and Contractor on a regular basis, such as at the weekly coordination meeting. Questions about the status of submittal or procurement, along with the priority and how it affects the project schedule should be discussed on a regular basis with the Project Team.

Priority:

The priority of the procurement item should be listed first in order for all of the project team to know without having to search the log to find out what priority has been assigned. If the status of the submittal or procurement changes due to conditions, the new priority will show up on the weekly report for review at the regular status meeting.

Submittal Package Number:

The Submittal Package Number contains the group of submittals required by a single specification section within the Procurement Log. Each package would include all of the submittals required within each specification section.

It is best if the Submittal Package Number follows the Construction Specification Institute (CSI) specification number contained in the Project Documents or similar control number that is known to the entire Project Team. This will allow Project Team members, as well as outside participants reviewing the project after completion, immediate recognition to what portion of work the submittal pertains, as well making searches easier to find the submittals in question.

Submittal Number:

The Submittal Number is an extension to the Submittal Package Number. Adding an alpha/numerical extension to the end of the Submittal Package Number provides a breakdown of the submittals within each package. As an example:

Submittal Package #	Submittal #	Description
051200	01 or A	Structural Steel Product Data
051200	02 or B	Structural Steel Anchor Bolts Shop Drawings
051200	03 or C	Structural Steel Beams & Columns Shop Drawings

Revision Number:

The Revision Numbers is yet another extension to the already established Submittal Package and Submittal (or sub-submittal) Number. Revisions can be numbered using Zero, One, or alphabetically with A as the original submittal, and using succeeding numbers or letters for each revision or re-submittal. While the method is not germane, consistency throughout the project is important. As an example:

Submittal Package #	Submittal #	Revision	Description
051200	01 or A	0 or A	Structural Steel Product Data
051200	01 or A	1 or B	Structural Steel Product Data Revision 1

Description of Submittal:

The Description of the Submittal is the type of submittal required by the Project Documents. A separate submittal (or series of sub-submittals) will be for each type of submittal required by the Contract. This allows for portions of the Submittal Package to be submitted, reviewed, and if required, re-submitted without affecting the status of other portions of the Submittal Package. Where submittals are being broken down by location within the project, that location should be identified within the Description.

Responsible Party:

The Responsible Party is the Contractor, Subcontractor, Supplier, or Owner that is ultimately responsible for providing the material and/or equipment that is being submitted for approval, and will ultimately provide the final product for installation within the project.

Received Date:

The Received Date is the date that the submittal was received by the Contractor from the Responsible Party. At this point, the Contractor will provide a review of the submittal to ensure the submittal is following the Contract Documents, as well as being complete and ready to be forwarded to the Design Team or Owner's Representative for review.

Sent Date:

The Sent Date is the date that the Contractor forwards the submittal to the Design Team or Owner's Representative for review. This is also the date used that begins the contractual review time that should be specified in the Contract Documents.

Returned Date:

The Returned Date is the date when the Design Team or Owner's Representative returns the submittal to the Contractor for further action. This action may be to authorize the Subcontractor or Supplier to either proceed with order and fabrication, or revisions if required.

It is important that all parties are in agreement with both of these dates since many times submittals are sent out near the end of the business day as well as at the end of the business week. What the sending party may record the date as Friday at 3:00 pm, the receiving party may record Monday at 8:00 am (a difference of 3 days). It is important that all of the Project Team review each other's logs and work out any inconsistencies in recorded dates instead of trying to make sense of conflicting dates during a claim after the project is complete. While a majority of submittals will not have any issues, it will be the few

submittals that do have issues that will require clarity in dates to eliminate additional issues pertaining to fighting over what date something was sent or received.

Forwarded Date:

The Forwarded Date is the date that the returned submittal is sent to the Responsible Party (Subcontractor or Supplier) for further action.

Ordered Date:

The Ordered Date is the date that the material and/or equipment can be ordered and fabrication can begin.

While many times the Ordered Date can start immediately after the submittal is approved, there may be a period of time between the time the submittal is approved and when the material and/or equipment is needed at the project site for installation.

