Chapter 11

Project Documentation

The proper documentation of a construction project involves the creation of sufficient records to affect a history of the construction process. Proper documentation does not mean creating gigabytes of electronic data or reams of paper to fill row upon row of filing cabinets. It does mean making certain that when important events are about to happen, or are happening, or have happened in the not-too-distant past, they are accurately and promptly recorded. The key words are “important” with regard to events, and “accurately” concerning recorded.

That smooth running project of yesterday may turn into a quagmire today, and without the documentation to support this turn-of-events, grave consequences can result; something which could apply to the general contractor as well if they’re asleep at the switch. It is not by chance that this chapter on documentation precedes the one on claims and disputes later in the book.

The Documentation Process

With e-mail used in lieu of letter writing these days, those back and forth messages should periodically be downloaded, printed, and filed to provide easier access to documents than by scrolling through hundreds of messages looking for the right one. Throughout this chapter, “e-mail” can be substituted for “letters” in almost all cases.

Facts rather than opinions are important in every facet of documentation, although some opinions gathered from remarks made by attendees at a project meeting ought to be recorded separately to shed some light on the intent of the comment.
Documentation of an event should consider:

- What happened
- When it happened
- How it happened
- When it was discovered
- Whether responsibility can be assigned with certainty
- Who was notified
- To whom and when was notification given
- What the impact of the event is
- What immediate action is required, if any, and by whom
- What longer-term action is required, if any, and by whom
- Which party or parties will be responsible for resolving the problem

Project documentation accomplishes the following:

- Creates a history of the project which can be referred to when similar jobs with comparable problems are encountered
- Provides enough information so that, if project reassignments are made within the organization, a new project manager can trace the job history to date and continue the administration of the project with little or no difficulty
- Provides more than mere reliance on one’s memory to reconstruct various segments of a project’s activity long after it has been completed
- Reduces the possibility of future misunderstandings, disagreements, or disputes by committing important events or verbal communications into writing
- Makes details available in the event that mediation, arbitration, or litigation is pursued

Recordkeeping is important since it relates to the project manager’s relations with:

- The owner
- The architect and engineer
- Government authorities
- Subcontractors and suppliers
- Field operations
- Office staff
Documentation to the Owner

The form and content of any owner documentation will vary with the general contractor’s contractual relationship with that owner. When the architect is the owner’s agent or representative, most owner-related communications will pass through the architect. Some owners may also request copies of all documents transmitted to the architect. Occasionally, some owners will bypass the architect entirely and direct instructions to the general contractor instead. When this occurs, the project manager must alert the architect to the situation with a request to ask the owner to transmit future documents to the contractor via the architect’s office.

The unique provisions of a GMP contract with respect to documentation

A cost-plus-not-to-exceed-a-GMP (guaranteed maximum price) contract requires communication between the owner, architect, and contractor for several reasons. All parties want to be kept apprised of any significant cost increases or decreases, and any decisions that may affect the cost of the project.

Subcontractor selection. When a cost-plus or GMP contract is administered, the final selection of subcontractors may be subject to approval by the owner. If so, copies of the subcontractor quotes along with the project manager’s recommendation will be forwarded to the owner. The letter accompanying the proposals should include a tabulation of scope and prices so that each quoted price represents equal scope, or is adjusted accordingly.

Included in the letter to the owner is a time frame required for a response—within 5 working days, 72 hours, or whatever seems appropriate to maintain job progress. This notice must be monitored so that if no response is received within the requested time frame, another written request should be sent indicating that there is some urgency attached to a timely response.

As is the case in all forms of notice, strict monitoring of the requested response to that notice must be maintained, and when no response is forthcoming, a second more urgent request must be sent.

Documentation to an owner from the construction manager

A construction manager (CM) contract creates another dimension in owner-contractor relations. The CM is now the owner’s agent and consultant in matters related to construction. Because of that relationship,
the documentation takes on a different perspective. The CM’s daily activities as the owner’s agent will require the CM to prepare reports, schedules, and various cost and estimate analyses, recommendations pertaining to contract awards, general contractor and subcontractor requests for extras, and interrelationships with the architect and engineer, so correspondence that would have previously been transmitted by the general contractor to the architect/owner will then flow instead from the CM.

A review of the Construction Management Association of America’s A-1 document lists the basic services required of a CM, each of which requires some form of documentation.

- Time management—preparing a master schedule or milestone schedule
- Cost management—surveying the construction market to provide the availability of local construction services, and project and construction budgets
- Operating a management information system—preparing various reports such as cost reports, cash flow reports, and scheduling updates
- Project management—working with prequalifying bidders, placing bid notifications, arranging prebid conferences, conducting bid analyses and recommendations, organizing postbid conferences, and preparing construction contracts
- Setting up project conferences
- Arranging progress meetings
- Reviewing contract documents
- Acquiring approval from regulatory agencies
- Managing change orders
- Monitoring contractor safety programs
- Controlling documents

**The owner’s responsibility to the contractor.** The owner must not only pay the contractor’s monthly requisitions, but pay the contractor on time. It’s also the owner’s responsibility to make all the necessary arrangements for financing prior to the start of construction. The owner’s obligation to a general contractor generally commences after a construction contract has been signed. Formal bidding instructions require general contractors to submit bids to the owner that must remain valid for periods ranging from 30 to 60 days. The owner must honor those commitments and notify the contractor of the final decision in writing; if the owner doesn’t, the contractor is under no obligation to accept an award if one is offered. Why would a contractor
want to reject a potential contract? Well, suppose that in reviewing their bid the general contractor discovered that a major item of work had either been inadvertently omitted from the estimate, or seriously undervalued. As a result, the contractor may wish to withdraw their bid; however, if a bid bond was required, that would mean forfeiting that bond.

If the owner fails to abide by the bid notification procedure though, and the contractor declines to accept the contract when offered (and a bid bond is involved), written notification of nonacceptance to the owner along with a request to return the bid bond would be in order.

The owner also has an obligation, in most cases, to provide certain surveys and easement information to the contractor if applicable. If the required surveys have not been submitted in a timely manner, a letter to the architect/owner needs to be sent, along with any follow-up.

**Documentation to the Architect and Engineer**

Correspondence with the architect, their engineers, and consultants generally makes up the most voluminous part of the entire general contractor’s recordkeeping process. Most of the following categories of items require the project manager’s attention. When “architect” is mentioned, the word “engineer” may also apply.

