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Warm regards,

The Construction Management Certification Team

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We encourage you to approach each lesson with curiosity and enthusiasm as you pave your way

# Construction Contracts and How They Are Administered

The project superintendent should be aware of the ways in which differing forms of construction contracts are administered in the field and how they affect day-to-day operations.

There are five basic types of construction contracts that the superintendent will encounter, with numerous modifications such as exhibits and addendas that customize the otherwise boilerplate provisions.

- The lump-sum or stipulated-sum contract
- The cost-plus-fee contract
- The cost-plus-fee contract with a guaranteed maximum price (GMP)
- The construction manager type of contract
- The design-build contract

## The American Institute of Architects Contract Updates

In the latter part of 1997, the American Institute of Architects (AIA) issued its newly revised contracts, copyrighted 1997, which superseded the 1987 editions. Although some earlier 1987 versions may still be in use, we will address the current versions of these AIA contracts. Another very important contract document is AIA Document A201, General Conditions of the Contract for Construction, which requires its own chapter (Chap. 3) to fully explore its provisions.

Other, less frequently used contracts—the turnkey and joint venture contracts—will also be discussed in this chapter.

A Letter of Intent is often executed as a “contract,” generally preceding the issuance of the more all-encompassing standard contract forms. So let’s begin our discussion with this document.

## The Letter of Intent

A Letter of Intent is generally a temporary document authorizing or initiating the commencement of construction in a limited fashion, anticipating that a more complete and encompassing form of contract will be forthcoming in the near future.

Limits are placed upon the scope of work to be performed, such as the dollar value of work to be performed, often expressed as a “not to exceed” amount, restrictions on what subcontracts or purchase orders can be awarded, and provisions relating to termination of the Letter of Intent. In addition, the Letter of Intent will incorporate provisions to cover settlement costs in the event that a formal contract for additional work is not awarded. However, if a contract is awarded for additional work, that which was spelled out in the Letter of Intent will be incorporated and any payments made under that document will be credited to the new contract sum.

There are a number of reasons for using a Letter of Intent:

- An owner may wish to start demolition of a recently vacated office space while negotiating with a new tenant desirous of a quick move-in.
- Having received verbal loan approval from a lender, an owner may wish to commence a limited amount of construction work on a new project while awaiting full written approval.
- When a project is “fast-tracked,” an owner may wish to commit to a certain portion of work while the final budget is being prepared and, via the use of a Letter of Intent, can authorize a contractor to proceed to purchase long-lead-time items necessary to jump-start the project, for example, reinforcing steel or structural steel shop drawings.

The Letter of Intent places limits on the scope of work to be performed and on the dollar value of the work to be performed (often expressed as a not-to-exceed amount) and puts restrictions on what subcontracts or purchase orders can be awarded.

This document is usually the precursor to the issuance of a contract with expanded scope of work and incorporates provisions to include settlement costs if that expanded scope of work fails to materialize.

A Letter of Intent must be specific:

1. It should be specific in defining the scope of work to be performed. If plans and specifications define that scope of work, these documents ought to be referenced. If plans and/or specifications are not available, an all-inclusive narrative should define the exact nature of work to be performed.
2. It should include either a lump sum to complete the limited scope of work or a “cost not to exceed” amount, including the contractor’s fee. It is essential to define what is included in *cost* as well as what reimbursable expenses are included.
3. It should include payment terms.

4. It should include a date when the work can commence and, in some cases, when the Letter of Intent expires.
5. If applicable, a statement may stipulate that the scope of the work and its associated costs will be credited to the scope/cost of work included in the expanded construction contract.
6. A termination clause should be included, setting a time limit on the work, or an event that triggers termination, such as the issuance and acceptance of another contract. A termination “for convenience” clause is often added, allowing either owner or contractor to terminate the work upon written notification.
7. The Letter of Intent must be signed and dated by all concerned parties.

*The superintendent must therefore be aware of restrictions contained in the Letter of Intent to ensure that no work beyond the scope of work contained in this document is performed.*

A typical Letter of Intent might be worded as follows:

Pursuant to the issuance of a formal contract for construction, the undersigned (Owner) hereby authorizes (Contractor) to proceed with the tree removal in the areas designated on Drawing L-5, prepared by Wilton Engineers, dated July 8, 2003. All debris including tree stumps will be removed from the job site. Prior to commencement of the work, all erosion control measures will be installed according to Drawing L-8, by Wilton Engineers, dated July 1, 2003. Maintenance of soil erosion measures will be required from the date of installation until this Letter of Intent is terminated on/about September 15, 2003. All the above work is to be performed at cost plus the 15 percent contractor’s overhead and profit fee. Daily work tickets will be presented by (Contractor) to (Owner’s representative) for signature to provide substantiation for all costs.

Signed: Contractor

Signed: Owner

Scope, tasks, and reimbursables included in letters of intent can include shop drawing preparation and cancellation charges for any materials/equipment ordered if a further construction contract is not forthcoming. Reimbursable expenses may include in-house costs incurred by the general contractor for estimating, accounting, and even interim project management and superintendent salaries. The owner should be presented with a list of reimbursable costs appended to the Letter of Intent to avoid any future misunderstandings.

When a formal construction contract is issued, the segregated costs associated with the work performed under the Letter of Intent must be applied against the costs for the total project.

It is important to accumulate and segregate all reimbursable costs as they are incurred. Assigning a separate cost code to all labor, material, equipment, and subcontract commitments will permit easy retrieval of all related costs and the preparation of an accurate exhibit to the owner’s requisition.

While operating under the terms and conditions of the Letter of Intent, the general contractor may have to make certain commitments to subcontractors and

vendors, and any purchase orders or subcontract agreements issued should contain the same restrictive provisions as are in the agreement between general contractor and owner.

For example, if the owner's Letter of Intent contains provisions for the preparation of reinforcing steel drawings, placing of an order for some nonstock sizes, and even partial fabrication, the same restriction(s) placed upon the general contractor should be transferred to the reinforcing bar contractor.

This is particularly important if there is a termination clause in the Letter of Intent. A typical termination provision would be as follows:

Upon receipt of a written directive to cease the work covered under the terms of this Letter of Intent, the contractor will immediately stop all work. All costs for work-in-place as of that date will cease. Cancellation costs for work-in-progress will be honored upon a detailed explanation for all such costs documented by purchase orders or other commitments and related stop-work orders.

*The superintendent must be familiar with the nature of costs to be included in the agreement so that any field-related costs can be segregated, documented, and presented to the owner for payment.*

### **The Most Prevalent Types of Construction Contract**

1. Cost of the work plus a fee
2. Stipulated or lump sum
3. Cost of the work plus a fee with a guaranteed maximum price (GMP)
4. Construction management
5. Design-build

Other less frequently used contracts between an owner and general contractor are

6. Turnkey
7. Joint venture

### **Cost of the Work Plus a Fee**

What could be simpler—a contract whereby the contractor invoices the owner for all costs related to the work plus the contractor's fee for overhead and profit? Well, the cost-plus-fee contract requires a great deal of thought and effort to work successfully.

First, a definition of what constitutes *cost* is often a point of contention between owner and contractor, and this needs to be clearly spelled out. A cost-plus-fee contract is, as the name implies, one in which the contractor will perform a certain scope of work identified by contract documents or a narrative description. The associated costs will be reimbursed by the owner inclusive of

the contractor's fee, generally calculated as a percentage of the work. Cost-plus contracts are used infrequently, but when employed, they require a high level of communication between contractor and owner to avoid misunderstandings and potential disputes.

This form of contract is often used when severe time restraints are imposed on the owner and it becomes necessary to begin construction as quickly as possible—often without the benefit of well-defined plans and specifications.

For instance, the owner of an office building may have an opportunity to lease space in the building to a tenant requiring occupancy in short order, and therefore demolition of previously occupied space must begin immediately in order to facilitate the start of the new construction. The owner may also wish to commence some limited amount of new work as the tenant fit-up drawings are being developed. The scope of demolition work can be easily defined, and partition layout and even partition work may be authorized on a cost-plus basis.

It is to the benefit of all parties to convert this cost-plus agreement into a lump-sum or guaranteed-maximum-price contract when the drawings have reached a stage of completion that would allow for a more defined contract sum. This will eliminate many misunderstandings and potential disputes, and the transition from a cost-plus contract to, say, a lump-sum contract is not difficult.

The owner can either pay for the cost-plus work on a separate invoice or incorporate these costs into the lump-sum or GMP contract.

There are two items that require a detailed explanation and mutual understanding by all parties, when using a cost-plus contract—what costs are to be reimbursed and what costs are *not* reimbursable. Even the cost of hourly labor may become a point of disagreement unless the owner is advised of base labor rates and the upcharge or “burden” applied to the base rate, incorporating such costs as unemployment compensation, social security taxes, workers' compensation costs, as well as employee fringe benefits or union dues. The addition of more than 70 percent to labor base-pay rates may come as a shock unless explained beforehand.

Reviewing the American Institute of Architects Document A111 (1997 edition), *Cost of the Work Plus a Fee with a Negotiated Guaranteed Maximum Price*, will establish guidelines for reimbursable and nonreimbursable costs.