For these instances, it will be necessary to provide a future date for Ordered Date and continually monitor the Procurement Log for Order Dates in the future to ensure the order of the material and/or equipment is placed at the appropriate time.

Delivery Date:

The Delivery Date is either the current anticipated date of delivery or the actual date the material and/or equipment is delivered to the project site. For further clarification, a designation such as F (Forecasted) and A (Actual) may be added to distinguish between anticipated and actual dates.

Early in the fabrication period the anticipated delivery date may be the expected lead time used while building the schedule, before the project began (e.g. the Supplier anticipated 8 weeks after approval, therefore the anticipated delivery date is 8 weeks after the Order Date)

However, during the fabrication period it is recommended that the Responsible Party continually check to ensure the progress of fabrication and provide an updated delivery date, which needs to be reported to the Project Team who will then be able to see if there are any issues with the schedule and when the material and/or equipment is required to be installed.

Required Delivery Date:

The Required Delivery Date is the current scheduled date that the procurement item is needed to be delivered to the project for installation without affecting the current schedule or critical path. By having the Required Delivery Date available in the Procurement Log, the Project Team will be able to see if there are any difficulties in making the required date without having to constantly referring to the project schedule. This date should be monitored throughout the procurement process to ensure that there is not a drastic change in the project schedule; either earlier or later, depending on the pace of the project. It is not recommended to rely only on the Baseline Schedule dates, but should have a constant review to know if the final delivery would affect the items installation within the project or be affected by outside influences during fabrication, shipping or delivery.

Procurement Status:

The Procurement Status is the status of the procurement item, whether through the submittal process, order, fabrication, or delivery to the project site or off-site storage awaiting final delivery prior to installation. The different statuses may include:

- Preparation
- Waiting Request for Information (RFI) Response
- Under Review
- Requested Additional Information
- Approved or
    - Approved As Noted
    - Accepted
    - No Exceptions Taken
    - Make Corrections Noted
    - Revise And Resubmit
    - Rejected
- Ordered
- Received by Vendor for Fabrication
- In Fabrication
- Factory Acceptance Tests (FAT)
- Shipped
    - Travel Status
- Delivered Off-Site
    - Location Stored
- Delivered On-Site
- Installed
- Site Acceptance Tests (SAT)

The Project Team may wish to separate the status of the Submittal Process from the Order, Fabrication, and Delivery status. However, it is imperative that the Order, Fabrication, and Delivery portions are continually monitored in order to ensure there are no final issues during the last legs of the procurement process. If the Project Team wishes to separate the Submittal Process from Order, Fabrication, and Delivery, it is recommended that an additional "Submittal Status" field within the Procurement Log be added for the Submittal Process.

Remarks:

The Remarks or Comments field in the Procurement Log provides a space to add a short summary of actions or issues pertaining to the current status of the particular submittal or procurement process. Such issues may include:

- Date of Procurement Meeting scheduled after a Submittal Rejection
- Anticipated date of re-submittal
- Quality Control issues that came up during fabrication
- Difficulties during shipping (such as a Truckers Strike)
- Shipping Tracking Confirmation Number

Copy Sent:

The Copy Sent or CC field in the Procurement Log will allow the documenting of the parties within the Project Team that received final copies of the approved submittals for reference during their portion of work in the project. This field may be filled out early, based upon information gathered in coordination meetings as to which parties need certain information when it is available. A check mark, or "X" box may be added later to signify that the copy was actually sent.

Procurement Logs are available, or may be modified from existing logs in several project management software programs currently available on the open market, as well as creating a new log using any database, spreadsheet, or word processor software. The use of database software will increase the ability to sort, filter, and create customized reports.

The final make-up of the Procurement Log will depend on company practices or Owner requirements. Regardless of the programs used or the final look of the Procurement Log, the goal is to provide a detailed record of the Procurement Process, including the Submittals, Order, Fabrication, and Delivery to the project site for installation. The Procurement Log needs to be updated regularly and accurately. The Procurement Log should be reviewed at each Project Coordination or Progress Meeting, with constant review of any issues that currently impact or may have a future impact on the Project Schedule.