**Shop drawing submittals, review, returns and logs**

The prompt receipt, review, transmission, distribution, and tracking of shop drawings is one of the most critical elements of project administration. Documentation of this process must be complete, accurate, and timely. Architects frequently require the general contractor to affix their stamp to the shop drawing certifying that it has been reviewed and that it complies with the contract requirements. Often, hundreds of shop drawings are generated and pass through the project manager’s hands, thus a proper shop drawing log is required to monitor the flow of shop drawings. This log should include, at a bare minimum:

- A tracking number
- The name of the sender
- The date received
- A brief description of the content
- To whom it should be sent
- The date it was sent
- The date due back
Days received—plus or minus the date requested

The action taken—approved, approved as noted, rejected, resubmitted, and so on

Figure 11.1 shows a standard format shop drawing log like that included in most project management software packages.

The log must be reviewed periodically at the owner’s meeting. This is important in order to track the flow to and from the architect and to note any drawings that are overdue and when they can be expected to be reviewed at the subcontractor’s meetings, to track the flow of shop drawings from their vendors, and also to respond to requests for resubmission of some questionable shop drawings. Finally, this should be done so as to notify a subcontractor of any late submissions and the consequences thereof.

To ensure a successful shop drawing management system:

- Create a tracking log
- Monitor the flow of documents, minimally on a weekly basis
- Provide written notification to the delaying party
- When delays continue, issue a letter warning of the consequences, job delays, impact on other subcontractors, out-of-sequence work, and so on

Requests for Clarification and Requests for Information

Requests for Clarification (RFCs) and Requests for Information (RFIs) are used during the bidding process to obtain clarifications or information affecting the cost of the project and, of course, after the contract award when an in-depth analysis of the plans and specifications is made by contractors. Requests may have originated from the general contractor or from their subcontractors and suppliers.

Because it is not uncommon for RFIs and RFCs to be composed of several hundred documents, a tracking and monitoring device is essential. The RFI log answers this need.

The RFI log (Figure 11.2) should contain the following elements:

- A tracking number
- The date when the RFI was created by the general contractor, or when received from their subcontractor (since all RFIs are sent to the architect, there’s no need for an entry of this type)
- The date sent to the architect
- The date when a response is required
FIGURE 11.1 A standard shop drawing log.
<table>
<thead>
<tr>
<th>RFI #</th>
<th>Subject</th>
<th>Date Created</th>
<th>Date Req'd</th>
<th>Date Resp</th>
<th>Question</th>
<th>Answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>047</td>
<td>Penthouse Wall Finish Clarification</td>
<td>1/26/2005</td>
<td>2/2/2005</td>
<td></td>
<td>Drawing A.6.9 Detail 6: Should the penthouse wall finish be just dense glass or does it require any waterproofing (we could bring the rubber roof membrane all the way to the cant strip since it seems not to be the case).</td>
<td></td>
</tr>
<tr>
<td>048</td>
<td>Concrete beam reinforcement</td>
<td>1/26/2005</td>
<td>2/2/2005</td>
<td>1/31/2005</td>
<td>Drawings JBS-1.3 and JBS-1.4 opening between L1&amp;L and C&amp;D lines Revision 6 is deleting the concrete beams around the opening. Please confirm.</td>
<td>Yes, this is confirmed.</td>
</tr>
<tr>
<td>049</td>
<td>2 1/2&quot; Chilled Water Supply and Return Valves and Capped for Future</td>
<td>1/31/2005</td>
<td>2/7/2005</td>
<td></td>
<td>Reference Drawings JB.H.1.1 This line is shown penetrating the Royal Room Wall around the C line. Do you want us to penetrate the Room Wall or leave it on the Tenant Side. Please Advise</td>
<td></td>
</tr>
<tr>
<td>050</td>
<td>Magnetic Starters</td>
<td>1/31/2005</td>
<td>2/7/2005</td>
<td></td>
<td>Revision #6 is changing the magnetic starters for roof mounted equipment from indoor to outdoor. The durability is usually higher when installed inside. Please confirm the change.</td>
<td></td>
</tr>
</tbody>
</table>

Total Number of RFIs for this project: 50

**FIGURE 11.2** The RFI log.
A brief description of the question (the detailed question will have been included in the RFI itself)

An answer or response from the architect (the detailed answer will be stated in full in the architect’s response, accompanying the return of the RFI)

A periodic review of outstanding RFIs/RFCs should take place at the weekly owner’s meeting, where their status should be documented accordingly. There again, the monitoring process is important. Many of these RFIs will, when answered, impact either cost or time, or both, and as such will generate a change-order proposal, starting another process that will require close monitoring.

Field Conditions Documentation

When a field condition occurs that requires a construction detail, procedure, or dimension to be changed, a Request for Clarification often takes the form of a field information memo (FIM). FIMs are also used when a contractor wishes to change a construction detail and needs to create a sketch or narrative in order to convey this information to the architect. Conversely, when an architect during a site visit requests a change, this data can be transmitted to the contractor’s field office via a FIM.

Another similar document is the ASI (architect’s supplementary instruction), which may also be issued after a visit to the field. This directive may or may not have cost and time implications. Some contractors include FIMs and ASIs on the RFI log because they are somewhat similar in nature.

The affect on “as-builts”

RFIs, RFCs, FIMs, and ASIs impact another part of the project: the “as-built” drawings. Subcontractors should be provided with copies of all of these documents as they come forth from the architect, not only to determine if their scope of work is impacted but to alert them to actual changes in the work that have no cost impact. Even a no-cost charge to the plans may affect the as-built drawing(s) for which a specific subcontract has the responsibility to produce. This is a further reason to distribute all such documents to the field and to interested subcontractors. Some general contractors make it a practice to send copies of all RFIs, ASIs, and FIMs to all subcontractors just to ensure that all the interested parties have received the information they need.

Field inspections required before close-in.  A subcontractor or general contractor may, at times, request an inspection by the architect/engineer
of an item of work before it is covered or enclosed. This will be in addition to the inspections required by local building officials during the course of construction. There may be a specific structural detail or mechanical piping installation that the project manager would like to have inspected, or that may be required by the contract to be inspected before being enclosed. An e-mail requesting the inspection, a verification that the inspection was made, and a report of the results of the inspection should be documented. The general conditions of the contract, if you recall, state that when a portion of work has been covered without being inspected as requested by the architect/engineer, the contractor may have to uncover the area in question for inspection. The cost to uncover and recover thus may be borne by the general contractor.

The Coordination Process

Coordination problems occur frequently and they reflect the complexity of today’s construction project. Making things fit in their designated space requires a great deal of time and effort and a section of the specifications generally includes a directive that the general contractor is to instruct that all systems are to be properly coordinated. A typical specification will read as follows:

General contractor shall circulate coordination drawings to the following subcontractors (usually MEP, fire protection, electrical) and any other installers whose work may conflict with other work. Each of these subcontractors shall accurately and neatly show the actual size and location of the respective equipment and work. Each subcontractor shall note apparent conflicts, suggest alternate solutions and return drawings to the General Contractor.