#### **Cost to be reimbursed as defined by A111**

1. Labor costs
2. Wages, salaries of contractor's supervisory and administrative personnel when stationed at the site *with the owner's approval*
3. Taxes, insurance, contributions, assessments, benefits required by unions
4. Subcontract costs
5. Costs of materials and equipment incorporated in the completed project
6. Cost of other materials and equipment, temporary facilities, and related items fully consumed in the performance of the work

7. Rental costs for temporary facilities, machinery, equipment, and hand tools *not customarily owned by construction workers*, whether rented from the contractor or others
8. Cost of removal of debris from site
9. Cost of document reproduction, fax and telephone calls, postage, parcel post, and reasonable petty cash disbursements
10. Travel expenses by contractor while discharging duties connected with the work
11. Cost of materials and equipment suitably stored off-site, if *approved in advance* by the owner
12. Portion of insurance and bond premiums
13. Sales and use taxes
14. Fees and assessments for building permits and other related permits
15. Fees for laboratory tests
16. Royalties and license fees for use of a particular design, process, or product
17. Data processing costs related to the work
18. Deposits lost for causes other than the contractor's negligence
19. Legal, mediation, and arbitration costs, including attorney's fees arising out of disputes with owner *with the owner's prior written approval*
20. Expenses incurred by contractor for temporary living allowances
21. Cost to correct or repair damaged work provided that such work was not damaged due to negligence or was not nonconforming

**Costs not to be reimbursed per A111**

1. Salaries and other compensation of contractor's personnel stationed at contractor's principal office or offices, except as specifically provided for in the contract
2. Expenses of the contractor's principal office
3. Overhead and general expenses, except as provided in the contract
4. Contractor's capital expenses
5. Rental cost of machinery and equipment, except as specifically spelled out
6. Costs due to negligence of the contractor
7. Any costs *not specifically included in costs to be reimbursed* (This transfers the responsibility onto the contractor to include a comprehensive list. The contractor cannot claim later that he or she "forgot" to include some miscellaneous costs.)
8. Costs, other than approved change orders, that would cause the GMP price to be exceeded



Changes to these standard costs, both additions and subtractions, need to be clearly delineated in the agreement. It becomes important for the project superintendent to clearly identify all applicable costs generated in the field, by project number and by the proper cost code. Segregation of these costs in the field and in the home office is essential when requisitions are prepared and documentation of all reimbursable costs is to be attached to that request for payment.

**Pitfalls for the superintendent to avoid when administering a cost-plus contract without a GMP**

1. The scope of the work included in the agreement should have been clearly defined. If the owner, during a site visit, requests the superintendent to perform work that appears to exceed the original scope of work, the project manager should be alerted as soon as possible to determine if these instructions to the field represent increased or possibly decreased costs.
2. A statement of costs to be reimbursed and those not to be reimbursed must accompany any cost-plus agreement and be given to the project superintendent.
3. The project superintendent's time is generally a reimbursable cost; and not only should daily and weekly hours be charged to the appropriate cost code, but also a brief explanation of each day's activities ought to be noted, primarily in the daily log, so that if it is questioned by the owner, all supervisory time can be accounted for.

*The superintendent should be meticulous in documenting all reimbursable costs for both labor and materials. Labor costs can be segregated by task by assigning appropriate code costs. Material and equipment costs will also be segregated by applying the correct cost code and will include a brief description of where the material or equipment was used or installed. Sign each ticket to validate that materials were received as indicated.*

The author had one experience with an open-ended cost-plus contract that illustrates these pitfalls very clearly.

**The saga of a cost-plus fit-up project**

The author worked with an owner on a cost-plus contract many years ago, and the problems he encountered and the lessons learned are worth repeating.

The client owned a vacant 80,000-ft<sup>2</sup> one-story building and had been attempting to lease all or a portion of the space for some time, to no avail. Because it was located in a strip shopping mall that had seen better days, he hoped that by attracting a national account tenant, the character of the entire complex could be upgraded.

The building had been a supermarket and consisted largely of open space. Heating and cooling had been accomplished via several large rooftop units with little or no duct distribution system. The floors were covered with vinyl

composition tile, and because the heating/cooling systems had been shut down, most of the floor tiles were loose and badly cupped.

The ceilings were made of suspended acoustic tile, and the  $2 \times 4$  ceiling tiles were badly warped due to the lack of conditioned air. The metal grid system, originally white enamel, now exhibited a moldy yellow hue. Recessed electrical fixtures in the ceiling grid were damaged or, in some cases, missing acrylic lenses.

The building's structural system consisted of bar joists bearing on interior steel columns and exterior masonry walls. All in all, the building was in a pretty run-down condition.

A national home builder supply company expressed an interest in leasing at least 40,000 ft<sup>2</sup>. This would be one of its first east coast store openings, and the building owner, anxious to close the deal, agreed to major interior and exterior renovations which included a new, large aluminum storefront entrance and a new fascia and canopy on the exterior of that portion of the building to be occupied by the home improvement company.

The new tenant's architectural department was going to submit drawings for all interior renovations, and the building owner was to submit drawings for all exterior work to the tenant.

Oh, yes, and the lease stipulated that all improvements must be in place within 60 days after contract signing, or the tenant could cancel the lease and not be held responsible for any renovation costs incurred if that date was not met.

The owner contacted the author's company, and a cost-plus contract was quickly put together, listing reimbursable and nonreimbursable costs and contractor's fees. On the basis of the scope of work discussed and agreed to by the owner, budget estimates were prepared and delivered to the owner the following morning. He requested that work begin as soon as possible.

The local architect hired by the owner produced drawings for the enlarged storefront entrance within a few days, as laborers and masons had already begun to needle through the existing exterior block walls and create new structural openings in the masonry wall to receive the aluminum storefront work.

Exterior canopy sketches were given to the author, and when this work started, the owner was so pleased with the look that he requested that it be extended along the full 400-ft elevation of the building instead of the 120 ft originally budgeted.

In the meantime minor demolition was taking place inside the building as the local architect awaited the tenant's interior design drawings.

To ensure that a sufficient number of carpenters would be available for the interior work, it was decided to extend the workday for the canopy construction crews to 2 hours of premium time per day per worker. The owner authorized this overtime which was quickly changed to 3 hours per day per worker. With a 15-worker carpentry crew, the cost for the premium time would be significant. At job meetings held at the site every 2 to 3 days to review progress drawings, the owner was kept apprised of the costs to date. Meantime, attention was turned to

interior work, and although the existing lighting fixtures were initially budgeted to be cleaned, rebalasted, and relocated, when work began, the electrical subcontractor said that most of the fixtures were beyond refurbishing and would have to be replaced. The owner agreed, new fixtures were immediately ordered, and the owner was presented with the cost differential for that portion of the work.

Time was ticking away. The tenant's interior design drawings were late, and therefore the new ductwork distribution system could not be fabricated. When drawings finally appeared, both the sheet metal contractor and the electrician had to work overtime to make up for lost time.

The floor was a mess, but the owner insisted that it be cleaned and loose tiles recemented, using tiles from other sections of the building to replace the broken ones. He was advised by the flooring contractor that an entirely new floor would be only slightly more expensive, and was even quoted a lump sum for that work, but the owner insisted on reusing the existing tiles. The flooring subcontractor proceeded to clean, patch, and repair on a "time and materials" basis.

When the tenant's representative visited the site at 4:00 p.m. the day before the grand opening was scheduled, he rejected the resilient floor installation and insisted that an entirely new floor be installed throughout the building in time for the opening day ceremonies, scheduled for 8:30 a.m. the following morning. If this was not accomplished, he hinted that the lease would be voided—and the owner would be unable to recover any costs to date. A quick trip to the supply house secured enough materials to replace the existing flooring, and frantic telephone calls to workers at their homes brought them swiftly back to the job.

With several teams of laborers and mechanics working around the clock, the last coat of wax was drying as the red, white, and blue bunting was being hung over the front entrance at 8:00 a.m.

The deadline was met, the tenant had started moving in the night before, and opening day was a smashing success.

During all the hectic activity during the 2 weeks prior to the tenant move-in, ongoing costs were reviewed with the owner, although many costs had not been fully developed. All these discussions were verbal, and just a few notes were written.

When the final costs and corresponding scope changes were assembled and presented to the owner, there was a funereal silence. The owner's face turned beet-red, and he said, "These costs are 30 percent higher than the initial budget!" The owner ignored the fact that the initial "budget" was prepared from two rather sketchy drawings prepared by his architect and the fact that he had authorized some rather significant changes during construction. Many of the increased scope items that had been previously discussed, agreed upon by all parties, and implemented during this fast-paced project suddenly were vague in the owner's memory—a condition sometimes known as *selective memory*.

It took 2 to 3 weeks to assemble all the detailed labor, material, and subcontractor cost sheets together with a complete narrative of the progression of scope changes, dates, parties present, etc., for presentation to the owner. This

was followed by another 4 weeks of meetings with the owner which mostly ended with a glazed look of bewilderment in his eyes.

There was very little question that he fully understood the extent of all the instructions he gave, instructions that he surely knew had substantial cost impact. But now his tenant was in place, paying rent, and the need to quickly resolve all costs with the general contractor became a less urgent matter, in his eyes.

It took another 3 months to receive final payment, and the author came away with the distinct impression that the owner felt he had been abused, when in fact he had authorized all the work, the project was completed on time, the new tenant greatly enhanced the image of the strip mall, and under the circumstances the costs were reasonable.

The experience certainly made painfully evident the importance of proper and timely *written* documentation when a cost-plus-fee project is undertaken.

*There are five critical elements in a cost-plus-fee contract that should be addressed by a project superintendent:*

1. Understand completely the scope of work included in the contract.
2. Identify all scope changes as soon as they occur and notify your office.
3. If the owner's representative requests a change, note the time and date that this request was made and pass all the information onto the office.
4. Cost-code and identify all field-related costs for labor, material, and equipment as these costs are incurred.
5. Do not authorize any subcontractors or vendors to proceed with the changes until advised to do so by your office.