Critical Path Method (CPM) Procurement Schedule:

The procurement process for major pieces of material and/or equipment should be modeled in the project schedule. This practice allows for a better understanding of where each activity fits into the entire construction schedule and evaluates how critical each piece of work is through the analysis of computed total float. A CPM schedule containing properly defined procurement activities will also allow for quick analysis of anticipated or actual delays, assisting in possible recovery planning.

The Procurement Schedule is as a subset within the Project CPM Schedule for the purpose of tracking the procurement process as it relates to the quick approval, fabrication, and delivery of essential items prior to the installation in the field. These items are not as detailed as in the procurement log, but are grouped together to provide a summary view of the process and if there are any delays in procurement in relation to the physical installation in the field. Each grouped item would include all submittals within the Submittal

Package that are required for approval before order and fabrication can begin. There are usually four distinct schedule activities for each group of submittals that are then tied to the installation activity within the project schedule.

It is the goal of the Procurement CPM Schedule to provide easily referenced activities that will track the material and/or equipment for the project from the submittal to fabrication to delivery and how it will affect the installation within the project. Ideally, the CPM schedule and the Procurement Log should be linked dynamically if possible, so that changes to the schedule will be updated in the log and/or vice versa. However, such a link is not possible without advanced project management software and may be required to be performed manually.

It is recommended that procurement schedule include at a minimum only those procurement items that may affect the critical path, or project completion, and leave the remaining items to be tracked through the Procurement Log.

However there are some projects that require a higher level of detail included in the CPM schedule. In those chases it is recommended that the maximum to be included in the CPM schedule to have activities grouped within the Submittal Package, unless specific material and/or equipment within the same Submittal Package require additional tracking. If more information is required, the Procurement Log is available that will have detailed information on each individual submittal item within the submittal package that will include information such as delays in original submittals, rejections and resubmittals, changes in scope, or other delays in the process.

By grouping submittals packages, the amount of schedule activities within the procurement phase of the CPM Schedule is reduced to a controllable number. Limiting the number of procurement activities within a schedule may be essential to keep from befuddling the entire project schedule. An example:

- The order of magnitude of the project is $5,000,000
- Within this $5 million project there are approximately 500 work activities
- There are between 16-23 CSI Divisions
- Each Division may have 12 Sections of individual material and/or equipment requiring procurement
- Each Section may require between 4-12 submittals for an individual material and/or equipment

- There are 4 schedule activities for each procurement item (Prepare, Review & Approve, Order & Fabrication, Delivery to Project).
- There can easily be 1,500 to 2,000 procurement activities in the project schedule that has 500 work activities.
- This makes the procurement activities out numbering the work activities by 3:1 or 4:1

The Procurement Log already provides detailed information on each procurement item with all of the appropriate dates. By duplicating all of this information within the CPM Schedule, the schedule then becomes more of a record keeping device instead of the project tool that it should be to enable the Contractor to build the Project and the Owner to monitor the Project's progress. Another item to consider when limiting the number of procurement activities in the schedule is the time required to maintain the schedule with actual dates that are already accounted for within the Procurement Log.

By grouping the procurement activities within the Submittal Package, the number of activities within CPM Schedule is reduced to the 4 activities (Prepare, Review & Approve, Order & Fabrication, and Delivery to Project) for each procurement item. This will reduce the ratio between work and procurement activities to a manageable number and reduce maintenance time.

There may be instances where more detailed tracking of procurement items is desired; such as Structural Steel for individual buildings, or different types of Kitchen Equipment (Kitchen Hood & Walk-In Coolers) that may be essential to the interior construction. The Project Team should agree to the amount of detail and any exceptions for procurement activities within the CPM Schedule during the planning of the project.

When building the CPM Schedule and adding procurement activities, there are ways that allow easy reference to the Procurement Log for each procurement items within the project schedule. While there are some scheduling software available that do not automatically provide the fields for these practices, there may be custom fields available that will allow similar functions within the software.

