GUIDELINES

FOR A SUCCESSFUL CONSTRUCTION PROJECT

THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA

ASC

American Subcontractors Association

Guidelines For A Successful Construction Project
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Mission Statement

The Associated General Contractors of America, the American Subcontractors Association, and the Associated Specialty Contractors have agreed to work together to develop, maintain and promote *Guidelines for a Successful Construction Project.* The Guidelines represent the joint efforts and approval of these organizations who will continue to address industry concerns as the need arises.

A. Introduction & Overview

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A.1
Guideline on General Contractor-Subcontractor Relations

Preamble

The primary objectives of every general contractor and subcontractor are to successfully deliver to the owner the specified project safely, on time, at the contract price and achieve a reasonable profit in return for performance of its work. Regardless of personal pride, business philosophy, contractual authority or years of experience, no general contractor can deliver a project successfully without the cooperation of competent subcontractors.

Similarly, no subcontractor, regardless of skill and experience in its specialty, can perform its work successfully without the corresponding measure of cooperation and leadership of a competent general contractor.

Both seek a business relationship on which they can depend. Usually, each wants to continue to do business with the other on future projects as well as those at hand. Skill, integrity, fairness, trust, respect, and responsibility will make the contractual relationship—now and in the future—possible, profitable and pleasant.

Contract Documents

A written contract document usually establishes the framework for the relationship between the general contractor and the subcontractor. To foster cooperation, the subcontract should be fair to both parties and non-adversarial. Experienced participants in the construction industry know that no architect/engineer can prepare a perfect set of documents, and that no general contractor or subcontractor can perform perfectly. Likewise, contract documents cannot detail every industry practice or anticipate every crisis or situation that will arise at the site. Mistakes will occur and miscommunications will arise. Most general contractors and subcontractors solve their problems without resorting to litigation. Errors and omissions, when discovered and made known in a timely fashion, can generally be overcome with minimal damage to all concerned. Mistakes that are admitted and corrected immediately are the least costly mistakes.

Project Culture, Trust, and Teamwork

Key to successful construction relationships is mutual trust which must be nurtured to develop a positive project culture. Keeping everyone on a project working together in a harmonious fashion, without unduly delaying or damaging others, is a highly complex task requiring the utmost coordination, cooperation, communication, and sometimes, compromise. As difficult as it may be, this is what makes a project profitable and the construction industry rewarding *(see D.2.a.Communication and D.2.b.Project Meetings)*.

Each general contractor and subcontractor on a project should be regarded with equal respect. Each is an expert in its own field. Ethical conduct, regardless of contractual "rights" or ability to make another firm suffer, is essential for harmony. The golden rule, "Do unto others as you would have others do unto you," is still the best guideline in dealing with other individuals and businesses.

Contractors should also assist architects, engineers and owners by advising them, when requested, on relative costs of alternates while plans are being prepared so as to reduce the number of alternates.

The following guidelines, developed by the Associated General Contractors of America, the American Subcontractors Association, and the Associated Specialty Contractors, provide suggestions for mutually profitable and ethical general contractor-subcontractor relations. These are arranged in the chronological order of the construction process.

Pre-bid phase

1. The general contractor should issue bid invitations to subcontractors, in sufficient time for subcontractors to review the project documents and prepare responsible and responsive bids *(see B.1. Bidding Procedures)*.
2. The general contractor should make the project financing information available to subcontractors before the deadline for subbids *(see A.2. Owner's Ability to Pay)*.
3. The general contractor should furnish any special bid proposal forms required and make necessary bidding documents reasonably available to subcontractor bidders. General contractors receiving subcontractor bids, as well as subcontractors receiving

sub-subs' bids, should provide a convenient plan room or make documents available via the Internet for subcontractors' use in preparing estimates.

4. The general contractor should promptly make bulletin and addenda information available to bidding subcontractors.

5. Each subcontractor should deliver to the general contractor, at least 24 hours before the bid hour, a written bid without dollar amount, setting forth its proposed scope, alternates, unit prices, addenda and/or bulletins to be included. The scope should reference specification divisions or sections and specifically identify any omissions or additions.

6. Proposals should not be invited, accepted, or considered from any subcontractor or supplier known to be unqualified to perform the proposed work or render the specified service, or from one who, for some reason, has no genuine possibility of being awarded a contract.

Bid period

1. The subcontractor should submit its finalized bid dollar amount and any necessary clarifications to the general contractor at least four hours before the general contractor bid hour. The general contractor should establish for all bidders a cutoff time for receiving subcontractor bids, make it known, and adhere to it.

2. Subcontractors should not quote on unapproved substitutions, except as an alternate.

3. The bid amount of one competitor should not be divulged to another before the award of the subcontract or order, nor should it be used by the general contractor to secure a lower proposal from another bidder on that project *(see B.4 Bid Shopping & Bid Peddling).* If a bid is so low in comparison with other bids as to suggest clearly an error, the general contractor should notify the subcontractor immediately that its bid appears to be out of line. The subcontractor should either withdraw or stand on its bid, but not modify it.

4. Fair and bona fide competition is a fundamental service the industry brings to its customers. Any act or scheme to restrict or suppress free and fair competition by any method is a breach of faith and a betrayal of principles. Any false or malicious word or act that would harm, or is intended to harm, the reputation of a competitor is unethical.

5. The amount of a bid should not be altered after the opening, nor should alterations be requested, except when a substantial change is made in the work *(see B.1 Bidding Procedures).*

Award of contract

1. Upon execution of the general contract, the general contractor should promptly award subcontracts at the bid amounts to responsible subcontractors whose bids were used in the preparation of the general contractor's bid. Subcontract terms should be the same as those in the owner-contractor agreement as related to the subcontractor's work. The interests of all parties in the construction process are well served by each being fully aware of its responsibilities and rights. All parties should pursue a full understanding of their contract obligations; those included by reference as well as express terms. Likewise, a full understanding of surety bond obligations, if any, and rights of claims against such bonds should be pursued.

2. The general contractor should establish a progress payment procedure and schedule which is approved by the owner and issue copies to the subcontractors upon request. The general contractor should promptly coordinate with the owner's payment approval authority to assure that the procedure and schedule will be followed *(see D.3.f. Prompt Payment).*

3. The general contractor should issue each subcontractor a timely written "notice to proceed" for the subcontractor's work and promptly notify the subcontractor of any changes in such date.

Pre-construction conference

The general contractor should arrange for and conduct a preconstruction conference as soon as the schedule has been prepared *(see C.1. Pre-construction Conferences* for more detail beyond the summary outlined below). A responsible representative(s) of each subcontractor, major supplier, the architect/engineer and owner's representative should attend. Detailed minutes should be recorded and

distributed to all such parties on the project. The purposes of the meeting are:

1. To introduce members of the team to one another and establish the project communication procedure *(see D.2.a. Communication);*
2. To review the job schedule prepared by the general contractor and ascertain that a reasonable time has been allowed for performing the work of each trade *(see B.2. Project Scheduling, Delays, and Liquidated Damages);*
3. To coordinate the submission of shop drawings and samples;
4. To set up change order procedures *(see D.3.d. Procedures for Change Orders);*
5. To list all initial questions that will require an answer from the architect/engineer or owner's agent;
6. To ascertain whether there are likely to be any labor or material problems which could seriously impede progress of the project;
7. To establish how non-contracted services for cleanup, temporary facilities, etc., will be authorized and charged *(see D.3.e. Charges for Non-contracted Construction Services);*
8. To describe temporary facilities for the project and establish parameters for their use *(see D.3.e. Charges for Non-contracted Construction Services and C.4. Site Logistics);*
9. To explain punch list procedures *(see D.5.b. Punch List Procedures).*

Scheduling

A workable project schedule is absolutely essential for a successful project *(see B.2 Project Scheduling, Delays, and Liquidated Damages).* It should be prepared by the general contractor with input from major subcontractors and suppliers. Failures to meet schedule requirements hurt all members of the team. Effective scheduling incorporates the following concepts:

1. The general contractor should only require a subcontractor on site when the project is ready for that subcontractor's work. The general contractor should strive to coordinate the project in such a manner as to permit subcontractors' work to proceed in a reasonable and logical sequence and manner.
2. A network diagram showing the critical path and clearly showing when each subcontractor is to start and complete the various portions of its work is a valuable tool. The general contractor and each subcontractor should be sure to understand the particular schedule used.
3. Conflicts in the project schedule should be discussed when they arise. Resolution frequently necessitates compromise.
4. The schedule should be continuously monitored, updated and issued to all project participants on a periodic basis (weekly or monthly depending on project size and complexity)
5. When a schedule change is made, each subcontractor affected should be notified immediately.
6. Dates for delivery and installation of heavy equipment should appear on the project schedule. Access for such equipment installation should be maintained accordingly.