Several pass-throughs are required before a “coordinated” set of drawings is produced and transmitted to the architect for review and comment. Not infrequently, it becomes apparent that some mechanical or electrical components will not fit in their allotted space above a ceiling or within partitions and the project manager must present the facts, as they are known, to the architect so that a resolution can be obtained. If a solution can be offered, it should be sent along with the drawings—and if additional costs are involved, they should be included.

This process often does not go smoothly and costs may be called into question by the architect, or alternate schemes may be passed back and forth to avoid increased costs. This entire process, if it becomes bogged down must be documented until a mutually agreed upon solution is found. But the problems are not over yet!

Once a coordinated set of shop drawings has been prepared and approved, each subcontractor participating in the process should “sign-off”
on all the drawings, either directly on the drawings themselves or in a letter accepting the drawings. Too often, a subcontractor will agree with their portion of the coordination process only to find that their initial review was not correct and their work will not fit as planned. By “signing off” and accepting the drawings, any future costs associated with making work fit will be charged to their account.

Other Important Documents

Cost proposal or cost estimate requests
All cost proposals or estimates for extra work, if presented verbally, must be confirmed in writing so that there is no misunderstanding regarding the amount of the quote or the scope of the work involved. All such proposed change orders (PCOs) should be numbered sequentially for ease of identification and for ease of tracking.

Two response times should be monitored, both of which are critical:

- The response from the vendor or subcontractor involved in the pricing of the PCO
- The response from the architect prior to their acceptance or rejection of the PCO

When either an architect or owner takes an exceptionally long time to review a particular proposed change order and implementation affects job progress, retrofitting or rework may be required at additional cost to the general contractor, who in turn should pass these costs onto the owner. Without tracking and notification that a quick response is required, when these added costs are presented to the owner, the answer will assuredly be “Why didn’t you tell me you needed approval in a hurry? I certainly would have responded promptly.”

It is therefore a good idea to insert the following caveat in every PCO:

If this proposal is not acted upon within 10 days after receipt, at the option of ________ (the general contractor), it may be modified or withdrawn.

Conditions that impact completion time
A contract containing a liquidated damages clause requires that all justifiable delays be documented as they occur whether or not it appears that they may ultimately affect the contract completion time. Even when the contract does not contain the LD clause, delays due to conditions beyond the contractor’s control should be documented in some fashion, both in the superintendent’s log book and in the project meeting minutes.
When work stoppages due to strikes or other types of job actions occur, the architect should be notified in writing the day the strike or dispute happens. This notification can state that at such and such a time the duration and effect of the strike or dispute was established; another notice should be forwarded later reflecting the effect, if any, on the construction schedule.

**Alternates and allowance reconciliation.** Many contracts contain “alternates” for additional work that the owner can incorporate into their project. The alternate concept allows an owner to get a fixed price for additional work that, depending upon budget and other considerations, they may decide to incorporate in the project as construction progresses. However, some of these alternates must be accepted or rejected at specific stages in the construction cycle so as not to disrupt or delay progress. An alternate for water and waste lines in an employee lounge, for example, must be accepted or rejected while mechanical rough-ins are in progress in that area in order to maintain the contract price for this work. The project manager, preferably at the start of construction, should submit a list of each alternate to the architect with a date by which it must be accepted or rejected in order to maintain the price structure included in the contract. In fact, this time frame for acceptance/rejection should have been included in the contract, probably in the Allowance/Alternate exhibit.

If there is no response to these deadlines from the architect, the project manager can reference their initial letter and stipulate that the “alternate” in question cannot be incorporated into the project at the “contract” price, and if the “alternate” is to be elected, the additional costs will be required.

With regard to “allowance” items, the project manager has to review the contract to determine how they are to be reconciled. Will the architect be soliciting bids for that item? If so, select a vendor or subcontractor so that the general contractor can reconcile costs on that basis and issue an add or deduct change order. Or is the project manager to solicit bids when the work is defined and then present them to the architect for approval? Depending upon their nature, some of the allowance items might be time-sensitive.

Finish hardware is often an “allowance” item and since an approved hardware schedule is required in order to purchase doors and frames, it becomes an allowance item that needs resolution early in the project.

Certain floor treatments, although not needed until later in the project, may require resolution early in the schedule if they require depressions in the cast-in-place concrete slab.

Documentation of all allowances and alternates acceptance/rejection/reconciliation efforts will defuse any “Why didn’t you tell me you needed a quick response?” comments.
Unforeseen subsurface or unusual conditions. Whenever conditions encountered below the surface or above ground, in the opinion of the project manager, are unusual, or at variance with the norm, or of a peculiar nature that could have a cost or time impact, a letter ought to be sent to the architect outlining these conditions. If groundwater is observed during excavation and it does not appear to be significant at the time, it is best to document its existence. Even if its presence was noted on a geotech report, if tests were made during a dry spell only a trickle may have been observed, but after a significant rainfall there could be a river. Document!

The topic of unforeseen or “differing” site conditions is dealt with in more detail in the following chapter on claims and disputes.

Disputes, claims, or requests for arbitration. Today’s congenial relationship with an architect, engineer, owner, or subcontractor can deteriorate rapidly for any number of reasons—usually triggered by problems relating to money. If conditions arise that have a potential for a future dispute, document them even though the relations between all parties to the contract are, at that time, favorable. Documentation might be extremely important in the future if that initial congenial atmosphere deteriorates. And when that happens, everyone’s memory of past events tends to be selective, recalling only those facts that support their position, and forgetting others that don’t.

Monthly requisitions. Will the schedule of values as submitted prior to, or shortly after, the contract award be acceptable, or will more detail be required of the contractor? How are stored materials, both onsite and offsite to be handled in a requisition?

The project manager should obtain an agreement on the requisition format at the inception of the project. Some architects prefer to review a preliminary or “pencil copy” requisition with the project manager a few days in advance of the formal submission. The project manager should then promptly submit the monthly requisitions with a letter of transmittal so that there is a record of the date when each was submitted. Then, any late payments, if they do occur, cannot be attributable to the “late” submission by the general contractor.

Of course, all necessary documentation of costs, if a GMP-type contract is in force, must be submitted with the requisition so the architect can reconcile actual costs incurred during the period with invoices, bills, subcontract requisition forms, and so forth.

