

The Construction Project Manager

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Defining Organizational Structure

The company structure is vital to company longevity and growth. Companies form in many different ways with different leadership characteristics but with the same objectives. Whatever the motivation for a company to choose an operating structure, the same principles in business apply, stabilize, strengthen, and make money. To the project manager, a same sense of accomplishment should also be present. To comprehend the role of a project manager you must first understand the organizational structure of the company. The role of the company is to set the conditions of work for the project management personnel defining how they are to perform their job functions, how they are to report their activities and to know the rules of accountability for their performance. Successful organizations create a hierarchy or structure that clearly defines who is the responsible person to report to for project work assignments, progress of work summaries, cost control management, change management, project safety matters, client attention and satisfaction, subcontractor relationships, union related requirements, team building strategies and human resource issues. A good company, regardless of structure, provides best practices and proper direction to their employees guaranteeing each project has the attention and controls it deserves.

Under the direct control of the project manager is the business of organizing and administering to the project. This requires the management of all staff assigned to the project with respect to conditions set within the contract language. This contract guide is referred to as the general condition, modified by the supplemental general conditions. The assembly of the contract includes these conditions by which the project must be organized and administer to. As the project manager is the business leader he must establish and manage the collaboration and communication processes for the project including the project team; client, consultants, superintendent, project engineer, administrative assistant and accounting clerk, with increased or decreased staffing for larger or smaller projects (or when significant time constraints exist). Also working for the project manager, reporting directly to the superintendent are trades foreman and subcontractor field personnel. This grouping of workers performs the specific and specialty trade work for the project. The project manager has the dubious task of developing and overseeing the subcontracts for the respective scope of work for each trade and generally is accountable for the dissemination of information throughout the life of the contract including the one or two years warranty period.

The superintendent has a unique role as the construction manager, “the builder” for the project. Field decisions are his to make, often with consultation with the project manager and after the assembly of relevant information regarding performance of work and issues resolution.

A project flow chart is rather specific and generally easy to create and understand. A top of the chart is the client linked to their architect and consultant team. The next link is generally the construction company’s “Principal-in-Charge”, followed by the project manager and all other positions of the project structure below this position. The office staff creates one branch linked to the project manager and the field staff a second. When preconstruction activities become a part of the contract, a pre-construction group, linked to the project manager and identifies the respective personnel involved. This implies the reporting elements of the flow chart. The office related responsibilities add another tier of accountability for the project manager to manage. Each of these fore mentioned employees is to share in the responsibility of reporting information accurately and as the project manager formats for his project. The administrative assistant

provides the clerical support and assistantship needed to maintain the many meeting minutes, distribution and assembly of documents and logs which the project manager is greatly dependent upon for success. For much larger projects a document control assistant may be desirable. Where project managers are the primary cost managers for their respective projects, the financial support needed by the project manager in payment to subcontractors and suppliers, which keeps the project moving smoothly, is the responsibility of the project accountant and company leadership. Accurate record keeping helps the project manager to project reasonably accurate profit margin differentials.

The project manager also has the responsibility to control the processes that support the construction such as purchasing, receiving and warehousing of the project materials to be incorporated into the completed project. This function may become the responsibility of the project superintendent or project engineer after a successful purchase has been made. Under each scenario, the project manager retains the responsibility for inventory and product controls (security).

Duties of the Project Manager

The duties of the project manager can best be summarized under five general operational areas. They are:

Preconstruction Services support

- Preparing a deliverable schedule relative to bidding practices
- Assisting the estimating department during plan review
- Preparing a preliminary construction schedule
- Delineating project requirement and general conditions

Administration of the project

- Managing the Owner's contract
- Communications of issues, and coordination of activities
- Document control

Acquisitions required for the construction of the project

- Refinement of scope
- Identifying items that have delivery dates that impact the schedule
- Purchasing of trades and materials

Management and scheduling of the project

- Understanding manpower operations
- Materials applications

Building code issues

(Site logistics another important task is generally organized by the superintendent)

Cost control management

Issues resolution

Managing and verification of subcontractor change orders

Preparation of cost documents for submission and resolution

Building code issues

Project close-out

Achieving substantial completion

Aggressive punch list completion

Submission of recoded drawings, maintenance manuals &

Warranties

The Objectives of the Project Manager

Goal Setting

At project orientation the internal project team is assembled to get involved in goal setting for the project. The project manager presents his review of the owners contract, a mandatory understanding of the Owner's contract documents are essential to all members of the team to guide them in their work. The selected contract type is first discussed as it sets the conditions of performance; general conditions and requirements, supplementary conditions, specifications language that denote specific contractor deliverables and the construction plans, form the basis of the development of the combined estimate and scope of work. The review should allow them the ability to develop the project's "budget", "construction schedule", "pre-purchase log", "financial projections" defining the performance, cost and time limitations to the project.

Together, the cost and time goals comprise the main criteria needed to produce the desired construction and they cannot be altered in any significant way. The project manager who recognizes "cost and time" as the goals which bring success to a project, must focus on the resources each subcontractor must assign to the project over any given period and plans for deliveries accordingly. For there to be success, subcontracts must be written to include this plan of action and the implementation of these actions become essential to limiting exposure to influences that will impinge in the project's success. Collectively these attributes combine in the development of the project schedule.

Additionally, goals that directly relate to the project manager's success are micro-schedules, for projects which require phasing, or specialty constructions within a larger project requiring a

unique amount of attention. The efficiency in processing subcontract documents and a means of tracking their execution, the preparation of the many logs that record the flow of materials, and their approval, become essential tracking tools to manage toward success.

This goal setting session informs the project team, superintendent and field staff, administrative assistant and project accountant of the requirements and performance standard they must produce for success. Through discussion about the sequencing of the job, team members will remain on track, sharing information, reducing the risk of over spending, planning the management of the project approach, mapping out the logistics plan and brain storming solutions to matters of potential concern. This helps the members think about the project in the same way.

Developing a Working System

As do people in most management positions, the construction project manager must take the most effective approach to controlling the project. Two choices are commonly used.

The aggressive approach is usually used by the project manager who understands the full scope of work and how it applies to the contract drawings (and specifications). Armed with this knowledge, the project manager works to reach the goals, implementing his objectives systematically. The success of each working process can be measured against the carefully mapped out schedule, "the intended plan". On the other hand, the more docile approach has the project manager dependent on the skills of the superintendent, whose goal is to get the job done by making things happen. The project manager following this style of construction may find himself reacting to daily happenings, often spending money, above the estimate, to correct the circumstances that may have been avoided through proper planning.

A manageable system is one that establishes a timetable guaranteeing the performance of tasks; sequenced to meet the time limitations of the developed schedule which was the foundation of the general conditions. The efficiency of the project must be measured in order to evaluate the success of the established goals. From the general conditions, the project manager delineates the "when" and "how much" of each resource needed to perform each supervised task. The project manager then assigns the field performance conditions needed to measure start and completion times of tasks. On paper the project manager must ensure that each resource is provided within the correct task at the desired time. In the field, the superintendent coordinates this function with each of the trade foreman, reporting back to the project manager the direction he chose to accomplish these tasks. Resource management should be a shared activity with the project superintendent validating the manpower demands as anticipated by the estimate and field conditions. Proper management of resources is an important procedure for project team members as it supports the efforts to control cost and time.

With respect to resources allocations, each decision made equates to profits and losses. Knowing each procedure and translating its resources into costs allows for the accurate prediction of the dollars needed to finance the project. At this stage of cost analysis we can accept material costs as fixed.