## The Stipulated or Lump-Sum Contract

A stipulated or lump-sum contract is most frequently used in competitively bid work, in either the public or private sector, where a complete set of plans and specifications has been prepared by the owner's design consultants.

Contractors are expected to estimate the cost of the work contained in a specific set of bid documents—no more, no less.

Any deviation from the scope of work contained in these bid documents, except if amended later by other contract provisions, will result in a change of scope, and the associated costs will be dealt with by change order.

Although this may appear to be a rather straightforward approach to the administration of a construction contract, it is not as simplistic as it seems. The *intent* of the plans and specifications can often be interpreted in many ways by each participant to the construction process—the owner, the architect/engineer team, other design consultants, the general contractor, and subcontractors.

The perfect set of plans and specifications, based upon the author's experience, has yet to be produced, and changes are almost always inevitable, to include not only items inadvertently omitted from the scope of work but also items added by the owner to include additional amenities or upgrades.

Since the architect is, by contract, generally designated as the “interpreter” of the plans and specifications, the final decision on what constitutes the obligation of all parties to the contract rests with that authority—unless challenged and resolved by negotiation, arbitration, or litigation.

In the case of renovation or rehabilitation work, the stipulated-sum contract may include a contingency allowance to cover the costs of unanticipated problems that generally occur in these types of projects. A contingency in the amount of 5 percent of the total contract sum is not unreasonable, and a contingency in the amount of 10 percent of the total contract sum for some types of renovation work is proper. The purpose of any contract contingency amount needs to be clarified. Is the contingency for the sole use of the owner or sole use of the contractor, or shared by both parties in some definable way?

The contractor’s fixed fee in the stipulated or lump-sum contract is dependent upon the tabulation of final project costs. If everything goes well and costs track favorably with the estimate, the contractor will achieve the anticipated fee, and possibly more. If, inadvertently, costly items have been omitted from the estimate or grossly undervalued, or adverse job conditions occur for which no owner reimbursement is received, the contractor’s fee may diminish or disappear.

The project superintendent must be alert to discovering any and all deficiencies in the plans and specifications and their associated costs. These comments should be passed on to the project manager to determine which unanticipated “extra” costs should have been reasonably expected and absorbed by the contractor and which costs should be presented to the owner as a change order.

### **Pitfalls to avoid when supervising a lump-sum or stipulated-sum contract**

A thorough review of the contract documents—the plans and the specifications—is essential to uncover any ambiguities, errors, and omissions before they surface during construction. This review should be made as early as possible, either during the period when the project’s mobilization is taking place or in the initial stages of construction. Discovery of problem areas can be presented to the architect or engineer in the form of a *Request for Information (RFI)* or a *Request for Clarification (RFC)*. Upon receipt of the response to the RFI or RFC, the project superintendent and project manager can determine whether the architect/engineer (A/E) interpretation or ruling warrants a scope change and a request to increase or decrease the contract sum via change orders.

Some of the more common errors and omissions encountered during a plan and specification review are as follows:

#### **Common drawing shortcomings**

1. Architectural, structural, mechanical, electrical, and plumbing drawings are not coordinated dimensionally.
2. Openings for mechanical and electrical work, louvers, and other exterior wall penetrations may be shown on the architectural and mechanical, electrical,

- and plumbing (MEP) drawings but not on the structural drawings—or else the size of an opening, if indicated, may vary from one drawing to the next.
3. Dimensions on structural foundation drawings may be at variance with dimensions shown on the architectural drawings—or individual dimensions do not add up to overall dimensions.
  4. Elevator shaft openings on the architectural drawings may vary in size and location from those on the structural drawings.
  5. Housekeeping pads for electrical and mechanical equipment as indicated on the MEP drawings may not be represented on the architectural or site drawings.
  6. Partition types as shown on the architectural floor plans may be at variance with larger-scale details or partition schedules.
  7. Finish schedules may be at variance with finishes indicated on the architectural drawings.
  8. Reflected ceiling plans may not accurately locate electrical fixtures, HVAC diffusers, or sprinkler head locations or may not be coordinated with these drawings.
  9. Ductwork and other above-ceiling work will not fit into the space assigned.
  10. Note on one drawing referring to a detail on another that does not appear, or the detail does not apply to the condition to which it is supposed to apply.
  11. Invert elevations on utilities leaving the building are not compatible with inverts indicated on the mechanical/electrical drawings.

### **Common specification review problems**

1. Reference is made to information contained in another section, but is not provided in that other section.
2. Specification sections do not apply to the project at hand.
3. Specifications do apply, but contain sections that are inappropriate to the project at hand, e.g., a requirement for TV brackets for “patients” that is included in a school project.
4. References to painting are made in the mechanical and electrical specification section but are not included in the painting section, or vice versa.
5. The requirement for equipment starters is not included in the appropriate section, or is not included in any section.
6. Equipment for the same item is listed in two different specification sections, i.e., hardware for aluminum entrance doors is indicated both in the door specification section and in the hardware section.

*A thorough review of the plans and specifications by the project superintendent early on may avoid some of the panic situations that occur during construction. The superintendent should also urge all subcontractors to review their scope of*

*work prior to coming on site, so that any errors, omissions, or inconsistencies in their respective trades can also be brought to the architect/engineer's attention in the initial stages of the project.*

### **Addressing Material Price Increases in Stipulated/Lump-Sum Contracts**

Volatility in prices of some construction materials, in recent years, has outpaced the normal inflationary impact on the cost of construction. Worldwide economic conditions can affect the price of cement, steel, lumber, and copper. India and China's burgeoning economic boom that began in the last several decades of the twentieth century has been credited with the huge increases in structural steel worldwide. The same also may be said for the price of cement and the sharp increase in the price of aluminum, copper pipe and tubing, and other metals.

McGraw-Hill's ENR magazine includes a Material Price Index for various materials and labor costs, and their February 27, 2007, edition showed the price of steel at an index price of 165 in May 2006, rocketing to 185 in October of that year before retreating to 174 in February 2007. During that same period, aluminum sheet prices increased nearly 11 percent and stainless steel sheets from 24 to 31.9 percent.

The standard lump-sum contract does not take into consideration these unforeseeable spikes in raw materials that can seriously affect a contractor's bottom line and even drive them into bankruptcy.

It has become more or less standard in the industry, in recent years, to have vendors add a fuel surcharge to truck deliveries of material after the cost per gallon of gasoline and diesel fuel spiked early in 2000, and it appears logical that abnormal increases in materials should be subjected to the same type of adjustment.

The federal government recognizes the fact that uncontrollable costs can occur in a fixed-sum contract and makes provisions for compensation to the contractor in some instances. The Federal Acquisition Regulation (FAR) in their regulation FAR 16.203-2 allows for the inclusion of an economic price adjustment to lump-sum contracts when "there is a serious doubt concerning the stability of market or labor conditions that will exist during an extended period of contract performance."

The federal government allows economic adjustments of three types:

- Adjustments based on actual costs of labor or materials
- Adjustments based on established prices
- Adjustments based on cost indexes of labor or materials

The Associated General Contractors of America (AGC) has taken steps to implement price adjustment clauses in both public and private contracts by preparing an amendment to their AGC Document 200. This amendment, Amendment No. 1, issued in May 2004, is entitled "Potentially Time and Price-Impacted Materials." Attached as an exhibit to a base lump-sum contract, it requires both owner and

contractor to establish a baseline cost of those materials that have had a history of severe price fluctuations. Both owner and contractor also agree on the method of calculating this “baseline” price—actual material costs, material cost indices (possibly ENR’s Materials Price Index) or other mutually agreed-upon methods.

The FAR and the AGC approach would permit this price adjustment practice when material prices increase inordinately and when they decrease in a similar manner. It may well be in both the owner’s and contractor’s interests to consider this price adjustment concept.

A 2007 Connecticut Department of Transportation invitation to bid on a \$400 million bridge project in New Haven failed to attract any bidders because of the project’s seven-year schedule and uncertainties about labor and material costs, so said several potential bidders. A liquidated damages clause of \$270,000 per day didn’t receive much enthusiasm either. The length of the project, uncertainty of costs, and the LDs all contributed to lack of interest by several major U.S. contractors that probably thought they could put their services to better use elsewhere. It is not known whether any price adjustment considerations were advanced by either owner or bidders, but both would have been better served if that approach had been offered.

If these wide price disparities for materials continue, we can look for more fixed-sum contracts to include a provision providing for adjustment of costs because of extraordinary globally induced price increases.

### **The Cost-Plus-Fee Contract with a Guaranteed Maximum Price**

The cost-plus-fee contract with a guaranteed maximum price (GMP or  $G_{\max}$ ) is frequently used because it allows the owner to gain the protection of the maximum cost of the construction while retaining the potential for cost savings. It is basically a cost-plus-fee contract with a cap on it.

The GMP contract is often used for fast-tracked work, and for the faster flash-tracked projects when incomplete or sketchy construction documents are all that is available at the time of contract preparation. The GMP contract is quite often used when design-build work is being considered.

It is not unusual for a GMP contract to be executed when the “contract” plans are between 70 and 80 percent complete. At that time, the general contractor would have included costs in their estimate for work not shown on these partially complete plans but anticipated when the 100 percent complete drawings have been prepared.