Documentation of close-out requirements

Proper compliance with the contract closeout procedures, and the proper documentation of those procedures, are necessary to trigger the contractor's
final payment and start the clock ticking on any retainage requirements. There will be requirements for as-built drawings, owner’s operating and maintenance manuals (O&Ms), and warranties and guarantees, most of which must be supplied by subcontractors and vendors. Requests to subcontractors and vendors for these documents should be made by letter or transmittal well in advance of the completion of the project.

When subcontractors or vendors don’t respond to repeated requests for this information, remind them that final payment for all subcontractors will not be forthcoming until all of this documentation is received and approved by the architect. Submission of all lien waivers and other certificates to the architect as part of the closing documents package, should be transmitted to them with a cover letter and through a delivery service where receipt can be verified. And, of course, one copy should always be retained for the files.

If the contract stipulates that extra materials for maintenance or replacement are required (attic stock), such as floor tile, carpet scraps over a certain size, ceiling tiles, or extra cans of paint, a signed receipt should be obtained from the owner’s representative accepting delivery of these materials so there is a clear record of the occurrence.

Sign-offs on acceptance by the architect/engineer of equipment such as boilers, hot-water heaters, DX units, cooling towers, and emergency generators are also necessary in order to establish the date of official acceptance, and, most importantly, the commencement of the warranty period.

**Documentation to the Subcontractors**

Most general contractors today subcontract the greater portion of work to specialty contractors, and the project manager assumes the responsibility for the administration of these contracts. Monitoring subcontractor performance will occupy the major portion of the project manager’s time as construction demands and schedules accelerate.

The formal subcontract agreement should contain the terms and conditions expected from both parties in the contract, and is usually amended with a series of exhibits to cover specific obligations. Unless the project manager and subcontractor are familiar with the provisions in these agreements, how else can they be managed and monitored?

Although this appears to be a basic principle, many project managers and subcontractors have *never completely read nor fully understood* all of the provisions in their subcontract agreement.

These lengthy legal documents vary from contractor to contractor, but they all seem to contain more or less the same provisions to protect the contractor from poor subcontractor performance. Proper documentation of subcontractor performance, as it relates to contract language, is an important element of the project manager’s administrative responsibilities.
because a subcontractor’s performance, or lack thereof, can severely impact the work of other subcontractors and the project as a whole.

The standard subcontractor agreement contains provisions for progress payments, the scheduling of the work, the scope of work, and the cost of that work, as well as insurance requirements, and compliance with local, state, and federal laws and labor practices, along with a long list of work practices. The standard boilerplate language is supplemented by specific job requirements such as:

- The precise scope of work to be included in the contract, often in the form of “Inclusion” and “Exclusion” lists, preceded by a list of specific plans and specifications included in the agreement.
- The time frame in which the work is to take place.
- The name of the owner of the project, the date of the agreement between the owner and general contractor, the name of the architect, and the name and address of the project. (This is important when the subcontract agreement has a “pass-through” provision.)
- The contract sum, requisition period, and retainage to be applied to each payment request.
- The applicable addenda, alternates, allowances, and other documents included in the bid proposal.
- A tax-exempt status, if applicable, and the tax-exempt number or certificate.

Is the scope of the work fully understood by all?

Has the subcontractor acknowledged that their price reflects the scope of the work as outlined in the latest drawings as referenced in the subcontract agreement? All too frequently, a subcontractor will sign a subcontract agreement, start to perform their work, and somewhere in the early stages of construction indicate that they had not really received all of the drawings referenced in the subcontract agreement. Now that they have seen all of these drawings and reviewed all of the specification requirements, they find that the cost of their work has increased and will require an adjustment in price. Situations like this can be avoided if a subcontractor interview form described in the Chap. 8 on buy-outs had been used during the negotiations, thereby documenting the specific scope of work discussed and agreed upon during negotiations.

The project manager, if and when the subcontractor disputes their scope of work, can quite simply ask “But why did you sign our subcontract agreement that referenced the proper contract drawings and contract sum when you did not have the latest drawings?” The answers will range
from “I guess I didn’t notice the difference in drawing dates” to “I never received a set of the latest drawings” to “I don’t know.” No matter what the answer, the project manager should attempt to resolve the problem amicably rather than delay resolution. Thus, it might be best to possibly allow a slight adjustment in the contract sum, while making a mental note to keep an eye on this subcontractor who signs documents without reading them.

**Avoiding problems related to subcontractor misunderstandings**

One way to avoid misunderstandings is to transmit whatever plans and/or specifications there are to a subcontractor via a transmittal that identifies the specific documents being sent, the date of each drawing enclosed, and the date of the specifications or any addendums or bulletins.

This will provide a record to confirm or deny the allegation that the most recent drawings, specifications, or addendums were never received and that the subcontractor’s quoted price did or did not include the scope of work contained in these documents. Transmittals used during the bidding process can serve another purpose: to keep track of the distribution of the drawings so they can be retrieved from nonsuccessful bidders and redistributed to subcontractors who will be performing the work.

**Addressing questionable items in the agreement.** Any potential for misunderstandings of scope should be clearly written and included in the subcontract agreement. For instance, if the general contractor requires an electrician be available during working hours to turn the temporary electric power on or off, this requires more specific information in the contract. What is the normal workday? If the electrician’s workday ends at 3:30 P.M., but other trades normally work until 4:00 P.M., agree on whose “normal workday” will be used. If it is the intention to have the electrician stand by until 4:00 P.M. every day to turn off the temporary power, state these hours of operation in the subcontract agreement.

The time frame for subcontracted work—the anticipated start and completion—is an important part of the contract. Inserting dates avoids any misunderstanding that the price quoted anticipates a specific starting date and that any increased labor rates for work performed during the period have been taken into account. The cost of materials and equipment necessary for the work will take into account the time frame required for the construction period.

There is, however, a danger in inserting specific start and finish dates. If the project is delayed and the time frame for that subcontractor’s work is delayed, they can use these specific dates to document their claim for extended general conditions and possibly other costs associated with
delays. So, before inserting specific start-finish dates in the subcontract agreement, carefully weigh the consequences of doing so.

**Linking the subcontract agreement with the owner's contract**

Most subcontract agreements include a provision that links that agreement with the terms and conditions of the general contractor’s contract with the owner. In fact, Article 5.3 of the 1997 edition of AIA Document A201, the General Conditions, states that “where legally required for validity” the general contractor will require each subcontractor, “to the extent of the work to be performed by the Subcontractor,” to be bound to the general contractor by the terms of the contract documents and assume toward the general contractor all the obligations and responsibilities that the general contractor assumes toward the owner and the architect.