Shop drawings and samples

The subcontractor should plan and schedule shop drawings and sample submissions in a logical sequence with input from suppliers involved and coordinated with the general contractor. The sequence must:

1. Allow for the project's established approval process turnaround time.
2. Prioritize subcontractor submittals to obtain approval for the longest lead time deliveries first.
3. Comply with the project schedule.

Building codes

Strict compliance with all local and national building codes should be observed and maintained.

Safety

Precautionary measures should be introduced and observed to ensure safety and protection of the public and those engaged in the industry. Subcontractors must abide

by the safety requirements established by the general contractor as well as those of their own safety programs and applicable jurisdictions.

Payments

Prime contractors should make payment promptly and in just proportion to work done by subcontractors and suppliers, and any changes in retained percentages should likewise be passed along in proper proportion *(see D.3.f. Prompt Payment)*.

In like manner, it is expected that the subcontractor will pay promptly for all its labor and material as far as executed, and should submit evidence of this fact to the general contractor if requested *(see D.3.f. Prompt Payment)*.

Retainage

Percentage retentions by the owner with respect to the general contractor and by the general contractor with respect to subcontractors are for the purpose of assuring completion of the work. Any manipulation of retentions for any other purpose, such as a credit device, is an improper use of others' money. Any adjustment of the retained percentage in the general contract made during the course of construction should be equally, proportionately, and promptly applied to the subcontract interest. A subcontractor that has completed its work properly should not be penalized by having final payment withheld because some other contractor has not completed its contract.

Project closeout

All parties must work throughout the project with an eye towards the final completion and acceptance by the owner. As a result, Project Closeout procedures must be integrated into all phases of the work beginning at contract award *(see D.5.a. Project Closeout)*.

A.2
Guideline on Owner's Ability to Pay

Delays or defaults by owners in meeting contractual payment obligations to contractors are a continuing cause of litigation, liens, long delays in completion of construction, abandonment of contracts, and bankruptcy of contractors and subcontractors. Qualified contractors often are unwilling to bid on projects for owners whose financial capacity and credit rating are not widely known. This results in reduced competition and the possibility of higher bids to the detriment of the owners.

The problem has been partially addressed in standard contract documents. For example, ConsensusDOCS 200 Standard Form of Agreement and General Conditions Between Owner and Contractor (2007 edition) states in sections 4.2 and 11.5.2.1:

> *Prior to commencement of the Work and thereafter at the written request of the Contractor, the Owner shall provide the Contractor with evidence of Project financing. Evidence of such financing shall be a condition precedent to the Contractor's commencing or continuing the Work. The Contractor shall be notified prior to any material change in Project financing.*
>
> *In addition, upon seven (7) days' written notice to the Owner, the Contractor may terminate the Agreement if the Owner:*
>
> *.1 fails to furnish reasonable evidence prusuant to Paragraph 4.2 that sufficient funds are available and committed for Project financing…*

Even though these clauses alert owners to the need to provide such "reasonable evidence" before construction can commence and during the course of the project, they may not completely reassure contractors who are considering bidding the work and investing many thousands of dollars in the process of preparing their bids. Furthermore, the requirement of "reasonable evidence" may be vague and cause misunderstandings.

The owner may have made financial arrangements to fulfill its obligation, but that does not necessarily mean that procedures have been established to assure that contractors will, in fact, receive timely payments and will not be forced to borrow working capital with interest to pay their ongoing expenses on the project. A trouble-free arrangement from the beginning to the completion of the construction requires that the owner have a sufficient commitment from a lending institution or other source of construction capital. This includes funding to make all progress payments and final payment promptly as provided for in the contract documents, as well as to pay for changes and any damages for which the contractors are entitled to reimbursement.

It is not advisable for construction contracts to be executed unless all necessary funds to pay for the construction have been placed on deposit, or unless all of those who bid on the project have full knowledge of deficiencies in funding before preparing bids or signing contracts. It is improper for any payment delay of even one day to occur because of administrative lapses or because release of funds is deliberately delayed while waiting for certificates of deposit or investments to mature. Such actions pass on to contractors the responsibility of financing the project, which should normally not be a contractor obligation. A means of avoiding these difficulties might be for payments to be issued to prime contractors by the lending institution or a title company from loan commitments. In addition, when a project is constructed with borrowed funds then the loan should be tied to the contract retainage provisions, so that there is an obligation by the lender, as well as by the owner to pay retainage *(see D.3.f. Prompt Payment).*

In order to obtain the most competitive bids, owners should furnish current written information needed by general contractors and subcontractors to enforce lien and bond rights. The following procedure is suggested to owners and to architects and engineers for recommendation to owners at the time bidding documents are being prepared:

- Invitations for bids should contain clear statements that the owner has made sufficient financial arrangements for the completion of the project and administrative arrangements for timely disbursement of every payment, including change orders and claims.
- Bidders should be invited to make inquiry about these arrangements so that they may satisfy themselves about financial details.
- Inquiries from contractors who have been invited to bid the project should be answered quickly and candidly by the owner and/or the construction lender.

In the case of governmental bodies, statements that necessary funds have been appropriated for the financing of the project by legislative bodies having appropriation authority or that necessary bonds have been sold and funds are on deposit will serve the same important purpose. Bidders who once felt confident in bidding to governmental bodies may have lost such confidence due to a number of governments which have defaulted or approached default on obligations. Because of the reputation of many governmental bodies of delaying payments due to procedural red tape, it is especially important that bidders on public works have clear assurances that such delays will not occur.

A.3
Guideline on Contractor's Payment Rights, Obligations, and Responsibilities

1. One of the most important aspects of the construction process is timely and complete payment for work accomplished.

2. At times, contractors fail to do adequate due diligence in determining the terms and conditions for payment. In addition, many contractors do not understand their rights to determine whether or not an owner, under contract with a general or prime contractor, has the ability to fund the construction project.

3. The responsibility of the contractors and subcontractors is to:

   - Understand the payment terms and conditions of their contracts.
   - Confirm the owner's ability to pay for services provided.

4. The following is a checklist to assist you in understanding your payment entitlements and obligations.

   It is imperative that all parties review the contract or subcontract before entering into such agreements.

   It is your responsibility to review the specific payment terms and obligations spelled out in the contract with the owner and/or your subcontract with a prime contractor.

   It is your responsibility, if a general contractor, to research the owner's ability to pay for the project and to convey such information promptly upon request to all members of your construction team at the outset and during the course of the project, including:

   - Total Financing Amount
   - Current Contract Amount
   - Pending Amount of Change Orders and Extras
   - Contingency Funds Available

   It is your responsibility, if a subcontractor, to research the owner's ability to pay for the project and the general contractor's ability to pay those with whom it has contracts for goods or services.