Periodic projections will aid in the preparation of a monthly budget analysis, which is needed in evaluating the status of the project. A simple equation will assist in this exercise:

$$\text{Projected project cost} = \sum (\text{Tasks total cost} - \text{expended-to-date} + \text{balance-to-complete} + \text{pending costs} +$$

anticipated unrecorded-to-complete)

Managing and Controlling the Project

Planning, Communicating and Monitoring

The task is to manage the project as it progresses, using the project control systems to maximum advantage. Project control is best analyzed by applying the factors of a unique operation, following its output and measuring its results. All factors are to be considered; labor, materials and equipment. One might also have to consider the role of the subcontractors, as they affect the sequencing of a task. In measuring the factors, the project manager must key in on the productivity of his labor force, measuring output over a given period of time. From these results, the project manager can then make a comparison against the project estimate, and against the objectives to meet the expected goals.

To be affected in managing the project, the project manager must exercise three modes of operation.

These three modes are planning, communicating and monitoring of the project. The project must be well-planned, each factor of the plan properly communicated, carefully monitored and controlled. Proper planning involves one of the initiatives of the goal setting process, the preparation of the schedules, a solid logistics plan and time-based general conditions established to monitor all phases of construction. The limits of construction should be clear and they must comply with the language of the contract documents. Collectively, these are the tools needed to compile this information. It must then be the commitment of the project superintendent and labor forces to carry out the tasks within these limits.

To properly implement the plan, the plan must be communicated in such a fashion that there is full understanding of its purpose. One successful mode is the construction schedule. This guide to the project must clearly show each activity starting and finishing dates, duration, resources, long lead item purchasing schedule, submittal dates, purchasing dates, materials delivery to site dates all tied together by meaningful relationships, the networking between tasks.

As the plan progresses and careful concise communications have taken place, there exists the possibility that one facet of the schedule may be interrupted causing a disruption sorely affecting the outcome of the schedule. Through careful monitoring by the project manager, and the control mechanisms that he has set in place, he should be able to analyze the effects of this obstruction, and make the necessary adjustments to get the project back on track. Quite often issues arise that represent change to the initial planning of the schedule; unanticipated material delays, modification to the design, additional scope and contract payment delays that are not in the project manager's control, that can cause a delay to the project. These activities require immediate notification to the Owner; with follow up in accordance with the language of general condition and supplementary conditions as applicable. The schedule impact must be analyzed immediately and communicated immediately. This communication must include projections on the updated time and cost impacts, show graphically on the schedule. Documentation must follow this notification in the form of a pending change order with comprehensive backup. A

well thought out issue letter would contain language that identifies to the Owner; first, the cause of the notification, how it came about, and secondly, the steps taken to analyze the validity of the issue followed by the means and methods needed to correct the issue and to bring the project back on schedule. Then a spreadsheet should be created to show the financial impact and how it was derived; use of premium time, which trades are affected, their involvement and the costs and general conditions effects associated with these additional working hours.

When possible, at the start up of the project, a contingency in the schedule should be initiated which allow for the reassignment of labor duties, on an as-needed basis, to protect the project from avoidable delays? In highly competitive situations where contingencies are not possible exact documentation is essential when presenting your claim. Leaving reason for doubt is a definite deterrent and may lead to undesired delays, the architect being forced to direct the work without prompt resolution and distrust in the project manager.

Recognizing and Using Project Controls

With the goals set and the project readied for construction, the project manager must put on paper all the tools required to complete the construction. A typical list of tools would include the submittal logs used to keep current all the material submissions. There are management logs for managing subcontracts, purchase orders, a subcontractor insurance compliance log, a long lead time item log, a material submittal log, questions to the architects and engineers (RFI) log, the proposed change order log and the project planner (meeting minutes).

Information which should appear on a typical submittal log are a title of the log, a project name, a corresponding job number, an identification number of the item submitted for approval, a description of the information being recorded, and the activities which are to take place once the submittal is made and, finally, the results of the activity. The Appendix contains samples showing each of their unique logs and characteristics. The project manager must realize that, for a project to be successful, the records he compiles must be kept current and distributed freely among all who are involved in making the project a success. This distribution must be done in a timely manner, never to exceed the defined limits of the general requirement. Along with this exercise, the project manager must coordinate the submittals with the construction schedule, since by relying on the order of procurement; he can depend on the sequencing of the progress of the construction. This is a key element to effective project management.

Cost Accounting as a Relation of Estimating

Cost Control Management

Estimating and cost accounting are very closely linked. If the estimate is properly prepared, yielding a successful bid, it becomes the framework for the cost accounts.

Since the estimate is based on the most recent and reliable information gathered from field operations and market activities, to whatever extent may be reasonable, the performance data reported to the project manager from the field for the current project can be compared. If there is a mismatch in work performance, exposed during this process, initiatives should be taken to analyze current operations, directly correlating them to historic data. Involved in this process

would be the study of new equipment, methods and resources used now, versus those used during the historical time period. The project manager must, in his review, be prepared to make the necessary adjustments to the detail task which has fallen off the financial track, rather than adjusting operations as a whole. There is never a easy solution to cost overruns and the project manager projecting financial deficits must assemble the internal project team, presenting his report and brainstorm toward a resolution. Recovery is a well-planned program and involves all engaged in the project.

The most critical of all general conditions items to control is labor. Labor overruns are common to projects for a variety of reasons. A poor planning exercise with the internal project team may result in a misunderstanding of labor intensive activities, daily cleaning, moving stock around the project to accommodate trades and to avoid delays in performance and general deliveries that were overlooked as a billable when developing the general conditions. It would be well worth the effort to maintain two set of labor data sheets (by activity) to compare estimated vs. actual cost records. From this information, a clear and complete narrative description of all the circumstances affecting the work should be made a part of the cost records, and then provided to the estimating department for future bidding purposes.

Construction Cost Control

Cost control is very different from project accounting. They are also performed by different team members. The project accountant pays the bills, prepares and manages the project revenues to project cost and signals the company when the cost appears to approach or exceeds the revenue. There is an issue here that the accountant must always be keep up to speed with the changes in project finances. They base that understanding on the real-time dollars in and out.

Cost control is a project manager's tool used in keeping their project finances in check. Project managers have the most difficulty with this job responsibility because they rarely allow themselves necessary time during the week to focus on what issues came about during a week's construction that would had an impact on the cost of the project. This does not imply that project managers avoid responsibility, but it does imply that they often depend on meeting minutes and memory recall and similar notes, at some given time at the end of a month, to record events and log in their potential impact. To avoid this, a daily visit into your financial program, updating events, creating new events or deleting events that never happened as expected is vital to keeping pace with costs. In taking time to maintain your project costs your end of the month cost report will become a controllable work responsibility.

Cost control involves your knowledge of accounting to this level. A client or owner accepts your company's proposal and offers you a contract. This contract is a compilation of self-performed or subcontractor work, your general conditions, overhead and fee. There is the potential that other agreed upon costs or contingencies are included in the contract, so be certain to include them into the spreadsheet. This trade breakdown is generally referred to as the "Schedule of Values" and you will present a monthly "Application for Payment" using this spreadsheet. Corresponding to these line items will be a subcontractor contract value. Let consider the owner's side of this spreadsheet first. If throughout the life of the contract the project experiences no changes or modifications, the total value never changes and you invoice work in place and pay for work performed. A retainage is held throughout the life of the project, and when all work is completed, final close-out accomplished the retainage is released. Assuming this to be

the case, then the subcontractors will be treated by you in the same manner. As this is a rare circumstance managing the changes that manifest additional costs must be maintained and recorded to an understandable level. Again, assuming that the pricing exercise you received from a subcontractor was factual and easily validated you would present this to the client for acceptance. In doing so, you would need to record this contract adjustment against the line item or items that are affected. The spreadsheet would add a column entitled Change Orders, and amply to the right a column entitled Subtotal. Continuing with our assumptions, let's assume that the client does not quickly agree to the change order request, then the change order column would not be the proper place to record and track this change, you would need a column to the right of the subtotal column called Pending Change Orders. Let's move ahead and add two more columns, then name them Unanticipated Changes and Total; we will get back to these later in the writing. The unaccepted change order gets recorded in the pending change order column and remains there until the client accepts the change and signs a change order letter; once done it is moved to the change order column. The column we added called unanticipated change order is generally used for out of scope changes that were not identified at the time of the bid and that you will attempt to recover the cost as opposed to taking a loss. If you are unable to recover these costs as soon as you are aware of this fact, remove the value from the placeholder position. You have accepted the loss. Horizontally each entry will sum up to the totals column and you will know the value of work for that line item at a glance. Vertically, Each column expresses the totals of the unique column heads.