The subcontractor’s payment schedule will then be tied to the payment schedule from the owner to the general contractor. The general contractor’s philosophy is “We can’t pay you on the date agreed upon in the subcontract agreement if we have not yet received payment from the owner.” The subcontractor’s answer may well be that they have a contract with the general contractor and not the owner, and unless they are made aware of the fact that their payment schedule is indeed tied directly to the owner’s, future disagreements will certainly occur.

Several states have enacted laws that reject the “pay when paid” clause in public works as not in the best interests of the public. In fact, various subcontractor organizations have petitioned the contractor associations to strike the “pay when paid” clause. Project managers need to keep abreast of new developments in the “pay when paid” contract clause in both public and private work to ensure that they are on firm ground in keeping this provision in their subcontract agreements.

**Subcontractor performance—the major concern**

One of the more restrictive clauses inserted into most subcontract agreements has to do with the remedies to correct a subcontractor’s poor or otherwise unacceptable performance. The general contractor must be able to control the performance of a lagging subcontractor so that the entire project’s progress is not severely impacted. One of three often-used clauses concerning performance needs to be included in every subcontract agreement.

**Contract Clause Option 1.** Should the subcontractor be adjudged bankrupt or insolvent or repeatedly fail to prosecute the work hereunder with promptness and diligence in keeping with the then-existing work
schedule, the contractor may take possession of all materials, equipment, tools, construction equipment, and machinery of the subcontractor after serving three (3) days notice to that effect and may through itself or others provide labor, equipment, and materials to prosecute and finish the work hereunder.

**Contract Clause Option 2.** Should the subcontractor fail to prosecute the work or any part thereof with promptness and diligence, or fail to supply a sufficiency of properly skilled workers or materials of proper quality, or fail in any other aspect to comply with the contract documents, the contractor shall be at liberty, after seventy-two (72) hours written notice to the subcontractor, to provide such labor and materials as may be necessary to complete the work and to deduct the cost and expense thereof from any money then due or thereafter to become due to the subcontractor.

**Contract Clause Option 3.** Should the subcontractor be adjudged bankrupt or should the subcontractor at any time refuse or neglect to supply a sufficient number of skilled workmen or sufficient materials of the proper quality, or fail in any respect to prosecute the work with promptness and diligence in keeping with the project schedule, or allow a lien to be filed against the building or cause by any action the stoppage of, or interference with, the work of other trades, or fail in the opinion of the contractor in the performance of any of the agreements contained herein, or fail to comply with any order given to him by the contractor or architect in accordance with the provisions of this subcontract, the contractor shall be entitled to provide for the account of the subcontractor and without terminating this subcontract, any such labor and materials, after 24 hours notice to the effect, and to deduct the cost thereof from any money then due or thereafter to become due, or the contractor at his option at any time may terminate this subcontract after 24 hours notice to that effect.

The Associated General Contractors of America (AGC) has published a subcontract agreement in conjunction with the American Subcontractors Association Inc. (ASA) and the Associated Specialty Contractors (ASC) known as AGC Document No. 640/ASA Document No. 4100/ASC Form No. 52, 1994 edition and is intended to be used in conjunction with AIA Document A201. These contract forms are available from any local AGC chapter at a nominal cost.

Article 16 of the AGC contract entitled “Recourse by Contractor” includes somewhat the same provision for failure of performance as the three options listed above, giving the subcontractor three (3) working days to perform—or else!

These restrictions require written notification to the subcontractor in order to be enforceable, and without a document trail it will be difficult to institute corrective action.
Danger signs and how to interpret them

There are easily recognizable danger signs that portend trouble with subcontractors. Watch out for any of the following danger signs and document them:

**Lack of adequate manpower.** There may always be disagreements between the general contractor and the subcontractor about what constitutes an adequate workforce. But we are not talking here about needing 12 workers on the job instead of the 10 currently working, we’re talking about *two* workers on the job for a week when there was an obvious need for five times that number. A situation like this, if allowed to continue, will no doubt affect other trades; thus, something must be done and done quickly. When a subcontractor is experiencing financial difficulties, it will be most noticeable in the size of their work crew. Workers must be paid weekly; no pay, no work. Material or equipment suppliers invoice on a monthly basis and may agree to extend their credit terms to 45, 60, or even 90 days, but this flexibility does not extend to the weekly payroll.

When subcontractor work crews are insufficient to maintain job progress, notify the subcontractor in writing. If the situation persists, invoke the subcontract agreement notification provisions regarding performance. This letter starts the “lack of performance” clock, and at this point you should have a heart-to-heart talk with the subcontractor to find out exactly what the problem is. If the problem is a temporary shortage of funds, consider advancing monies for weekly payroll until the problem is resolved, *but only if the subcontractor has put sufficient work in place to justify an advance.*

Ask the question: “Are there sufficient funds remaining in that subcontractor’s account so if they default on their obligation, another subcontractor can complete the work and still stay within budget?”

**Delays in submitting shop drawings.** A subcontractor, after being awarded a contract, will purchase materials and equipment and in so doing may often try to “package” various materials and equipment with one or two vendors in order to obtain the best possible price for the larger value of that package.

Under normal circumstances, this can take several weeks for a subcontractor to test the market for the most competitive price, issue their purchase order, and request the necessary shop drawings. Vendors do not issue shop drawings until they receive a firm order from a subcontractor, so the issue of prompt purchasing by a subcontractor becomes a matter of concern for the project manager. Prolonged negotiations between vendor and subcontractor can be a reflection of the subcontractor’s inefficient purchasing department or a desperate need to get rock-bottom prices to compensate for a too-low bid. Or worse, the subcontractor may be searching...
for a supply house or vendor to accept their order because they have such a poor credit rating.

Shop drawings that are not being submitted in a reasonable, timely manner should prompt a letter to be generated advising the subcontractor that any further delays in the submission of a particular shop drawing (or group of drawings) will seriously affect the progress of the job, and that their submission must be received by a certain date. If the drawings are not received within that time frame, another letter should be sent invoking the appropriate paragraph in the subcontract agreement pertaining to nonperformance and delays.

**Inability to provide day-to-day working materials.** If, along with reduced manpower, adequate day-to-day working materials are not readily accessible on the job when there is adequate manpower to do the work, this could portend big problems. We are talking about, for example, a plumbing contractor having trouble keeping enough small-diameter copper pipe and/or fittings on the job even though the field supervisor calls the office daily requesting these materials. This could signal a lack of credit at the local supply house. After sending the subcontractor written notice of poor performance, a telephone call to the subcontractor’s supplier might be helpful in determining or confirming the problem connected with the shortage of supplies.