The general contractor, in cooperation with the owner and architect, will have made certain assumptions with respect to what the remaining 20 to 30 percent of work will include and would not include and these assumptions or qualifications will be memorialized in a contract exhibit referred to either as a pricing qualification list (Fig. 2-1) or an exclusion/inclusions list. Another document, or exhibit, would often be an allowance list (Fig. 2-2) because some of the finishes or extent of work would remain unknown until actual construction starts.



**The Grey Falcon Stadium project  
Fort Cartwell  
Maryland**

**Pricing Qualifications**

In an effort to ensure our team has reflected the design intent in our pricing, the following is intended to provide a division by division description.

**Division 1 - General Conditions/General Requirements**

**Inclusions/Exclusions**

- 1 This proposal is based on mutually agreeable contract terms.
- 2 Underpinning is said to be not required by the structural engineer is therefore not included
- 3 Asbestos, lead, or hazardous materials testing, removal and remediation are not included.
- 4 Utility and service company fees and charges for connections or meters are not included.
- 5 Temporary electric consumption cost during construction is not included.
- 6 A payment and performance bond is not included
- 7 Builders risk insurance is assumed provided by Owner and is not included
- 8 Any costs associated with the Health Department inspections are not included.
- 9 Construction site security, other than separation of work zones by construction fences is not included.
- 10 With timing going to be critical, we assume that the Owner will assist in obtaining permits

**Allowances included within the General Conditions**

- 1 *Police details and street permits: \$15,000 is included*
- 2 *Winter weather protection will most likely be required for the waterproofing, and concrete sidewalks as the current schedule does not allow for a start of this scope prior to Mid Oct 04. In addition, protection will likely be required for the façade restoration after the completion of the sidewalks. \$25,000 is included.*

**Division 2 - Site work / Demo**

**Inclusions/Exclusions**

- 1 Below grade obstructions, rock, and/ or removals of these are not included
- 2 The furnishing and installing of the new gas line including the meter is by the gas company has included the excavation and backfill of this line as shown.
- 3 Relocation, repairs, or replacement of uncharted utilities.
- 4 Interior building demolition along with the removal of the existing floor slab in basement is currently underway and as such is not included.
- 5 Removal of any other topping slab at 1st floor level other than the area shown.
- 6 The work associated with the connection of existing roof drains to The Muddy River Conduit. was said to not be required and as such, we have not included.
- 7 The City of will require flowable fill in the utility trenches and as such this is included
- 8 Based on the grade of the new floor slab, we believe that this job will require a small amount of imported fill, approx 500 cy, therefore, we assume that the existing soils will remain in place.
- 9 The current demo operation will included the removal of the existing walls into the former street vault areas
- 10 As discussed, the demolition will allow access to the new grease trap location for installation of the unit and of the piping

**Allowances included within the Site work / Demo**

- 1 As the full scope of the demo required for the remove of the existing concrete topping slab and unknown supports down to the assumed structural slab is included \$10,000.
- 2 We believe that there will be a need for saw cutting of the existing column for new beam pocket: \$2,500.
- 3 We have included an allowance for the installation of the new grease trap as do not have an elevation for this, \$10,000. We assume that dewatering will not be required.
- 4 As we also do not have an elevation, we have included an allowance of \$5,000 to support the

**Figure 2-1** A pricing qualification exhibit to a GMP contract.

Schedule of Allowances

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Div. 1- \$15,000 - 25,000 -	Miscellaneous costs with the City of including all costs for police details, firewatch, and any required permits. Winter Conditions.
Div.2 - \$10,000 - 2,500 - 5,000 - 2,500 -	Removal of existing topping slab and any unidentified supports. Saw cut one existing column, if required, to create a beam pocket. Support existing sewer line while installing adjacent water line. Miscellaneous demolition.
Div. 3 - \$10,000 - 10,000 - 5,000 -	Structural concrete patching for the ceilings, columns and for the exposed concrete finishes in the public spaces. Cosmetic concrete patching for ceilings, columns and for the exposed concrete finishes in public spaces. Structural repairs and/or waterproofing preparation to the existing Brookline Ave structural slab at the Areaway.
Div.4- \$20,000 - 15,000 -	Masonry repairs behind existing yellow bricks. Epoxy filling and all necessary repairs to existing cracked concrete lintels.
Div. 9- \$750 -	Patching and repair of the wall at Corridor 101.
Div. 15-\$25,000 - 6,000 -	Cost to re-feed, relocate and coordinate any existing mechanical, electrical or plumbing (“MEP”) items not shown in the Contract Documents. All rigging and hook-ups required for the safe and proper operation of the HVAC equipment.
Div.16- \$18,500 - 2,000 -	Electrical Demolition outside of the Basement Area. Installation of all lighting in the tunnel.

Any amounts to be charged against the above allowances must be documented by Contractor and approved by the Owner. In the event the Contractor believes additional expenses covered by an allowance will be required, the Contractor shall notify Owner, prior to expending any amounts over the allowance, and shall not exceed an allowance without a written change order. In the event that Contractor exceeds an allowance without first receiving a written change order from Owner, Contractor shall have waived any claim for the additional expenditure.

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**Figure 2-2** An allowance exhibit to a GMP contract.

A project superintendent must review the GMP contract with the owner to determine if either or both of these exhibits are included, and, if they are, become familiar with each item. With respect to the pricing qualification exhibit, details not covered by the plans and specifications will flush out the full contractual scope of work; as far as allowance items are concerned, the timing for resolution of allowance items must be addressed to avoid unnecessary and costly rework. This is discussed more fully in Chap. 4 in the section “Reviewing Allowance and Alternate Items in the Owner’s contract.”

The contractor’s fee is usually prenegotiated, based upon a percentage of cost, and generally there is a provision in the contract allowing additional fees for work above and beyond the initial scope of work, i.e., change order work.

A GMP contract will most likely include a *savings clause* specifying that any savings are to be shared by the owner and the contractor. Some owners prefer to have the contractor receive a greater portion of the savings, theoretically creating greater incentive for the builder to search for potential savings. Many contracts stipulate that any savings will be shared on a 50-50 basis, giving the owner an incentive to review any scope changes or accept value engineering suggestions proposed by the contractor.

A standard feature of the GMP contract is a requirement for a cost certification audit when the project has been completed. The owner will have the authority to audit the contractor’s books to verify costs and to determine the extent and nature of any potential savings. The audit may also be used to ensure that all costs charged to the project are proper ones and were actually expended for that project.

The project superintendent should carefully review, identify, and isolate all costs as they are incurred in the field. This will save countless hours and reduce any owner frustration at the end of the project, when various job-related costs may be called into question. Identification of costs for labor, materials, and equipment will be similar to the procedures described in the administration of cost-plus contracts.

Scope changes, whether initiated by the owner, subcontractor, or general contractor, should be analyzed to determine if the guaranteed maximum price should be increased or decreased. Since the GMP contract is based upon a specific scope of work, any change in that scope should theoretically increase or decrease the guaranteed maximum price. Even if costs to date reveal that substantial savings have accrued which will allow any added costs due to scope increases to be absorbed by these savings, the contract sum must be revised. Remember, your company will share in any eventual savings, and absorbing these costs will only decrease the amount of savings to be shared.

One of the many functions of a project superintendent and project manager administering a GMP contract will be to look for savings throughout the life of the project. All subcontractors should be requested to review their work with an eye toward developing possible cost savings. As these suggestions are received, they must be reviewed and analyzed to determine whether a savings by one

trade may increase costs in another trade, thereby eliminating any net savings and, in some cases, resulting in higher costs. This process of *value engineering* can be costly, not only in dollars, but also in testing the project superintendent and project manager's professionalism.

For example, the substitution of two small rooftop exhaust fans for one larger unit may result in a savings in the mechanical portion of the work but may add costs for two electric circuits, two breakers, associated labor, one additional framed rooftop opening, roof curb, and flashing.

All such value engineering suggestions should be routed through the architect, engineer, and any related subcontractors for their comments before being formally submitted to the owner.

The more adept a contractor becomes at developing meaningful cost savings or value engineering suggestions, the easier it will be to build a solid reputation as an effective administrator of GMP contracts.

### **Pitfalls to avoid when administering a GMP contract**

1. All material and equipment receiving tickets should be identified with the project name, number, cost code, and an indication of where the item was used. This will make it much easier to document costs, if and when a detailed audit is required.
2. If the GMP was based upon less than complete plans and/or specifications, the project superintendent and project manager should carefully review all design development drawings as they are produced to ascertain that the scope of work is neither increased nor decreased. When scope changes occur, alert the owner immediately and attempt to quantify those changes. If additional costs are involved, request confirmation of acceptance. If the scope of work can be modified or reduced in other areas to offset these added costs and create a tradeoff, notify the owner in writing.
3. When you receive value engineering cost savings, review them carefully with all related suppliers and subcontractors to verify that the actual savings being suggested are, in fact, true savings and that no hidden costs lurk somewhere down the line.
4. Do not allow scope increases to occur without increasing the guaranteed maximum price, even though it appears that some costs could be absorbed by the savings that exist at the time. (These savings may disappear rapidly as unanticipated costs suddenly appear.)
5. Remember that if the architect or owner deletes items of significant value from the contract, she or he will expect a credit that lowers the GMP.

*In GMP-type projects, identify all labor, material, and equipment costs so that an audit by the owner at the end of the project will clearly indicate that all costs assigned to the project are properly documented. When scope increases or*

*decreases occur, report them to the project manager so that the owner can be notified of the extent of the change and its associate cost impact.*

## Construction manager contracts

Once associated with megaprojects, the construction manager (CM) form of contract has been utilized in significantly smaller projects, and most general contractors today also market themselves as construction managers.