Activity ID:

The practice of creating "Smart Activity IDs" is common, and their use allows a user to know much about the schedule activity by its ID number alone. Using the CSI Specification number for the items in the Activity ID will allow users to immediately know what material and/or equipment the schedule activities to which they pertain. Adding a suffix to the CSI number may be used to separate the type of procurement activity (Prepare, Review & Approve, Order & Fabrication, Delivery to Project) as indicated below:

Activity ID	Description
07320-10	Prepare Roof Tiles Submittals
07320-20	Review & Approve Roof Tiles Submittals
07320-30	Order & Fabrication Roof Tiles
07320-40	Delivery Roof Tiles

Activity Codes:

The use of Activity Codes allow for easy grouping, sorting, and arranging similar activities when preparing reports. Including specific Activity Codes for the procurement process will increase the efficiency when preparing procurement reports and how they affect the CPM Schedule. Such Activity Codes may include:

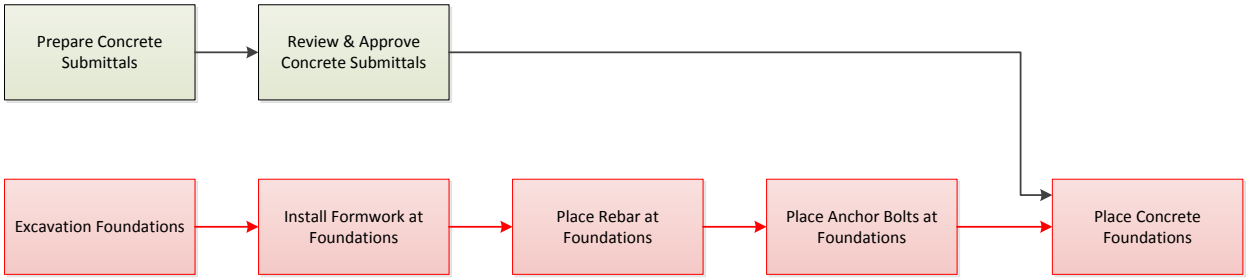
- Type of Activity
  - Procurement
  - Mobilization
  - Construction
  - Systems or Mechanically Complete
  - Startup & Commissioning
  - Close Out
- Phase
  - Prepare Submittals
  - Review & Approval Submittals
  - Order & Fabrication of Material/Equipment
  - Delivery to Project
  - Deferred Submittal
- Priority
  - High Priority Submittals
  - Medium Priority Submittals
  - Low Priority Submittals
- CSI Specification Numbers
- Responsibility

While the above examples of Activity Codes mostly deal with the Procurement Process, the use of activity codes for all phases of the project is encouraged and should be agreed within the Project Team during the planning process.

Logic Ties & Restraints:

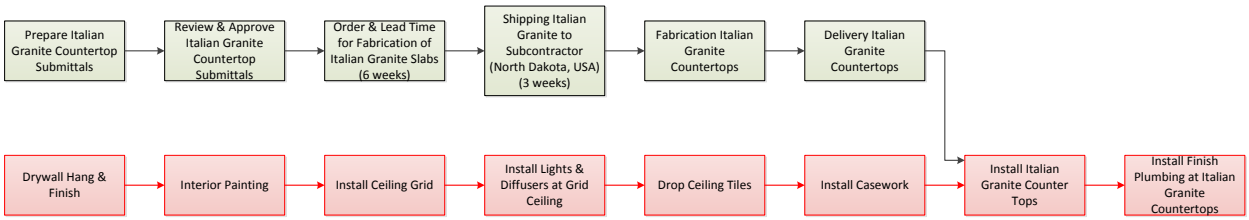
As in normal CPM practices, each schedule activity should have a predecessor and successor. Procurement and submittal activities should be tied to their logical predecessors and successors from the start of the project until the material and/or equipment is installed in the project. As an example:

Concrete mix designs are usually a readily available data sheet for each concrete mix to be used in the project. The process will be to prepare the submittal then the Engineer will review and approve or return the submittal. The submittal is required to be approved prior to placing concrete on the project, and there is not a fabrication or delivery activity needed. Thus the successor to approval of the Concrete Mix Design should be the first concrete placement on the project, as indicated below:

