

Table 4.1: Checklist of Pre-Construction Planning Activities (page 15)

Project Number: _____
Project Name: _____
Location: _____
Estimator: _____
Project Manager: _____

PRE-CONSTRUCTION PLANNING CHECKLIST				
	COMPLETION DATE	ACTIVITY CATEGORY	ACT. NO.	ACTIVITY
<input type="checkbox"/>		Team Selection and Turnover	1	Finalize selection of project manager, field supervisor and other key team members.
<input type="checkbox"/>			2	Hold turnover meeting between estimator and project manager (when applicable).
<input type="checkbox"/>			3	Hold separate turnover meeting between project manager and field supervisor.
<input type="checkbox"/>			4	Hold pre-job (planning) kickoff meeting with internal team members to assign responsibilities.
<input type="checkbox"/>		Scope and Contract Review	5	Review contract for unfavorable or high risk clauses (<i>recommended</i>).
<input type="checkbox"/>			6	Project manager reviews plans, specifications, and schedule.
<input type="checkbox"/>			7	Field supervisor reviews plans, specifications, and schedule.
<input type="checkbox"/>			8	Create a list of issues that need to be resolved and begin the request for information (RFI) process.
<input type="checkbox"/>			9	Conduct site visit (<i>recommended</i>).
<input type="checkbox"/>			10	Compare estimated (bid) work activities and materials to planned performance.
<input type="checkbox"/>			11	Identify value engineering and refabrication opportunities and how to simplify the work.
<input type="checkbox"/>			12	Prepare construction takeoff.
<input type="checkbox"/>		Administrative Setup	13	Set up project files and create contact list.
<input type="checkbox"/>			14	Set up computerized tracking and control system (forms, database, schedule, tracking).
<input type="checkbox"/>			15	Initiate a change management system.
<input type="checkbox"/>			16	Initiate a request for information (RFI) tracking and processing system.
<input type="checkbox"/>			17	Initiate a submittal tracking and processing system.
<input type="checkbox"/>			18	Develop a "Labor Requirements/Expectations" letter (for background check, etc.) (<i>recommended</i>).

PRE-CONSTRUCTION PLANNING ACTIVITIES

Table 4.1: Checklist of Pre-Construction Planning Activities (continued)

Project Number: _____				
PRE-CONSTRUCTION PLANNING CHECKLIST				
	COMPLETION DATE	ACTIVITY CATEGORY	ACT. NO.	ACTIVITY
<input type="checkbox"/>		Buyout Process	19	Price and/or review subcontractor/supplier/vendor prices and qualifications.
<input type="checkbox"/>			20	Negotiate pricing and contract conditions, and select subcontractors/suppliers/vendors.
<input type="checkbox"/>			21	Develop and issue purchase orders and contracts for materials and equipment.
<input type="checkbox"/>			22	Order long-lead-time materials and equipment.
<input type="checkbox"/>			23	Request submittals, cut sheets and shop drawings.
<input type="checkbox"/>			24	Develop and process log and book of submittals, cut sheets and shop drawings.
<input type="checkbox"/>		Material Handling Plan	25	Develop material delivery and handling plan.
<input type="checkbox"/>			26	Develop material storage and staging plan.
<input type="checkbox"/>		Budget Preparation	27	Develop, review or expand cost code scheme.
<input type="checkbox"/>			28	Develop budget by breaking down labor, material, overhead and profit costs.
<input type="checkbox"/>			29	Develop schedule of values.
<input type="checkbox"/>		Layout and Sequencing Plan	30	Develop installation sequence and layout drawings.
<input type="checkbox"/>			31	Develop field instructions, including panel, pull or conduit schedules.
<input type="checkbox"/>			32	Develop prefabrication drawings for field use (when applicable).
<input type="checkbox"/>		Schedule Development	33	Review customer's schedule and timeline.
<input type="checkbox"/>			34	Identify work that impacts electrical activities.
<input type="checkbox"/>			35	Review the work sequence and long-lead-time material/equipment delivery dates.
<input type="checkbox"/>			36	Coordinate electrical schedule with customer schedule (<i>recommended</i>).
<input type="checkbox"/>			37	Create a bar chart schedule (<i>recommended</i>).
<input type="checkbox"/>		Tracking and Control	38	Customize the computerized tracking and control system (database/schedule/etc.) for the current project.
<input type="checkbox"/>			39	Develop labor and materials tracking report.

Table 4.1: Checklist of Pre-Construction Planning Activities (continued)

Project Number: _____				
PRE-CONSTRUCTION PLANNING CHECKLIST				
	COMPLETION DATE	ACTIVITY CATEGORY	ACT. NO.	ACTIVITY
<input type="checkbox"/>		Construction Execution Kickoff Meeting	40	Review meeting schedule.
<input type="checkbox"/>			41	Review request for information (RFI) process.
<input type="checkbox"/>			42	Review change order process and field change management process.
<input type="checkbox"/>			43	Review submittal processing procedure.
<input type="checkbox"/>			44	Review billing and invoicing procedures.
<input type="checkbox"/>			45	Review project and field reporting and tracking procedures.
<input type="checkbox"/>			46	Review electrical and customer schedules.

Table 4.2: Team Selection and Turnover Checklist (page 16)

Project Number: _____
Project Name: _____
Location: _____
Estimator: _____
Project Manager: _____

TEAM SELECTION AND TURNOVER CHECKLIST FOR PRE-CONSTRUCTION PLANNING			
ACT.	COMPLETION DATE	ITEM NO.	SUB-ACTIVITIES
1. Finalize selection of project manager, field supervisor and other key team members.			
<input type="checkbox"/>		1	Assemble a list of project managers and review their current work-load and special skills.
<input type="checkbox"/>		2	Determine whether an ideal match can be made between the project manager and the job, and then select the project manager.
<input type="checkbox"/>		3	Assemble a list of field supervisors and review their current work-load and special skills.
<input type="checkbox"/>		4	Determine whether an ideal match can be made between the field supervisor and the job, and then select the project manager.
<input type="checkbox"/>		5	Work with the project manager, field supervisor, and/or the director of operations to select key foreman when appropriate.
2. Hold turnover meeting between estimator and project manager (when applicable).			
<input type="checkbox"/>		1	Arrange a meeting time and location and ensure enough time has been allocated to transfer knowledge between the estimator and project manager.
<input type="checkbox"/>		2	Follow and complete a checklist that describes the information that should be transferred (See Table 4.3).
3. Hold separate turnover meeting between project manager and field supervisor.			
<input type="checkbox"/>		1	Arrange a meeting time and location and ensure enough time has been allocated to transfer knowledge between the project manager and field supervisor.
<input type="checkbox"/>		2	Follow and complete a checklist that describes the information that must be transferred (see Table 4.3).
4. Hold pre-job (planning) kickoff meeting with internal team members to assign responsibilities.			
<input type="checkbox"/>		1	Arrange a meeting time and location and ensure enough time has been allocated to assign planning responsibilities.
<input type="checkbox"/>		2	Invite internal team members that will be involved during the construction execution process, such as project manager, field supervisor, accounting, purchasing, and director of field operations.
<input type="checkbox"/>		3	Complete a checklist that describes the planning activities that must be completed and who is responsible for completion (see Table 4.4).

Table 4.3: Turnover Meeting Agenda (page 16)

Project Number: _____
Project Name: _____
Location: _____
Estimator: _____
Project Manager: _____

TURNOVER MEETING AGENDA

Review Items:

1. Project overview
 - a. Project name
 - b. Location
 - c. Type of work
 - d. Estimated cost and estimated work hours
 - e. Profit goal
 - f. General scope of work
 - g. Identify potential opportunities and challenges of the project

2. Review the plans and specifications.
 - a. Go page by page through the plans to discuss the quantities and costs.
 - b. Review each section of the specifications.
 - c. Discuss how the estimator assumed the work would be performed (materials and methods).
 - d. Review others' work performance.
 - e. Identify discrepancies and ambiguities in the bid documents.
 - f. Identify design discrepancies or issues.
 - g. Identify potential errors in the bid documents.
 - h. Discuss information collected during a site visit.
 - i. Discuss information collected during a pre-bid meeting.
 - j. Identify potential cost savings from changes to materials and methods.
 - k. Identify potential prefabrication or internal value engineering opportunities.
 - l. Discuss alternative routing of conduits.
 - m. Identify any temporary power and lighting requirements.

3. Review the cost estimate and bid price.
 - a. Review each bid line item and its cost.
 - b. Review overhead, profit and contingency funds.
 - c. Discuss wage rates.
 - d. Review the bid submission letter with clarifications and qualifications.

4. Review subcontractor/vendor pricing and qualifications.
 - a. Review subcontractors and suppliers scope of work and qualifications.
 - b. Identify all pre-contract commitments and promises.
 - c. Verify minority business requirements.

Table 4.3: Turnover Meeting Agenda (continued)

Project Number: _____
Review Items:
5. Review the schedule and milestones. a. Review the owner-furnished schedule. b. Review any preliminary schedule submitted with the bid. c. Review work by others that will impact the electrical work. d. Identify important material and equipment delivery dates. e. Discuss holidays, vacations and potential weather events.
6. Review manpower requirements and labor rates. a. Review the manpower loading chart (if available). b. Identify the estimated crew mix. c. Identify any wage increases. d. Review the potential for overtime.
7. Review other items specific to this project: _____ _____ _____ _____ _____ _____ _____ _____ _____ _____

Table 4.4: Pre-Job Planning Kickoff Meeting Agenda (page 17)

Project Number: _____

Project Name: _____

Location: _____

Estimator: _____

Project Manager: _____

PRE-JOB PLANNING KICKOFF MEETING AGENDA

Agenda Items:

1. Project overview
 - a. Project name
 - b. Location
 - c. Type of work
 - d. Contract cost
 - e. General scope of work
 - f. Identify potential opportunities and challenges of the project

2. Introduce internal team members.
 - a. Project manager
 - b. Field supervisor/foreman
 - c. Estimator
 - d. Accounting representative
 - e. Other internal team members (i.e., CAD operator, purchasing agent, etc.)

3. Identify external team members.
 - a. Owner/customer
 - b. Architect/engineer
 - c. General contractor/construction manager
 - d. Other specialty subcontractors
 - e. Vendors/suppliers

4. Review the general scope of work.
 - a. Provide an overview of the project scope of work and the electrical scope.
 - b. Review major work performed by others.