Although there was once much confusion over what constitutes construction manager work, the *Construction Management Association of America (CMAA)* defines it as follows:

Construction management incorporates the following elements:

- A project delivery system consisting of a program of management services
- Defined in scope by the specific needs of the project and the owner
- Optimally applied to a construction project from conception to completion in order to control time, cost and quality
- Performed as a professional *service* under contract to the owner by a construction manager as the owner's *agent*

*Note:* The word *agent* is a key word in discussing CM work. Unlike a general contractor (GC) who issues subcontracts and purchase orders in the name of the GC, a CM is an *agent* for the owner, and so all subcontracts, purchase orders, and the like are issued in the owner's name when approved and recommended by the CM.

The construction manager is

- Selected on the basis of experience and qualifications of the firm operating as a construction manager, as opposed to experience as a general contractor
- Compensated on the basis of a negotiated fee for the scope of services rendered, generally expressed as a percentage of the total cost of construction but also as a fixed fee in some cases

The construction manager concept can be subdivided into

- *CM for fee.* All required construction management services are performed by the CM, and the CM receives a fee plus a previously agreed upon list of reimbursable expenses. The CM does not guarantee the final cost of the project.
- *CM at risk.* The CM in this case also provides all required construction management services for which he or she receives a fee plus listed reimbursable expenses. However, the CM guarantees that the final cost of the project will not exceed a stipulated sum, excepting approved changes in scope.

## CM contracts—a two-part arrangement

Quite often an owner will select a CM and award one contract for preconstruction services with a termination clause prior to the award of a second contract for the actual administration of the project. If the owner is unhappy with the performance of the CM during the preconstruction phase, the owner can terminate

the second contract and seek a more qualified firm for the administration of the work and possibly to review the preconstruction portion as well.

The division of services provided by a construction manager is rather straightforward:

- *Preconstruction services.* The CM provides professional staff to the owner prior to or during the design phase. In some cases staff is provided during various stages of project development, including estimating, scheduling, purchasing, and project management. The purpose is to assist in development of the owner's construction program by working closely with the design team to ensure that it meets the client's schedule and budget restraints. The CM may provide these services as a lump-sum proposal or cost plus fee, with or without a GPM.
- *Construction services.* The CM provides the staff and related field office facilities to administer and manage the construction project, acting as the owner's agent. The CM during construction will be awarded either a for-fee contract or an at-risk contract.

And, of course, many owners engage CMs to perform both functions—preconstruction and construction services—in one contract incorporating both phases.

CM work has come in for some criticism, directed not so much at the system, but at those firms that profess to be qualified construction managers but lack the experience and staff to perform the required services at the anticipated professional level.

### **The construction manager and the preconstruction phase**

One major advantage of the CM process is that an owner can obtain the services of a team of construction professionals to act on the owner's behalf during the preparation of the project's design. The CM's staff of experienced professionals, having day-to-day contact with subcontractors, local labor pools, equipment manufacturers, and material suppliers as well as a detailed database of construction component costs, can provide invaluable assistance in determining the most cost-effective design commensurate with the owner's program, budget, and project delivery dates.

The CM entering into a preconstruction services contract must have a complete understanding of the services the CM is expected to provide, so that the CM can establish the fee accordingly and include a list of corresponding reimbursable expenses for staff and services.

Some owners prefer to enter into a lump-sum contract once the scope of these preconstruction CM services has been defined.

Preconstruction services generally include

1. Consultation with the client and the architect/engineering team during project development with respect to building systems and components

2. Preparation of a schedule to include dates for completion of bid documents; time required to solicit, receive, and analyze bids; contract award and commencement of construction; and a detailed outline of construction activity from start to completion of the project
3. Preparation of an initial budget, which is to be updated as design development proceeds.
4. Coordination and assistance in the preparation of bid documents
5. Selection of qualified bidders and solicitation of bids
6. Review and analysis of bids and award recommendations

*Note:* Items 5 and 6 are sometimes included in the construction phase of the CM contract.

Construction-phase services include

1. Selection of a qualified bidders list, review, analysis of bids, and recommendation for contract award (if not included in preconstruction phase)
2. Project supervision during construction to include project superintendents, project managers, and project engineers, depending upon the size and complexity of the project
3. Field office and related expenses and administrative staff
4. Cost control and scheduling services
5. Assistance in obtaining all required permits
6. Establishing procedures for change order preparation, review, and approval/rejection recommendations
7. Consultation with the owner and design consultants involved in the project
8. Inspection of the work to ensure compliance with the contract documents
9. Acting as a conduit between subcontractors and vendors and owner and design consultants over matters of contract interpretation and compliance
10. In collaboration with the architect and engineer, establishing a shop drawing processing and monitoring procedure to ensure its smooth operation
11. Reviewing, recording, and processing all reports and site documents
12. Determination of substantial completion in conjunction with the architect and preparation of a list of incomplete and unacceptable items
13. Monitoring the start-up and testing of equipment with the architect and engineer and supervising the turnover of equipment in accordance with the contract provisions
14. Developing and monitoring the punch list process in collaboration with the design team
15. Collecting, reviewing, and approving all closeout documents in conjunction with the design consultants

16. Assisting in ensuring that all warranty and guarantee work is provided and performed in full accordance with the contract requirements
17. Assisting the design consultants in the completion of all project closeout procedures and documentation

Some CM contracts do not prohibit a general contractor from performing certain work tasks with his or her own forces if the GC is experienced in these tasks and can demonstrate that the GC's involvement will be cost-effective. If such an award is made, the CM will be allowed to include a certain percentage for administrative costs and profit just as though that portion of the work had been subcontracted to another firm.

### CM fees

The fee charged for construction manager services varies depending upon whether preconstruction *and* construction services are required and whether the CM will be a for-fee or at-risk contract.

Fees in either case are significantly lower than those charged by general contractors performing lump-sum or GMP work because the CM is reimbursed for most field and many office-related expenses. Therefore most of the fee will go to the contractor's bottom line.

The *reimbursable expenses* are specifically listed in the CM's proposal, and their *cost* includes a percentage allocated for overhead and profit. These reimbursables including overhead and profit are referred to as *reimbursables with a multiple*; in other words, the owner will pay the CM for specified costs multiplied by a factor of 1.5 or 2.0 or whatever is agreed upon. Therefore the cost of a superintendent's weekly salary including fringe benefits may be, say, \$1500.00. At a multiple of 1.5, the owner will agree to pay \$2250.00 to the CM for the "cost" of this superintendent's services; at a multiple of 2, the CM would be reimbursed \$3000.00.

Exclusive of preconstruction services and reimbursables, compensation for a for-fee CM will be in 1.5 to 3 percent whereas the fee for a CM at risk could be between 4 and 7 percent.

As stated previously, preconstruction services are often quoted on a lump-sum basis and include the CM's specific duties and responsibilities associated with administering these duties and responsibilities.

### Pitfalls to avoid when administering a construction manager contract

As the owner's agent, a great deal of responsibility shifts from the contractor to the owner since the CM will *recommend* rather than *decide* certain issues involving costs. One of the pitfalls to avoid is failure to include a complete and inclusive list of reimbursables for field-related expenses. (And that is why a CM will administer a project from the field, incorporating all office-related project functions and thereby transferring those costs from their central office overhead to reimbursable field-related costs.)



A typical CM list of standard reimbursables might include the following:

Project office field setup

1. Office complex, trailers, security fencing
2. Office equipment, duplicating machine, computers, miscellaneous supplies (staplers, hole punches, etc.)
3. Utility connections for telephone, data, water/sewer (if applicable), and electricity
4. Signage
5. Rental of reproduction equipment (even if owned by the CM)
6. Office furniture—desks, chairs filing cabinets, conference table

Project field office expenses

1. Supplies for office equipment, periodic maintenance
2. Copy machine supplies
3. Fax machine supplies
4. Utilities—power, telephone, sanitary, water
5. Postage, package deliveries, overnight delivery service
6. Field radios, beepers
7. Blueprints
8. Automobile and trucking expenses and repairs
9. Travel expense
10. Reproducibles
11. Office maintenance and cleaning services
12. Travel expense
13. Security
14. Office maintenance and cleaning services

Site-related expenses

1. Engineering (if requested)—initial survey, interim layouts, final survey (if not supplied by owner)
2. Testing, geotechnical services (if not contracted for directly by owner)
3. Erosion control—installation and maintenance (if not awarded to another contractor)
4. Shop drawing receipt, review, and transmission to A/E and return to the appropriate subcontractor/vendor
5. As-built drawings (either preparation or review of drawings prepared by others)
6. Safety/first aid
7. Site security
8. Photographs—progress photographs and others required for documentation

Project maintenance

1. Access roads—supervision of installation and maintenance
2. Fire extinguishers and maintenance of same
3. Personal safety equipment

4. Portable toilets—delivery and periodic maintenance
5. Cleanup and dust control
6. Dumpster services
7. Trash chutes
8. Pest control

*The project superintendent's role in administering a construction manager (owner's agent) type of construction contract will be not much different from that supervising any other project. However, the low CM fee is dependent upon the owner reimbursing the construction manager for all costs as set forth in the reimbursable portion of the contract. Therefore the project superintendent must diligently track, isolate, and document all such reimbursable costs, being careful not to include any nonreimbursable costs.*

## Design-Build

Although design-build is contractually a different project delivery system, it encompasses several different forms of other construction contracts.