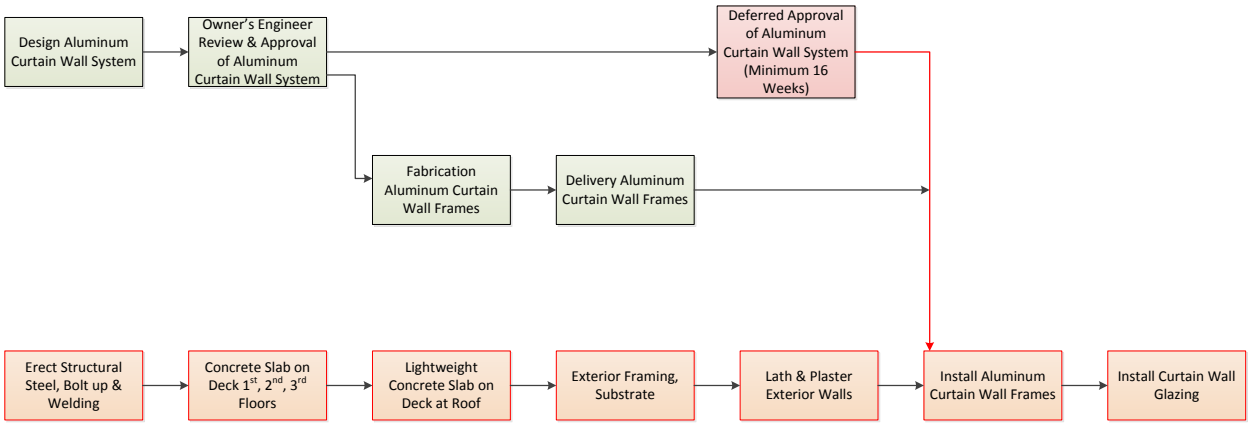


Other procurement items may require fabrication, lead times, and extensive shipping before being delivered and available for installation. While many items have a limited number of procurement activities, additional activities may be desired depending on the time requirements, and should be agreed upon by the Project Team.

Consider the requirement of using specific materials from another country. The material (in this case Italian Granite for countertops) is provided only by a single supplier, who estimates a 6-week lead time after approval for providing the slabs of granite to be shipped. Shipping from Italy to North Dakota (USA) is estimated at 3-weeks. The time between obtaining approval of the submittals until the time the subcontractor can begin fabrication is 9-weeks, assuming there are no problem getting the material through customs. In this case, the Project Team agrees that the entire process should be scheduled within the Project Schedule and this particular material will be carefully tracked, as indicated below:



Another exception in the process is the Deferred Approval. This requires that the Subcontractor design the system by a licensed engineer (in this case an Aluminum Curtain Wall System) that will be reviewed by the Owner's Engineer, and then sent to the Permitting Agency for their review and approval. It has been decided by the Project Team that the Deferred Approval must be obtained before installation, but the Subcontractor may take the risk of fabrication before final approval has been given.



Cost Loading:

Many contracts allow the billing for large material and/or equipment purchases once the items have been delivered to the project site, or an agreed upon off-site location. For these instances, it is acceptable to cost load the "Delivery" activity in the Procurement Schedule which will indicate when the Contractor anticipates delivery and payment for each particular procurement item.

There are also costs associated with the preparation of submittals, such as shop drawings requiring a detailer or engineering costs in deferred submittals. Many contracts do not allow for cost loading or billing for such submittal preparation activities, and expect these costs to be rolled up in either delivery or installation activities. However, the method of planning for these costs should be agreed within the Project Team at the beginning of the project in order to not delay the submittal and approval of the Baseline Schedule over inappropriate cost loading for procurement activities.

Timing of Deliveries:

Except for materials and equipment required at the beginning of the project, many procurement items will be scheduled for fabrication and delivery sooner than realistically expected. While it is recommended to have all procurement submittals approved early in the project, there is nothing keeping the successor activity of Order & Fabrication from starting immediately after the approval by the Owner. In addition to these activities remaining without actual dates during schedule maintenance and repeatedly showing up as activities without progress, the project cost forecasts and Earned Value will be inaccurate.

