

PLANNING FOR PROFITABILITY:

Your Guide To Successful Pre-Construction Planning

PROJECT NAME: _____

■ Signature _____

Title _____ Date _____

Planning for Profitability: Your Guide to Successful Pre-Construction Planning

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Planning for Profitability

has been developed by the Mechanical Contractors Association of America, Inc. (MCAA) to assist contractors in making an in-depth evaluation of a project, thereby reducing risk and enhancing profitability. To assure the management team that proper planning has been done for a project, it is suggested that one booklet be used on each project. At the end of the pre-construction phase, signatures should be obtained from each team member indicating their commitment to the plan. The guide then becomes an integral part of the project's management, planning, and execution.

THE IMPORTANCE OF PRE-CONSTRUCTION PLANNING

Complete pre-planning and scheduling are vital to the success and profitability of a construction project. While the size of the contract affects the time required to complete planning, it does not impact the need for a plan. For maximum success, company management must commit the necessary resources to accomplish all planning before the start of construction whenever possible.

This planning serves three primary purposes:

1. Achieve agreement on targeted profit by the project manager, senior management and field labor.
2. Create a well-thought-out, finalized, workable plan and schedule.
3. Identify additional profit opportunities to be investigated and risks to be avoided.

In pre-planning a project, the construction team will focus on timely meeting all project requirements. It is important to start closing out the project immediately upon its beginning, regardless of the project's duration.

During project closeout, each contract requirement is completed, one by one, until all have been satisfied. If this commitment to completion is not made from the start of the project, a project manager may find that work has to be performed more than once, too many activities must be completed at the end of the project, and retainage collection is significantly delayed. All of these problems are certain to increase cost. Moreover, an incomplete or inconsistent closeout process runs the very real risk of damaging the relationship with both the owner and the designers. The best contractors are able to develop strong, long-term relationships with clients that provide the foundation for long-term profitability.

Pre-construction planning is designed to maximize the input of company experience and to compress project planning into a definite time frame at the beginning of the project. It is mandatory that each phase produce a written plan including a list of construction and administrative activities, persons responsible for each activity, a time period during which the activity will be performed, and deadline dates. This plan may be a simple list, a bar chart listing activities, or a complex network of actions. Management needs to know that the company's accumulated knowledge and company philosophy have been communicated to and understood by the project manager and field labor. The only way to ensure that communication is complete is to secure feedback in the form of a written plan that can be monitored, managed, and controlled.

The company makes a profit by making things happen, and that requires a good written plan. Without the plan, the company is in the position of reacting to project conditions, often resulting in poor handling of the project. With a written plan, the company is in a much better position to cause events, schedules, and progress to happen in a manner most favorable to the progress of the work and the ultimate maximization of profit.

OBJECTIVES OF PRE-CONSTRUCTION PLANNING

1. **Enhance visibility at the project outset.** The project manager and his key support people will be aware of the project goals and understand how to build the project logically and profitably. This will provide the team with the confidence that only knowledge and planning can bring. In addition, it frees up time during actual construction to manage, increase productivity, identify profit opportunities, lend assistance to other project pre-construction planning, and maintain the kind of jobsite management that drives project pride and profitability.
2. **Encourage maximum knowledge of the project.** A thorough analysis of the schedule, including the contract and the scope of work, fosters understanding of the responsibilities of the various players, including the general contractor, construction manager, owner, architect, engineer, and other subcontractors.
3. **Improve cash flow.** Having a billing plan, change order plan, risk avoidance plan, and claims avoidance plan put the contractor in a position for regular payments and early retainage collection. Performing flawlessly encourages the owner to reward the contractor with predictable cash flow.
4. **Create an environment of intense activity.** Management must make a commitment to ensure that each phase of pre-construction planning is on time and complete, each team member performs as agreed, and the project begins with a complete written plan. This will set the example for similar intense activity during the construction phase and will encourage the controlled sense of urgency desired for the planning and construction of the project.
5. **Increase jobsite productivity** with improved material and tool logistics, improved verbal and written communication, improved relationships with project contractors and subcontractors, and the use of short interval/lean planning on the appropriate projects. Productivity will increase dramatically on the current project and will become consistent between projects.
6. **Use the company's combined knowledge, insight, and experience** to improve the project by including the project management team, other project managers, field foremen, and people with specialized skills on the front end of the project.
7. **Achieve complete buy-in from the project team.**