5. Review the contract cost.
 - a. Review direct costs and the contract cost.
 - b. Review overhead, profit and contingency funds.

6. Review purchasing of materials, equipment and services from subcontractors/vendors.
 - a. Review subcontractors and suppliers scope of work and qualifications.
 - b. Identify all pre-contract commitments and promises.
 - c. Verify minority business requirements.

Table 4.4: Pre-Job Planning Kickoff Meeting Agenda (continued)

Project Number: _____
Agenda Items:
7. Review the schedule and milestones. a. Review the owner-furnished schedule. b. Review any preliminary schedule submitted with the bid or construction schedule. c. Review work by others that will impact the electrical work. d. Identify important material and equipment delivery dates.
8. Review manpower requirements and labor rates. a. Review the manpower loading chart (if available). b. Identify the estimated crew mix. c. Identify any wage increases.
9. Review the contract—identify any special clauses that require careful consideration.
10. Review administrative procedures. a. Administrative setup b. Request for Information (RFI) procedures and setup c. Submittal process and setting up the submittal tracking system d. Change order procedures and setting up the change management system e. Field reporting requirements f. Budget preparation and billing procedures g. Cost control and setting up the tracking system
11. Review special safety issues.
12. Review site logistics and material storage and staging. a. Site access b. Parking c. Material delivery and movement procedures d. Material storage locations e. Trailer locations (if applicable) f. Site cleanup requirements g. Temporary power and lighting requirements
13. Review bond, permit and certificate of insurance requirements
14. Review other items specific to this project: _____ _____ _____

Table 4.5: Scope and Contract Review Checklist (page 17)

Project Number: _____
Project Name: _____
Location: _____
Estimator: _____
Bid Due Date: _____

SCOPE AND CONTRACT REVIEW CHECKLIST FOR PRE-CONSTRUCTION PLANNING			
ACT.	COMPLETION DATE	ITEM NO.	SUB-ACTIVITIES
5. Review contract for unfavorable or high risk clauses (<i>performance recommended</i>).			
<input type="checkbox"/>		1	Complete the Contract Review Checklist (Table 4.6).
<input type="checkbox"/>		2	Identify all required bonds, permits and certificates.
<input type="checkbox"/>		3	Review contractual billing requirements.
<input type="checkbox"/>		4	Review and understand procedures for requesting change orders.
<input type="checkbox"/>		5	Identify whether disputes must be resolved through alternative dispute resolution, such as mediation or arbitration.
6. Project manager reviews plans, specifications and schedule.			
<input type="checkbox"/>		1	Order extra sets of plans and specifications if necessary.
<input type="checkbox"/>		2	Complete the Scope and Schedule Review checklist (Table 4.7).
<input type="checkbox"/>		3	Compare the scope identified in the contract to the scope from the bid submission to verify that they match.
<input type="checkbox"/>		4	Compare the plans to the specifications to identify any discrepancies.
<input type="checkbox"/>		5	Review the customer-furnished schedule to determine whether the electrical work can be completed within the contractual timeframe.
7. Field supervisor reviews plans, specifications and schedule.			
<input type="checkbox"/>		1	Complete the Scope and Schedule Review checklist (Table 4.7).
<input type="checkbox"/>		2	Review best field practices or lessons learned.
<input type="checkbox"/>		3	Identify value engineering and prefabrication opportunities (see Activity 23).
<input type="checkbox"/>		4	Identify labor requirements and begin selecting foremen.
<input type="checkbox"/>		5	Identify special tools that will need to be purchased or assembled.
8. Create a list of issues that need to be resolved and begin the request for information (RFI) process.			
<input type="checkbox"/>		1	Establish a request for information (RFI) process (see Activity 16) and create a list of questions that require clarification.
<input type="checkbox"/>		2	Formalize the RFIs by assigning them a trackable number and submitting them to the owner/CM/GC.

PRE-CONSTRUCTION PLANNING ACTIVITIES

Table 4.5: Scope and Contract Review Checklist (continued)

Project Number: _____			
9. Conduct a site visit (performance recommended).			
<input type="checkbox"/>		1	Complete the Site Visit Checklist (Table 4.8).
<input type="checkbox"/>		2	Examine site access and layout, including parking, material delivery points and material lay-down and storage.
<input type="checkbox"/>		3	Identify locations and availability of material and personnel lifts, elevators, cranes, scaffolding and forklifts.
<input type="checkbox"/>		4	Create a plan for installing temporary power (when applicable).
<input type="checkbox"/>		5	Verify existing conditions and compare them to the conditions shown on the plans and described in the specifications.
10. Compare estimated (bid) work activities and materials to planned performance.			
<input type="checkbox"/>		1	Compare the estimator's concept of how to perform the work to typical field operations and document differences.
<input type="checkbox"/>		2	Discuss unclear methods or discrepancies with the estimator.
<input type="checkbox"/>		3	Determine the cost difference between the as-bid and planned performance of the work.
11. Identify value engineering and prefabrication opportunities and how to simplify the work.			
<input type="checkbox"/>		1	Review value engineering (VE) or prefabrication opportunities that were identified in the turnover meeting between the estimator and project manager.
<input type="checkbox"/>		2	Review procedures for formally requesting VE consideration if required.
<input type="checkbox"/>		3	Search for and identify additional VE and prefabrication items.
<input type="checkbox"/>		4	Identify additional ways to simplify the work.
<input type="checkbox"/>		5	Price out the cost difference between the as-bid and VE options.
10. Compare estimated (bid) work activities and materials to planned performance.			
<input type="checkbox"/>		1	Take off the materials, equipment and systems in the order they will be constructed.
<input type="checkbox"/>		2	Code each plan sheet as you take it off so that you can return to it later and immediately identify the quantity of various materials shown on the sheet.
<input type="checkbox"/>		3	The final quantities should be identified by the units in which they will be purchased.
<input type="checkbox"/>		4	All assumptions should be noted on the quantity takeoff sheets.
<input type="checkbox"/>		5	Be sure the quantities that are estimated include a waste factor.
<input type="checkbox"/>		6	Compare the construction takeoff to the bid takeoff to identify significant differences or discrepancies.

Table 4.6: Contract Review Items¹ (page 17)

Project Number: _____
Project Name: _____
Location: _____
Project Manager: _____

Completed	Date Completed	ITEM
<input type="checkbox"/>		Check for ambiguous clauses and seek clarification.
<input type="checkbox"/>		Check for one-sided clauses that favor the other party.
<input type="checkbox"/>		Cross-reference clauses to understand the whole meaning of clauses.
<input type="checkbox"/>		Identify discrepancies and conflicting clauses and seek clarification.
<input type="checkbox"/>		Check for agreement between plans and specifications, and seek clarification if there is any discrepancy.
<input type="checkbox"/>		Identify any "killer clauses" that assign full responsibility for everything to the electrical contractor.
<input type="checkbox"/>		Determine whether the contract clearly favors the other party (owner/CM/GC), and seek more equitable contract terms.
<input type="checkbox"/>		Review the Indemnification Clause, and ensure your insurance coverage can sufficiently cover the risk.
<input type="checkbox"/>		Evaluate the Coordination Clause to determine each party's responsibility to coordinate the work.
<input type="checkbox"/>		Determine your rights and responsibilities if the sequence of work is changed or if out-of-sequence work impacts the project.
<input type="checkbox"/>		Carefully review all time-sensitive clauses that cover commencement, completion, milestones, accelerations, delays and progress.
<input type="checkbox"/>		Review and understand your rights to receive damages if the schedule is accelerated or delayed by other parties.
<input type="checkbox"/>		Determine whether there is a no-damages-for-delay clause, and review your rights and responsibilities.
<input type="checkbox"/>		Review and understand the clause that describes waivers.
<input type="checkbox"/>		Review the concealed conditions clause, and identify the circumstances that will entitle you to compensation.
<input type="checkbox"/>		Review the Force Majeure clause, and identify the circumstances that will entitle you to a time extension.
<input type="checkbox"/>		Evaluate clauses that identify procedures for seeking change orders.
<input type="checkbox"/>		Evaluate clauses that identify the compensation for extra work.
<input type="checkbox"/>		Identify payment provisions, especially a "pay when paid" clause and a "pay if paid" clause.

¹Detailed contract review guidelines can be found in ELECTRI International (2000) *Fundamentals of Contract Risk Management for Electrical Contractors*.

PRE-CONSTRUCTION PLANNING ACTIVITIES

Table 4.7: Scope and Schedule Review Items (pages 18, 39)

Project Number: _____
Project Name: _____
Location: _____
Estimator: _____
Project Manager: _____

SCOPE AND SCHEDULE REVIEW ITEMS			
Completed	Completed By	Date Completed	Item
<input type="checkbox"/>			Contract
<input type="checkbox"/>			Plans
<input type="checkbox"/>			Specifications
<input type="checkbox"/>			Cost estimate and bid breakdown
<input type="checkbox"/>			Referenced/applicable codes or regulations
<input type="checkbox"/>			Quality requirements
<input type="checkbox"/>			Safety requirements
<input type="checkbox"/>			Special conditions
<input type="checkbox"/>			Addendums
<input type="checkbox"/>			Temporary power and lighting requirements
<input type="checkbox"/>			Owner/CM/GC-furnished materials
<input type="checkbox"/>			Vendor pricing and qualifications
<input type="checkbox"/>			Owner/CM/GC schedule
<input type="checkbox"/>			Internal schedule submitted with bid
<input type="checkbox"/>			Work sequence and work by others
<input type="checkbox"/>			Required coordination with other trades
<input type="checkbox"/>			Material and equipment deliveries
<input type="checkbox"/>			Anticipated weather problems or holidays
<input type="checkbox"/>			Required labor
<input type="checkbox"/>			Labor rates and potential increases
<input type="checkbox"/>			Crew mix
<input type="checkbox"/>			Administrative procedures (submittals/RFIs/changes)
<input type="checkbox"/>			Other:
<input type="checkbox"/>			Other:
<input type="checkbox"/>			Other:

Table 4.7: Scope and Schedule Review Items (continued)