During one of this author’s projects years ago, he overheard the electrical crew supervisor on a telephone call to the supply house indicate that he would use his personal credit card to purchase some conduit and couplings. This was a red flag I couldn’t ignore.

**Requests for joint checks.** Requests from subcontractors to have joint checks issued are not necessarily danger signs. A valued subcontractor might be dealing with a new supplier who feels more comfortable using joint checks for the payment of supplies in their first transaction with that subcontractor. A subcontractor might be involved in that first big job which normally would be beyond the company’s present credit line and their supplier may need the added assurance of a joint check to accept the order.

Joint checks are desirable from the general contractor’s viewpoint because it affords them added insurance that monies they disperse are being passed on to the appropriate supplier or vendor. The danger flag is raised when a subcontractor with a good track record suddenly asks that joint checks be issued on the new project. Does this mean that they cannot obtain adequate credit any other way? The subcontractor should explain their sudden request for joint checks to determine if there is a problem. Another danger sign is raised when a subcontractor, halfway through the job, requests a joint check for a supplier who had been
supplying materials to the project without that requirement. When initiating a joint check policy, a joint check agreement should be prepared for signature by a subcontractor's officer and placed in their contract file.  

**Delinquent payroll deduction notices.** When a subcontractor is party to a union collective bargaining agreement and the required payroll contributions are not being made to the appropriate union office, the project manager had better find out why these payments are not being made. Of course, this would be true of monies owed to local, state, or federal agencies for various taxes as well.

The subcontractor should be requested to explain the circumstances surrounding all nonpayment issues and submit a plan indicating how they expect to meet these obligations. Since the general contractor may be liable for all such funds if the subcontractor defaults, a properly written letter outlining the problems should be sent to the subcontractor. The letter should state that unless the general contractor receives a satisfactory repayment schedule, they may withhold funds sufficient to satisfy the payroll contributions or taxes should the need arise.

**Requests from the subcontractor or their supplier for immediate payment.** If the subcontractor has been routinely submitting monthly requisition requests and receiving payment within the normal pay period but suddenly asks for accelerated payment schedules, find out the reasons for this change. It could be a temporary problem caused by late payments from other general contractors or the beginning of a bigger problem.

**That low subcontract bid—are problems waiting to surface?**

When a subcontract agreement has been awarded to a company and their competitive bid was substantially lower than their competitors, that initial “buy-out” may quickly disappear.

We are not talking about the subcontractor who submitted a bid of $95,000 when the other four subcontractors’ quotes ranged from $98,500 to $105,000. This variation of 6.5 percent between high and low bidders is a fair spread. What should be of concern is one subcontractor’s bid of $75,000 that is 24-percent lower than the lowest bid. If that $75,000 bid is accepted, the project manager’s danger antenna should be raised all the way.

General contractors, when faced with a decision whether to accept or reject a substantially lower bid, will look at the situation differently.

One general contractor will reason that if this very low-bid subcontractor is selected, the potential savings look tempting, but the subcontractor probably omitted some item of work and will not be able to
complete the job. The additional costs to complete the work, assuming the subcontractor defaults, will probably be greater than the second bidder’s price and will also impact the work progress of the entire project; therefore, this low bidder should be disqualified.

Another general contractor will reason that maybe this unrealistically low-priced subcontractor does not know what they are doing and could possibly complete the work before they find out that they have lost money. And if this subcontractor defaults near the end of the project and another subcontractor is engaged to complete the work, the total cost may still be below the second bidder’s price. So this subcontractor is brought on board and fingers are crossed. After all, isn’t this a risky business?

If a low bid subcontractor is awarded a contract, against the project manager’s best judgment, but not that of his boss, the project manager should accumulate a list of all material and equipment suppliers, as well as second and third-tier subcontractors, so that if the subcontractor defaults, it will be easier to uncover those lower-tier subs and suppliers that may not have been paid.

This is a Las Vegas–type decision that once made demands that steps be taken to live with that decision, and to be prepared for the inevitable. The odds can be reduced substantially if the very low bidder is called into the office before an award is made so that their bid can be carefully scrutinized to determine why it is significantly lower than their competitors. If a major portion of the work has been inadvertently omitted from the subcontractor’s estimate, then the general contractor’s decision may be somewhat affected.

But when things begin to go wrong, document everything, every day, including written memorandums of telephone conversations, because every bit of documentation will surely be needed.

**Documentation When Major Drawing Revisions Are Made**

There may come a time when an architect makes series revisions to the contract drawings because of a major change requested by the owner. These changes may encompass a substantial number of architectural, mechanical, and electrical drawings. And this usually occurs when work at the site is progressing smoothly and rapidly.

An interior designer hired by the owner to provide furniture layouts and decorating assistance in an office project may develop furniture drawings to locate desks, workstations, possibly task lighting and power, and data and voice communication terminals that impact the location of electrical and HVAC devices. Demountable partitions, of either partial or full height may require relocation of ceiling lighting fixtures, sprinkler heads, and VAV terminal devices.
The first priority is to get these drawings to all affected subcontractors as quickly as possible via transmittals with a note to review them and respond as to the nature of any changes and their cost implications within X number of days. The subcontractors should be instructed to identify changes that either add or delete scope, and all such changes having a cost impact must be clearly defined and accompanied by a detailed labor and material cost breakdown to facilitate review and comment from the architect.

If the subcontractors can be requested to delay work in the affected areas for several days at no impact to their work schedule, so much the better. The architect should be advised that all subcontractors whose work is affected by these potential changes have been directed to refrain from working in those areas for X days and that a prompt review and authorization to proceed is required to avoid added costs. It is important to note in this letter that if no response is received from the architect within the required period of time, all affected subcontractors will be permitted to commence work in the areas where changes are being considered, and any costs to retrofit will be added to the cost proposal previously submitted.

A meeting with the architect and owner a day or two after submitting the cost proposal in this type of situation may facilitate a quick decision.

Multiple revisions to a wide range of plans are often accomplished by an architect via a series of small sketches, not only for time expediency but to save printing costs, but frequently this process creates other problems.

What to do with all of those 8\(\frac{1}{2}\)\(\times\)11s

A multitude of 8\(\frac{1}{2}\)\(\times\)11 drawing revisions or sketches can create havoc when major plan changes are to be initiated. First of all, there is the problem of gathering them together for submission to all the interested parties—subcontractors and vendors. If one or more critical sketches become lost along the way, the consequences are easy to imagine.

And as stated earlier, architects may have objections to the reissuance of a full set of revised drawings for both time and money reasons. The project superintendent and various subcontractor crew supervisors will be seen busily pasting these sheets over the applicable sections of the drawings in order to insure that all changes are properly noted.