   It is your responsibility to understand the adequacy and source of the money for each project. You have a right to this information upon request. In most cases, there will be a financial arrangement in place: e.g. loan, line of credit or owner supplied funds. It is appropriate for you to assure yourself that enough money and/or credit is in place and that you understand the terms under which the money/credit can be accessed *(see A.2. Owner's Ability to Pay).*

   It is your responsibility to understand the billing process of the owner, contractor, and lender. Each of their specific requirements could lead to significant delays in actual payment. Ensure that your payment forms are submitted in a timely manner, as prescribed by contract, and that each requisition is complete. Changes, revisions, or incorrect billing forms may delay payment in some cases until the next billing cycle *(see D.3.f. Prompt Payment).*

   You must understand your obligations as required by the contract. If you are not in complete compliance with your contract, it may affect your ability to collect on the work that you have completed.

   It is your right to obtain any information deemed appropriate to your work on the project. This includes any financial conditions, terms, and the ability to change or modify those terms and conditions. It is important that your contract spell out if any of the financial conditions change for the project, you are to be notified in advance.

   Understand your bond rights, if any, and applicable lien laws. Avoid the premature waiver of any bond or lien rights and file all required bond and intent to lien notices promptly.

   Understand the conditions of your contract as to when you are entitled to stop work, if necessary, for lack of payment. It is important that you retain the contractual right on each project to stop work, or to terminate, in the event of nonpayment for properly performed work

   Understand, however, that you must have complied with all terms and conditions of your con-

tract before actions allowed by the contract provisions can be exercised.

5. **The person most responsible for prompt and complete payment is you. Protect yourself and your company.** Understand and research the payment requirements of each individual project and the owner's ability to pay. It is not only your right but also a prerequisite for your success in the construction industry.

A.4
Guideline on Design Responsibility

All owners, architects and other design professionals are urged to uniformly accept responsibility for design-related plans and specifications applying to construction projects. This design responsibility includes drafting complete specifications for inclusion in project bidding documents, initiating or approving all design-related additions, deletions and changes to project specifications and accepting ultimate responsibility for the safety and utility of all project design elements. For design-build projects, the responsibility for the plans and specifications must be extended to the design-build entity in order to ensure project success.

Delegation of professional services which constitute the practice of architecture or engineering, should ordinarily be limited to manufactured products such as curtain walls and elevators, and then only subject to constraints including the following:

1. The owner and architect must specify all performance and design criteria that these professional services must satisfy.

2. All such services must be specifically required in the contract documents and not be in violation of any applicable law.

3. The architect, or other owner designated design professional, must approve all design-related work performed by others and coordinate the overall design integration, safety of the public, compliance with codes and other legal or owner requirements as contracted. With respect to other than the manufactured products themselves, the architect or other owner designated design professional shall accept and retain sole responsibility for overall design.

4. Contractors and subcontractors must not be held responsible for the adequacy of the performance or design criteria indicated by the contract documents.

5. The use of inappropriate or unclear specifications ordinarily increases costs to the owner. Higher bid prices, frequent change orders, and lost time usually result when design documents lack clarity or fail to adequately integrate the work of individual trades. Attempts to shift design responsibility to the contractor impose an unquantifiable risk on the contractor that may increase the owner's cost without shielding the owner against liability to others.

6. Specification divisions for each trade must be clear and complete. Phrases such as "intended results," "including but not limited to" and "reasonably inferable" create bidding uncertainties, result frequently in claims and lessen the owner's chances that the project will meet its expectations *(see also B.3. "Scope" Bidding for Private Work).*

7. Review of design drawings and documents by the contractor should be for the purpose of facilitating construction and not impose on the contractor a duty to discover errors, omissions or inconsistencies. It should be recognized by all concerned that the contractor's review is made in its capacity as a contractor and not as a design professional.

8. Review and approval of contractor submittals by the designer is another area that can create distress for the project team. Some designers will "approve" a submittal with an approval stamp that contains language absolving the designer of responsibility for any mistakes in the review process. During contract negotiations and initial meetings between the owner, designer, and construction team, this issue should be frankly discussed.

Long experience demonstrates that a clear division of responsibility between the architect, as designer, and the contractor, as builder, offers an effective way to achieve fast, safe, and economical construction results.

A.5
Guideline on Liaison Committees: Starting or Expanding an Existing Program

The AGC-ASA-ASC *Guidelines for a Successful Construction Project* are available online at *www.constructionguidelines.org.* The guidelines may be used as a framework for local industry discussions. They may be distributed by individual contractors to their customers as a vehicle for bringing about a better understanding of the complexity of the industry. Architects, consulting engineers and members of construction users' groups should receive personally delivered copies.

Starting a construction industry liaison committee

In those areas of the country where some form of an industry liaison committee now exists, much has been done to jointly develop solutions to many of the vexing—but unnecessary—problems that may occur in the working relationship between general contractors and subcontractors.

Use and implementation of the *Guidelines,* adapting them where required to fit local needs, will strengthen and improve the efforts of existing committees. Where such an effort has not yet begun, the *Guidelines* can be invaluable in initiating a productive and ongoing program. All local leaders of AGC, ASA and ASC have access to the *Guidelines* and related documents.

How to get going

I. To gain maximum support and strength from your chapter members, establish an industry liaison committee within your chapter, including the chapter manager or executive director. Members of this committee may then serve as members of an industry liaison committee. Take the initiative to organize an informal industry liaison committee.

II. At the first industry liaison committee meeting, plan a meeting of the members of all of the local construction association chapters and members of sponsoring organizations not having chapters. Organize a thorough and frank discussion of the *Guideline on Better General Contractor-Subcontractor Relations (see A.1. Contractor-Subcontractor Relations)* and other contents of the *Guidelines.*

a. Go over carefully the materials contained in the *Guidelines for a Successful Construction Project* so that all committee members are familiar with the material. Discuss each item thoroughly.

b. Go over the list of the prearranged meeting items. Get the information your group needs and keep the discussion on a high plane—don't be argumentative.

c. Based on the meeting comments, and where practical, plan to initiate those actions that representatives feel are necessary or helpful.

d. If a controversy exists, find out the reasons and seek a mutually acceptable solution. A start towards a reasonable approach to common problems is a significant accomplishment.

III. Take action with respect to holding future meetings of the entire industry liaison committee and of the subcommittees or task forces which can carry out many of the committee's programs between full committee meetings.

a. It would be advisable, for subsequent meetings of the full committee, for the chairperson to be alternated among the members, so that all groups have an equal role. Make a full written report of committee discussions and agreements and distribute them promptly to all committee representatives.

b. In the interest of continuity, it is quite helpful to have permanent members from all organizations—rather than rotating membership.

c. Make distribution of copies of the *Guidelines* to local architects, consulting engineers and owners a priority objective of the industry liaison committee.

B.1
Guideline on Bidding Procedures

Most construction projects in the United States are competitively bid. However, bidding procedures from one geographic region to another frequently vary widely. This variety has become an increasing industry problem as owners, design professionals, contractors and subcontractors more frequently move from construction market to construction market.

As a result, there is a need to establish more uniform guidelines for bidding competitively-priced projects in order to reduce confusion, increase fair competition and lower construction costs. Some key concepts for bidding are summarized below:

Advertisement for Bids

Owners should advertise the availability and distribution of bidding documents as far in advance as possible, but no later than 30 days prior to bid document issue. An advertisement should contain a short description of the project, including bid date, time, approximate contract amount, approximate size, project location, licensing requirements, plus bid and performance and payment bond requirements. It also should state the date of document availability, location of documents, and deposit and refund information. The advertisement should be circulated to both individual prime and major subcontractor and material supplier prospect bidders, placed in construction publications and posted in plan rooms.