THE PRE-CONSTRUCTION PLANNING PROCESS

The pre-construction planning process begins with the turnover/kickoff meeting. The project manager and company management jointly decide the degree of advanced planning desired for the project. The project manager is then responsible for preparing a list of planning activities and an estimate of the man hours required to perform each activity. The hours required to properly plan the project often exceed the hours available. Management must then decide to extend the planning period, extend the work day/week to accommodate the necessary extra hours, defer certain activities until after job start, or manage the project with only partial planning. Most successful companies would rather pay the price for successful planning than risk the cost of a nonperforming project.

The following 19 steps are intended to be a guideline for a successful turnover/kickoff meeting. Specific checklists are included for each of the major planning phases. These checklists are intended as a starting point. A project may not need to include all of the items listed. Rather, the purpose of the checklists at the outset of planning is simply to provide a starting point for the project manager, company management, and field labor to decide what is important on a specific job and to identify those items that need to be planned and considered. On some projects, other items may need to be evaluated because of the unusual nature of the job.

MCAA's *Successful Project Management Flowchart* shows the first 11 steps at the beginning of the pre-construction planning process and the remaining eight at the end of the process acting as a summary completion activity. Each company should decide the proper process for their company and the particular project. Some companies may choose to condense the steps dramatically while others will need to diligently and thoroughly complete each step. The most successful companies will commit whatever resources necessary to ensure that each project is started with a realistic work plan and aggressive target goals that are completely understood by the entire project team, including both labor and management.

STEP

1

NOTES

Present the Project

The person/team who acquired the project discusses the project with the goal of transferring all the history and methodology used in developing the budget. At a minimum, the following are discussed.

- Owner goals and objectives
- Company goals and objectives
- Scope of work
- Estimate breakdown with overhead and profit defined
- Project schedule and/or milestones available at time of pricing
- Risk/reward analysis
- Bid comparisons, if available
- Owner expectations and requirements
- Commitments made to vendors, contractors, and suppliers
- Overview of potential change orders to price immediately and areas of concern for future changes
- Special notes from project visits or inspections
- Original Go/No Go matrix and reasons for the Go decision
- MBE/WBE requirements and how each have been satisfied
- Jobsite requirements including trailer set up, drinking water, lavatory facilities, utilities, phone connections, Internet availability, parking, food facilities, etc.

STEP

2

NOTES

Select the Project Team

If the project manager was not included in the acquisition process, he may be selected at this time. The rest of the project team should be selected during this step and a clear, usable organizational chart developed showing the chain of command (who reports to whom). Consider such items as:

- Technical expertise and experience
- People skills and temperament
- Labor relations experience
- Customer relations (Does the customer have a preference?)
- Administrative skills
- Leadership skills
- Project location
- Compatibility of the complete team
- Ability to develop a long-term relationship with the client

STEP

3

Risk Management with Insurance and Bonding Review

The project team must understand the company's insurance coverage and program (what is deductible, what is covered, etc.). What is the bonding program for the project? What are the particular risks of this site? The following should be reviewed.

- Has project funding been verified and by whom? Are there any risks to project cash flow during construction?
- What are the lien rights for the state in which the project is located?
- Is the general contractor bonded?
- Is the mechanical contractor bonded? Who pays the premium?

STEP

4

NOTES

Negotiate the Contract

If the contract is a “standard form,” you may choose to execute the contract offered or to negotiate the standard terms. Not all “standard form” contracts are in your best interest. Thus, most contracts will need to be negotiated. If doing work repeatedly for the same entity, you may want to negotiate a “typical” contract modification that can be used for your legal relationship. Don’t be shy about negotiating. While many general contractors will not change the contract, you can negotiate an addendum to their abusive contract. The following will need to be considered.

- Who will be responsible for negotiating and signing the contract?
- If the company does not have a checklist, use the one in MCAA’s Project Manager’s Manual.
- Who will be responsible for confirming and clarifying the scope of work?
- Are there additional risks associated with hold harmless clauses, scheduling clauses, coordination requirements, back charges, etc.?
- Consider a review by your lawyer and/or your insurance carrier.
- Can you proceed without a contract? Are oral contracts binding in the state in which the project resides?