Project Number: _____			
SCOPE AND SCHEDULE REVIEW ITEMS			
Completed	Who furnishes?	Who installs?	What to review in the Plans and Specifications
<input type="checkbox"/>			Access doors
<input type="checkbox"/>			Asbestos abatement
<input type="checkbox"/>			Carpentry (miscellaneous)
<input type="checkbox"/>			Clean up
<input type="checkbox"/>			Conduit (sizes and quantities)
<input type="checkbox"/>			Crane
<input type="checkbox"/>			Cutting and patching
<input type="checkbox"/>			Demolition and removal
<input type="checkbox"/>			Electric motors
<input type="checkbox"/>			Electric starters
<input type="checkbox"/>			Excavation and backfill
<input type="checkbox"/>			Fire alarm wiring
<input type="checkbox"/>			Fire alarm devices
<input type="checkbox"/>			Hand dryers
<input type="checkbox"/>			Hoists for personnel
<input type="checkbox"/>			Hoists for materials
<input type="checkbox"/>			Interior layout
<input type="checkbox"/>			Painting
<input type="checkbox"/>			Panels
<input type="checkbox"/>			Scaffolding
<input type="checkbox"/>			Site access
<input type="checkbox"/>			Site surveying
<input type="checkbox"/>			Temporary power
<input type="checkbox"/>			Underground utilities
<input type="checkbox"/>			Wire (and/or pipe and wire)
<input type="checkbox"/>			Other:
<input type="checkbox"/>			Other:
<input type="checkbox"/>			Other:

Table 4.8: Site Visit Checklist (page 19)

Project Number: _____
Project Name: _____
Location: _____
Project Manager: _____
Scope Review Completion Date: _____

SITE VISIT REVIEW ITEMS		
Completed	Item to Review	Notes
<input type="checkbox"/>	Access into and out of the site	
<input type="checkbox"/>	Circulation throughout the site	
<input type="checkbox"/>	Material and equipment delivery routes	
<input type="checkbox"/>	Material storage and staging locations	
<input type="checkbox"/>	Office trailer or office space	
<input type="checkbox"/>	Temporary power and lighting locations	
<input type="checkbox"/>	Existing underground utilities location	
<input type="checkbox"/>	Existing above ground utility locations	
<input type="checkbox"/>	Location of existing interior systems	
<input type="checkbox"/>	Progress of the demolition	
<input type="checkbox"/>	Progress of the site work	
<input type="checkbox"/>	Progress of the site layout/surveying	
<input type="checkbox"/>	Asbestos abatement has been completed	
<input type="checkbox"/>	Work completed to date	
<input type="checkbox"/>	Presence/location of the crane	
<input type="checkbox"/>	Presence/location of the personnel lift	
<input type="checkbox"/>	Presence/location of the materials lift	
<input type="checkbox"/>	Potential coordination with others	
<input type="checkbox"/>	Anticipated weather problems	
<input type="checkbox"/>	Housekeeping conditions	
<input type="checkbox"/>	Special site considerations	
<input type="checkbox"/>	Safety issues or concerns	
<input type="checkbox"/>	Other:	
<input type="checkbox"/>	Other:	
<input type="checkbox"/>	Other:	

Table 4.9: Administrative Setup Checklist (page 21)

Project Number: _____
Project Name: _____
Location: _____
Project Manager: _____
Start Date: _____

ADMINISTRATIVE SETUP CHECKLIST FOR PRE-CONSTRUCTION PLANNING			
ACT.	COMPLETION DATE	ITEM NO.	SUB-ACTIVITIES
13. Set up project files and create contact list.			
<input type="checkbox"/>		1	Use the File System Checklist (Table 4.11) to create paper files.
<input type="checkbox"/>		2	Create a contact sheet that lists all team members and their company contact information.
14. Set up computerized tracking and control system (forms, database, schedule and tracking).			
<input type="checkbox"/>		1	Verify the accounting department has assigned a project number and entered initial information in the cost control center.
<input type="checkbox"/>		2	Use the File System Checklist (Table 4.11) to create computer files.
<input type="checkbox"/>		3	If a separate project management software system is used, set up the project in the system.
<input type="checkbox"/>		4	If a separate project management software system is used, set up the project in the system.
15. Initiate a change management system.			
<input type="checkbox"/>		1	Review the contract to identify required change order, field change, and time-and-materials procedures.
<input type="checkbox"/>		2	Review your company's standard procedures for initiating, requesting, and processing change orders and field changes.
<input type="checkbox"/>		3	Develop a log with sequential numbering to track all changes, including change orders, field changes and time-and-materials requests (Table 4.12).
16. Initiate a request for information (RFI) tracking and processing system.			
<input type="checkbox"/>		1	Develop a log with sequential numbering to track all requests for information (RFIs) (Table 4.13).
<input type="checkbox"/>		2	Determine whether RFIs will be submitted by e-mail, fax or postal mail.
<input type="checkbox"/>		3	Review your company's standard procedures for processing RFIs, and use a company standard form for submitting RFIs.
<input type="checkbox"/>		4	Ensure each RFI also identifies a proposed solution.

Table 4.9: Administrative Setup Checklist (continued)

Project Number: _____			
17. Initiate a submittal tracking and processing system.			
<input type="checkbox"/>		1	Develop a log with sequential numbering to track all submittals, including those of vendors and subcontractors (Table 4.14).
<input type="checkbox"/>		2	Review your company's standard procedures for processing submittals, and use a company standard form for submissions.
<input type="checkbox"/>		3	Verify that each submittal processing form identifies a respond-no-later-than date, which is associated with timely ordering and delivery of materials and equipment.
18. Develop a "Labor Requirements/Expectation" letter (for background check, etc.) (performance recommended)			
<input type="checkbox"/>		1	For projects that have special requirements such as drug testing, background check or special safety training, develop an "expectations" letter that must be reviewed and signed by crew members (see Figure 4.8).
<input type="checkbox"/>		2	For projects that will require hiring workers from the union hall, develop an "expectations" letter that must be reviewed and signed by crew members.

Table 4.10: File System Checklist (page 21)

Project Number: _____
Project Name: _____
Location: _____
Project Manager: _____

SCOPE AND SCHEDULE REVIEW ITEMS		
Completed	File Number	File Description
<input type="checkbox"/>		Project Information and Contacts
<input type="checkbox"/>		Cost Estimate and Bid Submission
<input type="checkbox"/>		Contract Agreement
<input type="checkbox"/>		Contract Documents
<input type="checkbox"/>		Budget and Pay Requests
<input type="checkbox"/>		Purchase Orders
<input type="checkbox"/>		Subcontracts
<input type="checkbox"/>		Materials Folder (Fixtures, Switchgear, Fire Alarm, Low Voltage)
<input type="checkbox"/>		Requests for Information
<input type="checkbox"/>		Submittals
<input type="checkbox"/>		Change Orders—Pending
<input type="checkbox"/>		Change Orders—Approved
<input type="checkbox"/>		Correspondence
<input type="checkbox"/>		Meeting Minutes
<input type="checkbox"/>		Daily/Weekly Field Report
<input type="checkbox"/>		Progress Reports
<input type="checkbox"/>		Other:
<input type="checkbox"/>		Other:
<input type="checkbox"/>		Other:

Figure 4.2: Change Order Proposal (pages 22, 39)

<p>COMPANY NAME COMPANY ADDRESS</p>						
<p>CHANGE ORDER PROPOSAL</p>						
PROJECT NUMBER: _____						
PROJECT NAME: _____						
DATE: _____						
TO: _____			FROM: _____			
_____			_____			
_____			_____			
DESCRIPTION OF CHANGED WORK:						
<div style="border: 1px solid black; width: 100%; height: 100%;"></div>						
COST OF THE CHANGED WORK:						
Description	Labor	Materials	Equipment	Other	Subcontracts	Total

Labor Burden _____%						
Bond Premium _____%						
Liability Insurance _____%						
				Subtotal _____		
Overhead _____						
Profit _____						
				TOTAL _____		
TIME EXTENSION _____ calendar days						
APPROVED BY: _____					DATE: _____	

Figure 4.3: Field Change Form (page 22)

PROJECT NUMBER: _____							
PROJECT NAME: _____							
FIELD SUPERVISOR: _____							
WORK PERFORMED BY (EMPLOYEE NAME): _____							
DATE: _____							
WORK AUTHORIZED BY: _____							
TITLE: _____							
FIELD CHANGE FORM							
SCOPE OF WORK:							
LABOR:					EQUIPMENT/TOOLS:		
EMPLOYEE	HOURS			WAGE RATE	TOTAL	EQUIPMENT/TOOL TYPE	COST
	REG	OT	DT				
SUBTOTAL						SUBTOTAL	
_____ % MARKUP						_____ % MARKUP	
TOTAL						TOTAL	
MATERIALS:					SUBCONTRACTORS:		
MATERIAL TYPE	UNITS	QTY	UNIT COST	TOTAL	COMPANY NAME		COST
SUBTOTAL					SUBTOTAL		
_____ % MARKUP					_____ % MARKUP		
TOTAL					TOTAL		
					SUMMARY OF COSTS:		
					TOTAL LABOR		
					TOTAL MATERIALS		
SUBTOTAL					TOTAL EQUIPMENT/TOOLS		
_____ % MARKUP					TOTAL SUBCONTRACTS		
TOTAL					TOTAL COST		

Figure 4.5: Request for Information Form (pages 22, 38)

COMPANY NAME COMPANY ADDRESS REQUEST FOR INFORMATION		
PROJECT NUMBER:	PROJECT NAME:	DATE:
RFI NUMBER:		
TO:	FROM:	
METHOD SENT: <input type="checkbox"/> FAX <input type="checkbox"/> MAIL <input type="checkbox"/> E-MAIL		
DESCRIPTION OF REQUEST:		
ADDITIONAL SUPPORT DOCUMENTS: <input type="checkbox"/> ARE <input type="checkbox"/> ARE NOT ATTACHED.		
DATE REQUIRED:		
DATE RESPONSE RECEIVED:		
RESPONSE FROM:		
RESPONSE:		

Figure 4.8: Requirements and Expectations Letter (page 25)

COMPANY NAME
COMPANY ADDRESS
COMPANY PHONE NUMBER

NAME OF NEW EMPLOYEE: _____

PROJECT NUMBER: _____

PROJECT NAME: _____

DATE OF EMPLOYMENT: _____

TODAY'S DATE: _____

SUBJECT: Requirements and Expectations of Personnel Employed on Project Number _____

The purpose of this letter is to notify you of special requirements and expectations of all personnel who will work on Project Number _____, entitled _____. The following requirements and expectations must be met as a necessary condition of employment:

1. This project requires weekly random drug testing, which will be conducted by a private company employed by the customer. Any employee who fails a drug test or refuses to submit to a random drug test will be immediately dismissed from employment.
2. This project requires a complete background check and the use of a security badge at all times. Employees who fail to exhibit their security badge or who arrive at the jobsite without their badge will be removed from the premises immediately.
3. Entry into certain parts of the facility will require an escort appointed by the customer. Requests for escorts must be submitted 24 hours in advance.
4. The work hours for this project are Monday through Friday from 7:00 AM to 3:00 PM.
5. No privately owned vehicles or company vehicles will be permitted into the secure work area. All employees must arrive at the security gate each morning no later than 6:45 AM to board a bus that will take employees to the secure work area. All employees must be at the pickup point each afternoon at 3:15 PM to board the bus and be escorted out of the secure area. Late employees will not be permitted into the secure area.
6. Employees may be monitored by closed-circuit television throughout the day.
7. Smoking will not be permitted inside the secure work area.