Bid Documents

Bid documents should be complete before they are issued. For small or simple projects, at least two weeks should be allowed for bid preparation. If a project is large and/or complex, four to six weeks or even more may be necessary.

Bid documents should be made available to a sufficient number of bidders to foster competition. Thus, the owner should furnish each local plan room with at least four complete sets of bidding documents. In addition, the owner should provide each prime bidder with at least four sets of bidding documents for its use and the use of its subcontractors and suppliers. Major subcontractors also should be provided, by the prime bidders, with a copy of the bid documents. Any prospective bidder should be afforded the opportunity to obtain complete sets of documents through a plan deposit system and/or to purchase partial or complete sets directly from a printer or the architect.

Recent developments in the use of "electronic plan rooms" have increased the availability of project information to multiple users. Owners and general contractors are encouraged to investigate and implement web-based plan access to maximize plan availability while minimizing cost.

Plan Deposits

In order for an owner to receive the best possible price on a construction project, it is important that all bidders on the project (prime contractors *and* subcontractors) have access to the most accurate and complete plans and specifications. It is in the interest of owners to provide sufficient sets of drawings and specifications to permit all interested contractors, subcontractors and material suppliers to prepare accurate bids. A fee for the use of such plans, when added to the contractors' other estimating costs, can be a factor limiting both quantity and quality of the bids on the project since only successful bidders can recover these costs.

Deposits, not exceeding reproduction costs for the plans, are reasonable. There should be a provision, however, for prompt refunds in full to anyone who pays the deposits and who submits a bid or sub-bid on the project and returns the plans within 30 days after bid opening (if its bid was unsuccessful) or who returns plans promptly after examining them and making a decision not to prepare a bid.

Further, it is reasonable to charge reproduction costs for plans to those material suppliers or bidders on smaller subcontracts who wish a set of plans for their own exclusive personal use, yet for whom plan room or borrowed sets of plans would normally be adequate for careful bid preparation.

With these facts in mind, and in order to promote the best, most careful and complete bidding on all projects, an adequate number of plans to permit careful preparation of bids should be provided to interested parties at no cost to bidders who return such plans within 30 days after bidding.

Scope Letters

Each sub bidder should submit a written scope letter to the prime bidder at least 24 hours before the bid time.

The scope letter should contain any information the prime bidder needs to evaluate the sub bidder's bid, including its proposed scope, alternates, unit prices, addenda, and/or bulletins to be included. The scope letter should reference specific divisions or sections and specifically identify any omissions or additions. Each sub bidder should submit its final bid dollar amount and any necessary clarifications to the prime bidder at least four hours before the prime bidder's bid hour. The prime bidder should establish a cutoff time for receiving sub bids, make it known, and adhere to it.

Ethics In Bidding

The bid amount of one competitor should not be divulged to another prior to bid time, nor should it be used by the prime bidder to secure a lower bid proposal from another bidder on that project. A subcontract bidder or supplier also should not request information from the prime bidder regarding any sub bid prior to the award of the subcontract *(see B.4. Bid Shopping and Bid Peddling for more details).*

Owners should publicly open and read aloud the bids. Construction contracts should be awarded to those responsible and responsive bidders, at all levels of the project, which submit the low bids for their portions of the work prior to bid time. Bids should not be held longer than 60 days without an award being made.

Bid Errors and Adjustments

If, after bids are opened, a low bidder claims it has made a material error in the preparation of its bid and can support such a claim with satisfactory evidence, it should be permitted to withdraw its bid, without forfeiting its bid security. Under no circumstances should a bidder be allowed to adjust its bid price as a result of an error in its bid. If the owner opts to re-solicit bids for the project, the erring contractor should not be allowed to bid for the contract, unless precluded by local, state, or federal law.

Some construction owners allow a low bidder who can demonstrate an error in its bid to upwardly adjust its bid price to the extent of the error. The low bidder will be awarded the contract at the adjusted price so long as that price, as adjusted, is still below that of the second low bidder.

Allowing a low bidder to adjust its price under any conditions, other than change orders issued after the contract is underway, undermines the entire system of competitive bidding and is an open invitation to abuse.

Use of the following procedures is recommended when a bid error is discovered:

> When an apparent low bidder discovers an error in its bid price, it shall have the following options:
>
> 1. The low bidder may, at its option, confirm its original bid price; or
> 2. The low bidder may withdraw the bid, without penalty or forfeiture of bid security if it establishes that a valid computational or transcribing error resulted in an unintentionally low bid, but shall not be allowed to re-bid the job under any circumstances.
>
> The owner shall then have the option of awarding the contract to the second low bidder or of re-soliciting bids for the project. In the event the project is re-bid, the former low bidder shall not be allowed to bid for the contract. Unless required by statute, no adjustment in bid price should be allowed a bidder as a result of an error in its bid.

If a subcontractor bid is so low in comparison with other bids as to suggest clearly an error, the general contractor should notify the subcontractor immediately that its bid appears to be out of line. The subcontractor should either withdraw or confirm its bid, but not modify it. The American Society of Professional Estimators has prepared even more detailed *Bidding Procedures for Competitively Bid Construction Projects.* It is available online at *http://www.aspenational.com/RecommendedBiddingProcedures.htm*

Other references include:

> *Recommended Guide for Competitive Bidding Procedures and Contract Awards for Building Construction* published by AGC and the American Institute of Architects:
> *http://www.agc.org/contracts*
> *http://www.aia.org/documents/*
>
> *Recommended Competitive Bidding Procedures Construction Projects* published by the Engineers Joint Contract Documents Committee:
> *http://www.asce.org*

B.2
Guideline on Project Scheduling, Delays, and Liquidated Damages

Proper project scheduling and avoidance of delays are critically important. When the owner has decided to include liquidated damages in the contract, or reserves the right to pursue un-liquidated, consequential damages, then the owner's design team must become involved with the pre-bid scheduling process, including the following:

- Review critical lead-time items: e.g., steel, mechanical equipment, electrical distribution equipment, etc.
- Determine in advance (within the time constraints available) that the major equipment and supplies can be purchased and delivered (within the time constraints available).
- Determine in advance that responsible marketplace participants can deliver this type of project within specified time constraints.
- Consult with knowledgeable and experienced construction contractors about all aspects of the proposed construction project and schedule.

Only after all of the above elements have been undertaken should the request for proposal (RFP) or invitation for bid (IFB) process go forward. To expect the construction industry to meet the owner's requirements without owner implementation of the above action items allocates unreasonable risks to the construction contractor and adversely impacts project costs.

Contractor Review

The contractor review of the construction documents and schedule must be a realistic assessment of the project to provide critique and direction for the owner and design team before the contractor completes the pricing process. This review is essentially a marketing opportunity for the contractor that is honest and up-front with the owner, and comes prepared with the documentation necessary to back up its assessment.

When the construction contractor bypasses this step, the contractor assumes the risk of accepting a project that has no chance of meeting the project schedule.

In addition, the major subcontractors and suppliers must accept their responsibility to review their areas of expertise for inclusion in the information stream in electing to "go" or "not go" with the project. If a major subcontractor bypasses this step, it assumes the risk involved in not completing the project on schedule.

Schedule Documentation and Communication

Documentation of schedule and a communication plan must be comprehensive. Every tier of contractor, subcontractor and supplier must have access to complete plans, specifications, and the project schedule to be fully informed of risks involved in non-performance.

Any subsequent variation to the projected schedule must be communicated up and down the project ladder. Without this communication, significant risk in project expansion or contraction is assumed by those who do not communicate *(see D.2.a.Communication).*

Team Responsibilities

The design team accepts an enormous responsibility for drawing review, submittal review, change order approval, and the impacts of tardy review and return. Contractors must assume the responsibility for timely submission and its impact on the project schedule, but the design team must provide its review in time to meet schedule guidelines.