- Should the mechanical contractor bond any of his subcontractors/vendors?
- Are there special insurance requirements for the project?
- If you are the prime contractor, evaluate additional insurance/bond coverage commensurate with your risk and responsibility.
- Are OCIP or CCIP insurance programs part of the project?
- Review warranty requirements and evaluate the need for additional insurance coverage.
- Are deductible insurance losses billable as cost?
- Evaluate hold harmless clauses and assess the need for additional insurance. Consider involving your insurance agent.
- Evaluate site risk for groundwater, rock, instability, soil contamination, work restrictions (noise, hours, accessibility, etc.).

NOTES

STEP

5

NOTES

Review Project Documents

The project team should review all pertinent documents. When determining what is pertinent, ensure that, in the event of a dispute, you have reviewed all documents that could influence cost, entitlement, and liability. These could include:

- Contract plans and specifications
- Addenda and clarifications before and after the contract
- Scope of work, including schedule and milestones
- Request for quotation
- Regulations, codes, and licensing
- General contractors and/or contracting entity contract
- LEED® requirements and responsibilities
- Commissioning requirements and responsibilities
- BIM utilization and responsibilities
- Minority reporting and utilization
- Regulatory policies and requirements (EEO, ADA, EPA, etc.)
- Proposal letter
- Manpower loading chart, if one was present in the proposal
- Correspondence to date
- Evaluate QA/QC requirements

STEP

6

NOTES

Evaluate Estimates

Schedule a session to conduct a detailed examination of the final estimate, bid/budget history, pricing strategy, etc. Include the following, plus any other special items unique to the project.

- Bid summary sheets
- Schedules and milestones available on bid day
- Labor pricing and strategy including fabrication factors, final crew cost by area, foreman requirements, manpower loading chart, labor optimization strategy
- Material take-offs and detail
- Vendor equipment and subcontract evaluation sheets
- Value engineering suggestions and the decision for each
- Complete bid/budget history
- Synopsis of alternate bids
- Consider additional takeoffs by foreman, if deemed necessary, and schedule each one.
- Davis-Bacon wages, project agreements, or any other government requirements
- Pre-fabrication and material handling plans
- Have the risks identified in the Go/No Go matrix been accounted for?

STEP



NOTES

Identify and Evaluate the Construction Team

Develop a list of the names, addresses, e-mail addresses, fax numbers, and cellular phone numbers for key contact people, such as the following. List their strengths and weaknesses and develop a strategy to deal with each.

- Owner or contracting entity
- General contractor and/or construction manager
- Major subcontractors, including electrical, structural, drywall, controls, commissioning, etc.
- Architect
- Engineers, including electrical and mechanical
- Outside key suppliers like kitchen equipment, medical equipment, owner furnished equipment, LEED, etc.
- Independent resources

Consider Commitment to a Partnering Strategy

The industry continues to search for better ways to build projects with less conflict. Design-build, integrated project delivery, and partnering are all efforts to improve the construction process.

- Commitment – this is imperative and must come from the top management of all construction team members.
- Early involvement – design professionals, general contractors, and subcontractors should be included from the early stages of the project.
- Equity – each team member's interests and goals must be respected.
- Trust – comes with understanding
- Development of mutual goals – identify all prospective goals for the project and mutually rank their importance (i.e., performance goals, budgets, jobsite safety, schedule milestones, dispute resolution, public relations, etc.)
- Implementation – team members should develop methodologies for goal implementation and periodic evaluation.

STEP

9

NOTES

Review Proposed Subcontracts

Subcontractors can enhance your reputation and ability to perform or they can disrupt the best planned project. A careful review is imperative.