You assign a contract to a subcontractor. This value remains parallel to the corresponding item in the client contract. A similar set of columns apply to the right identifying contract revision, subtotal, pending changes and unanticipated changes. Each of these columns represent the financial changes to the subcontracts, with more careful recognition to the column called unanticipated changes. This column has unique meaning when an out of scope change is recorded. The choice you have and must make when adding this type of entry is based on your presumption that first, can this money be recovered from an client or, second, was there missing scope that is not recoverable. If it becomes recoverable scope, then the value is moved to the revision column and a letter of revision is executed with the subcontractor. If it is not recoverable, then you take this expense as a loss. You may find it beneficial to add one more column before the total line on each side of the spreadsheet, one when you expect a cost but it has not been formally introduced, this will allow you to make more accurate projects on the total revenue and cost of the project.

There is no secret to cost control; there is importance to your willingness to follow good practices. Record change event entries as they occur, and make the necessary adjustment to the spreadsheet without delay or hesitation, all too often we put off taking action and lose track of what we need to be done resulting in inaccurate reports.

Cost reporting is your way of projecting the outcome of your project. If you expect to be recognized for your proficiency as a project manager you want to excel in this assignment. As your talent grows, and your experience in interpreting an estimate more prominent, the day you are handed a project, and set-up your cost control spreadsheet, you will find that you are prepared to forecast your project's revenue vs. costs before you mobilize to your site.

The Construction Schedule

Introduction to the Construction Schedule

The construction schedule is the most important organizational tool for the project manager, and it serves the same vital function for the subcontractors and suppliers participating in the project. To establish a strong working schedule, an outline of the tasks of the project should be written down and reviewed until the tasks are representative of each activity, the order that they are fit into place, linked to the proper predecessor and successor until all tasks are linked and accounted for. It is sometimes best to begin by listing all of the activities of the table of contents, by sub subdivisions as they appear in the specification document. The next step is to decide the level of detail one needs to show on a schedule to assist him in the management of the project. He may, as he begins to develop the schedule, choose to present this information in outline format. A parent task might be concrete; which would include child tasks as forms, footing, reinforcing bars, walls and slabs, to mention a few, and sitework; having child tasks similar to grub & stump, clearing, strip loam & stockpile, excavate for footings/piles, etc. To expand the schedule to a CPM schedule, a greater level of detail is required, and milestones become the focal point and mechanism for measuring accomplishment. A milestone is a non-duration activity that can state the actual required start of a task or the actual end date of a task. Setting critical dates in this manner provides for a quick reference in schedule review to see if field operations are meeting scheduled expectations.

Assigning resources to scheduled tasks demonstrates an understanding of the scope of work, manhours needed to perform the work and the locations designated for the use of resources on the construction site. The start date for general contract work is determined at the signing of the Owner contract, but may be accelerated by joint agreement and the contractor's acceptance of an Owner's "Notice-to-Proceed". Subcontractor's scheduled activities begin at the signing of the subcontract, purchase order or a "Notice-To-Proceed" similar to that received by the general contractor. The duration of self-performed work can be taken directly from the construction estimate. Generally to acquire this information a project manager working with the superintendent generates a plan of action that lists the resources needed over a given period of time, while for trade work attain from the subcontractors their manhour allocation for the project per activity of work and insert their logic into the master schedule. This procedure must be followed for each trade at the time trades are purchased until the durations are well set. Blocks of sequential trades may be cast into a smaller sub-schedule to establish their relationship, predecessor to successor, lag time, earlier start to later start, and float time (limits to the tasks start or end). In creating the schedule on computer, all of the above information is needed for a proper "network", linking all of the tasks with proper relationships literally building the project on paper in a graphically vivid manner assisting all involved parties in seeing the end of construction.

The project manager needs to publicize the timetable by which they intend to publish the original schedule and its successive updates. This is often defined in the general conditions or supplementary general conditions. The work effort to accomplish this goal is quite substantial and must become routine to the project manager. Constant monitoring of job progress and effective communications with the subcontractors and suppliers are mandatory for successful scheduling. Gathering these updates on a regular basis is crucial to the understanding of the

"Where are we this week?" syndrome. Therefore, once the information is gathered and reviewed, the construction schedule can be updated with confidence. The updated schedule needs to be distributed to all involved parties.

Keeping the Progress Schedule

The initial progress schedule should be developed as the estimating department begins its initial review of the contract documents. At this point the project manager will be reviewing the documents for unusual performance criteria that may affect the routine start up of construction activities. Recognizing issues that control the manner by which the project is run and are identified early in the budget development stage allow for a more comprehensive schedule that becomes a strong tool to expand upon. Whether identified by the project manager or a team member, paying attention to documented procedural issues, strengthens the awareness of what needs to be applied to the construction schedule. The project manager can then prepare a tentative plan for all work, to assist him in analyzing the timetables required to complete all activities, phases or scopes of work. The schedule needs to show all issues that affect the progress of work, by creating a relationship with the tasks that are dependent on its successful completion in one given time period. At the time the project manager is assigned the project, they should schedule a meeting with the estimator to review the construction documents and the list of "special" issues he identified and share them with the estimator and passing them off to the entire project team.

Project managers tend to use their experiences in developing a schedule. For most with years of building they can be fairly accurate, and for smaller less complicated projects, right on track! This repetitious manner in preparing a schedule is generally accurate enough for the unlearned client, who trusted his architect to provide an approximate overall duration, and is dependent on the contractor to accept and build to this known fact. Clearly adjustment to this type of schedule is necessary based on an accurate procurement schedule.

This is not true for larger more complex projects. Some companies depend on a "Scheduler". A well-trained employee, specializing in the development of "CPM" method scheduling, dealing with every fact to accomplish his work depends on the resources of a strong network. Project managers need to follow the same procedures when a scheduler is not available for their project schedule preparation. A most important step is in collecting data from subcontractors to qualify the assumptions made during the scheduling process. This information will be used in creating the working schedule to be presented to the Owner for acceptance prior to the commencement of operations. It should be noted that the input offered by the subcontractors is the essence of their estimates and represents your most reliable data. The project manager in cooperation with the superintendent will use this information and develop the relationships by which the tasks will be related. Additionally, material purchases and deliveries are shown on the schedule to maintain control of long-lead time items; make this a mandatory requirement, and place these items on the schedule as milestones.

When the information is complete (data collected) and the task relationships are finalized the schedule can be placed on the construction bar chart, and refined and expanded to a CPM schedule, Time-scaled PERT chart showing the tasks as a pod with starting time, ending time

and duration, float and more clearly and graphically showing the network relationships.

For the first time scheduler, a parallel schedule should be maintained showing the actual work in progress vs. the original projected schedule. Computer scheduling programs allow for this option at the stroke of a key. But, the long hand approach will allow you the opportunity to be more focused at first, because you need to see all of the elements of the graph visualizing and projecting related tasks more spontaneously. As computer skills become keener, and you have experiences behind you, you will find that you will retain relationships and be able to focus on schedule segments (screen views) with greater confidence.

To succeed in scheduling you need to be an aggressive writer or user, update regularly and challenge yourself.

Close-out Procedures - be efficient!

Assuring success of a project the Project Manager needs to remain mindful of the close-out activities that bring a job to its responsible end. The process involves several very important accomplishments that are clearly defined in the construction documents usually in the general conditions section of the specification book.