But there are hidden dangers that lay ahead in situations like this:

- Some sketches may have gotten lost in the process.
- Some sketches many not have been distributed to all subcontractors.
- Some field supervisor may have placed these sketches in a loose-leaf binder but failed to refer to them when required and therefore will not be incorporated in the work.
Architects may be reluctant to reissue full-size drawings incorporating all of the changes, but the project manager should request that this blizzard of small sketches be incorporated into an updated set of drawings. In the letter to the architect, the following disclaimer might be considered:

Due to the nature and extent of the changes reflected in the (number of—20, 30, and so on) sketches generated by your office during the period (time), we request that the appropriate full-size drawings be reissued no later than (date) reflecting these changes, or else we cannot be held responsible for their incorporation into the work.

Even if the architect refuses to reissue the drawings, with such a letter on file, if correction of some missed details is required, the project manager would have gone on record with their concerns.

**Documentation Required When Contracting with Public Agencies**

When entering into a construction contract with local, state, and federal entities, the project manager should note that these agencies have their own contract formats with specific requirements, and sometimes unusual requirements, for submission of shop drawings, change orders, requisitions, schedules, releases, affidavits, and various work rules that vary from those in private sector work. Additionally, requirements to comply with the Davis-Bacon Act, and various mandated executive orders and laws relating to equal opportunity, minority hiring, and environmental issues will need to be addressed.

There may even be an extensive list of requirements before the first requisition is submitted. The close-out procedures for these types of projects oftentimes contain numerous documents to be filed with the agency that involve subcontractor obligations as well.

The project manager should carefully read all of the general, special, and supplementary conditions that accompany the contract, highlighting all requirements to be followed before, during, and at the close of construction. Subcontractors should be given copies of any requirements affecting their work, and at the first project meeting these unusual or special requirements should be reviewed with them and documented in the project meeting minutes. On the assumption that most contractors and subcontractors don’t thoroughly read the contract “boiler plate,” this extra effort by the project manager may make everyone’s job a little easier.

**The Davis-Bacon Act**

The Davis-Bacon Act (DBA) requires the payment of prevailing wages on federal government construction projects in excess of $2000. Local and state public works projects, where federal funds are used, also require compliance with Davis-Bacon.
The Davis-Bacon Act became law during President Herbert Hoover’s administration, when this country was in the midst of the Great Depression. The act required that all laborers and mechanics employed on the site of a federally funded construction project in excess of $5000 (later amended to $2000), must be paid rates determined to be prevailing in that area.

The U.S. Department of Housing and Urban Development (HUD) requires compliance with Davis-Bacon because of a labor provision contained in one of HUD’s “related acts”—the U.S. National Housing Act of 1937, the Housing and Community Development Act of 1974, the National Affordable Housing Act of 1990, or the Native American Housing Assistance and Self-Determination Act of 1996.

Davis-Bacon requires that worker wages meet the highest prevailing wage in the area as stipulated by the Secretary of Labor. Today, the prevailing wage scale is regional, but may contain different wage rates for similar tradesmen working in various part of the same area. A laborer working in one part of the state may have a different wage rate from a laborer working in another part of the same state. These prevailing wages, more or less parallel union wage scales in the region.

The requirement to comply with Davis-Bacon and pay prevailing wages also requires certification that those wages were actually paid. A Statement of Compliance form, WH-347 and WH-348, requires the contractor to list each worker, their job classification and the hourly wage paid during the previous pay period.

Gross wages will be reported, and deductions for Social Security and other fringes are to be included, and then the net pay tabulated. The only workers that can be paid less than prevailing wages are apprentices and trainees who are registered in approved apprenticeship or training programs. The project manager should verify that the apprenticeship programs are “approved” because some may not be, meaning the request for payment may be rejected.

Workers on projects requiring compliance with DBA that have been hired as “piece workers” have weekly earnings calculated according to how much work they actually completed during the pay period. Employers reporting wages of piece workers must certify that weekly earnings are sufficient to satisfy the wage requirement based upon the prevailing wage rate for that period, including any overtime if incurred. If the weekly piece-rate earnings are not sufficient to meet this DBA standard, the employer must recompute weekly earnings based upon the actual hours worked times the rate of the prevailing wage rate and pay the difference to the affected employee.

The prime contractor is ultimately responsible and will be held liable for any wage restitution due the government by improper or false reporting, including workers employed by their subcontractors. Falsifying
payroll records will be cause for further government legal action, and
willful violation of the labor law is cause for disbarment from govern-
ment projects for periods of up to three years. Falsifying government doc-
uments, meanwhile, is a criminal offense.

Complying with other government requirements

To ensure compliance with all documents required when a government project commences, it is wise to review the project specifications thor-
oughly before construction begins.

Make a checklist of documentation required by the General Conditions and when each item will be needed. A typical list could include the fol-
lowing requirements:

1. Contract signing
   a. Within 10 days, submit a schedule of value for approval for the pur-
      pose of the requisition format.
   b. An approved project sign should be installed before the first req-
      uisition is submitted (both the design and contents of the sign
      need approval).
   c. The field office should contain a separate space for the inspector’s
      office, as well as a phone and computer terminal for their use.
      (Some contracts require a separate trailer for the inspector(s), the
      copier, file cabinet, and computer access.)
   d. Prevailing wage scales should be posted prominently with
      Executive Orders 3, 17, and Public Act 79-606—Notice of Non
      Segregated Facilities outside the office trailer.

2. To be submitted before construction starts
   a. An estimated progress schedule (sometimes an “S” curve is required)
   b. The list of subcontractors to date (update as required)
   c. Surety bonds
   d. A schedule of values
   e. Insurance certificates
   f. A site logistics plan
   g. A project organizational chart

3. During construction
   a. Weekly payroll certification
   b. Monthly manpower utilization reports
   c. Requisitions to be submitted by the 20\textsuperscript{th} of month that projects work
      that will be completed by the end of the month (or other set dates).
   d. A list of other forms required during construction

4. Due before Substantial Completion can be obtained
   a. A certificate of compliance
b. An architect/engineer certificate of substantial completion, along with a list of escrow items and a punch list
c. Product warranties, guarantees, and operating and maintenance manuals (O&Ms)
d. A list of other closing documents such as a final waiver of liens, a Consent of Surety, and so on

This list should be prominently displayed in the project manager’s work area so it is a constant reminder of the documentation and data required at specific project milestones.