While there may be instances where material and/or equipment may be delivered earlier than the date of installation, there are many factors that the Project Team should consider, including cost effectiveness, location of storage, loss or damage, possible shipment delays, and possible ease of access issues prohibiting delivery after surrounding work is completed. These exceptions should be considered by the Project Team when early delivery is requested.

Just-in-Time Deliveries:

Using a Just-in-Time system for deliveries will ensure more accurate estimations on material and/or equipment deliveries as well as Cost Projections and Earned Value analysis during the schedule maintenance. In order to ensure Just-in-Time delivery in the CPM Schedule, the scheduler may:

- Create a lag time between the predecessor and successor activities giving a "best guess" when Order & Fabrication and Delivery to the Project Site will happen.
- Create logic relationships or restraints between the Order & Fabrication activity and an actual work activity in the project that will trigger the Order & Fabrication activity and delivery happening near the time the material and/or equipment is needed within the project. (e.g. Start the Order of Metal Studs and Drywall activity after the Structural Steel has been installed)
- Some of the newer scheduling software allows assigning an "As Late As Possible" constraint to the activity that will use all of the Free Float to the Order & Fabrication and Delivery activities before starting.

Whatever the method used to create the Just-in-Time delivery activities within the CPM Schedule, it should be agreed within the Project Team and used consistently throughout the project schedule.

Maintenance of the CPM Procurement Schedule:

As with the Project CPM Schedule, the Procurement Schedule requires constant maintenance throughout the Procurement Process in order to accurately forecast delivery dates and alert the Project Team for any problems that may affect the Project Schedule.

Prepare Submittal Activities:

The start date for the Prepare activities is the date that the Responsible Party was directed to provide their submittals. The Finish date is when the submittals have been submitted to the Owner for review. While the start date for these activities is more important during the forecasting of the succeeding activities, it is the Finish date that is important to track during schedule maintenance.

Review & Approve Activities:

The start and finish dates for the Review activities are as recorded in the Procurement Log. For multiple submittals within the Submittal Package that were grouped together for the CPM Procurement Schedule; the Start date is when the first submittal was submitted and the Finish date is when the last submittal was approved that enabled the Responsible Party to order and begin fabrication of the material and/or equipment within that Submittal Package.

Order and Fabrication Activities:

The Order & Fabrication dates are also as recorded in the Procurement Log. The activity Start is when the Responsible Party was given authorization to proceed with manufacture or fabrication of the material and/or equipment within that Submittal Package.

The Finish date is noted as when the material and/or equipment is ready to be delivered to the project site. If there is normal shipping time for the delivery, it may be included within the Order & Fabrication activity. However, there may be times that special shipping needs require an additional activity as stated earlier.

Delivery Activities:

The delivery activities are usually a single day activity to record when the material and/or equipment have been delivered to the project site. This is usually to mark the date the Subcontractor or Supplier are able to bill for the material and/or equipment delivered, but will also indicate the completion of the Procurement Process for that Submittal Package item.

The Start and Finish dates recorded for delivery should be the dates the delivery actually happens with recorded delivery slips to back it up.

It is essential that all Actual Start and Finish dates within the Procurement Schedule are as accurate as possible to avoid any credibility issues in the future. Forecasting actual delivery dates for payment within an earlier period than reality should be avoided.