Please acknowledge your acceptance of the requirements and expectations of this project by signing and dating below.

I understand and accept the above terms of employment.

NAME

DATE

WITNESS

DATE

PRE-CONSTRUCTION PLANNING ACTIVITIES

Table 4.14: Buyout Process Checklist (page 26)

Project Number: _____
Project Name: _____
Location: _____
Project Manager: _____
Start Date: _____

BUYOUT PROCESS CHECKLIST FOR PRE-CONSTRUCTION PLANNING			
ACT.	COMPLETION DATE	ITEM NO.	SUB-ACTIVITIES
19. Request and/or review subcontractor/supplier/vendor prices and qualifications.			
<input type="checkbox"/>		1	Request subcontractor/supplier/vendor pricing if it was not requested or received during the bidding stage.
<input type="checkbox"/>		2	Compare actual subcontractor/supplier/vendor scope of work with the scope identified in the subcontractor/supplier/vendor bid submission.
<input type="checkbox"/>		3	Evaluate the subcontractor/supplier/vendor qualifications.
<input type="checkbox"/>		4	Compare pricing and qualifications among the subcontractors/suppliers/vendors.
20. Negotiate pricing and contract conditions and select subcontractors/suppliers/vendors.			
<input type="checkbox"/>		1	Discuss potential cost savings with potential subcontractors/suppliers/vendors.
<input type="checkbox"/>		2	Review the contract or purchase order terms and conditions with potential subcontractors/suppliers/vendors prior to award.
<input type="checkbox"/>		3	Select all successful subcontractors/suppliers/vendors, and issue a letter of intent (if necessary).
21. Develop and issue purchase orders and contracts for materials and equipment.			
<input type="checkbox"/>		1	Develop the purchase orders or contracts for subcontractors/suppliers/vendors.
<input type="checkbox"/>		2	Process and issue the purchase orders or subcontracts.
22. Order long-lead-time materials and equipment.			
<input type="checkbox"/>		1	Compare the sequence, schedule and materials/equipment to identify long-lead-time items.
<input type="checkbox"/>		2	Negotiate and issue purchase orders and subcontracts for long-lead time items before negotiating standard purchase orders and subcontracts.
<input type="checkbox"/>		3	Issue a letter of intent or purchase order immediately to release long-lead-time items for order and delivery.

Table 4.14: Buyout Process Checklist (continued)

Project Number: _____			
23. Request submittals, cut sheets and shop drawings.			
<input type="checkbox"/>		1	Upon issuing the contract document, the subcontractor/supplier/vendor should be requested to assemble and submit samples, cut sheets or shop drawings.
<input type="checkbox"/>		2	Identify a deadline by which the submittals, cut sheets, and shop drawings must be submitted to the electrical contractor.
24. Develop and process log and book of submittals, cut sheets and shop drawings.			
<input type="checkbox"/>		1	Develop a log, with sequential numbering, to track all submittals, including those of vendors and subcontractors (see also Activity 17 and Table 4.13).
<input type="checkbox"/>		2	Assemble two or more binders of all draft and approved submittals.
<input type="checkbox"/>		3	Submit and track required submittal items.

Table 4.15: Subcontractor/Supplier/Vendor Comparison Spreadsheet (page 26)

Project Number: _____					
Project Name: _____					
Location: _____					
Project Manager: _____					
SUBCONTRACTOR/SUPPLIER/VENDOR BID ANALYSIS					
ITEM TYPE _____	VENDORS				
	BUDGET	VENDOR A	VENDOR B	VENDOR C	VENDOR D
REVIEW ITEMS:					
Was the item bid per plans and specs? [Yes/No]					
Was the item bid per the scope of work? [Yes/No]					
Are the workers union or non-union?					
How long will it take to order and deliver the item?					
List any exclusions.					
Was tax included in the bid price? [Yes/No]					
Did the vendor acknowledge all addenda? [Yes/No]					
Base bid price					
List any alternate pricing provided.					
List adjusted bid price if alternates accepted.					

Figure 4.9: Letter of Intent (page 27)

COMPANY NAME
COMPANY ADDRESS
COMPANY PHONE NUMBER

Subcontractor Representative
Subcontractor Company Name
Subcontractor Company Address
Subcontractor Phone Number

DATE: December 1, 2005

SUBJECT: Letter of Intent to Award a Contract

Dear Subcontractor Representative:

You have been selected as the successful bidder on Project Number _____, entitled _____ . Per our telephone conversation, we are in the process of developing a contract for the scope of work identified in your bid submission. The contract amount will be \$1,000,000.

This purpose of this letter is to notify you of our intent to award a contract. You can expect to receive the contract no later than _____, 20____. You are authorized to proceed with the work identified in your bid submission.

Please feel free to contact me at (222) 110-0000.

Sincerely,

Electrical Contractor Company Officer
Title

Figure 4.10: Purchase Order Form (page 27)

<p>COMPANY NAME COMPANY ADDRESS PURCHASE ORDER FORM</p>		
<p>DATE: P.O. NUMBER: PROJECT NUMBER: PROJECT NAME:</p>		
<p>TO:</p>		
<p>SHIP TO: (Home office or jobsite address) SHIP VIA ____ (jobsite) ____ F.O.B.</p>		
<p>REQUIRED SHIP DATE:</p>		
QUANTITY	DESCRIPTION OF ITEM(S)	COST
<p><i>NOTE: MATERIAL SAFETY DATA SHEETS ARE REQUIRED WITH ALL SHIPMENTS</i></p>		
<p>SHIPPING INSTRUCTIONS:</p> <div style="border: 1px solid black; height: 80px; width: 100%; margin-top: 5px;"></div>		
<p>ADDITIONAL REQUIREMENTS:</p> <p>1. Submit ____ copies of shop drawings/details/performance data for review/approval</p> <p>2. Submit ____ copies of OandM manuals or ____ copies of wiring diagrams for review/approval</p>		
<p>NAME: _____ NAME: _____</p>		
<p>SIGNATURE: _____ SIGNATURE: _____</p>		
<p>DATE: _____ DATE: _____</p>		

Table 4.16: Material Handling Planning Process Checklist (page 29)

Project Number: _____
Project Name: _____
Location: _____
Project Manager: _____
Start Date: _____

MATERIAL HANDLING PROCESS CHECKLIST FOR PRE-CONSTRUCTION PLANNING			
ACT.	COMPLETION DATE	ITEM NO.	SUB-ACTIVITIES
25. Develop material delivery and handling plan.			
<input type="checkbox"/>		1	Review the "Material Delivery/Storage and Site Logistics Best Practices" (see Table 4.18).
<input type="checkbox"/>		2	Establish and maintain a file of delivery receipts and packing slips.
<input type="checkbox"/>		3	Establish a material and equipment delivery and storage log
<input type="checkbox"/>		4	Create a material and equipment delivery schedule.
<input type="checkbox"/>		5	Establish standard procedures for receiving, handling and storage of materials and equipment.
26. Develop material storage and staging plan.			
<input type="checkbox"/>		1	Complete the site logistics review checklist (Table 4.20).
<input type="checkbox"/>		2	Review the "Material Delivery/Storage and Site Logistics Best Practices" (see Table 4.18).
<input type="checkbox"/>		3	Develop a storage site layout that identifies where the materials and equipment are stored.

PRE-CONSTRUCTION PLANNING ACTIVITIES

Table 4.17: Material Delivery/Storage and Site Logistics Best Practices (page 29)

Project Number: _____
Project Name: _____
Location: _____
Project Manager: _____

MATERIAL DELIVERY/STORAGE AND SITE LOGISTICS BEST PRACTICES	
Best Practice Number	BEST PRACTICE DESCRIPTION
1	Assign one person the responsibility of managing material and equipment delivery, handling storage and staging.
2	Establish a standard unloading crew that consists of laborers or apprentices.
3	Establish standard procedures for receiving, handling and storing materials, and strictly enforce the standard.
4	Develop a storage site layout that identifies where the materials and equipment are stored, and annotate the location on the material and equipment delivery and storage log.
5	Develop a storage site identification system that provides a method to document and track the location of all materials that have been delivered to the jobsite.
6	Establish storage space for each major material item or group (pipe, wire, boxes, etc.).
7	Sort and store the materials as soon as it is delivered to the site.
8	Allow storage space for waste or excess materials, and remove them as soon as possible.
9	Ensure the material and equipment is adequately secured and protected from the elements.
10	Make sure the materials manager is notified of pending deliveries.
11	Return all damaged, excess or incorrect materials to the vendor immediately in order to keep the site free from clutter.
12	Arrange to have materials delivered just before you need them so that storage and handling is kept to a minimum.
13	If materials are ordered in bulk, ask the vendor to store the materials at their office until you need them on the jobsite (also consider paying extra for this option).
14	Consider using a material consignment trailer, where the vendor inventories the trailer each week, restocks it and only charges you for the materials you use.
15	Try to place materials/equipment at the location where they will be used to improve access to the materials/equipment and minimize handling.
16	Arrange to have materials packaged for efficient unloading, handling and installation.
17	Determine ahead of time what equipment will be needed to unload and handle material deliveries.
18	Evaluate the capacity of material lifts, freight elevators and cranes to ensure they can safely move the materials and equipment.
19	Locate your toilet facilities as close to the work areas as possible.
20	Locate your break facilities and trash containers as close to the work areas as possible.
21	Develop a map of facility locations, and distribute it to workers and suppliers/vendors.