This process, although already in wide use in both the public and private sector, is expected to expand to the point at which design-build will approach 45 percent of all project delivery systems by the year 2010. Design-build projects have a documented record of significantly reducing the design-build time cycle and producing cost savings in the process, and this explains its growing acceptance.

Design-build in its basic form is merely a method to provide an owner with a single source for both design and construction. The design-build team can be contractor-led or architect/engineer-led, but in either case this team will be responsible for extracting the owner's program, design it, and build it.

Design-build contracts can take many forms:

A bridging contract

A contract between builder and design consultants to form the design-build team

A contract with the owner for a design-build project

### The bridging contract

The bridging approach allows an owner to approach the design-build process in a limited fashion, limiting their commitment and financial exposure. An owner will hire an architect to prepare a basic design incorporating the owner's construction program, and often will include the budget. These design development documents will be transmitted to potential design-build firms for pricing along with a request to provide suggestions to modify the design and offer value engineering suggestions. The prospective bidders may be requested to critique the design or provide another one to fulfill the owner's program. The owner has the option of a design-builder selection based on the innovative proposals submitted as a response to their request for proposal (RFP).

The owner has the option of requesting the “bridging” architect to provide further design development documents, complete the design, or turn the initial design documents over to the design-build team for incorporation into their final design.

### **The contract to form the design-build team—the teaming agreement**

When an owner submits an RFP, some of the respondents may not be design-build firms but may desire to form a design-build team and respond to the proposal. Therefore, the builder or the designer look for a compatible partner and consider forming a partnership to bid and hopefully be awarded a contract. But they may not be successful in their bid, so this “partnership” will be formed solely for bidding purposes, and if they are lucky enough to be awarded the contract, they will proceed to develop a more formal contract.

This type of contract is known as a teaming agreement, and is generally a two-part affair. Part A spells out the agreement between architect and builder to develop and present a design-build proposal. Each participant’s duties, obligations, and responsibilities are specifically stated. The Part B agreement is executed if and when the team has been awarded a design-build contract and will form the basis for the relationship between builder and the design consultants through the design and construction process.

### **A contract between owner and design-builder**

The contract between the owner and the design-builder will include responsibility for providing design and construction, which will proceed through a series of schematic and design development documents until the final design is approved by the owner and the design-build team.

The contract can be in the form of a cost-plus a fee (cost of the work as well as the contractor’s fee) with a guaranteed maximum price (GMP), or a lump sum or a construction manager (CM) contract—either “at risk” or “for fee.”

From the project superintendent’s perspective, each of these types of contracts will be administered in much the same manner as any other GMP, lump sum, or CM contract, except for one very important deviation—change orders.

Responsibility to extract the owner’s program rests with the design-build team, and the ability to generate change orders is therefore limited if the design-build team failed to ask the right questions to fully define the scope of work. A favorite expression is, “You should have known,” as in, “You should have known that the executive offices should all have individual climate control devices.”

### **Owner concerns during construction**

In the conventional design-bid-build process, the architect is the owner’s watchdog. Now that the architect is allied with the builder, owners become concerned that their interests may not be protected. If an owner does not have qualified people on staff, they often engage a consultant to look after their interests.

The project superintendent must exhibit strong control over design compliance and quality control matters to ease these concerns.

The design-build process also requires a more selective group of subcontractors, who may have more technical expertise, and high-quality supervisors on site to work with the architect and design engineers more closely.

### The Joint Venture Agreement

In today's marketplace, local builders may discover that large national and international contractors are venturing into their geographic area, seeking work to increase or maintain their already huge annual volume. Sometimes these incursions are the result of one of the national account clients deciding to build in your area, and at other times these construction giants are just looking to increase their market share.

Expansions into local markets by these companies may present opportunities for established local contractors and may not necessarily be viewed negatively. Without any long-term relationships with local subcontractors and suppliers and lacking knowledge of local job conditions, these large contractors may seek out local partners to work with in what is known as a *joint venture*. Advantages can accrue to both firms if the joint venture agreement is properly prepared, and shared responsibilities and shared profits can enrich all parties.

A joint venture contract is often used when a minority contractor and a non-minority contractor, having a higher financial capacity or higher bonding ability, team up to bid on a public project requiring an affirmative action program.

The joint venture (JV) agreement defines the legal *entity* between the builder and the owner and is complemented by one of the five basic construction contract types—cost-plus, GMP, lump sum, CM, or design-build.

### Turnkey Contracts

Although there are several variations on the *turnkey contract* concept, the most universally accepted definition is a project whose costs will not be reimbursed until the contractor completes the project and “turns the keys” over to the owner. In a turnkey project, the cost of financing the project until turnover is borne by the turnkey contractor, and all such costs are included in the contract sum. Monthly requisitions are not submitted to the owner for payment; but once the project has been completed and accepted, the contractor receives payment in the amount of the contract or adjusted contract sum. A turnkey contract can be used for a variety of types of construction projects. The author prepared a joint venture proposal for a private university desirous of building a new dormitory building complete with furniture and related equipment. Turnkey contracts have been used successfully in certain type of public housing projects where, in competition with others, developers select a site and submit a proposal to construct the required type and number of housing units on that site. Some turnkey contracts require the builder to not only construct the project but also provide interior equipment and furnishings.

## Contracts with Government Agencies

Many local, state, and federal agencies have their own contract forms. Although these forms may borrow heavily from many standards of the American Institute of Architects or Associated General Contractors of America (AGC), they also include pages of various local, state, and federal laws and ordinances and executive orders. Under the canopy of *equal employment opportunity (EEO)*, provisions for fulfilling requirements for *disadvantaged business enterprises (DBEs)*, *minority business enterprises (MBEs)*, *women-owned business enterprises (WBEs)*, war veterans, and the handicapped may also be included in supplemental or special conditions in print so small as to defy readability, but nevertheless needs to be read, understood, and complied with.

Minimum hourly rates for skilled and unskilled labor are most likely established and included in the contract documents and certification of compliance required (Fig. 2-3), with the submission of weekly certified payroll costs on special forms provided in the bid documents (Fig. 2-4). These certifications, following the provisions of the Davis-Bacon Act, are to be strictly followed since falsification is a violation of federal law.

For the project superintendent embarking on the first public works project, it is critical to read all the bid documents, contract, and specification boilerplate. Noncompliance with some of those provisions contained in the documents may result in nonpayment of monthly requisitions, penalties of various sorts, and the potential for violation of public laws, resulting in fines and even jail.

In the special, general, and supplementary conditions, there are stipulations that will affect the way in which negotiations are to be concluded with subcontractors and methods by which EEO requirements are to be met. Some requirements may dictate how a site logistics plan is to be established, and other requirements may govern the various closeout procedures and requirements that must be addressed even before the job begins.

### The notice to proceed in a public works project

This document, generally in the form of a letter, sent to the contractor by the government agency is the official notification of the starting date of the contract—the date from which the contract time will be charged.

In some cases there are two notices to proceed. The first one is issued for mobilization of the contractor's field office (the contract time clock generally does not start with this notification), and the second one stipulates when the contractor is to commence construction—and this one *does* start the contract clock.

### Public works provisions that can affect subcontractor negotiations

Prompt-payment provisions are being included in an increasing number of public works projects. The pay-when-paid clause in most general contractor-subcontractor agreements is therefore nonenforceable when these prompt-payment clauses exist. These prompt-payment provisions typically state that the





Subcontractors are allowed the same overhead and profit as outlined above for the general contractor performing work with the GC's own forces.

Total subcontractor fees, including those of their subcontractors, cannot exceed the amounts stipulated above.

Requirements for payment for off-site storage of materials and equipment are frequently spelled out in these government contracts, and the methods by which payment is allowed are another important consideration when you are negotiating subcontract agreements. If materials or equipment is stored in a location any distance from the job site and off-site payment has been approved, there may be provisions in the general, supplemental, or special conditions requiring the contractor to reimburse the government-appointed inspector for any costs incurred to travel to the area and inspect the item being requisitioned.

Subcontractors need to be made aware of these provisions at the time of contract negotiations to avoid misunderstandings at a later date. The project superintendent should never assume that the subcontractor has read and understood all these miscellaneous provisions. It has been the author's experience that very few subcontractors thoroughly read all these special, general, and supplementary conditions; and when this is brought to their attention during the progress of the project, they seem upset that they are expected to abide by such provisions.

### **Change Order Clauses in Government Contracts— Enrichment and Betterments**

Some contracts may contain clauses stating that no changes other than those for project *enrichment* or extra work ordered by the owner's representative or architect will be approved. The term *enrichment* can have one meaning for the owner but a different one for the contractor.

For example, prior to the issuance of a building permit, plans and specifications are presented to, and reviewed by, local building officials and the fire marshal. If they are approved on the basis of this initial plan and specification review, a building permit is issued; it signals that all local and state requirements have been met and construction can begin. As the building nears completion, however, local building officials and the fire marshals visit the site to begin a series of final inspections. And often these officials may point out the need to install more exit lights or relocate ones already installed or to add more heat or smoke detectors or to install a few more emergency lights or possibly another floor drain in the kitchen, and so forth.

Typically this means that the subcontractor will request extra money to perform this work, and the general contractor will feel justified in preparing a change order for the owner—who will be reluctant to recognize these costs as *extra* to contract. Their argument will be based on the fact that these added items, and their costs, do not represent *enrichments*, but merely compliance with local and state requirements.