The entire construction team must understand that each member is responsible for its performance in the project schedule. Any hitch or stumble affects the entire process and creates risk for claims by downstream contractors. Project expansion and contraction are two of the risks involved.

Project Closeout

Project closeout and delaying the processing of change orders until the end of the project, create risk in completing and finalizing a construction project. It is unreasonable to assume lower-tier contractors must wait for their payment while the paperwork for changes they were directed to complete is delayed. While the owner may be using the building, the construction contractor incurs an increased financial burden, possible claims for non-pay-

ment on change orders and potential litigation *(see D.5.a. Closeout, D.3.c. Consequential Damages, and D.3.k. Retainage)*.

Team Relationships

Utilizing project relationships to the detriment of a team member of one project in the hope of winning a future project is irresponsible. This practice should be discouraged by any team member, including the design professionals and prime or lower-tier contractors.

While utilizing the partnering process is a good start, a quality project is the goal, and success for the entire project team must be the vision to strive for, including the on-time, on-budget successful completion of the owner's project *(see C.2. Partnering)*.

B.3
Guideline on “Scope” Bidding for Private Work

So-called "scope" bidding has proliferated in recent years in relation to traditional competitive bidding. On the one hand, the concept has introduced flexibility in contract administration that is useful and desirable. However, the concept has also introduced an uncertainty and an extreme risk to contractors and subcontractors by implying responsibility and liability for added work under the "scope" concept which the contractor and subcontractor could not have deduced was required from the information given on the scope documents. Note that the concerns in this guideline may not be applicable to Design-Build delivery methods.

Concept Overview

The "scope" document may appear in the form of a stamp on the plans or specifications that has many variations, with infinite interpretations. One example is:

Scope Document

> “This document indicates the general scope of the project in terms of architectural design, the dimensions of the building, the major architectural parts and the type of structural, mechanical, and electrical systems. This document does not necessarily indicate or describe all work required for full performance and completion of the Contract Documents. On the basis of the general scope indicated or described, the contractor shall furnish all items required for the proper execution and completion of work. Decisions of the architect, as to the work included within the scope of this document, shall be final and binding on the contractor and the owner.”

Note that the above example is not a recommendation, but is presented for information to those not familiar with "scope" projects.

Because of the inherent risk presented by such a contract document, owner-users, architects, engineers, contractors and subcontractors should be aware of the problems associated with "Scope Bidding." The obligations and limitations of the various groups within the construction industry are outlined below.

Background

This guideline applies to projects where the architect and engineer are responsible for design but plans and specifications do not cover every item necessary for a complete project. It is recognized that, in practically all areas of plans and specifications, every single item of construction material and technique cannot be delineated. It is reasonable to require the providing contractor, as part of its work, to include those items which are part of its trade and which are installed as part of the work without specific instructions being required to demand that activity *(see B.1. Bidding Procedures "Scope Letters").*

On the other hand, demands upon the contractor to cover a multitude of changes and additions on the basis that they come within the definition of the "scope," are unwarranted and should be rejected. Design and design changes for a project should be the sole responsibility of the architect and/or engineer unless, as a part of the contract obligations, the contractor assumes that responsibility. In that case, the full responsibility for design, installation and performance should be specific *(see A.4. Design Responsibility).*

Guideline Details

1. Performance specifications or scope criteria should not be used in the award of competitively bid contracts for public buildings. Scope and performance criteria do not generate the best competitive bidding among contractors nor do they provide the awarding authority with sufficient means for accurate and fair comparison of proposals received.
2. Where "scope" plans and specifications are a part of the project documents, each contractor should provide the following:
   a. All material and equipment of standard quality, whether specified or not, and within the limitations of the architectural, structural, mechanical and electrical drawings and specifications, to cause the installation to function in accordance with the intention and objective of the finished project. The original intention should be specifically set forth in the documents.

b. All material necessary for equipment to function in a normal and acceptable peculiar or particular type manner, unless that equipment is of a manufacture which requires singular, unique or special installation devices or techniques. In that case, it should be the obligation of the architect/engineer to specify those requirements.

c. All work required to cause its operations to fit and coordinate with others, causing the other trades no added cost, subject to the limitations of the structure as shown on plans.

d. All work required to comply with governing codes with respect to its activity, except for design criteria involving capacities and basic design.

e. When not indicated in the plans and specifications, the sizing of interconnecting facilities, such as piping, ducts and wiring, between pieces of equipment in order to utilize the specified capacities of the equipment.

3. The contractor should not be required to provide the following:

a. Material or equipment not specified to be furnished, unless required for normal functioning of the system or to comply with the original stated intent.

b. Changes in location of equipment, materials and facilities due to alterations in architectural concept and design.

c. Changes in sizes, capacities and locations of components of the installation due to modifications of the building or its components.

d. Determination of capacities and sizes, unless made a part of bidding and contract requirements, and the furnishing of equipment to satisfy those capacities.

e. Basic design changes to meet applicable codes and ordinances, including but not limited to, added stairs, exits, added sprinklers, fire protection or changes from specified or indicated items.

By following this guideline in preparing project documents, and in making architectural and engineering decisions and interpretations, many disputes arising from the word "scope" may be avoided.

B.4
Guideline on Bid Shopping & Bid Peddling

Bid shopping and bid peddling are abhorrent business practices that threaten the integrity of the competitive bidding system that serves the construction industry and the economy so well.

The bid amount of one competitor should not be divulged to another before the award of the subcontract or order, nor should it be used by the contractor to secure a lower proposal from another bidder on that project (bid shopping). Neither should the subcontractor or supplier request information from the contractor regarding any subbid in order to submit a lower proposal on that project (bid peddling).

An important, but often unrecognized, business asset of the construction contractor is its proprietary information. Proprietary information includes the price, the design or novel technique, or an innovative approach used in preparing a proposal.

The preparation of bids, proposals, submissions or design-build documents is the result of professional consideration which is the intellectual property of the preparer, and so any such information should be considered proprietary.

It is unethical to disclose to others, any information that is provided with an expectation that such information will be kept confidential.

B.5
Guideline on Exchanging Documents and Data in Electronic Form

The advent of alternative project delivery methods requiring greater project communication levels, utilization of new and emerging technologies such as project collaboration software, and frequent owner insistence on shorter project schedules, have increased the likelihood that project team members, especially contractors and specialty contractors, will be expected to receive and exchange contract documents or other project information and data in electronic form. Important notices, submittals, plan changes, and other crucial documents are frequently transmitted by means other than the U.S. mails or private mail carriers, such as by posting to project-specific web sites or FTP ("file transfer protocol") sites. Often, the parties neither have discussed any issues relating to the exchange in advance, such as costs, safeguards and maintenance responsibilities, nor, in turn, addressed such issues in their project agreements. Without careful consideration of such issues, project parties exchanging electronic documents and data risk misunderstandings, delays, additional costs and even increased liability.

Current industry standardized forms neither address these issues in any detail, nor permit contractors and subcontractors to make use of electronic documents or data that are provided to them without considerable risk of liability. For example, EJCDC C-700, Standard General Conditions of the Construction Contract, 2002 Edition, Subparagraph 3.06 – Electronic Data, in part states:

> *"A. Copies of data furnished by Owner or Engineer to Contractor or Contractor to Owner or Engineer that may be relied upon are limited to the printed copies (also known as hard copies). Files in electronic media format of text, data, graphics, or other types are furnished only for the convenience of the receiving party. Any conclusion or information obtained or derived from such electronic files will be at the user's sole risk. If there is a discrepancy between the electronic files and the hard copies, the hard copies govern"*

In the above provision, all risks are assumed by the recipient of the electronic information, which in most cases is the contractor. In effect, the provision establishes a practice where the contractor may receive electronic information but may rely on it solely at his or her own detriment, a practice counterintuitive to facilitating and expediting document and data exchange, and out-of-step with present industry communication and collaboration needs.