Table 4.19: Site Logistics Review Items (page 29)

Project Number: _____
Project Name: _____
Location: _____
Project Manager: _____

SITE LOGISTICS REVIEW CHECKLIST		
Completed	Date Completed	ITEM
<input type="checkbox"/>		Review the site layout, and identify placement of materials and facilities to maximize productivity.
<input type="checkbox"/>		Identify site entry and exit points, and plan possible vehicle circulation.
<input type="checkbox"/>		Identify procedures for receiving materials and authorized personnel.
<input type="checkbox"/>		Identify material storage locations.
<input type="checkbox"/>		Determine and document equipment that will be needed to unload and move materials (cranes, fork lift, pallet jacks, etc.).
<input type="checkbox"/>		Evaluate material lifts, freight elevators and cranes to determine whether they can support the size and weight of the material items.
<input type="checkbox"/>		Determine and order special tools associated with material handling (box cutters, bar code readers, computers, etc.).
<input type="checkbox"/>		Establish a “receiving crew” that consists of laborers or apprentices who will unload trucks and move materials.
<input type="checkbox"/>		Select a worker to be in charge of material handling, including inspection and inventory of delivered items.
<input type="checkbox"/>		Establish standard procedures for receiving, logging, handling and storing materials and equipment on the jobsite or at an offsite location.
<input type="checkbox"/>		Establish delivery dates for all materials and develop a schedule of deliveries.
<input type="checkbox"/>		Evaluate purchasing options to ensure materials are ordered to promote efficient unloading, storage and installation.
<input type="checkbox"/>		Evaluate the benefits and pitfalls of prefabrication in terms of delivery, storage, handling and installation.
<input type="checkbox"/>		Review the material delivery, handling, storage and staging best practices (see Table 4.18).

Table 4.20: Budget Preparation Checklist (page 30)

Project Number: _____
Project Name: _____
Location: _____
Project Manager: _____
Start Date: _____

BUDGET PREPARATION CHECKLIST FOR PRE-CONSTRUCTION PLANNING			
ACT.	COMPLETION DATE	ITEM NO.	SUB-ACTIVITIES
27. Develop, review or expand the cost code scheme.			
<input type="checkbox"/>		1	Decide whether to use a cost code scheme based upon 16 specifications divisions or 48 specifications divisions.
<input type="checkbox"/>		2	Review the cost estimate to identify the existing cost code breakdown, and decide whether additional breakdown is necessary.
<input type="checkbox"/>		3	Review the company standard list of cost codes (or use Table 4.21), and decide which codes will be needed for breaking down the work for tracking and billing.
<input type="checkbox"/>		4	Add new codes for work items that are not on the standard list.
<input type="checkbox"/>		5	Assign additional codes to specify the costs associated with material, equipment, labor, subcontractors and other miscellaneous costs.
28. Develop budget by breaking down labor, material, overhead and profit costs.			
<input type="checkbox"/>		1	Create the budget in concert with the labor and materials tracking report.
<input type="checkbox"/>		2	Establish a budget with sufficient line items to identify potential problems yet enough simplicity to avoid complex, time-consuming data entry.
<input type="checkbox"/>		3	Verify that labor and materials can and will be reported according to the budget line items.
29. Develop schedule of values			
<input type="checkbox"/>		1	Review the contract to identify the contractual format and process for developing a schedule of values.
<input type="checkbox"/>		2	Create the schedule of values in concert with the billing process.
<input type="checkbox"/>		3	Consider “rolling up” the budget so that the schedule of values has the same summary line items but fewer sub-line items.

PRE-CONSTRUCTION PLANNING ACTIVITIES

Table 4.21: Cost Code Scheme Based on Masterformat™ 1995 (16 Divisions) (page 30)

DIVISION	DESCRIPTION	DIVISION	DESCRIPTION
01000	General Requirements/Conditions	16300	Transmission And Distribution
01500	Temporary Facilities and Controls	16310	Transmission and Distribution Accessories
01510	Temporary Utilities	16320	High-Voltage Switching and Protection
01700	Execution and Closeout Requirements	16330	Medium-Voltage Switching and Protection
01710	Mobilization	16340	Medium-Voltage Switching and Protection Assemblies
01730	Cutting and Patching	16360	Unit Substations
01740	Cleaning and Waste Management	16400	Low-Voltage Distribution
01780	Closeout Submittals	16410	Enclosed Switches and Circuit Breakers
02200	Site Preparation	16420	Enclosed Controllers
02220	Demolition	16430	Low-Voltage Switchgear
02500	Utility Services	16440	Switchboards, Panelboards, and Control Centers
02580	Electrical and Communications Structures	16450	Enclosed Bus Assemblies
03400	Precast Concrete	16460	Low-Voltage Transformers
03480	Precast Concrete Specialties	16470	Power Distribution Units
05400	Cold-Formed Metal Framing	16490	Components and Accessories
05450	Electrical Support Assemblies	16500	Lighting
10400	Identification Devices	16510	Interior Luminaires
10440	Illuminated Interior Signage	16520	Exterior Luminaires
11060	Theater and Stage Equipment	16530	Emergency Lighting
11060	Stage Lighting and Controls	16540	Classified Location Lighting
11060	Controls for Theater & Stage Equipment	16550	Special-Purpose Lighting
11130	Audio-Visual Equipment	16560	Signal Lighting
13100	Lightning Protection Conductors	16570	Dimming Control
13110	Cathodic Protection Conductors	16580	Lighting Accessories
13700	Security Access and Surveillance	16590	Lighting Restoration and Repair
13800	Building Automation and Control	16700	Communications
13850	Detection and Alarms	16710	Communications Circuits
15900	HVAC Instrumentation and Control	16720	Telephone and Intercommunication Equipment
16050	Basic Electrical Materials and Methods	16740	Communication and Data Processing Equipment
16060	Grounding and Bonding	16770	Cable Transmission and Reception Equipment
16070	Hangers and Supports	16780	Broadcast Transmission and Reception Equipment
16075	Electrical Identification	16790	Microwave Transmission and Reception Equipment
16080	Electrical Testing	16800	Sound and Video
16090	Restoration and Repair	16810	Sound and Video Circuits
16100	Wiring Methods	16820	Sound Reinforcement
16120	Conductors and Cables	16830	Broadcast Studio Audio Equipment
16130	Raceway and Boxes	16840	Broadcast Studio Video Equipment
16140	Wiring Devices	16850	Television Equipment
16150	Wiring Connections	16880	Multimedia Equipment
16200	Electrical Power		
16210	Electrical Utility Services		
16220	Motors and Generators		
16230	Generator Assemblies		
16240	Battery Equipment		
16260	Static Power Converters		
16270	Transformers		
16280	Power Filters and Conditioners		

Table 4.24: Layout and Sequencing Planning Checklist (page 32)

Project Number: _____			
Project Name: _____			
Location: _____			
Project Manager: _____			
Start Date: _____			
LAYOUT AND SEQUENCING CHECKLIST FOR PRE-CONSTRUCTION PLANNING			
ACT.	COMPLETION DATE	ITEM NO.	SUB-ACTIVITIES
30. Develop installation sequence and layout drawings.			
<input type="checkbox"/>		1	Organize the project by areas, floors or systems
<input type="checkbox"/>		2	Allocate sufficient time to mentally think through the sequencing of all work processes from start through completion.
<input type="checkbox"/>		3	Determine whether to create sequence and layout drawings by hand (marked-up drawings) or by creating new CAD drawings.
<input type="checkbox"/>		4	Create daily installation drawings at least one day prior to the date when the work needs to be performed so that the drawings can be distributed each morning to foremen and field crews.
<input type="checkbox"/>		5	Review the sequence daily or weekly to ensure the project is progressing as expected.
31. Develop field instructions, including panel, pull or conduit schedules.			
<input type="checkbox"/>		1	Review the sequence and installation process to identify any additional information that might minimize questions and improve productivity.
<input type="checkbox"/>		2	Create the panel, pull or conduit schedules in conjunction with the installation drawings so that they can be distributed as a package to the foremen or field crews.
<input type="checkbox"/>		3	When repetitive work is scheduled on a project, develop field instructions and drawings
32. Develop prefabrication drawings for field use (when applicable).			
<input type="checkbox"/>		1	For systems that are partially or completely prefabricated in a prefabrication shop, develop drawings that show how the prefabricated parts should be assembled and installed in the field.
<input type="checkbox"/>		2	For systems prefabricated in a shop, ensure the prefabricated parts are clearly labeled and that these labels correspond to an assembly and installation scheme identified on the drawings.
<input type="checkbox"/>		3	If on-site prefabrication is scheduled, the drawings should identify the step-by-step process of how each piece is assembled into the prefabricated system.
<input type="checkbox"/>		4	If on-site prefabrication is scheduled, separate drawings should also be created to identify how the prefabricated parts should be installed.
<input type="checkbox"/>		5	Distribute the prefabrication drawings to the foremen or field crews that will perform the work.

Table 4.25: Schedule Development Planning Checklist (page 34)

Project Number: _____			
Project Name: _____			
Location: _____			
Project Manager: _____			
Start Date: _____			
SCHEDULE DEVELOPMENT CHECKLIST FOR PRE-CONSTRUCTION PLANNING			
ACT.	COMPLETION DATE	ITEM NO.	SUB-ACTIVITIES
33. Review customer's (general contractor's) schedule and timeline.			
<input type="checkbox"/>		1	Complete the "Customer's Schedule Review Items" checklist (see Table 4.26)
<input type="checkbox"/>		2	Initiate or attend a customer schedule review meeting to identify any special requirements and clarify any questions.
34. Identify work that impacts electrical activities.			
<input type="checkbox"/>		1	While reviewing the overall construction schedule, annotate work that must be coordinated with other trades.
<input type="checkbox"/>		2	While reviewing the overall construction schedule, annotate potential conflicts that will require coordination.
<input type="checkbox"/>		3	Develop and submit RFIs to resolve open questions about equipment wiring or conflicts among systems.
<input type="checkbox"/>		4	Request an initial (and a recurring) coordination meeting to identify and resolve schedule questions and conflicts before installation begins..
35. Review the work sequence and long-lead-time material/equipment delivery dates.			
<input type="checkbox"/>		1	Develop a rough draft of the electrical schedule from the sequence and installation plan.
<input type="checkbox"/>		2	Verify the ordering and delivery dates of long-lead-time materials and equipment.
<input type="checkbox"/>		3	Perform a three-way coordination between the sequencing/ installation plan, material/equipment delivery plan and the draft draft electrical schedule.
<input type="checkbox"/>		4	Modify the draft schedule and sequencing/installation plan to accommodate long-lead-time deliveries.