- Consider subcontractors' past histories and skill sets.
- A subcontractor's workload may determine suitability.
- What commitments were made at bid time?
- Does the customer have a preference?
- If you must use a marginal subcontractor, should they be bonded? How do you handle retainage, overbilling risk, and performance management?
- Do all subcontractors have proper insurance? The contractor must be listed as an additional insured on the subcontractor's insurance certificate. Ask your insurance carrier to review certificates of insurance.
- Should other new subcontractors be asked to participate? Can you reduce your risk by subcontracting fire stopping, core drilling, dewatering, trenching, or others?
- Is it possible to expand a subcontractor's scope of work to cover one of your responsibilities as part of the subcontract negotiation or their ability to do the work more cost effectively? For example: coordination drawings, BIM drawings, LEED coordination, excavation, commissioning, etc.
- What are the lien waiver requirements of the contract? Must they be extended to the subcontractor with an appropriate pass-through clause?
- Review timing of subcontractor payments and management of retainages.

STEP

10

NOTES

Review Material and Equipment Requirements

Using the preliminary work from Step 6: Evaluate Estimates, expand the discussion to develop detailed plans for material, equipment, fabrication, and rental equipment.

- Determine if centralized purchasing is appropriate.
- Can this project be combined with others to obtain better discounts and reduced pricing?
- Determine the best way to handle material and equipment storage for safety, efficiency, and for getting paid as stored material.
- Evaluate whether in-house fabrication or external purchase of pre-fabricated materials is appropriate.
- Can “bag and tag” strategies be employed on the project?
- Make a commitment to reduce on-site crew size through material handling, pre-fabrication, optimum rental equipment, off-site staging of material, and other means.
- Make arrangements for additional materials and equipment, and arrange a plan to return each at an agreed price at project completion or as systems are completed.
- Consider leasing options: lease/purchase, buy/lease back.
- Verify compatibility of components. Coordinate mechanical and electrical drawings to verify voltage, phase, service, starters, and disconnects.
- Analyze “Buy American” initiatives.
- Determine union jurisdictional rules regarding who can perform which jobs such as loading, unloading, etc.
- Develop a secure tool/material storage plan.
- Plan effective utilization of the cranes considering off-hour deliveries, special lifting trailers or containers, combining lifts with other trades, utilizing the steel erector’s crane, forklifts for lower floors, etc.
- Develop a cleanup/pick-up plan.

STEP

11

NOTES

Develop a Labor Plan and Productivity Measurement System

The labor plan is the focus of all the other planning activities. Effective management of labor utilization and productivity is essential to jobsite success.

- Determine how involved field labor supervision will be in the planning process. Field labor understanding of and commitment to the plan are essential for jobsite success.
- Discuss labor relations, union agreements, project agreements, job targeting, grants, and funds available.
- Using the preliminary work from Step 6: Evaluate Estimates and Step 8: Develop a Project Schedule, identify the number of man hours each craft will need to complete specific activities identified in the construction schedule.
- Ensure construction activities follow a logical construction sequence, are understood by field foremen, and conform to the original estimate whenever possible. The better the match with the original estimate, the easier it is to perform post-project reviews and to quantify labor impacts when necessary.
- Develop a manpower mix plan (how many general foremen, foremen, journeymen, apprentices, helpers, etc.) for the project. Evaluate crew costs included in the estimate and develop an optimization plan for the project.
- Consider making the jobsite supervisor (superintendent, general foreman, foreman) responsible for meeting the crew cost goal.
- Decide how you will measure productivity. Will you use craft- and area-specific labor breakdown or work product measurement, such as feet of pipe, inches per day, hangers per day, joints installed, fabrication spool piece installed, or some other method?
- Develop a short-interval schedule form and share it with all parties.
- If necessary, how will you set up a jobsite office considering trailers, utilities, computers, drafting support, fax machines, timekeeper, etc.?

STEP

12

NOTES

Review Unique Project Conditions

Discuss the unique challenges of the project and how prepared your company is to meet those challenges.

- Has the company done a similar project? If not, what are the possible new skills needed for the project.
- If the facility is occupied, what are the unique risks like damage liabilities, security, access, special badges, work permits, etc.?
- Jobsite location: new union jurisdiction, skills and abilities of local suppliers, new/remote geographic area, new owner, weather conditions, etc.
- What inspections, permits are necessary? Who does inspections: county, state, municipal, federal, outside agency?
- Fire protection interface, including fire marshal notice for flammable liquid storage tanks, temporary fire protection connections, final inspections, etc.

STEP

14

NOTES

Develop a Change Order Plan

Develop a plan to recognize, properly price, and accurately track change orders, and collect the money promptly.