Recommended Practices

1. Procurement items should be prioritized for the Submittal Process depending on when it is required how long it takes to be delivered after the Submittal has been approved, and the scheduled total float.
2. The Submittal Process should be completed approximately within the first 25% of the project's duration (e.g. a 2 year project should have all submittals complete within the first 6 months)
3. The Project Team should work together in completing the Submittal Process as early as possible to ensure materials and equipment are ordered and delivered so as to not impact the project. While it may be the responsibility for the Contractor to submit and the Owner to review; the entire Project Team has the responsibility to complete the project together.
4. Rejected Submittals should trigger a Procurement Meeting that will get all of the parties involved in finding resolution to the rejected submittal and keep the procurement process moving.
5. Deferred Approval submittals should be planned early in the project to ensure approval from the permitting agency as quickly as possible.
6. Procurement process for Owner or Outside Sources provided material and/or equipment should be carefully planned and enough time given that this process will not impact the project schedule.
7. The Procurement Process should be tracked within the project by two methods; the Procurement Log and as a subset of the CPM Project Schedule
8. The Procurement Log is a detailed document that tracks every facet of the procurement process, with exact dates, comments, and changes to each submitted material and/or equipment.

9. The CPM Procurement Schedule is a subset of the Project Schedule. It provides a summary of grouped submittals or selected significant submittals for each material and/or equipment and how approval, fabrication, and delivery may affect their installation within the project.
10. Cost loading of procurement schedule activities, if performed, should be on the Delivery activities only. Preparation of submittals and administrative costs should not be normally loaded into Preparation activities, unless specified by contract.
11. "Just-in-Time" delivery practices should be used in projecting early delivery dates for procurement items in order to reflect a realistic cost projection and earned value during the project, as well as keeping storage costs low.

Suggested New Definitions for RP 10S-90

Priority System: Pertaining to the Procurement Process; the creation of priorities when preparing and reviewing for approval Submittals in order to concentrate on higher priority packages first before moving on to the lower priority submittals. This process ensures the submittal process is moving forward in a way that will not impact the project itself by late delivery of material and/or equipment due to late submittal approval. The Priority System may be defined numerically, alphabetically, alphanumerically, or using common terms such as "High, Medium, and Low".

Procurement Log: The Procurement Log (also known as a procurement register, and similar to the submittal log, or submittal register) is a detailed list of all items requiring formal submittal, approval, fabrication, and delivery to the project site. Each action within the process is recorded establishing the date each phase of the procurement process starts and finishes.

Procurement Schedule: The procurement schedule is a subset of the CPM Project Schedule that tracks the Procurement Process through the submittal process, fabrication, and delivery to the project site. The level of detail of this schedule is less than what is recorded in the Procurement Log and submittals may be grouped by Submittal Package, or selected significant items, unless specific tracking is required. Each line item should be linked in a path from preparation, approval, fabrication, delivery, and then to the schedule activity that actually installs the material and/or equipment within the project. Such schedule activities help ensure that the procurement process is moving forward and the delivery of material and/or equipment does not delay the project.

Submittal: A submittal (or Vendor Data) is a contractually-required document and/or sample that must be supplied to the Owner's representative for review. It contains detailed information designed to help ensure that the proposed material and/or equipment meet the requirements of the contract documents. The submittal may be in the form of Product Data, Shop Drawings, Samples, Certifications, Warrantees, or other requirements pertaining to the specified material and/or equipment will be installed in accordance with the requirements of the contract documents.

Submittal Log: A detailed list of submittals sometimes grouped by specification section recording significant information such as dates when submitted to owner, returned, and when approval is obtained or required actions needed to obtain approval.

Submittal Package: A group of submittals required by a single specification section within the submittal log. Each package would include all of the submittals required within each specification section (i.e. Mix Design, Product Data, Shop Drawings, Certifications, Warrantees, etc.).

Submittal Process: The process where the contracted party provides detailed information to the Owner or their representative (i.e. architect, engineer, construction manager, or designer) as to required material and/or equipment to be installed as part of a project.

Submittal Status: A line item within the Coordination Meeting Agenda that reports the status and issues of any particular Submittal from preparation to delivery.

Contributors

The following individuals contributed to the development of this RP:

Delbert Bearden, PSP (Author)
Ron Winter, PSP
Hannah Schumacher, PSP
David Doughty
Peter van der Schans
Rumi JA
Steve Beck

References

DSA (2013). Division of the State Architect (California) [Online] "Deferred Approvals". Available: http://www.dgs.ca.gov/dsa/Programs/progProject/overview/projsubmitintro.aspx#G