Moreover, in many instances where design professionals do forward documents in electronic form to contractors, such documents often are accompanied by statements disclaiming accuracy and completeness or exculpating or limiting the design professional's liability. Such language requires a conscious decision on the part of contractors and specialty contractors to decide whether they are willing to accept such documents in electronic form, thereby increasing their potential liability, or if they would be better served by waiting for the "hard copies." A more balanced approach would permit a standard of reasonable use of electronic documents and data by project parties. To that end, parameters governing electronic document exchange would be described and agreed on in a written protocol incorporated in or attached to the parties' construction agreement. Key to the successful exchange protocol is an agreement that clearly defines ownership, management, and security responsibilities of the information transfer. Such a protocol, at a minimum, should address in detail the following points:

- Identification of one party to manage the exchange process, including responsibility for providing and coordinating notifications.
- Identification of an individual or individuals within each firm or company responsible for compliance with document exchange protocols.
- The definition of documents to be accepted in electronic form and/or transmitted electronically, including a specific listing of such documents for the project (e.g., drawings, shop drawings, change orders, requests for information, etc.).
- The parties' listing of, and responsibilities for compliance with, equipment, software and services impacting the transmission, receipt and/or utilization of electronic documents and data (including any prohibitions on or cautions as to utilization of different operating systems or translation programs and any equipment and software upgrading expectations).

- Document transmission standards, such as acceptable formats, transmission methods and verification procedures.
- Identification of third-party providers, if any, with copies of governing agreements/licenses.
- Methods for maintaining version control of electronic documents, including a depository of record copies of transmitted and received electronic documents.
- Specific privacy and security requirements.
- Storage and retrieval requirements for electronic documents and data.
- Reciprocal indemnity obligations for violations of the exchange agreement.
- Applicable insurance requirements, if any.

During bid preparation, the parties should review their respective construction documents relative to any exchange agreements. Among the subjects for careful review are the following:

- They should assess whether provisions governing ownership of documents are consistent with the provisions of the exchange agreement, and that requirements for similar agreements and protocols are in place with lower-tiered subcontractors and suppliers.
- The parties should review contract provisions in the design and construction agreements that address the line and flow of communications among the project parties to assess if such provisions need modification in appropriate, limited circumstances to permit direct communications among parties not in contractual privity, such as the principal design professional and a specialty contractor performing a portion of the design. In such circumstances, contemporaneous notification of such communications or exchanges should be given to the parties otherwise in the line of communications.
- Contractual reporting requirements for known or observed errors or omissions in contract documents should be reviewed to ascertain if they are adequate and consistent given the potentially increased pace of electronic document exchanges.
- Confidentiality provisions should be reviewed for consistency with similar requirements in exchange agreements.

Rapid advances in technologies and the uniqueness of each project will require parties to continually review and assess the adequacy of their electronic document exchange protocols and agreements. Although such agreements cannot prevent errors in every instance, they do give the parties assurance that they may reasonably rely on documents and data transmitted electronically to perform their project services, so long as they comply with clearly established protocols. With appropriate protections in place, project participants may reap the productivity gains and time savings offered by emerging project technologies.

B.6
Guideline on Volatile Price Adjustment Clauses

Volatility of construction material and equipment costs is greater now and in recent years than has previously been the case. The combination of raw material and natural resource scarcity, burgeoning infrastructure, commodity and construction demand in the Far East and elsewhere, and unpredictability of world political stability (and shipping infrastructure too) argues for ever greater vigilance in commodity purchasing and price commitments in procurement planning for fixed-price construction contracts.

With volatility emerging as the norm in the 21st Century, fair contract risk allocation will more frequently require an equitable cost adjustment clause in fixed-price construction contracts, as the most specific way to adequately address an otherwise uncontrollable and unforeseeable risk factor.

Cost adjustment escalation clauses set the basic parameters for the foreseeable range of price fluctuation by a set baseline—either actual costs, catalog prices, or common price indexes. Shared risk of volatility beyond that range is then allocated between the contracting parties. The shared risk approach to either exceptional increases or decreases in price can help eliminate bid contingencies, avoid defaults and delays mid-project, for the benefit of all parties and the project as a whole.

Force majeure and contract impossibility defenses are not adequate to address the problem. Volatile price adjustment clauses operate in the same way as common unforeseen site conditions clauses, by allocating uncontrollable and unknown risk equitably, rather than putting all the risk on just one party, subjecting the owner and the project to price contingencies based on that unbalanced risk. Cost adjustment clauses address material cost volatility and unavailability in a way that is much more specific than a standard *force majeure* clause. *Force majeure* clauses (superior force, acts of God,) and contract impossibility defenses are limited to very extraordinary extraneous events, often are subject to very narrow interpretation by courts, and may be limited to time extension remedies only.

Fixed-price contracts with [an] economic price adjustment should be used, when: (i) there is serious doubt concerning the stability of market or labor conditions that will exist during an extended period of contract performance, and (ii) contingencies that would otherwise be included in the contract price can be identified and covered separately in the contract. Price adjustments based on established prices should normally be restricted to industry-wide contingencies. Price adjustments based on labor and material costs should be limited to contingencies beyond the contractor's control.

The Federal Acquisition Regulation, ConsensusDOCS and the American Institute of Architects' contract documents all have prescribed methods to address these challenges.

Note: Contracting parties should scrupulously avoid any claims for costs not actually incurred, as False Claims Act provisions are strictly enforced and sanctions for violations are severe.

Note: As a private-sector form document, such percentage limits an adjustment must be left to the negotiations among the contacting parties.

Actual costs, catalog prices or common published indexes can all be used to set the baseline for cost adjustment clauses. ENR publishes a series on common construction material cost indexes. **(Go to: www.enr.com).** Also, The U.S. Department of Labor's Bureau of Labor Statistics publishes a very comprehensive set of Construction Material producer price Indexes along with a comprehensive guide on the subject, Escalation and Producer Price Indexes: A Guide for Contracting Parties. **(Go to: www.bls.gov/ppi.home).**

Influential public and private contracting policy documents have been responsive to these trends and risks.

For further reference:

ConsensusDOCS – **www.consensusdocs.org**

American Institute of Architects Supplementary Conditions – **www.aia.org**

FAR Contract Clause (Part 52-216-4)

B.7
Guideline on Building Information Modeling (BIM)

Building Information Modeling (BIM) is a tool that enables the construction industry to more efficiently operate in new and increasingly expeditious ways. Initially, BIM and 3D models have primarily helped eliminate design conflicts with far more efficient coordination. Other benefits of BIM include the following:

- **Project scheduling and the concept of 4D (3D+Schedule), in which time considerations are inserted into the modeling process.** With manpower loading inserted into the scheduling portion of the model, the project team will be able, on a long term, look ahead basis, to observe and plan to the detail on a daily (perhaps eventually even hourly) basis.
- **Estimating and quantification when 5D (3D+Schedule+Cost) concepts are incorporated with the BIM process.** As the 3D model is developed, a materials quantity report is instantaneously available. Further, depending on the sophistication of the software, pricing information could also be instantaneously generated.
- **The speed of shop drawing development and the associated coordination between all trades.** Simply put, with 3D, it is realistic to envision that shop drawings could be developed simultaneously as the design unfolds. Thus, the "issued for construction" model is just that—eliminating the need for approvals and submittal "turnarounds," as that process will already have been accomplished during the design period.
- **Request for Information (RFI's) will be significantly reduced during field construction due to the enhanced coordination and conflict reduction with the use of 3D.**
- **Accurate as-built drawings are available immediately at the close of construction with the use of BIM and a 3D model.** The 3D model, as it is updated throughout the project duration, actually represents in electronic format the physical design and construction of the project throughout all trades.
- **The use of BIM and 3D modeling allows for the optimization of lean construction techniques and principles.** This will lead to the potential for increased prefabrication, the minimization of waste in both the shop and the field, the reduction of field interferences and collisions, and a general increase in productivity at all stages of the project.