- Review contract documents to define change orders, notice requirements, and procedures.
- Understand the owner's change order process to ensure proper paperwork flow for approval and payment.
- Develop a computer-generated change order form that complies with the contract documents and maximizes cost recovery on the changes. Establish rates for field labor, material, subcontractors, rental rates, safety costs, project management, drafting, and any other recoverable costs.
- Establish consistent tracking of changes to document submitted change orders, approved changes, costs on unapproved changes, and work that you have agreed to do that is beyond the scope of the contract (i.e., hooking up the general contractor's trailers though you excluded the work in the contract, damage caused by the general contractor when you choose not to pursue recovery to maintain relationship, etc.).
- Determine who has the authority to approve change orders and develop a strategy to build a relationship with that person or entity.
- Where applicable, establish a field order procedure and determine who can approve the work. Establish whether approvals should be signed daily or weekly.
- When possible, track costs by change order and regularly check gross margin for the changes.
- Develop a plan to cover the costs of the cumulative impact of a series of change orders.

STEP

15

NOTES

Develop a Claims Avoidance Plan

Claims are disruptive to the company and rarely result in the full recovery of all costs. Develop a strategy to capture impact costs and support a strong negotiating position.

- Be aware of the factors that affect labor productivity, and review MCAA's *Management Methods Manual* Bulletin PD 2, "How to Use the MCAA Labor Factors," for the labor impact factors that might be experienced on the project.
- Evaluate contract documents for claim documentation, notification, and reporting requirements.
- Do a thorough review of the project schedule. Is it feasible? Can there be acceleration, compression, extension, disruption or any other aberration that affects your cost?
- Establish a commitment to document delays immediately, and track potential problems such as RFI response times, submittal delays, system space coordination, work approvals, etc.
- Discuss how to forward price the changes if the project team finds that problems are occurring.
- Develop formal RFI plans for initiation, tracking, and documenting solutions
- Discuss development of a measured mile analysis for the project
- Plan to deal with adversity immediately—communicate!

STEP

16

NOTES

Develop a Special Risks and Safety Plan

Using the company safety plan and considering special owner requirements, develop a project-specific safety plan, if necessary, considering special job risks, such as the following:

- Hazardous waste
- Chemical or toxic spills
- Mold
- CFCs
- Ground contamination
- Fire/explosion hazards
- Excavation risks, like dewatering and soil conditions
- OSHA, MSHA, or local safety jurisdiction requirements
- Physical aspects, such as extreme temperatures, noise, confined spaces, deep excavations, etc.

STEP

17

NOTES

Develop a Human Resources Support Plan

Coordinate personnel needs with the Human Resources (HR) department or, if your company does not have an HR department, consider the following for the project.

- Using the organizational chart developed in Step 2: Select the Project Team, identify existing employees or hire the proper team members.
- Review and follow company hiring, promotion, and termination procedures.
- Establish a project drug program considering the owner's requirements, local union programs, company policy, and relevant law. Establish an EEO/affirmative action plan as required considering the owner's requirements, local union programs, company policy, and relevant law.

STEP

18

NOTES

Develop an Accounting and Financial Plan

Cash is the lifeblood of all construction companies. Ensure that the communication between accounting and the jobsite is well constructed and understood by all parties so the company has timely, accurate, complete information to manage the project and, whenever possible, have positive cash flow.

- Using company procedures, create a coded job-cost control tool to allow proper job cost forecasting and cost accumulation. This tool needs to be agreed upon before costs start to accumulate so that data is accumulated accurately from the first job cost expenditure.
- Perform billing breakdowns, and submit them for approval by the owner/general contractor.
- Create job cost projections and billing projections so the company can manage cash flow.
- When possible, put a plan in place to collect/reduce retainages early. Coordinate this plan with the project closeout plan.
- Determine if there are unique aspects of the project that require special banking.