Payment of enrichments can be defended on the basis that if they had not been installed, no *certificate of occupancy (C of O)* will be issued, and without



the C of O the building cannot be occupied and is therefore worthless. This argument can also be used when you meet resistance from owners in the private sector as well, even though there is no enrichment clause in their contract. (*Note:* The provisions of AIA Document A201, 1997 edition, specifically mention that the contractor is *not* required to ascertain that the contract documents are in accordance with building codes. There is more on this subject in Chap. 3 under general conditions review.)

Administering contracts with public agencies can be a demanding task. The project superintendent should be thoroughly familiar with all phases of the contract requirements because they may be enforced to the letter.

### Looking for Those Onerous Provisions in the Contract with the Owner

Although the plans and specifications can contain some rather strict requirements or procedures, the contract for construction is where most of the onerous provisions find a home.

Rare is the owner who merely fills in the blanks in a contract form and attaches a standard AIA A201—General Conditions document to it. Owners will invariably amend both documents, adding pages of small print in the form of exhibits, special conditions, or supplementary conditions—and that is where many traps lie for those who don't take the time to read and understand *all* the terms of the agreement. Here is a sample list of some of the onerous provisions frequently added by owners and the sections of the general conditions contract, as amended, where they may be found:

#### Article 3—Contractor

1. With respect to shop drawings: "The contractor shall submit complete and accurate submittal data at the first submission. If the submittal is returned requiring re-submittal, only one (1) additional submittal will be reviewed at the Owner's cost. Any additional submittals will be reviewed at the Contractor's cost."
2. Schedules: "If any of the work is not on schedule, the Contractor shall immediately advise the owner, in writing, of proposed action to bring the Work back on schedule. In such event the owner will require the Contractor to work such additional time over regular hours, including Saturdays, Sundays and holidays, at *no* additional cost to the Owner, to bring the Work back on schedule."
3. Schedules: "If the contractor fails to take prompt and adequate corrective action (to get the project back on schedule) to the Owner's satisfaction, the owner reserves the right to perform such work as it deems necessary and to back charge the cost thereof against payments due the Contractor."
4. Contractor responsible for details not shown on the drawings: "The contractor has constructed several projects of this type and has knowledge of the construction and finished product." (If some minor portions of work are

omitted from the contract documents, and as the contractor, you are purported to have constructed several similar structures previously, you may be required to perform any such extra work at no cost to the owner.)

#### Article 4—Administration of the Contract

1. Extension of time and related costs: “Any extension of time in which to complete the Work granted by owner for items beyond the Contractor’s control shall be the sole remedy for any delay, hindrance in performance of the Work, loss in productivity, impact damages or similar claims.” This is known as a no damages for delay clause.
2. Deletion of the arbitration clause: “No arbitration clause is enforceable by any party under the contract documents. It is the intention of the parties under the contract documents that all disputes that cannot be resolved by negotiations shall be resolved by appropriate proceedings at law or in equity. “This puts a clamp, somewhat, on resolving small contractor claims quickly and economically. Are you willing to sue an owner for \$15,000 when the lawyer’s fee may meet or exceed that number?”

#### Article 7—Changes in the Work

1. “The owner at all times shall have the right to participate directly in the negotiations of Change Order requests with subcontractors and Material Suppliers.”
2. “If the Owner and Contractor are unable to agree on the amount of any cost or credit to the Owner resulting from a change in the work, the Contractor shall promptly proceed with, and diligently prosecute, such change in the work and the cost or credit to the owner shall be determined on the basis of reasonable expenditure and savings.” This means that you cannot refuse to perform extra work even if the cost of this work is in dispute prior to starting the work.

#### Article 9—Payments and Completion

1. Definition of *substantial completion*. This phase adds yet another requirement to meet: “Notwithstanding anything contained in the contract documents, the Work shall not be deemed substantially complete unless and until a Certificate of Occupancy is issued.”
2. “Unless otherwise agreed to in writing by the Owner, the project shall not be considered substantially complete if the items on the Punch List would reasonably require more than two calendar weeks to complete.”

#### Article 13—Miscellaneous Provisions

1. Applicable primarily to work in buildings being renovated or rehabilitated: “The contract shall review the structural capability of the structure prior to allowing installation of temporary lifting devices or staging equipment or the temporary off-loading and storage of materials. Costs associated with the architect’s review or re-design of structure to accept the temporary construction loading shall be borne by contractor.” In other words, you break it and you own it.

## Bonds and Insurance

These two terms are not interchangeable; insurance is a *loss sharing* mechanism that guards the policy holder from damages that may occur in the future; a bond provides *guarantees* of performance and completion to a third party, typically a project's owner.

A project superintendent should have a basic understanding of the types of bonds generally required in the construction industry and the various forms of insurance that owner, general contractor, and subcontractor will be required to carry before they can commence construction.

Let's discuss bonds first.

### Three Basic Types of Bonds

#### The bid bond

Requirements for bid bonds will be clearly indicated in the bid documents and generally require a bid security in an amount equal to not less than 10 percent of the bid amount. The purpose of the *bid bond* is to assure the owner that when the low bidder has been determined, the low bidder will be able and willing to proceed to enter into contract. The bid bond gives the owner protection against a contractor's declining to accept a contract after being declared low bidder. If such a situation occurs, then the contractor will forfeit his or her bid bond and all proceeds, up to the dollar value of the bond, will be used to cover any losses if another bidder is awarded a contract.

#### Payment bonds

The *payment bond* is sometimes referred to as a *labor and material bond* because its purpose is to ensure that the contractor will pay the subcontractors and material/equipment suppliers and all labor costs for work incorporated into the structure. The penal sum of the payment bond is usually the amount of the contract and requires the principal (contractor) to pay for all labor and materials promptly. If subcontractors or vendors are not paid within 90 days after they last worked on the project or delivered materials or equipment to the project, these claimants may *sue on the bond*, in other words, call the bond.

#### Performance bonds

The *performance bond* assures the owner that the contractor (principal) will promptly and faithfully perform in accordance with the terms and conditions of the contract. If the contractor does not perform, the owner (obligee) will notify the bonding company that will investigate the nonperformance. If the builder refuses or is unable to meet the performance standards incorporated in the contract, the bonding company may elect to engage another contractor to complete the work and use the proceeds from the defaulting contractor's

performance bond to pay all costs to complete the work, up to the penal sum of that contractor.

### Some Bond Terminology

*Calling the bond*—notification to the bonding company that the contractor or subcontractor has failed to live up to the commitment as stated in the contract and the bonding company (surety) is being requested to provide sufficient funds to cover these unsatisfied commitments.

*Consent of surety*—When a construction project has been successfully completed, all bills have been paid, and the provisions of the bond have been met, the contractor will request that the project owner sign off the bond so that the bonding company can be notified that all conditions have been met and the bond can be effectively terminated.

*Dual obligee*—When two parties have a financial interest in the project, such as the owner and the owner's lending institution, the bonding company will have a financial obligation to these two entities.

*Guarantor*—the underwriter or surety company.

*Obligee*—the project owner and others if there are dual obligees.

*Penal sum*—the amount of the bond (generally the amount of the contract).

*Premium*—the cost of the bond.

*Principal*—the contractor.

*Surety*—the bonding company (not the insurance agency transmitting the bond).

### Other Types of Bonds

There are *maintenance bonds* that provide an owner with assurance that the contractor will provide the required maintenance stipulated in the contract for the period of time so stated.

There is a *supply bond* which is usually required when special materials or equipment crucial to the completion of the project is needed. Custom-made equipment, possibly manufactured overseas, often requires supply bonds which include the cost to the project if the equipment is lost or damaged in transit, say, if the boat on which it was stored sank, or the train on which it was being transported was derailed.

A *lien bond* indemnifies the owner against the cost to remove liens filed against the property.

There are also license or permit bonds required by various government agencies. Many states require contractors to post bonds before they are given licenses to operate as contractors. Certain contractors such as road builders or excavating contractors are often required to post bonds to ensure that disturbance of

an existing public roadway will result in its being repaired/replaced in the exact manner prescribed by that government agency.

### **Federal agencies and bonds**

On all federal public works projects, where taxpayer money is involved, the Miller Act mandates that surety bonds on all such contracts in excess of \$100,000 be required. Most states have passed similar laws where projects involving state funds are concerned, and these laws are referred to as *little Miller Acts*.

### **The letter of credit**

This is another type of safeguard against contractor or subcontractor default. A *letter of credit* is issued by a bank, usually for 10 percent of a contract sum and callable by an owner if a general contractor defaults or by a general contractor if the subcontractor defaults. In case of default, those contractor or subcontractor funds secured by the bank would be dispersed to the owner or general contractor, as the case may be, if and when the default conditions spelled out in the letter of credit occurred. A letter of credit does not guarantee sufficient funds to complete the work, but limits the payment to the sum specified in that instrument. Unlike the bond, a letter of credit does not ensure that subcontractors or vendors will be paid or, in fact, that the project will be completed in accordance with the terms of the contract—it is an instrument that merely passes on a specific sum of money to the party so designated. Letters of credit are often used when an owner or contractor requires some form of financial surety and the requested party does not have bondability or has reached the limit of his or her bonding capacity.

### **Subcontractor Bonds Required by General Contractors**

Surety bonds are effective tools for shifting risks for possible subcontractor failure to a surety company. These surety bonds are three-way instruments: The surety guarantees to the general contractor that the third party, the subcontractor, will perform its obligation under the terms of their subcontract agreement. There are other instruments, such as subcontractor default insurance, that appear to offer the same protection of a bond, but there are distinct differences between the two. The bond covers costs up to the amount of the contract, but default insurance can have deductibles or copayments and defines *cost* and *expenses* above a certain minimum that the contractor must pay as a result of subcontractor default.