Project Documentation from the Field

The project superintendent must be kept apprised of what the project manager is doing as it relates to his or her area of responsibility. A good rule-of-thumb for the project manager is to ask themselves: “If I were the super in this job, is this something I would need to know in order to run my job effectively?” If the answer is “Yes,” send the information to the field. Sketches or revised drawings issued by the architect/engineer should be sent to the jobsite promptly and the transmittal should indicate what action is required—FYI (For Your Information), For File, Review with Subcontractor, and so on. All approved shop drawings and equipment catalog sheets will be sent to the job with accompanying transmittals, and the project manager, from time to time, ought to ensure that they are properly filed and not scattered around the field office where they can easily be lost.

Note: The word approved is italicized. There may be occasions when it is necessary to send unapproved shop drawings to the field so that the superintendent can verify certain dimensions, or review and comment on installation details, but these unapproved shop drawings should be filed away or thrown away after being reviewed. There have been too many times when unapproved shop drawings are left on the plan table in the field office and an inquiring subcontractor will come in when no one else is around, obtain information from that unapproved shop drawing and proceed to follow directions that may prove to be totally different from the approved set.

Verbal commitments between the project manager and the architect/engineer or a subcontractor that affect the ongoing work at the site should be e-mailed to the project superintendent.

The superintendent’s record of daily activities

Every superintendent must keep a daily record of job activity, if for no other reason than to keep track of their own workers on the job and the
hours they have worked for payroll purposes. Superintendents keep these job records in the form of either a bound daily diary or daily reporting sheets either handwritten or computer-generated. The diary, with entries made on a daily basis, fulfills the legal definition of a *business record* and may be introduced in court. A bound volume is required to meet this criteria and often individual daily reports filed in a loose-leaf binder may not meet these standards. Figure 11.3a is a page from a typical bound daily log book, while Fig. 11.3b is a typical computer-generated version.

The whole discussion of whether certain computer-generated documents meet the criteria of acceptable legal documents is ongoing, and a review of these types of documents with the company attorney is a good idea.

No matter what form the daily diary or daily log takes, the following information must be reported, at a minimum:

- Month, day, date, and year—Every day, whether work is performed or not, requires an entry. When no work takes place due to holidays or weekends, enter “No Work.”
- Weather conditions and temperature—Should preferably be done at the start of work, mid-day, and at the end of the workday. If inclement weather occurs (rain, snow, sleet) include the amount (light, heavy, and so on).
- List of subcontractors on the site that day, the number of workers in their crew, the work performed, and the location within the building or onsite.
- The number of the company’s workers onsite and the operations they were performing.
- Visitors to the project and the purpose of their visit. Should include any of the company’s office staff, the owner, and so on.
- The list of inspections that took place, either by local building inspectors, testing labs, or the architect/engineer.
- Briefly describe the type of work performed that day and, if possible, the location within the building or site where it took place.
- Record deliveries of materials, equipment and refer to delivery ticket numbers if possible.
- Record any unusual events, occurrences, and work stoppages.
- Any accidents, whether reportable by OSHA or the insurance company or not.

Look at the daily diary as a reference book of project history. If required to recall events at the jobsite on a particular day a year or two
FIGURE 11.3a  Two types of daily log book pages. (With permission from McGraw-Hill, New York.)
### Project Documentation

**Chapter Eleven**

**DAILY REPORT**

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<th>Project:</th>
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<tr>
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<th>Men</th>
<th>Remarks</th>
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<td>Loading out conc. w/ trailer</td>
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<td>Sandblasting</td>
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<td>Excavation</td>
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<td>Millwork</td>
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<td>Roofer</td>
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<td>Floor covering</td>
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<td>Sprinkler</td>
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<td>Plumber</td>
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<td>Pipe fitter</td>
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<td>Duct work</td>
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<td>Electrician</td>
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<td>SDC:</td>
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<td>Superintendent</td>
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*FIGURE 11.3b (Continued.)*
from now, will the entry in this daily diary allow the recall of events with some clarity?

**Photographs: important documentary components**

The old saying “a picture is worth a thousand words” is certainly true in the construction industry when there is a need to document some events.

With the digital camera or video camera, lots of photographic documentation can be achieved at a small expense and with little effort. A 250MB memory card in a digital camera will hold 1000 photographs. Onsite 24 hours cameras are becoming popular, particularly on urban sites, affording a complete progression of events both day and night, some of it for security reasons.

Photographs can be a valuable adjunct to the documentation of a project, for reasons such as the following:

- To further document the job progress, or lack of it
- To record the uncovering of unusual conditions or document conditions that differ “materially” from those normally encountered
- To act as further substantiation for a change-order request
- To record a complex construction process or detail for future use by others

Many general contractors use some special photographs for in-house training sessions or in future sales and marketing presentations, as well as for lobby-wall decorations.

**Photos to document lack of progress.** In the administration of contracts with liquidated damages, it may be important to document the lack of progress regarding conditions that are beyond the contractor’s control, such as encountering unanticipated site conditions, severe weather, labor disputes, or owner-directed changes. If the project is in the excavation and foundation stage, a torrential rainfall can cause more damage than just the loss of one workday. Photographs will vividly depict the aftermath of severe weather. During work stoppages due to labor disputes or strikes, photographs can serve several purposes.

- They can document the effect of the strike, not only on the disputed trade but on trades that may have joined the dispute in sympathy, which may constitute an illegal secondary boycott. The photos can show how progress of seemingly unrelated work was affected.
When tempers flare, altercations can erupt, equipment or suppliers may be vandalized, and photos will be helpful in any claims against proven offenders or for insurance claims.

**Photographs during rehabilitation or renovation work.** Photos can be especially helpful in documenting conditions uncovered during the demolition stage and reconstruction of a rehab or renovation project. Contract drawings showing the location of a nonbearing wall that is actually determined to be a bearing wall can provide documentation of this changed condition and assist in the approval of a change order, if one is required. Photos are useful in recording structural cracks or structural failures which may have existed prior to being uncovered by the demolition of existing plaster or drywall finishes.

When taking close-up detailed photos, it is sometimes difficult to determine the size of the item being photographed and its relationship to surrounding areas. Proper scale can be displayed by inserting a carpenter’s rule or metal tape rule into the photograph.

Unsuitable subsurface conditions are other areas that can be effectively documented with photographs. Subsurface rock formations, underground water, and buried trash are all conditions that warrant documenting with photos even if it appears that they will not be required within the terms of the contract.

**Remember.** Documentation (recordkeeping) is an essential component of the construction process. It is just as important as the correct placement of concrete foundations or the superstructure on which it rests. Disagreements and differing interpretations of contract responsibilities and obligations abound in this business.

To reduce or avoid future misunderstandings during the construction process, remember three important things:

1. Document
2. Document
3. Document