To be successful it is always prudent to be informed and prepared. At the start up of the project a review of each trade section would further help identify needed final submittal information, that each of your subcontractors would be obligated to produce to complete their contract. It is now time to make a close out checklist. This checklist is an excellent tool to include in each subcontract, locking each subcontractor into ownership of their respective final submittal material, whether it is warranties, record drawings, or operation and maintenance manuals a clear reminder at the set time of contract signing is a good way to indentify that you are in control.

Referencing this information at the halfway point of a longer project would allow you to focus on closing out subcontracts of early finish work completed early, reducing your challenges at the end of the project.

The close-out materials are generally comparable to the submission materials required for approval by the architect at the start-up of the work by any trade. At the end of the project a manual including all of these pieces of literature are assembled and you publish this collection to the client via the architect. Additional information may include as-built drawings, replications of the architect plans with markups that identify the changes made and approved throughout the construction period and most certainly, letters of warrantee from each participating subcontractor.

Conclusion

Conclusion & Summary

To be an effective project manager, one must be prepared to establish a working structure, a format of proven management principles that support the philosophy of the construction company they serve. A system that will work best for your company has to be designed by your

company and then supported from within, to be truly effective.

The project manager must prepare a reasonable plan of action for building the project, by understanding the estimate, collecting data from subcontractors, outlining the scope of work and aggressively purchasing the trades, establishing the cost control measures which best assists in accomplishing one's goals. One should monitor job progress in a timely manner, and report findings on a regular basis to all involved participants. If problems occur, the project manager must take immediate action to identify the cause and effect, report their findings as specified, and take the necessary action to correct the problem.

The project manager's chances for success will be greatly improved if the principles, which govern the project manager's activities, are adhered to. Exactness is not always attainable, but the ability to plan, track and execute the project is.

The project manager needs to draft a schedule that best depicts the data gathered from the estimate and the subcontractors. He should discuss the project estimate with the estimator and share the schedule creation with the superintendent. The more tasks listed on the schedule the greater the control of the progress of the project. This is a definite benefit to the project manager.

Using the estimate and the purchasing opportunities he will create the project cost controls, formulating the working budget. With proficiency and experience projecting the outcome of your project can be done with reasonable success on day one.

The project manager is the leader, "Captain of his Ship", in control of activities, aggressively pursuing the plan of action, making informed decision and avoiding the consequences of reacting to issues that may be avoided through the active, aggressive approach style of management. The project manager maps out his course of action, monitors its progress, and corrects where necessary. With timely knowledge of any aberrations, the project manager will be in the position to administer the project rather than be manipulated by the woes of inaction.

Assistant Project Management - Training Program

A 3-year Program

Beginning strategy places the new employee into a three-year program that provides for experience in the Construction Company's three areas of performance.

The Employee

Year one

A concentration in the area of estimating begins the journey to becoming an assistant project manager with limited construction capabilities.

The assignment commences with a learning experience in the estimating department. Assigned to the Chief estimator, activities would include:

- Moderate exposure to timberlines power
- Attending timberline software classes
- Using the digitizer as a take-off tool
- Understanding the database for use
- Reading drawings and details
- Preparing scope sheet
- Scoping out a trade
- Preparing green sheets
- Learning communications skills
- Preparing spreadsheet reports
- Integrating with home office staff
- Pricing take-off
- Pricing change events

Year Two

The next assignment is in the field as the assistant to a Superintendent. The responsibilities will be similar to that of the project engineer.

- Job site organization
- Setting up the subcontractors
- Safety meeting attendance
- Document review
- Communication with the project architect

- Scheduling the work
- Manpower review by discipline
- Subcontractor relations
- Attending job meetings
- Preparing daily reports
- Preparing work authorization sheets
- Maintaining a daily diary of job activities
- Prepare performance criteria
- Work completed vs. work scheduled
- Work completed per task vs. manpower
- Review changes for economy, efficiency & effectiveness

Year Three

The third year begins with a focus on project management. First assignment is to assist the project manager in a larger scale project with the following assignments.

- Receive and review plans & specifications
- Review the low bid subcontractors identified by estimating
- Compare the subcontractors proposals against the estimators scope sheets
- Recommend to the project manager the adjusted low bidder per your review
- Prepare subcontract Exhibit "A" Scope of Contract Work Forms
- Purchase, with the Project Manager, the trades
- Prepare a series of logs for use on the project
- Subcontract log
- Insurance log
- Submittal log
- RFI log
- Change Event log
- Issue log
- S-K log
- Bulletin log
- Document drawing log

- Prepare, with input from the superintendent the official project schedule
- Prepare schedule update on a regular basis, for job meetings
- Prepare meeting minutes
- Create a project on C-3
- Maintain the job issues on C-3
- Receive shop drawings and review for consistence with design
- Transmit shop drawings to the architect within 5 working days
- Monitor the shop drawing process
- Review change directives from the architect for economy, efficiency and effectiveness
- Transmit change requests to subcontractors (minimize pricing time)
- Receive changes from trades and prepare a CE letter to the architect (this must all happen within 7 days of the change directive or request).
- Develop a working relationship with Home office
- Develop a working relations ship with the project superintendent

The Employer

The intent of this program is to provide reasonable training to new employees. Some general rules need to be accepted by the company to allow for the success of the training program. Noted below is a listing of items that need be established as operating parameters:

- Unless otherwise noted, the positions will be charged to projects, in the event that project costs do not allow for "direct employee expense" for this position, then the payroll expense will be service costs.
- Each new employee will be assigned to the group mentor responsible for the development of the new employee. The mentor will assist and inform management in evaluating each new employee and will provide guidance to the new employee. The mentor will integrate with operations personnel to ascertain the learning rate, knowledge base and the aggressiveness of the new employee.
- The new employee will be assigned to qualified personnel, with the capabilities and talents to "show the way" and provide for a base education in their area of expertise.
- Employment benefits would be equivalent to first year employees with the following growth criteria over a three-year period.
- After the successful completion of the first year's assignment and, in receipt of their mentor's first letter of recommendation (preceded by a reemployment interview) the one-year employee would earn a raise between \$2,400 and \$4,800. In successful completion of their year two assignment they would qualify for a second salary increase equal to the range offered in year one. Mandatory at this stage would be a detailed review outlining the strengths and weaknesses of the employee during their first year, with a focus on improvement and success. At the completion of their third year's training and, with an assessment of their completed performance, a meeting must take place between the employer and employee to discuss their experiences, accomplishments and weaknesses, with recommendations made to the employee guiding them toward their future employment @ BSCC. The employer would, based on this data and interview, prepare a

third year salary adjustment, appropriately.

- The employee standard benefit package would be offered at the time of employment.

Year/Phase

Learning Objective

Metric

Year One

Estimating

To develop a working knowledge of SPG estimating systems & procedure

At term's end, be able to independently prepare complete bid of \$250,000 value

To have a fundamental understanding of BSCC's marketing & BD philosophy & Strategies

Serve as an active participant in a bid presentation

To become familiar with various estimating tools, such as Timberline and digitizer

At term's end, display proficiency with timberline, digitizer and other tools

To further hone one's communication skills by successfully participating in bid day activities, receiving and verifying subcontractor quotations

Present an ability to understand the trade and scope offered as it relates to the bid quantify the scope per estimating's assessment of the time of the scope review.

6 months

To enhance the individual's knowledge of the pre-construction process.

mid-year review

Prepare spreadsheet formats for presentation with proposals less than \$250,000.

Learning skills associated with Lotus 123 spreadsheet activities.

Preparing quantity take-off for all trade activity, with a concentration in demolition, concrete, metals, masonry, carpentry, door/frames hardware, windows, glass & glazing. And pricing same.

Demonstrate a working knowledge of each of the construction trades and their building components, and the average cost to perform.

Final assignment - "being the bid captain"

Accept the assignment as a bid captain, conduct the scope review sessions with the estimating team, coordinate the scope sheets with the intended design documents, notify the project manager of special requirements.