Table 4.25: Schedule Development Planning Checklist (continued)

Project Number: _____			
36. Coordinate electrical schedule with the customer's schedule.			
<input type="checkbox"/>		1	After coordinating the sequencing/installation plan, material/equipment delivery plan and the draft electrical schedule, coordinate the draft schedule with the customer's schedule and adjust as necessary.
<input type="checkbox"/>		2	Review the final electrical schedule with the customer, general contractor, other trade contractors and suppliers to resolve any final conflicts.
<input type="checkbox"/>		3	Seek approval of the schedule from the customer and general contractor.
<input type="checkbox"/>		4	Seek integration of the electrical schedule into the customer/general contractor's overall project schedule.
24. Develop and process log and book of submittals, cut sheets and shop drawings.			
<input type="checkbox"/>		1	In addition to the integration of the electrical schedule into the overall schedule, format the final electrical schedule into an independent bar chart for tracking and control.
<input type="checkbox"/>		2	Select the type of bar chart to develop and track.
<input type="checkbox"/>		3	Save the original approved schedule as the baseline so that progress can be tracked and delays can be documented.
<input type="checkbox"/>		4	Distribute the electrical bar chart schedule to the customer, general contractor, various subcontractors and suppliers.

PRE-CONSTRUCTION PLANNING ACTIVITIES

Table 4.26: Customer's Schedule Review Items (pages 34, 41)

Project Number: _____
Project Name: _____
Location: _____
Project Manager: _____

CUSTOMER'S SCHEDULE REVIEW CHECKLIST		
Completed	Item to Review	Annotations
<input type="checkbox"/>	Identify the overall project start date:	
<input type="checkbox"/>	Identify the electrical work start date:	
<input type="checkbox"/>	Identify the overall project completion date:	
<input type="checkbox"/>	Identify the electrical work completion date:	
<input type="checkbox"/>	List any interim milestones:	
<input type="checkbox"/>	Is the project divided into phases?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/>	Identify the start and completion dates for each phase (if applicable):	
<input type="checkbox"/>	Does the contract include a liquidated damages clause?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/>	Does the contract include an incentive for early completion?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/>	Can the electrical work be completed in the timeframe identified in the contract documents?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/>	If the schedule must be compressed, create a plan for compressing the schedule and completing the work by the contractual completion date.	
<input type="checkbox"/>	Identify unusual scheduling requirements (such as night work, second shift work, after-school work hours, escort required, etc.):	
<input type="checkbox"/>	Will the owner furnish any items, such as materials or equipment?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/>	Identify the "deliver no later than" dates that owner-furnished items must be delivered to the jobsite.	
<input type="checkbox"/>	Will any portion of the work be installed by the owner's own workforce or a separate contract? (example: automated shelving systems)	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/>	Identify the "install no later than" dates that owner-installed items must be completed.	
<input type="checkbox"/>	Identify techniques that will speed up the completion of the work.	

Table 4.26: Customer’s Schedule Review Items (continued)

Project Number: _____		
CUSTOMER’S SCHEDULE REVIEW CHECKLIST		
Completed	Item to Review	Annotations
<input type="checkbox"/>	Review the sequencing/installation plan to determine how the electrical work fits into the overall project schedule.	
<input type="checkbox"/>	Identify work that has already been completed:	
<input type="checkbox"/>	Identify work in progress and percent complete:	
<input type="checkbox"/>	Identify non-electrical activities that must be completed before the electrical portion of the work can begin.	
<input type="checkbox"/>	Are you aware of any pending changes to the overall project or electrical work?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/>	If yes, describe the pending changes:	
<input type="checkbox"/>	Do you anticipate crowded site conditions?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/>	If yes, consider scheduling some of the electrical work during a second shift to improve productivity.	

Table 4.27: Schedule Development Best Practices and Rules-of-Thumb (page 35)

Project Number: _____
Project Name: _____
Location: _____
Project Manager: _____

SCHEDULE DEVELOPMENT BEST PRACTICES AND RULES-OF-THUMB	
Best Practice Number	BEST PRACTICE/RULE-OF-THUMB DESCRIPTION
1	Seek scheduling input from the field superintendent and foremen. They often understand how the work will be accomplished and how the installation method corresponds to the crew size and duration.
2	Develop the first draft schedule using actual durations to determine whether the electrical work can be completed by the contractual completion date. If the schedule must be compressed, build the compression into the second draft schedule.
3	Consider developing a resource-loaded schedule so that the expenditures from the schedule can be compared to the expenditures from the cost report.
4	Compare the estimated work hours for an activity (or work process) to the scheduled duration of that activity (or work process). Then, either adjust the duration based on estimated work hours and expected crew size, or adjust the crew size based on the estimated work hours and allowable duration.
5	Be sure the schedule takes into account the time of year when the work item will be performed and the possible weather that can be expected. Excessive heat, cold, humidity, rain or wind can significantly impact the progress of the work.
6	Understand when major materials and equipment items will be delivered to the jobsite. The schedule may need to be adjusted to accommodate the delivery of those items.
7	Be sure the schedule clearly documents the date when owner-furnished materials and equipment must be received. Also, make sure the owner knows when these items are required, and seek their acknowledgement in writing.
8	Review the schedule of other specialty contractors to identify work that will impact the electrical schedule. For example, if the air conditioning unit will require a power connection, completion of the connection must occur after the unit has been delivered and installed. Hence, the electrical work must be coordinated with the mechanical work.
9	The electrical schedule should incorporate the work of any electrical subcontractors, such as the fire alarm installer and tester. Review and incorporate your subcontractors' work into your own schedule and be sure to provide updates if the schedule changes.
10	If crowded conditions or overmanning is expected on a jobsite (due to a small site or an acceleration of the work), consider scheduling some of the electrical work during a second shift to improve workflow and increase productivity.
11	Once the electrical schedule has been reviewed and approved by the customer/general contractor, document delays and changes to the sequence caused by others. Good documentation can improve your chances of receiving a time extension and financial compensation.

Table 4.27: Schedule Development Best Practices and Rules-of-Thumb (continued)

Project Number: _____	
SCHEDULE DEVELOPMENT BEST PRACTICES AND RULES-OF-THUMB	
Best Practice Number	BEST PRACTICE/RULE-OF-THUMB DESCRIPTION
12	When developing work activities or elements for the schedule, review the budget, cost codes and installation sequence plan. Create work elements that comprise no more than 5% of the scope of work so that inaccuracy in tracking progress will not have a significant impact on the percent complete.
13	Consider creating a computerized bar chart schedule. Tracking and control will be greatly simplified if the updates can be made in a computer system.
14	Consider dividing the schedule into areas or systems, such as first floor, second floor, etc. This will simplify tracking and control, especially on larger projects.
15	If some of the work is repetitive (such as conduit and wire on the first floor, second floor, etc.), consider creating these activities in your computer scheduling software and simply cutting and pasting as many times as the work occurs. The dates and durations can then be modified for each area of work.

Table 4.28: Tracking and Control Planning Checklist (page 36)

Project Number: _____			
Project Name: _____			
Location: _____			
Project Manager: _____			
Start Date: _____			
TRACKING AND CONTROL CHECKLIST FOR PRE-CONSTRUCTION PLANNING			
ACT.	COMPLETION DATE	ITEM NO.	SUB-ACTIVITIES
38. Customize the computerized tracking and control system (database/ schedule/etc.) for the current project.			
<input type="checkbox"/>		1	Review the tracking and control best practices (Table 4.31).
<input type="checkbox"/>		2	Complete the tracking and control tools checklist (Table 4.32).
<input type="checkbox"/>		3	Select appropriate computerized tracking and control tools for the project.
<input type="checkbox"/>		4	Modify the tracking and control tools for the project.
39. Develop labor and materials tracking report.			
<input type="checkbox"/>		1	Review the cost estimate and associated budget and cost code scheme.
<input type="checkbox"/>		2	Match the cost estimate/budget work items to crew assignments so that labor and materials can be tracked easily.
<input type="checkbox"/>		3	Select the reports to be created and used for monitoring progress.
<input type="checkbox"/>		4	Develop the selected reports by inputting project data into the reporting system (database or accounting system).

Table 4.29: Tracking and Control Best Practices (page 36)

Project Number: _____
 Project Name: _____
 Location: _____
 Project Manager: _____

TRACKING AND CONTROL BEST PRACTICES	
Best Practice Number	BEST PRACTICE/RULE-OF-THUMB DESCRIPTION
1	Remember that tracking and control involves a time-cost tradeoff. The more detailed the tracking and control system is, the more time must be spent on entering data and the greater the overhead costs will be. You must balance detail with simplicity.
2	Be sure to take into account the financial information needs of banks and bonding companies when setting up your control system.
3	If your company keeps track of historic costs, be sure the tracking and control system captures the right data in the proper format so that it can be added to the historic cost database.
4	Match budget/cost control line items with field work items so that labor hours can be easily reported and tracked.
5	Review the daily labor reporting procedures with the field supervisor and foremen. Be sure they understand how to code timecards so that the work performed can be directly associated with line items in the budget and tracking reports.
6	Deviations between actual and estimated costs and work hours should be discussed with the field supervisor each week to identify and correct problems immediately.
7	Seek feedback from the crew members about the causes of poor productivity and cost/labor hours overruns.
8	Work together with crews to improve productivity. Often, management actions or inactions contribute to productivity outcomes. For example, poor instructions can hinder productive work, while speedy responses to questions can help increase productivity.
9	If the crew members complete the work in fewer hours than estimated, provide a reward to thank them for their hard work, such as free lunch or special recognition.
10	Try using incentives regularly to improve productivity.
11	Make sure your data entries are as accurate as possible. Remember that cost reports should provide the project manager with a realistic financial overview of the project.
12	A negative variance between estimated and actual cost and work hours should be addressed through corrective action. One of the main benefits of monthly cost reporting is to identify problems early enough to take corrective action.