As the use of BIM accelerates within the design and construction industry, it will lead to a revolution in project delivery. Many are already referring to this revolution as leading to the fully collaborative project team. The theory of full collaboration generally envisions the entire project team: Owner, Architect, Engineers, Consultants, GC/CM, and Specialty Contractors being involved from the project's inception by "sitting together at one table" in developing the project design. Essentially the team constructs the project electronically in 3D with the use of BIM. This full collaboration allows for increased speed of project delivery, enhanced economics for the project, and true lean construction all levels not historically experienced in our industry. However, in order to make this collaboration truly successful, the interoperability of BIM software is essential for all parties involved in the project.

Useful resources in the implementation of BIM into contracts is the ConsensusDOCS 200.2 (Electronic Communications Protocol Addendum) and the ConsensusDOCS BIM Addendum.

Key aspects of the ConsensusDOCS BIM Addendum include:

- Maintaining the contractual relationships and risk allocation among the project participants unless otherwise specifically stated in the contract.
- Maintaining the Architect/Engineer's obligation and role as the person responsible for and in charge of the design of the project.
- Participation of the contractor or its subcontractors and suppliers in contributions to a model shall not constitute the performance of design services.
- In general, a design model is not intended to provide the level of detail needed in order to extract precise material or object quantities.
- The design model shall take precedence in the event of a conflict between any other design models.

- Each party shall be responsible for any contribution that it makes to a model or that arises from that parties access to the model.

While this is a brief overview of the BIM process and benefits, other information can be found on the following websites:

Associated General Contractors of America (AGC) BIMForum – **www.bimforum.org**

ConsensusDOCS 200.2 and BIM Addendum – **www.consensusdocs.org**

BuildingSmart Alliance – **www.buildingsmartalliance.org**

National Building Information Model Standard – **www.facilityinformationcouncil.org/bim**

American Institute of Architects (AIA) Integrated Practice – **www.aia.org/ip_default**

C.1
Guideline on Preconstruction Conferences

Conference time and participation

The best time for the preconstruction conference is after all subcontracts have been awarded but before the beginning of actual construction. This timing will permit the important details discussed at the conference to become a background for understanding the intended operational plan among members of the project team.

It is essential that all members of the project team attend the conference. The presence of the owner will enable it to better appreciate the potential operational problems encountered by the team on the project. This procedure will aid the total building team by:

- Providing greater insight on specific owner needs.
- Helping the architect to secure and translate team cooperation into a quality job consistent with the scheduled time and costs.

Preconstruction conference

The preconstruction conference is a practical forum in which problems of economic waste and disruptive construction problems can be discussed and prevented. The conference is designed to benefit all concerned parties by recognizing the responsibilities for various tasks before the project is begun. The benefits are as follows:

1. Recognition and elimination of delays and disagreements.
2. Establishment of agreements that curb increases in construction costs.
3. Predisposition of the gray-area responsibilities which, if left unassigned, can cause disputes.
4. Unification of management requirements and establishment of clear understanding of these requirements.
5. Establishment of lines of communication.

Participants

The preconstruction conference is a meeting of the principal parties involved in the planning and execution of a construction project.

It should include:

- The Owner
- Local Jurisdiction Officials
- The Subcontractors
- The Major Suppliers
- The General Contractor
- The Architect
- The Engineers

Full attendance and participation can be assured by making an agreement for the general contractor and all subcontractors to attend the preconstruction conference one of the conditions of the contract documents. This action will emphasize the importance of the conference.

Purpose

The primary purpose of the conference is to establish acceptable ground rules for all parties concerned, and to assure that each party understands the complete job requirements and coordinates its work to produce a completed job in a minimum amount of time, with maximum economic gains, and in proper coordination with the owner, architect, engineer, prime contractor, and all subcontractors. The preconstruction conference is primarily concerned with management and operational considerations. It is in these areas of contract interpretation and clarification that the greatest value of the preconstruction conference can be achieved.

Topics for discussion

The preconstruction conference should be scheduled to permit sufficient time to cover the total agenda. Topics for discussion typically depend upon the nature, size and complexity of the project. It is, however, necessary to assign priorities. Although each job is different, certain factors are common to all types of construction.

Agenda for a typical preconstruction conference

1. Progress payments. When, how, and to whom, in exact terms, stated clearly so that no question exists about billing and payment requirements and responsibilities. This should also apply to the areas of retention and final payment *(see D.3.f. Prompt Payment).*
2. The form for payment requests. For a suggested form, see E.2 Appendix – "Subcontractor's Application for Payment." Are the suppliers' waivers required? Is it possible that waivers can be one payment behind; that

is, can a waiver for a particular request be submitted at the time the next request is presented?

3. Payroll reports. The requirements, if any, for payroll reports and accidents.

4. Shop drawing and sample submittal data including procedures for submittal, review, and approval. The form in which data is to be submitted. The number of copies required and the number to be returned; the type of approval, e.g., "approved," "approved as noted," "approved as noted-resubmit," "rejected," etc.

5. Requirements, if any, for interference and/or composite drawings. Who initiates them and what will be the order of progression of these drawings; what is the impact on time for performing the work if composite drawings are required?

6. Insurance requirements.

7. Job progress scheduling. A preconstruction conference provides an opportunity for the essential involvement of subcontractors in the development and correlation of the individual schedules that make up the construction schedule. Many large projects are conducted with an overall schedule, using the CMP (Critical Path Method) or the PERT (Project Evaluation Review Technique) systems. Such scheduling is most effective when it is thoroughly understood by all parties.

8. Site logistics. Many utility and other services are essential to the construction process but do not form a part of the finished product. Under the uniform system, the specifications related to this scope are spelled out under "General Requirements"; under other systems the requirements are less well defined. This is a gray area, requiring clear definitions of responsibility (see *C.4. Site Logistics* for a complete listing of categories that should be covered).

9. Change orders. Since change orders are responsible for more disputes than any other single aspect of a construction project, they should be discussed in complete detail *(see D.3.d. Procedures for Change Orders).* Typical items for discussion include:

   a. Percentage mark-ups for overhead and profit to be applied to change orders; what costs will or will not be included in the change order price.

   b. Length of time that a change order proposal price is to be considered firm.

   c. Determination of the individual(s) authorized to approve change orders.

   d. Procedures to be followed when submitting change order proposals.

   e. Change order forms to be used. American Institute of Architects', general contractor's, subcontractor's, others.

   f. Time extension—requests made by the subcontractors due to changes in drawings or specifications.

   g. The detail required of subcontractors when submitting change order proposals. Will a complete breakdown of all costs be required? Brief description? Descriptive drawings?

   h. Overtime—due to change orders. Consideration of decreased productivity *(see D.3.i. Overtime, Construction Costs and Productivity).*

   i. When materials or equipment are to be removed due to a change, who owns it, and who removes it from the site of the job?

   j. Responsibility for as-built drawings brought about due to change orders.

   k. Acceptance and payment. Consideration of methods for achieving expeditious acceptance and prompt payment.

10. Warranty requirements. Since damage or defects caused by abuse, modifications by others, improper or insufficient maintenance, improper operation or normal wear and tear are responsible for many disputes, this should be discussed.