To develop the ability to organize a job site

Complete job site mobilization & set up sub contractors for project

To command a sound understanding of project scheduling

Produce and maintain a project schedule

To gain a more in depth, broader understanding of safety, risk management and financial impact upon the project

Be able to conduct an in depth safety audit of a job site.

To obtain a firm understanding of the project document preparation and control process

Be able to prepare daily reports, work authorization sheets, daily diary of work activities and minutes of job meetings

To understand and utilize various forms of project criteria

Prepare work completed vs. work scheduled & work completed per task vs. manpower performance reports.

Year Two Superintendent

Document review for construction schedule preparation

Review the construction documents and assist the superintendent in preparing the project schedule. Be prepared to provide input into the duration of activities that make up the schedule.

Job Site Organizational requirements and who does what?

Review the general requirements for conditions that affect setting up of the project, prepare a list and discuss with the superintendent for implementation at the site.

Scheduling the subcontractors and monitoring their performance.

Recommend to the superintendent start up dates for various subcontractors, prepare daily reports on job site attendance & register percent of work completed on a monthly basis.

Communicate with the project architect regarding project activities and scope issues that require their input in making a change decision.

Prepare a RFI log of activities that require clarification. Communicate your effort to the PM and follow up on the decision making process to remain fully informed of the outcome of these issues. Maintain the log, and report regularly to the PM the status of the sort after resolutions.

Attendance at regularly scheduled job meetings. Prepare for review a status of current activities and a look ahead to "next week".

Be concise and focused. Your written assumptions must be made with reason and accuracy; approval by the Superintendent prior to presentation is mandatory. Update the site construction schedule after approval.

6 months

To enhance the individual's knowledge, you must be prepared to meet with the general superintendent to discuss your assignments and learning experiences demonstrating your understanding of the processes.

Mid-year review

Preparing daily reports

Daily reports must be kept in a most complete manner. All items and issues must be recorded (strong document when used as a legal document). Retain a copy for your file and submit a copy to Operations for their review and understanding of the project's status.

Preparing Work Authorization Sheets. Retain for you personal reference a daily log denoting activities of the day which appear uncommon to the stand operation, e.g., Owner rep. Request for work outside the scope of the contract; subcontractor's remarks that a claim for work not noted on the drawings require a Time & Material signing.

No additional or questionable work can proceed without a signed work authorization sheet signed by the

Owner or the authorized representative. Report these occurrences to the PM immediately. Retain log of all "WAS" and submit the log to the PM weekly. Only superintendents can approve, after discussions with the PM, Time & Material Slips.

Prepare performance criteria of work completed vs. work scheduled, and work completed per task vs. manpower.

On a copy of the "site kept" project schedule, annotate on a daily basis performance of work for each trade activity; note carefully delays in startup time of subcontractor's who do not reports per the scheduled plan

Job modification review for economy, efficiency & effectiveness.

Review implied modifications against the intended design for accuracy of their request. Consider and recommend alternatives if applicable, estimate the cost impact, and schedule impact. Present to the Superintendent and PM for their review.

Year Three

Project Manager

Review plans & specification for new projects against scope prepared by estimating and subcontractor's scope.

Be prepared to identify accuracy of scope or deficiency therein, work off of Green Sheets in comparing subcontractor's bids. Be prepared to

| | | |
|---|---|---|
| <p>make recommendations to PM for subcontract award.</p> | <ul style="list-style-type: none"> • Insurance Log • Submittal Log • RFI Log • Issues log • Change Event Log • SK Log • Bulletin Log • Document Drawing Log | <p>To enhance ones knowledge you must be prepared to meet with management personnel to present your work and to explain the process that has guided your training.</p> |
| <p>Prepare scope Exhibits, e.g., Exhibit "A"</p> | | <p>Mid year review</p> |
| <p>Utilizing the green sheet information, prepare a comprehensive subcontract "scope document" for inclusion into the subcontractor's contract.</p> | | <p>Receive, review and monitor shop drawings for correctness to design and consistency with code practices.</p> |
| <p>Purchase trade for a given project. Work with the PM to negotiate the purchase of a subcontract. Keep a log of records in conflict with the scope for use by the PM, prior to the subcontract purchase.</p> | <p>Keeping logs current on a daily basis.</p> | <p>Review, shop drawings and approve for submission to the architect/engineers. Note deficiencies within submittals to the PM for clarification prior to submission. Retain a log of the submittals. Receive from the architect/engineer approved submittals and distribute to affected parties.</p> |
| <p>Computer related company program usage</p> | <p>Prepare the project schedule. Work with the PM and Superintendent to develop the official project schedule. Maintain the schedule on a weekly basis for presentation at weekly project meetings.</p> | |
| <p>Attend training classes and learn the following company computer programs:</p> | <p>Prepare meeting minutes.</p> | <p>Review change directives form the architect/engineer for economy, efficiency and effectiveness.</p> |
| <ul style="list-style-type: none"> • C-3 or Cost X • 123 forms or Project -X • Microsoft Word • Lotus 123 • SureTRAK Project Manager | <p>Learn the Beacon Skanska Format for action Meeting Minutes and maintain and update the minutes weekly.</p> | <p>Review directives with the PM and superintendent against the plans for correctness, when determined to be a legitimate change request subcontractor pricing for compliance with contract language. Prepare a cost event letter estimating the cost and time impact of the change and submit to the architect/engineer.</p> |
| <p>Prepare a series of management tools, logs, for use on the project.</p> | <p>Create and maintain the cost control management (financial picture) of the project. Work closely with the PM and Cost Control Manager to preserve accuracy.</p> | <p>Running a project</p> |
| <p>Logs to include:</p> | | <p>Be prepared to accept a project, under the guidance of a PM, meeting the objectives achieved above and manage the project.</p> |
| <ul style="list-style-type: none"> • Subcontract Log | | |

Procedure Manual

This manual provides for the basic insight to the process and actions; the project manager ensues, throughout the construction project. Many of the functions that are required are repetitious. The project manager who masters the process, who has construction smarts and demonstrates good leadership skills will be in control of his project.

As companies differ in organizational structure, they may have philosophical differences that dictate the approach the company takes in bidding and managing a project. Be mindful that this is a guide and that your success will be measured by your ability to manage a project following your companies policies.

The manual is broken into three main sections:

- I. Bidding
- II. Purchasing
- III. Construction Management

The categories that are commonly dealt with in the estimating departments, with the project manager involvement are:

I. BIDDING

- General Bid Procedure
- Scope Analysis Sheets
- Preparing The Bid List
- Interviewing Subcontractors
- Preparation For Bid Day

After notice of award and signing of a formal commitment letter you need to follow the next procedure, purchasing the subcontractor trades and material venders including:

II. PURCHASING

- General Requirements
- Smaller Projects
- Larger Projects

III. Construction Management & JOB START UP

- Applying for the Building Permitting
 - Forms
 - Formulas
 - Request for checks
 - Affidavits

- Refining the Project Scheduling
 - Developing the front end of the schedule
 - Purchase, fabrication & delivery dates
 - Milestones activities
- Cost Analysis
 - Setup of spreadsheet
 - Analysis of general conditions
 - Projections of subcontractor project completion
- Administrative
 - Filing System
 - Project Directory
- Insurance and Bonds

IV. Managing the day-to-day

- Document Control
 - Shop drawings
 - Architectural drawing log
 - Request For Information
 - Cost Event Log
- Meeting Minutes
- Requisitioning
 - Owner
 - Stored material
 - Subcontractor
- Cost Control
 - Maintaining cost reports
 - Monthly Executive Reports
- Change Management
 - Owner Change Orders
 - Subcontractor changes

- Field Operations
 - Daily Reports
 - Quality Control
 - Safety
- EEO
 - Minority Requirements
 - Local Residence Employment Plan
 - HUD
- Miscellaneous
 - Timesheets
 - Expense reports
 - Reproduction
 - Labor rates / agreements
 - Publication Agreement

V. CLOSEOUT PROCEDURES

- Substantial Completion
- Owner / Architect Closeout
- Subcontract / Vendor Closeout
- Jobsite Closeout
- Sample Correspondence / Closeout Package
- Storage

I. Bidding

General Bid Procedures

General bid procedures require the setting up of all of the forms that will be used to control the outcome of the bid.