STEP

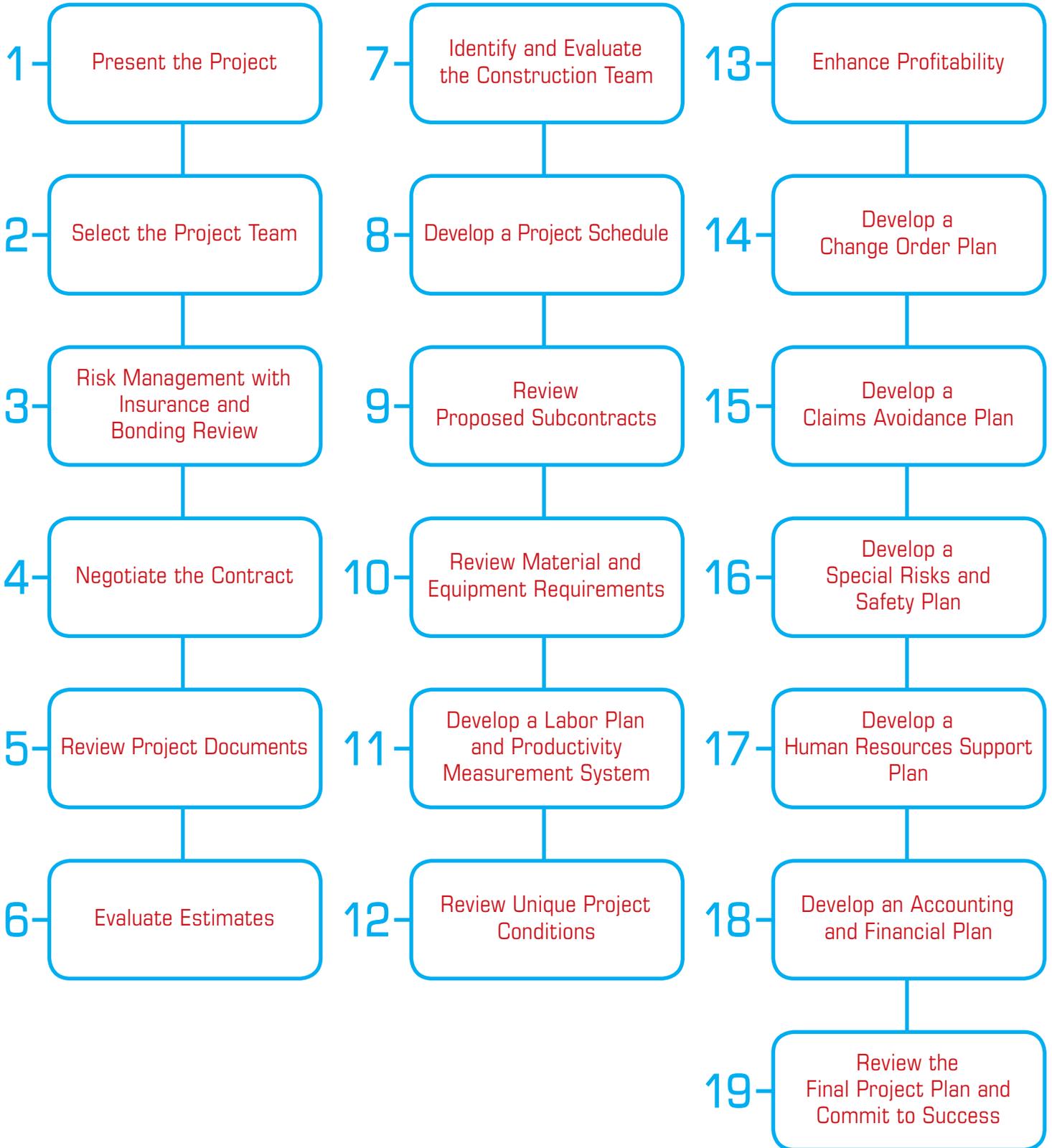
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NOTES

Review the Final Project Plan

During this meeting, the project manager presents the plan for the project to the entire project management team. He may choose to present the project schedule, the job cost breakdown, the material/equipment plan, the change order plan, the claims avoidance plan, the profitability enhancement plan, the BIM/fabrication plan, the risk avoidance plan, or another agenda. The purpose is to ensure that all team members fully understand how they will work together to make the project successful. If there are doubts or concerns, they will need to be addressed so that all can go forward together enthusiastically. At the end of the meeting, all members of the team sign the front cover of this booklet, affirming their commitment to making the project successful.

PLANNING PHASE FLOWCHART



Item Code: M4



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