Table 4.30: Tracking and Control Tools Checklist (page 36)

Project Number: _____
Project Name: _____
Location: _____
Project Manager: _____

TRACKING AND CONTROL TOOLS CHECKLIST		
Completed	Date Completed	ITEM
<input type="checkbox"/>		Identify the goals of your tracking and control system. Do you want to: <ul style="list-style-type: none"> a. Monitor profitability? b. Identify variations in costs and work hours? c. Track productivity of the workforce? d. Contribute to your historical costs database? e. Document costs that are beyond the initial scope of work? f. Track changes in cost and work hours? g. Create contractually-mandated cost reports for the customer? h. Evaluate the effectiveness of your management team? i. Conduct risk analyses on future projects of a similar type?
<input type="checkbox"/>		Create a project schedule, and format it so that you can update the progress of all schedule line items (see Activity 37). Match schedule line items to budget line items to facilitate effective tracking.
<input type="checkbox"/>		As an alternative, create a resource-loaded schedule that will permit you to track cost and labor hours as you track schedule progress.
<input type="checkbox"/>		Create a manpower loading chart that identifies your crew size and composition for each week of the project (see Figure 4.13).
<input type="checkbox"/>		Customize the computerized project management program so that you can use it as a tool to track RFIs, submittals, purchase orders, deliveries and change orders.
<input type="checkbox"/>		Create a progress report to track variances in costs and labor hours. Your progress report should track budgeted line items.
<input type="checkbox"/>		Create a labor productivity report to compare estimated to actual productivity and identify solutions to problems. Daily time sheets should be coded to match budget line items.
<input type="checkbox"/>		Other:
<input type="checkbox"/>		Other:

Figure 4.31: Daily Labor Time Report (pages 36, 40)

PROJECT NUMBER: _____
PROJECT NAME: _____
FIELD SUPERVISOR: _____

EMPLOYEE NAME: _____
PAY PERIOD: FROM _____ TO: _____

DAILY TIME SHEET					
DAY	WORK DESCRIPTION	COST CODE	HOURS		
			REGULAR	OVERTIME	DOUBLE TIME
MON					
TOTAL HOURS					

DAY	WORK DESCRIPTION	COST CODE	HOURS		
			REGULAR	OVERTIME	DOUBLE TIME
TUE					
TOTAL HOURS					

DAY	WORK DESCRIPTION	COST CODE	HOURS		
			REGULAR	OVERTIME	DOUBLE TIME
WED					
TOTAL HOURS					

DAY	WORK DESCRIPTION	COST CODE	HOURS		
			REGULAR	OVERTIME	DOUBLE TIME
THU					
TOTAL HOURS					

PRE-CONSTRUCTION PLANNING ACTIVITIES

Figure 4.31: Daily Labor Time Report (continued)

DAY	WORK DESCRIPTION	COST CODE	HOURS		
			REGULAR	OVERTIME	DOUBLE TIME
FRI					
TOTAL HOURS					

DAY	WORK DESCRIPTION	COST CODE	HOURS		
			REGULAR	OVERTIME	DOUBLE TIME
SAT					
TOTAL HOURS					

DAY	WORK DESCRIPTION	COST CODE	HOURS		
			REGULAR	OVERTIME	DOUBLE TIME
SUN					
TOTAL HOURS					

Table 4.33: Construction Execution Kickoff Meeting Agenda (page 38)

Project Number: _____
Project Name: _____
Meeting Date and Location: _____
Estimator: _____
Project Manager: _____

CONSTRUCTION EXECUTION KICKOFF MEETING AGENDA	
Agenda Items:	
1.	Project overview <ul style="list-style-type: none"> a. Project name b. Location c. Type of work d. Contract cost e. General scope of work
2.	Introduce internal team members and any changes in team members since planning meeting. <ul style="list-style-type: none"> a. Project Manager b. Field Supervisor c. Foremen d. Estimator e. Accounting representative f. Purchasing Agent g. Director of Operations h. Other internal team members
3.	Identify external team members and any changes in team members since planning meeting. <ul style="list-style-type: none"> a. Owner/Customer b. Architect/Engineer c. General Contractor/Construction Manager d. Other Specialty Subcontractors e. Vendors/Suppliers
4.	Review the general scope of work. <ul style="list-style-type: none"> a. Provide an overview of the project scope of work and the electrical scope b. Review major work performed by others
5.	Review the meetings schedule. <ul style="list-style-type: none"> a. Internal office and jobsite progress meetings b. Jobsite safety and coordination meetings c. Project progress and coordination meetings d. Other meetings
6.	Review the Request for Information (RFI) Process. <ul style="list-style-type: none"> a. Standard company RFI procedure b. Contractual language regarding RFIs and the RFI process c. Current outstanding RFIs

Table 4.33: Construction Execution Kickoff Meeting Agenda (continued)

Project Number: _____	
Agenda Items:	
7.	Review the change order process. <ul style="list-style-type: none">a. Contract language regarding changes and the change order processb. Standard company change order and field change processesc. Documentation of changes, delays, disruptions and disputed work
8.	Review the submittal process. <ul style="list-style-type: none">a. Contract language regarding submittals and the submittal processb. Standard company submittal processesc. Following up on late submissions and approvals
9.	Review the billing process. <ul style="list-style-type: none">a. Contract language regarding billing and the payment processb. Standard company billing processesc. Subcontractor/supplier/vendor invoicing and paymentd. Following up on late payments or open accounts receivable
10.	Review the tracking and control process. <ul style="list-style-type: none">a. Labor reportingb. Progress reporting and percent completec. The progress update timelined. Standard company progress update procedures
11.	Review the schedule and milestones. <ul style="list-style-type: none">a. Customer-furnished scheduleb. Electrical bar chart schedulec. Work by others that will impact the electrical workd. Important material and equipment delivery datese. Schedule updating to reflect percent complete
12.	Review site logistics and material storage and staging. <ul style="list-style-type: none">a. Site accessb. Parkingc. Material delivery proceduresd. Material storage locationse. Trailer locations (if applicable)f. Site cleanup requirementsg. Temporary power and lighting requirements
13.	Review special safety issues.
14.	Review other items specific to this project: _____ _____ _____

Table 4.34: Construction Execution Kickoff Meeting Checklist (page 38)

Project Number: _____			
Project Name: _____			
Location: _____			
Project Manager: _____			
Start Date: _____			
CONSTRUCTION EXECUTION KICKOFF CHECKLIST FOR PRE-CONSTRUCTION PLANNING			
ACT.	COMPLETION DATE	ITEM NO.	SUB-ACTIVITIES
40. Review meeting schedule.			
<input type="checkbox"/>		1	Review the schedule of weekly internal meetings associated with the project.
<input type="checkbox"/>		2	Review the schedule of weekly project meetings conducted by the customer or general contractor.
<input type="checkbox"/>		3	Identify the internal team members that will be responsible for attending the internal and external meetings.
41. Review request for information (RFI) process.			
<input type="checkbox"/>		1	Review the contract for a customer-mandated request for information (RFI) process.
<input type="checkbox"/>		2	Review the company standard procedure for developing, processing, tracking and closing out a request for information.
<input type="checkbox"/>		3	Modify the company standard RFI procedure, as necessary, to conform to the contractually-mandated process.
42. Develop prefabrication drawings for field use (when applicable).			
<input type="checkbox"/>		1	Review the contract for a customer-mandated change order (CO) process and field change request process.
<input type="checkbox"/>		2	Review the company standard change order procedure and field change request/management process.
<input type="checkbox"/>		3	Discuss the process for documenting changes, delays and disruptions in the work flow and sequence.
<input type="checkbox"/>		4	Discuss the process for tracking and following up on change order requests and payment for field change directives.
43. Review submittal processing procedures.			
<input type="checkbox"/>		1	Review the contract documents for a customer-mandated submittal processing procedures.
<input type="checkbox"/>		2	Review the company standard procedure for developing, processing, tracking and receiving approval for project submittals.
<input type="checkbox"/>		3	Modify the company standard submittal procedure, as necessary, to conform to the contractually-mandated process.

Table 4.34: Construction Execution Kickoff Meeting Checklist (continued)

Project Number: _____			
44. Review billing and invoicing procedures			
<input type="checkbox"/>		1	Review the customer/general contractor's process and timeline for invoicing, lien waivers and payment.
<input type="checkbox"/>		2	Review the internal billing cycle established by the accounting department.
<input type="checkbox"/>		3	If necessary, adjust the internal billing cycle to conform to the customer/general contractor's invoicing cycle.
<input type="checkbox"/>		4	Discuss the process for following up with the customer/general contractor on late unpaid invoices.
45. Review project and field reporting and tracking procedures.			
<input type="checkbox"/>		1	Discuss the process for reporting labor hours and submitting timecards to the accounting office.
<input type="checkbox"/>		2	Discuss the process for reporting progress and percent complete.
<input type="checkbox"/>		3	Discuss the process for tracking material and equipment costs and purchase orders.
<input type="checkbox"/>		4	Review and discuss the tracking tools that will be used to monitor progress.
<input type="checkbox"/>		5	Review the monthly update process.
46. Review electrical and customer schedules.			
<input type="checkbox"/>		1	Review the electrical bar chart schedule.
<input type="checkbox"/>		2	Review the customer/general contractor's schedule and/or timeline.
<input type="checkbox"/>		3	Discuss the process for updating the schedule.

5. The Planning Assessment Process

5.1 Introduction to the Planning Assessment Process

Chapter 4 of this manual discusses, in detail, the model electrical pre-construction planning process. This research discovered that projects that implemented a planning process similar to the model process tended to perform more successfully. Furthermore, there appeared to be 16 activities that had an especially strong influence on performance—and many of these activities were often overlooked during the planning process.