Printing of plans and specifications by use of the bid team.

Selection of all subcontractor bidders, notification of the project, bid day and time and special requirement of the bid.

Bid team meeting schedule.

Assignment of the trades to bid team members.

Scope Analysis Sheets

Developing the scope requires that the project manager (bid captain) read the front end of the contract documents and notes all information germane to the bid. The information noted is generally applicable to all subcontractors and for the purpose of consistency in bidding a requirement at the time of the bid.

- Prepare a scope sheet for each trade.
- Read the general conditions carefully; note the requirements in numerical order on the scope sheets.
- Discuss the items in detail with the bid captain being certain that all relevant information has been noted, eliminating duplications.
- Items that are generally standard items, i.e., sales tax, union affiliations, etc. should be noted first.
- Items common to all bidders should appear following the standard items on the scope sheets.
- Next list all items that are trade specific, that appear in the documents and are unique or require special coordination.
- These scope sheets will be used in discussions with subcontractors at the time of solicitation of estimates, in a telephone qualification session, confirming completeness of the subcontractor's estimate.
- When in the course of taking bids inconsistencies are discovered in the scope of bidders, and you need to understand a common scope for all, you must complete the missing information and add assign a value to that information.
- When all information is complete it must be summarized at the bottom of the page.

Preparing the Bidder's List

Preparing the bid list is generally one of the easiest tasks that the project manager/estimator has. The standard listing of potential bidders is used with one special inclusion, that is, specialty subcontractors identified at the initial bid document review. All potential bidders need to notify at the same time giving them access the bid documents and equal time to prepare a bid. Follow-up telephone calls must be made to gain knowledge of the bidders who are interested in the bid and whom you will become dependent upon through this process.

- Send out a general facsimile to all potential bidders; identify a brief scope, date and time of bids, availability and location of plans.
- Follow-up telephone calls to confirm bidder interest is very important.
- After the completion of the scope sheets. Calls and confirmation of the scope with all interested bidders must be done. This is a good time to discuss your understanding of the scope with the subcontractors, your trade experts. Make the necessary adjustment, additions to your scope sheets as new information is learned, and be certain to qualify that scope with each bidder.

Interviewing Subcontractor

The interviews with subcontractors require that you are familiar with their scope, so you must be construction smart. The following are sets that you should take in preparing for these interviews.

- Read the scope sheet before beginning your review of the contract documents.
- Make note of facts stated in the documents that are not on the scope sheets for discussion with your team members and ultimately your subcontractor contacts.
- From you carefully prepared list discuss, in as much detail as possible, these items with the subcontractors.

- Carefully note all adjustments, and be certain that the subcontractor provides a value for this adjustment.
- Take bid information carefully, exclusions, additions, alternates, allowances and their bid value.
- Exclusions and additions mean incompleteness or inconsistency, be certain to qualify each item carefully.

Preparation For Bid Day

Bid day preparation requires the careful crafting of forms to be used, creating an order by which you can monitor the forms and an instrument to summarize your bid. A location to put the bid together. Bids forms pre-prepared and ready for delivery, a delivery team and bid day leader to accept the final numbers and to complete the bid.

For each trade section of work:

- Scope summary sheet by trade
- Trade value
- Allowance section
- Alternates section
- Adjustment section

For the general bid:

- Summary by trade
- Direct Cost Bid Amount
- General Conditions Amount
- Fee Amount
- Total Bid
- List of Alternates Summarized and Totaled

II. Purchasing

General Requirements

General Requirements are made of two (2) elements:

- General Conditions, the costs associated with doing business including the salaries and expenses incurred by the general contractor in performing the work, and,
- Work performed by the General Contractor's labor force in completing various construction tasks

Smaller Projects

Upon notification of a bid award the process moves into purchasing. Depending of the size of the project this function can be managed differently. For smaller projects the project manager, acting independently he will contact the subcontractors and confirm and finalize their bids, awarding the work to the lowest bidder.

Larger Projects

For larger projects, where subcontract scope and volume are much larger and more detailed the process should be

followed:

- Consolidate the information collected during the bidding process from each of the subcontractors participating on bid day.
- Use the form of the scope sheet, expanding it to include a column for all subcontracts that participated, and space for new subcontractors if necessary.
- Discuss the items in detail with the bid captain and project manager being certain that all relevant information has been noted, eliminating duplications and including information from a detailed study of the plans and specification.
- Be certain that all items of the general conditions that pertain to the subcontractors and all standardized language that your company requires are listed on these scope summary sheets.
- The Development of the subcontract and/or purchase order scope beyond the bid day version requires another look at the plans and specifications, this time from a builder's standpoint.
- A superintendent's input is very valuable at this stage, recognizing issues of construction that cannot be drawn onto plans or typically described in trade specification sections.
- Noting the schedule start time for a subcontractor is a factor at this juncture.
- Develop a contract status log, which will allow for tracking, routing and completing the document process.

III. Job Start-up

The Building Permit

Permitting is primarily a function of the project manager in conjunction with the superintendent, as construction supervisor, the signatory of the permit and the contractor's responsible authority.

The Project Manager's responsibilities are to:

- Receive and prepare the appropriate form, which are generally available at the local building inspector's office.
- The cost of a permit is usually based on a formula that is particular to each community or jurisdiction
- The superintendent as signatory for the contractor must execute the form
 - It is required that the signer be the site supervisor.
 - If required, have the owner sign as noted.
- Submit a check with the permit submission to the proper authorities, and follow up on the assigning of the permit.
- Many large constructions are governed by the overseer, generally the architect and/or engineers who designed the project and they must submit an affidavit that they will responsibly oversee that construction portions of their design with respect to local standards.

The Project Schedule

More clearly defining the project schedule, is keynote to the success of a project manager, a clear recognition of the tasks of work, the proper order of their appearance on the job, correct duration of work, complete resources allocation to tasks and a clear purchasing and delivery register.

- Begin with the contract award date; this identifies the actual date that your company is committed to the project.
- List all trade of significance that need to be purchased early, basing these dates on delivery to jobsite
- List all of the design team approval dates needed to succeed at making these delivery dates attainable, backing into the submission date of shop drawings and allowing adequate review and approval periods.
- Link the entire submittal to the delivery process.
- Based on the delivery of key elements, how do they match up with the initial schedule performance items? This is where adjustments must take place. An example is that you're completion of concrete foundation, which began 8-weeks after excavation for footings, is 8-weeks after commencement. Steel delivery is projected at 20 weeks after approved shop drawings. Your schedule shows 4-weeks of down time, unless you can improve on the review period or shorten your fabrication time. If the initial schedule did not show this delay, then you may be faced with unexpected job delay. Caution prevails!
- Verify with your selected subcontractors the manpower they have estimated to perform this work, and the duration that they expect to complete their assignment in. Qualify the time allowed within your schedule by comparing your estimate with your subcontractor's estimate. Discuss this dates fully with them; your schedule must be a part of you contract with them. If you choose to buy time of completion as a part of the project schedule, be certain that your subcontractor understands parameters of your schedule.
- Certain tasks are dependent on predecessors' tasks; you should create these links accurately. If a question of order makes creating a link an uncertainty, confer with the project superintendent and subcontractor, remember, they are both team members now, and each have a stake in the project's success.
- Lastly on your way to completing the schedule, there will be construction elements that must be delivered at exact dates for their installation and for the success of a predecessor task to begin. These elements give birth to milestones, a task of no duration, and a point in time that doesn't exist on your schedule, denoted as a symbol, a flag, an emblem or a pennon. An insignificant market that points to success.