*The project superintendent will generally not deal with bond issues, except in those cases where subcontractors have been required to submit a bond as part of the terms and conditions of their subcontractor agreement. The superintendent should be alert to any signs that the subcontractor may be failing in the contract responsibilities and alert the project manager to those events that may portend calling the subcontractor's bond.*

## Subcontractor Default Insurance—a Bond or Insurance?

As mentioned in Chap. 1, construction is a risky business and the failure rate of subcontractors is higher than general contractors. A Surety Industry Organization (SIO) study of 2002 indicated that the failure rate for subcontractors was 28.4 percent and, as every general contractor knows, stability of their subcontracted work is essential to a successful project. With the rising cost of bonds and the more intense scrutiny of subcontractor financial statements by bonding companies, subcontractor default insurance (SDI) presents an alternative to the performance bond when several conditions exist.

The difference between a bond and SDI is that bonds create a three-way relationship—general contractor (obligee), subcontractor (principal), and surety. If a subcontractor defaults, surety investigates, and, if their investigation proves out, may either finance the subcontractor to complete their work or hire another subcontractor to do so.

In the case of a bond default, the investigation process can drag on and on, even though the general contractor needs to put work in place immediately.

One of the advantages of SDI is the way in which claims are processed. When an SDI claim is presented, the general contractor is free to continue the subcontractor's work and the insurer will reimburse the GC for the remedy it has chosen.

SDI is a two-party contract involving the insurer and the insured. General contractors can purchase insurance called subguard, which will cover all of their subcontractors at a savings of up to 50 percent of the cost of bond premiums. However, SDI policies come with a deductible in the \$500,000 range; bonds have no deductibles and SDI policies have upper limits and may not cover the entire value of all subcontracts.

SDI seems to work best for contractors subcontracting work valued at more than \$100 million per year.

## Insurance

Standard contract insurance requirements for a general contractor are generally limited to commercial general liability (CGL), contractor's professional liability insurance (CPL), and vehicle insurance.

### Commercial general liability

The CGL policy offers third party (owner) coverage to the contractor arising out of operations and premises that may be either owned by, or under the control of, the contractor. It provides bodily injury and property damage liability coverage on the contractor's premises or at the construction site. Generally, an owner will require a minimum of \$1,000,000 in general liability coverage.

**Contractor's professional liability insurance**

CPL protects the contractors from loss from a claim of alleged negligent acts, and errors and omissions in the conduct of their professional business. This insurance covers loss of client data, software or system failure, claims of non-performance, fraud and negligence. An owner will usually require coverage of at least \$1,000,000.

**Contractor's pollution liability insurance (CPL)**

Contractors working on renovation or building rehabilitation projects may need insurance to cover them against claims originating from contact with mold or mildew at the job site. In 2003 most basic insurance policies contained a Universal Mold Exclusion clause. To fill this gap, insurance companies began offering CPL. Subcontracted mold remediation work does not relieve the general contractor from a mold liability claim, so this type policy is important when embarking on a project in which mold is anticipated.

There are two basic coverage forms of CPL insurance:

1. Occurrence-based—coverage is provided for claims that occur during the policy period regardless of when they are reported.
2. Claims made—only claims made and reported during the policy period or extended discovery period (one to two years after the policy expires) are covered.

**Umbrella coverage**

As the name implies, this is policy provides liability coverage in excess of that provided by the basic liability insurance policy.

**Builders risk insurance**

Unless otherwise stated, builders risk insurance is furnished by the project's owner. This type of insurance, also known as *course of construction* insurance, provides coverage for loss or damage to any portion of the structure incurred during construction that has been paid for by the owner by virtue of having paid the contractor via a requisition covering that work.

There are two basic types of builder's risk:

All risk—covers all risks except those expressly excluded

Named peril—covers only certain risks identified in the policy

**Owner- or contractor-controlled-insurance programs—OCIP and CIP**

Controlled insurance programs, either owner or contractor controlled, are a new way to approach insurance coverage that has gained popularity over the

years, particularly on very large multimillion-dollar projects. An owner-controlled insurance program (OCIP) is generated by the owner of the project and replaces the need for the general contractor and their subcontractors to provide their own liability or other insurance coverage for the project. The theory is that one large policy can be written, which will produce a lower premium than a bunch of smaller, individual policies. Each subcontractor and the general contractor will advise the owner of their project insurance costs and issue a credit for those costs that are deducted from the contract sum.

Many OCIP policies require the general contractor and their subcontractors to provide automobile liability insurance and often to include worker's compensation insurance as well.

A contractor-controlled insurance program (CIP) would be similar to an OCIP except that the general contractor would buy the "bulk policy" and each subcontractor would provide a credit to delete the cost of insurance from their proposal.

### Workers compensation insurance

Every contractor is required by the state law in which they are operating to have worker compensation insurance. A general contractor or subcontractor's poor accident record can have a profound effect on the cost of this insurance and one year with a high accident rate will take three years of good safety experience to reduce those high premiums.

A project superintendent's enforcement of the company's safety program can have either a positive or negative impact on the worker's compensation insurance premiums, another reason to instill good safety practices on the job site.

These insurance premiums are established by the applicable state government according to the following formula:

$$\text{WCIP} = \text{EMR} \times \text{manual rate} \times \text{payrolls units}$$

where WCIP = worker's compensation insurance premiums

EMR = experience modification risk—the multiplier determined by the previous work experience of the contractor that is used to forecast future benefit payments to employees who have filed claims.

manual rate = rate structure assigned to each trade, which are classified as "families" based on their potential exposure to injury. Each "family" is assigned a four-digit number corresponding to their premium rate and takes into account the worker accident claim experience for that particular trade (i.e., laborer, carpenter, iron worker, etc.)

payroll units = number determined by dividing the contractor's (or subcontractor's) annual direct labor cost by 100.

### Glossary of Insurance Terms

**Additional Insured** An entity other than a named insured who is to be protected under the terms of the policy. For example, a bank loaning money to a



contractor may wish to be named as “additional insured” so that any proceeds from a claim may be used to pay off that loan.

**Aggregate Limit** The maximum amount of coverage that an insurer will pay for all losses during the coverage period of the policy.

**All Risk Insurance** A policy written against damage to the property to insure all risks of loss or damage, as opposed to a policy insuring against “named perils,” which are specific hazards that the policy insures.

**Annual Aggregate Limit** The maximum amount payable under an insurance policy for all losses occurring within a calendar or fiscal year.

**Blanket Insurance** A policy that covers more than one property or two or more types of property in different locations.

**Business Interruption Insurance** When a temporary shutdown of a business occurs as a result of physical damage to their property or to another’s property, the ability to continue operations becomes impacted. This type of insurance usually provides for payment of salaries, taxes, rent, and other continuing expenses along with loss of net profits that would have been earned had not the shutdown or interruption occurred.

**Coinsurance** A provision that obligates the insured to purchase insurance to a specific percentage of the total value of the insured property or to bear a fraction of each loss in proportion to the deficiency in the amount of insurance purchased.

**Combined Single Limit** The limit of liability coverage for bodily injury or property damage.

**Endorsement** Document attached to a policy that modifies the policy’s original limits.

**Excess Limits** Limits of liability that may be purchased in excess of the limits included in the basic policy.

**Fidelity Bond** Insurance that covers an insured employer against loss of money or other property as a result of the theft by a dishonest employee.

**Products Liability Insurance** Coverage protecting the insured for liability arising out of defects in products manufactured, sold, or distributed by the insured.

**Professional Liability** Liability for injury, personal injury, death, and property damage arising out of the negligent act or omission of a professional (architect, engineer, and attorney as they relate to the construction industry).

**Single Limit** Maximum of the insured’s liability for all types of bodily injury, property damage, or personal injury claims arising out of one accident, regardless of the number of persons incurring the injury or accident.

**Retro Date** The inception date of the first policy written on a claims-made basis.

**Split Limit** Separate limits for bodily injury and property damage claims. These policies contain three separate limits: one for bodily injury to each insured person, one for bodily injury to two or more injured persons in the same accident, and one for property damage per accident.

**Subrogation** The legal right of anyone who has paid an obligation owned by another to collect from the party originally owning the obligation. For example, an insurance company, after paying the insured for damages may attempt to recover those costs from the third person who actually created the damage in the first place.

**Subrogation Waiver** A waiver by the named insured giving up any right of recovery obtained from another party.

**Tail** An insurance term referring to the lapse of time between the occurrence of an accident and the eventual resolution of the claim.



## End of Lesson Wrap-Up

Congratulations on completing this lesson! You've taken another important step in your journey to becoming a certified professional in the construction industry.

### Up Next: Quiz Time

Before we move forward, there's a short quiz waiting for you. Remember, this quiz isn't designed to trip you up but to reinforce your understanding of the concepts we've covered. It's a way to ensure that you have grasped the essential elements of the lesson and are ready to build on this knowledge in subsequent modules.

### You're Doing Great!

You're doing an excellent job so far, and we encourage you to keep up the momentum. Every quiz and lesson is a building block towards your ultimate goal of certification and professional advancement.

### See You in the Next Lesson!

We are excited to continue this journey with you and look forward to seeing you in the next lesson. Keep up the great work and stay motivated—your future in construction management looks promising!

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Keep learning, keep growing, and remember, we are here to support you every step of the way. See you soon for more learning and development

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