5.2 Purpose of the Planning Assessment Process

Chapter 4 presents a series of instructions and easy-to-use checklists to guide electrical contractors through the pre-construction planning process. The purpose of this chapter is to present a scorecard that can be used to evaluate the effectiveness of the planning that was completed on a project that is about to be executed.

The chapter will begin by identifying the 16 activities that had an especially strong influence on performance in order to explain why these activities are weighted more heavily on the planning scorecard. Then, the planning effectiveness scorecard will be introduced, which includes all of the activities from the model planning process, and instructions will be provided on how to score the effectiveness of planning on a new project. Finally, a section on “score analysis” will present some rules-of-thumb and benchmark score values for projects that have various characteristics, such as large projects versus

small projects, complex projects versus simple projects, and so on.

5.3 Important and Influential Planning Activities

It is essential to note that each of the 46 pre-construction planning activities in the Model Electrical Pre-Construction Planning Process is an important part of the planning process. It is also worth noting that not every activity will require a great deal of time to complete. Indeed, many of the activities can be completed in a matter of a few minutes, particularly on smaller projects. The project manager will need to exercise skill and judgment when determining how much time to devote to each activity.

Many of the activities are clearly critical to an effective planning process. Such obvious activities as reviewing the plans and specifications, administratively setting up the project, and issuing purchase orders can directly impact the smooth execution of a project. Overall, 16 “influential activities” were identified through careful research, and these activities are identified in the next section. It is critical that the project manager understand the following:

All of the 46 pre-construction planning activities are important to project success.

However, 16 of those activities have a particularly strong influence on the outcome of a project.

5.3.1 The 16 Influential Planning Activities

Sixteen of the pre-construction planning activities were identified as having an especially strong

correlation to a successful project outcome. These activities include the following:

■ Team Selection and Turnover

Activity 2: Hold turnover meeting between estimator and project manager (when applicable).

Activity 3: Hold separate turnover meeting between project manager and field supervisor.

■ Scope and Contract Review

Activity 7: Field supervisor reviews plans, specifications and schedule.

Activity 10: Compare estimated (bid) work activities and materials to planned performance.

Activity 11: Identify value engineering and pre-fabrication opportunities and how to simplify the work.

■ Administrative Setup

Activity 16: Initiate a request for information (RFI) tracking and processing system.

Activity 17: Initiate a submittal tracking and processing system.

■ Buyout Process

Activity 23: Request submittals, cut sheets and shop drawings.

■ Material Handling Plan

Activity 25: Develop material delivery and handling plan.

Activity 26: Develop material storage and staging plan.

■ Layout and Sequencing Plan

Activity 30: Develop installation sequence and layout drawings.

Activity 31: Develop field instructions, including panel, pull or conduit schedules.

Activity 32: Develop prefabrication drawings for field use (when applicable).

■ Schedule Development

Activity 36: Coordinate electrical schedule with the customer's schedule.

■ Construction Execution Kickoff Meeting

Activity 43: Review submittal processing procedure.

Activity 44: Review billing and invoicing procedures.

When performing pre-construction planning, extra care should be taken to include these activities in the planning process. Although it is recommended that all of the 46 activities be completed, under extraordinary circumstances, when the planning process must be abbreviated, these 16 activities should be among those that get completed.

5.4 Planning Assessment Process

The planning assessment process provides a simple method for evaluating whether each of the 46 pre-construction planning activities has been completed and whether an activity was completed before or after a project was executed. Under ideal circumstances, all of the planning activities will be completed prior to executing the work. However, ideal circumstances are rare in the construction industry, and often, some of the planning activities must be completed after the project has been executed.

The purpose of this section is to introduce the planning effectiveness scorecard and to provide instructions on how to use the scorecard to evaluate the planning that has occurred on a new project.

5.4.1 The Planning Effectiveness Scorecard

The planning effectiveness scorecard was developed as a tool to evaluate how closely a project's actual planning process matches the Model Electrical Pre-Construction Planning Process. The scorecard, which is presented as **Table 5.1** (pages 100-101), lists each of the 46 model pre-construction planning activities (Column C). Space is provided in Column D for contractors to identify

whether or not the activity was performed and to assign a “performance score.”

The performance score is assigned based on whether an activity was performed or not performed and whether it was completed before or after execution using the following scale:

PERFORMANCE SCORE (Column D)

- 2 = Activity was completed before executing the work
- 1 = Activity was completed after executing the work
- 0 = Activity was not completed

Using this scale, a higher summed performance score indicates that more of the pre-construction planning activities were completed before executing the work, which correlates strongly to better project performance.

Column E represents the weight assigned to each activity. As mentioned in the previous section, 16 of the activities have a stronger influence on performance, and as a result, these activities are assigned larger weights. To calculate a final score (Column F) for each activity, Column D (Performance Score) is multiplied by Column E (Weight). The planning effectiveness score is the sum of all of the total scores.

5.4.2 Score Analysis

Projects that were investigated as part of the research had various characteristics. In particular, four characteristics were analyzed, including project size, initial uncertainty, bid accuracy and type of construction.

5.4.2.1 Project Size

Project Size is generally determined by three values: contract cost at award, original estimated total work hours and estimated peak number of electricians. Furthermore, estimated project duration is also strongly related to a project’s size.

The trend seems to indicate that larger projects will require a higher planning effectiveness score to have a greater chance for successful performance.

5.4.2.2 Initial Uncertainty of the Project

Initial uncertainty of the project is generally determined by three values: perceived level of uncertainty (high, medium or low), percentage of the total design completed at bid and perceived level of complexity (high, medium or low).

The trend indicates that projects with high levels of initial uncertainty will require a higher planning effectiveness score to have a greater chance for successful performance.

5.4.2.3 Bid Accuracy

Bid Accuracy is generally determined by two concepts: a perceived accurate cost estimate and perceived accurate estimated work hours.

The trend indicates that projects with an inaccurate bid will require a higher planning effectiveness score to have a greater chance for successful performance.

5.4.2.4 Type of Construction

Type of Construction is generally determined by classifying projects as: commercial, industrial, institutional and other.

The trend indicates that industrial and institutional projects require a higher planning effectiveness score to have a greater chance for successful performance.

Table 5.1: Planning Effectiveness Scorecard

PLANNING EFFECTIVENESS SCORECARD					
(A) ACTIVITY CATEGORY	(B) ACT. NO.	(C) ACTIVITY	(D) PERFORMANCE SCORE*	(E) WEIGHT	(D)X(E)=(F) FINAL SCORE
Team Selection and Turnover	1	Finalize selection of project manager, field supervisor and other key team members.		1.00	
	2	Hold turnover meeting between estimator and project manager (when applicable).		2.00	
	3	Hold separate turnover meeting between project manager and field supervisor.		4.00	
	4	Hold pre-job (planning) kickoff meeting with internal team members to assign responsibilities.		1.00	
Scope and Contract Review	5	Review contract for unfavorable or high risk clauses.		1.00	
	6	Project manager reviews plans, specifications and schedule.		1.00	
	7	Field supervisor reviews plans, specifications and schedule.		3.50	
	8	Create a list of issues that need to be resolved, and begin the request for information (RFI) process.		1.00	
	9	Conduct site visit.		1.00	
	10	Compare estimated (bid) work activities and materials to planned performance.		3.00	
	11	Identify value engineering and prefabrication opportunities and how to simplify the work.		2.00	
	12	Prepare construction takeoff.		1.00	
Administrative Setup	13	Set up project files, and create contact list.		1.00	
	14	Set up computerized tracking and control system (forms, database, schedule, tracking).		1.00	
	15	Initiate a change management system.		1.00	
	16	Initiate a request for information (RFI) tracking and processing system.		2.00	
	17	Initiate a submittal tracking and processing system.		3.50	
	18	Develop a "Labor Requirements/Expectations" letter (for background check, etc.).		1.00	
	19	Review subcontractor/supplier/vendor pricing and qualifications.		1.00	
Buyout Process	20	Negotiate pricing and contract conditions, and select subcontractors/suppliers/vendors.		1.00	
	21	Develop and issue purchase orders and contracts for materials and equipment.		1.00	
	22	Order long-lead-time materials and equipment.		1.00	
	23	Request submittals, cut sheets and shop drawings.		2.00	
	24	Develop and process log and book of submittals, cut sheets and shop drawings.		1.00	
Material Handling Plan	25	Develop material delivery and handling plan.		2.50	
	26	Develop material storage and staging plan.		2.00	

* 2 = Activity completed before executing the work
 1 = Activity completed after executing the work
 0 = Activity not completed

Table 5.1: Planning Effectiveness Scorecard (continued)

PLANNING EFFECTIVENESS SCORECARD					
(A) ACTIVITY CATEGORY	(B) ACT. NO.	(C) ACTIVITY	(D) PERFORMANCE SCORE*	(E) WEIGHT	(D)X(E)=(F) FINAL SCORE
Budget Preparation	27	Develop, review or expand cost code scheme.		1.00	
	28	Develop budget by breaking down labor, material, overhead and profit costs.		1.00	
	29	Develop schedule of values.		1.00	
Layout and Sequencing Plan	30	Develop installation sequence and layout drawings.		2.50	
	31	Develop field instructions, including panel, pull or conduit schedules.		3.00	
	32	Develop prefabrication drawings for field use (when applicable).		2.50	
Schedule Development	33	Review customer's schedule and timeline.		1.00	
	34	Identify work that impacts electrical activities.		1.00	
	35	Review the work sequence and long-lead-time material/equipment delivery dates.		1.00	
	36	Coordinate electrical schedule with the customer's schedule.		2.00	
	37	Create a bar chart schedule.		1.00	
Tracking and Control	38	Customize the computerized tracking and control system (database/schedule/etc) for the current project.		1.00	
	39	Develop labor and materials tracking report.		1.00	
Construction Execution Kickoff Meeting	40	Review meeting schedule.		1.00	
	41	Review request for information (RFI) process.		1.00	
	42	Review change order process and field change management process.		1.00	
	43	Review submittal processing procedure.		3.50	
	44	Review billing and invoicing procedures.		3.00	
	45	Review project and field reporting and tracking procedures.		1.00	
	46	Review electrical and customer schedules.		1.00	
	PLANNING EFFECTIVENESS SCORE (sum of Column F)				

* 2 = Activity completed before executing the work
 1 = Activity completed after executing the work
 0 = Activity not completed