The Cost Analysis

The analysis of the cost of a project is much different than the estimate prepared to build the project. The day the project is assigned takes on a new meaning to the value of worth the project has. Preparing a method to evaluate the worth is very important to the project manager, so much so, that many computer software companies are writing specific programs to deal with the financial matters of a construction project. These programs are a diversion from the standard accounting software that monitors dollars spent against cost commitments made.

- A schedule of the general conditions distribution for the life of the project
 - Current projected cost distributed monthly
 - Anticipated monthly expenditures that affect these projections
 - Outside influences that affect these projections
 - The difference between the budgeted amount and the projected amount
- Subcontractor costs estimated on bid day
 - The actual purchasing value
 - Anticipated costs due to oversights in the bid
 - Costs for delays attributed to poor schedule planning

- Lost work performed recovery to be negotiated at end of project.

The Administrative Process

The filing system should be standard throughout the company. The day the project is assigned to the project manager and the files are delivered to their workstation is the time to initiate the filing system. An example of the type of files that should be created is as follows.

Projects Folders:

- General folders should include the following:

| | | | |
|-----------------------------|-------|-------------------------------|-------|
| Chronological | _____ | Estimate | _____ |
| Owner In Correspondence | _____ | Owner Out Correspondence | _____ |
| Architect In Correspondence | _____ | Architect Out Correspondence | _____ |
| Meeting Minutes | _____ | Superintendents Daily Reports | _____ |
| Other Correspondence | _____ | Photographs | _____ |
| Permit | _____ | Requisition | _____ |
| General Conditions | _____ | Schedules | _____ |
| Cost Reports | _____ | Change Orders | _____ |
| Insurance / Bonds | _____ | Owner Contract | _____ |
| Other_____ | _____ | Other_____ | _____ |

- Trade folders should be created for all subcontractors/vendors and include

Example:

| | |
|----------------------|---------------------------|
| Subcontractor/vendor | Contract folder |
| | Costs/ requisition folder |
| | Correspondence folder |
| | Shop Drawings folder |
| | Transmittals |
| Studies | _____ |
| Inspection Reports | _____ |

- Project Directory

The project directory was begun early on in the process. At this time the administrative assistant assumes the responsibility of this document and maintains it throughout the project through completion.

The Insurance & Bonds

Insurance:

The bidding documents and/or contractor define the limits of insurance requirements.

For Subcontractor insurance certificate submission, the industry standard form certificate or the AIA G715 form, an acceptable substitution can be used reflecting the applicable limits and the additional insured. Often it is advisable to forward the sample insurance with the notice to proceed to enable the subcontractor to present this form to their provider to avoid misinterpretation of the requirements. This also allows them to submit their complete insurance before work begins.

Insurance Certificates must be received before personnel arrive on site.

Bonds:

Payment and Performance Bond-

The contractor sets the requirements for bonding of subcontractors at the time of the bid. The bond requirements are usually “performance” of the subcontract by the subcontractor and “payment” by the subcontractor for all material cost.

Certain projects have a requirement that the contractor is bonded, if this is the case the language that described the bonding should be forwarded to the contractor’s bonding agent for review and processing as defined in the bidding documents.

Bid Bond-

Occasionally bid bonds are required during the bidding stage to insure the bid amount presented.

The project manager again should submit the proper information to their respective binding agent for review and compliance.

Sales Tax Bond-

A sales tax bond is required when contracting with a company that resides out-of-state to insure that the company pays Local State Sales Tax. The bond is submitted to the state. The project manager is responsible for confirming the submission of the bond or that payment is made.

**The bond fees are a percentage of the total “contract value” not just the estimated material value.

IV. Managing the Day-to-Day

- Document Control

- Project Directory

At the project start-up, it is imperative to generate and maintain a project directory listing the Contractor/Owner/Architect team members, and the subcontractor team members. The directory should include: the name of the company, address, telephone number, fax number and contact person. This listing should be forwarded to the field superintendent and field operations as soon as possible.

Maintaining this document with updates and additions throughout the project is also very important. At the time of project close out this document can be included in the final project summary report presented to the owner, for easy access to subcontractors throughout the warranty period.

- Shop drawings

Are drawing, manufacturer’s literature and sketches the contractor submits to the architect to verify that the interpretation of the design made by the contractor, the detail, profiles and dimensions are consistent to what was rightfully inferred on the plans and in the specification. The development of these materials are usually generated by the subcontractors and verified by the contractor prior to there being submitted.

⊕ Architectural drawing log

A standard log that shows the list of drawings and sketches released by the architect and engineers from the initiation of the bid process and throughout the construction project.

⊕ Drawing number

⊕ Description

⊕ Date of drawing

⊕ Release date

⊕ Request For Information

When a question arises, whether from the contractor or a subcontractor, it is recorded by the contractor and forwarded to the architect from an interpretation, determination or resolution it is placed on a log for tracking purposes.

⊕ Cost Event Log

This log is used to track outstanding cost items developed by the contractor representing changes or modification to the current construction program. As this is an issue between the contractor and the subcontractor, the contractor tacks these items on a log for their benefit. At such time that one of thee cost items becomes an issue to be discussed with the architect as a change to the construction contract the item become a pending change order.

⊕ Meeting Minutes

The project manager in job meetings prepares “Meeting Minutes”, and the superintendent prepares the minutes of field meetings. These are valuable tools when:

- ⊕ Confirm all attendees are cognizant of the outstanding issues and actions required by each.
- ⊕ Advise the owner/architect/others of potential and or existent problems that could impact the job in a cost or schedule manner.
- ⊕ Reminds each team member of responsibilities and forces accountability
- ⊕ For record keeping and reference

Once an issue is resolved, the item is noted as 'resolved' for one period, usually weekly, the following week the item is removed from the list.

⊕ Requisitioning

⊕ Owner

Requisitioning to the owner should occur monthly on or about the first of each month. The documents and or contract may specifically define the requisition schedule.

The requisition is typically submitted with all contract required support literature and can be produced in several formats as indicated below.

A) Cost Plus

The requisition represents the actual costs-to-date incurred on the project including the general condition's information from the monthly cost report and payroll, and, ultimately the requisition becomes a derivative of the exact accounting records.

As a minimum, on a monthly basis, the accounting records should be reviewed and the information documented is transcribed to the application for payment document.

B) Lump Sum

The most common contract is in the form of a lump sum. The requisition reflects the actual bid values.

The requisition is based on the percentage complete in each trade.

Subcontractor backup may or may not be required.

Percentages should be reviewed with architect or owner before formal submission or as soon as possible after submission, to confirm agreement in amounts applied for avoiding delay in approval for payment.

C) Guaranteed Maximum Price

The owner is aware of all trade contracts and will want to see the 'buyout savings' line item on the generated form the purchasing effort.

General conditions can be submitted in a summarized format.

1. Buyout saving is the contractor's money during the construction of the project, covering items of scope that are generally inferred and not appearing in any specific trade line item. At the end of the project, when all costs are accounted for and paid, the remaining balance of the buy out savings is returned to the owner by presenting a final deduct change order.

Change Orders:

The architect on standard AIA documentation typically prepares an owner's change order.

Once the CO form has been signed by the owner and/or architect, the project manager is allowed to bill for the approved items.

Once the requisition is prepared and verified, three copies must be signed and notarized.

Typically, the requisition is forwarded to the architect. Copies of the requisition should go to the owner, project accountant and controller as well.

⊕ Subcontractor

Subcontractor Requisition:

Each Subcontractor, and most vendors, is required to submit a formal requisition.

Typically, when a purchase order is used in lieu of a contract, requisition is not required; the vendor invoice is acceptable.

The subcontractor requisition is due approximately 2 weeks before the owner's requisition. That is done so that there is ample time to revise the request if backup is required for the owner.

Upon receipt of an invoice, the project manager is to verify the work has been completed or materials

received, sign the invoice as confirmation, code or identify the invoice to match the item of work it becomes associated with on the project and forward the original to accounting for processing.

Upon receipt of the requisition from a subcontractor, the project manager is to verify the contents. The following must be correct:

- ⊕ Contract amount,
- ⊕ The amount billed is equal to the amount completed,
- ⊕ Confirm what has been paid to date or scheduled to be paid,
- ⊕ Verify change order amount,
- ⊕ Confirm insurance certificate is dated for the project,
- ⊕ Performance and payment bonds have been received and are on file,
- ⊕ The contract has been received and executed.

Upon receipt of funding, accounting notifies the project manager by forwarding a copy of the check for their files. Accounting and project manager should again meet and review what information, if any is missing. If information is missing, it is the responsibility of the project manager to secure. If all paperwork is acceptable, the accountant will proceed with the process of cutting checks. Once checks are available, the accountant notifies the project manager to confirm that the release of checks to all payees is prudent or if a delayed payment is required.

Stored Material:

When a subcontractor invoices for stored material off site, the following items are required,

- ⊕ Verify payment for stored material is contractually correct.

- ⊕ Proof-Site visit, photographs, video, shipping manifests are in order

- ⊕ Bill of Sale- stating the material belongs to the owner once payment is received. This enables the owner to claim material should the subcontractor face financial problems.

- ⊕ The bill of sale shall state the following information:
 - The name of the subcontractor
 - The name of the storage facility if other than subcontractor's yard
 - What is the material and how is it marked (i.e. job name and number on steel) if possible

- ⊕ Insurance certificate for Storage facility and courier
 - UCC-1 Filing - The UCC-1 filing is a requirement of some owners or lending institutions. The filing is with state and local municipalities and produces a public record of the sale. The responsibility and fee of the filing is with the subcontractor/vendor and a copy of all paperwork should be forwarded

- ⊕ Stored Material Billings

⊕ Cost Control

⊕ Maintaining Cost Report

Each month, each project manager must coordinate the financial information provided by their accounting department or monthly cash records and summarize them into a report that anticipates and predicts the outcome of the project. This report should be submitted to the head of the company for their review and approval. Success or failure of a project can happen quickly, when project costs run out of control. Be mindful of this very important procedure.

| Step | Action |
|------|---|
| 1. | Immediately following the close of the month cost review create the report that you intend to submit. Collect all of the accounting records, including payroll. |
| 2. | Given the information contained in the reports, update the worksheet program that you created at the start of the project, or have been maintaining throughout the project. Today many companies are using computer project management software to control cost and management activities, if your company prescribes to these applications, keep them current. |
| 3. | Presumably if you have made a conscious effort in maintaining the cost information accurately, the summary data will be concise and easy to understand, therefore, usable and predictable. |

⊕ Change Management

⊕ Cost Events / Work Authorization

⊕ Owner Change Order

⊕ Cost Event Letter

The owner and or architect may require extra work by issuing a written or oral directive.

The contractor must advise the Owner/architect immediately if there is a possibility of a cost or schedule impact. The time allowed for this notification varies with contracts; therefore, it is very important that you are familiar with the language of the contract documents in administering to the contract.

Change Order

The generation of an Owner Change Order is done in response to this request or directive that asks for additional work or modifies the existing construction design. Clear direction must be given by the owner/architect as to the design change and the contractor needs to understand the scope of the change before proceeding. Once this is clear, the contractor (with their subcontractors) can provide an estimate of cost for review and acceptance by the owner/architect.

Once approved the work of the change can be initiated.

⊕ Subcontractor changes

⊕ Field Operations

⊕ Superintendent Daily Reports

For record keeping and informational purposes, the project manager requires the superintendent or field engineer to submit daily reports indicating:

- ⊕ Date
- ⊕ Day
- ⊕ Weather / Temperature
- ⊕ Manpower
- ⊕ On site contractors
- ⊕ Visitors
- ⊕ Description of work performed that day by subcontractors and Beacon craft
- ⊕ Items for Project Manager's Attention
- ⊕ Field Instructions Received
- ⊕ Rental Equipment

Upon completion, the report should be forwarded to the Project Manager for review and understanding the progress and activities of the project.

Quality Control

In the desire to service the owner, and provide and deliver a top quality project, quality control is essential. Ultimately, the field superintendent is responsible for checking each subcontractor's conformance to shop drawings, design documents, material deliveries and or erection/installation requirements.

Should nonconformance or errors be found, the superintendent must notify the subcontractor (s) involved that corrective work is required and follow up until all work is completed satisfactorily.

Should resolution not be completed to the satisfaction of the superintendent, the superintendent must put the subcontractor on written notice. The notice should be forwarded to the PM also to enable he/she to support the support the completion of the project.

⊕ Safety

This is a most serious area to manage. Accidents that are simple and considered natural, a minor cut, a fiber in the eye or a twisted ankle can put a worker out of work for hours or days and affect the timing of the project. More caustic occurrences such as a pulled back, bang to the head and deep cut can result in the loss of a man for the duration of the project, damaging your company's credibility. A tragedy on the jobsite would have serious ramification for a company, or even mean the end of a company.

The company may be viewed as not attentive to worker safety, a possible violator of OSHA regulations, susceptible to major penalties and fines and again the demise of the company.

What worker's think about after an accident, the recovery time to regroup your team, how you handle a crisis situation, additional costs to your operation, industry perceptions and insurance company investigations are clearly issues that require careful, factual documentation.

- ⊕ Shut down operations until your executive or a principal representative of your company

arrives onsite and organizes the investigation. His approach may include:

- ⊕ Interview everyone onsite at the time of the incident
- ⊕ The interviews should be witnessed, followed by a repeat review session recalling the accounts of the incident
- ⊕ Have each person interviewed prepare a chronological detailed account of the incident as they know it
- ⊕ Have any individual worker or team member at the site of the incident, or in the closest proximity of the incident write a chronological account of the event as they know it
- ⊕ Focusing on the oral interviews in the short term, decipher what is relevant, and non-damaging, work with your executive in preparing a statement of the incident only addressing the facts, as they are known at this time. Announce to the press or others that no information can be released based on assumption or supposition. Never release names of injured or involved individuals.
- ⊕ Once organization has returned to the jobsite, begin preparing a binder that includes all of the materials that were gathered.

Focus: You must be completely focused on this accident,

- Release no information about the accident and,
- Discuss nothing with anyone except you immediate supervisor
- Politely excuse yourself from contact with the Press Corp or anyone outside of the company population.
- Use expressions that are informative, by lettering outsiders know that you are investigating the situation and,
- That as soon as you know more, “all of the facts” you will be prepared to make a statement.
- Providing incorrect information in a formal statement can potentially be damaging to your company.

Equal Employment Opportunity Program

This is a company policy and rarely managed by the project manager. Language that addresses this policy will be included in the general conditions of your subcontractor’s contract. You will be required to assure your company that the practices that your subcontractor is making meet your company’s standards, and the standards of the public agencies we serve.

Resident Requirements

Of growing interest when public monies are used in construction or if the project that you are to begin has tremendous public interest. Recent trends of cities are in an attempt to copy HUD section 3 requirements, in a more stringent way. These requirements strongly suggest that the contractor establish a training program for local workers, then to implement the program on their project. The area from which the

workers will come is called an empowerment zone.

MBE / WBE

When these requirements are imposed on a project, based on the percent of the contractor's total contract amount, minority and women enterprise subcontractors must be employed. This process is generally secured during the bidding, pricing process. A good estimator protects their bid by seeking out participants and includes them on bid day.

The project manager, with support from a compliance officer, prepares logs to monitor the monthly information that is a requirement submission to regulatory agencies. The forms maintained by the project manager are a compilation of the information collected from each subcontractor.

Miscellaneous forms used in preparing and reporting information are attached for explanation and clarification.