11. Employment practices.

12. Listing and identification of all tiers of subcontractors.

13. Inspections Protocol *(see D.4.b. Project Inspections).*

14. Punch lists. The procedure for establishing timely punch list items and the avoidance of a multiple number of punchlists *(see D.5.b. Punch List Procedures).*

15. Lines of communication. The procedure for transferring information to and from the owner, architect, engineers, contractor, subcontractors, and major suppliers *(see D.2.a. Communication).*

16. Commissioning protocol to develop consensus as to the extent, timing and procedures for commissioning of the project.

Conclusion

Effective communication among owners, architects, engineers, general contractors, subcontractors, and major suppliers is essential for the successful completion of a construction project. Only with such a basis of understanding can the necessary planning and work proceed without conflict or costly dispute. The preconstruction conference is a practical means toward this end.

C.2
Guideline on Partnering

Construction contracting is a very high-risk business. Intense competition, coupled with occasional, unfortunate misperceptions of conflicting objectives among owners, contractors, architect/engineers, subcontractors and suppliers, can set the stage for adversarial and unrewarding relationships. Litigation, with all of its negative impact, is counterproductive to the mission of every construction team member to profit while producing quality projects on time and within budget.

In order for a construction project to be deemed successful, all the members of a construction team must work together to:

- Emphasize cooperation and clearly define common objectives.
- Recognize the respective roles and inherent risks of other team members.
- Develop synergistic systems for rapid issue resolution and to jointly evaluate partnership effectiveness.

One way to achieve this goal is through a strategy and process called Partnering. Partnering is a strategy for building relationships based on trust, honesty, and respect. Partnering is a proactive process aimed at prevention prior to dispute. For Partnering to have its most effective results, all construction team members should participate in the development of the Partnering strategy for the project. A Partnering workshop should be conducted during the early stages of the contract process.

The key elements of Partnering are embodied in the 3C's: Commitment, Communication, and Conflict Resolution. To ensure Partnering success, the following concepts should be considered and incorporated into the process:

Commitment – Commitment to Partnering must come from the top management of all construction team members who have a stake in the project and are called stakeholders.

Early Involvement of Stakeholders – Owner representatives, design professionals, general contractors, subcontractors and local officials need to be part of the evolution of the framework of the partnership charter.

Equity – Every stake holder's interests must be considered in creating mutual goals. There must be a commitment to satisfying each stockholder's requirements for a successful project by utilizing win/win thinking.

Development of Mutual Goals/Objectives – At a Partnering workshop, the stakeholders should identify all prospective goals for the project in which their interests overlap. These jointly developed and mutually agreed to goals may include achieving zero injuries during construction, value engineering savings, meeting the financial goals of each party, limiting cost growth, limiting review periods for contract submittals, early completion, minimizing paperwork for the purpose of case building or posturing, no litigation, and other goals specific to the project.

Implementation – Stakeholders together should develop strategies for implementing their mutual goals and the mechanisms for solving problems.

Continuous Evaluation – In order to ensure implementation, the stakeholders should agree to plan for periodic joint evaluation based on the mutually agreed to goals. This will ensure the plan is proceeding as intended and that all stakeholders are carrying their share of the load.

Timely Responsiveness – Timely communication and decision making will not only save money but can also keep a problem from growing into a dispute.

Benefits to the project contractors, subcontractors, suppliers and workers

- Better control over safety and health issues.
- Reduced exposure to litigation through communication and issue resolution strategies.
- Increased productivity because of elimination of defensive case building.
- Lower risk of cost overruns and delays because of better time and cost control over the project.
- Increased opportunity for innovation and implementation of value engineering in the work.
- Potential to improve cash flow due to fewer disputes and withheld payments.
- Improved decision making that helps avoid costly claims and saves time and money.

- Enhanced role in decision making process as an active team member.
- Increased opportunity for a financially successful project because of a non-adversarial win/win attitude.
- Improved long-term relationships between team members for future projects.

The Partnering Process

Because every project is unique and the particular stakeholders for each project will vary, the process should be tailored by and for the stakeholders for each project. A partnering process can be developed for any type project and any size project.

The following is a model to guide the Partnering process.

1. **Educate Your Organization.** Whether you are an owner, contractor, subcontractor or supplier, you should educate your own organization about Partnering before attempting a project using the concept. Understanding and commitment are essential.
2. **Make Partnering Intentions Clear.** The owner's intention to encourage Partnering may be mentioned in the project solicitation advertisement and specifications. The provision should emphasize the voluntary nature of Partnering and that the costs associated with implementing it would be shared. The pre-bid conference may include a presentation of Partnering. In the context of a negotiated contract for private work, the contractor may propose the use of Partnering. In public works contracts, the contractor can propose and initiate a Partnering agreement after the award because the Partnering process does not change the contract.
3. **Commitment from Top Management at the Start.** Following the award, the owner or the contractor can request a meeting at the chief executive officer level to discuss the Partnering approach to managing the project and the CEO role. Commitment at this level is essential for Partnering to achieve its potential. Upon agreement, each entity will designate a Partnering leader. These leaders will meet at a neutral site to get to know one another as individuals and to plan a Partnering workshop.
4. **The Partnering Workshop.** As soon as possible, before problems arise, all key construction team members should participate in a Partnering workshop, again at a neutral site away from the job site and outside of the respective corporate cultures of the various stakeholders. Key team members from each stakeholder organization at the workshop are those who actually will be involved in contract performance and those with decision making authority. They might include the contractor's area manager, project manager, superintendent and project engineer; the architect/engineer's chief designer, construction administrator and consultants; subcontractors' project managers or superintendents; the owner's manager or representative; and, depending on the project, special participants such as a representative from a testing laboratory or a key public official. Larger projects might utilize a facilitator, as discussed below, but a facilitator is not essential to the concept.

   While partnering workshops are most effective at the beginning of a new project, project relations and problem solving can be improved even midway on a project.

   a. Creation of a Partnering Charter. The mutually developed objectives form the basis for the Partnering charter. In this process the team members get to know one another and develop team attitudes rather than "we/they" or "us/them" attitudes. The charter not only is a symbol of the stakeholders' commitment to Partnering, but also can be used as a scale against which the implementation of the process can be evaluated. The ceremonial signing of the charter after the personal interaction necessary for the development of mutual goals is an important formalization of the bonds among all stakeholders. This charter should be communicated throughout the project and to all participants including other organizations not directly involved with the charter development. The charter should also be communicated within each organization, especially to key managers who may join the project team after the charter has been finalized.

   b. Development of an Issue Resolution Process. In the workshop, the partners design systems for resolving issues on the project. They decide how issues that are not resolved at their level will be escalated to the next level of management in a timely manner so that the decision-making process becomes more efficient and costly delays are avoided.

c. Development of a Joint Evaluation Process. In Partnering the effectiveness of the process participation is reviewed and evaluated by all participants. Evaluation can be written, through periodic meetings of the key team members, and/or periodic executive meetings.

d. Discussion of Individual Roles/Concerns. A workshop goal should be a high-trust culture in which everyone feels they can express their ideas and contribute to the solution. Risks and potentially difficult areas of the contract should be discussed openly. Team members should be made aware of the potential for value engineering. Understanding other stakeholders' risks and concerns and seeing where one's portion of the contract fits in relation to others' help to build the essential team attitude.

e. The Facilitated Workshop. Although not essential to the process, a neutral facilitator can be very helpful in organizing the workshop agenda and providing training in conflict management, listening and communication skills, as well as insights into individual problem solving styles. Whether to use a facilitator is a business decision to be made jointly by all stakeholders. A qualified facilitator is particularly valuable in initial Partnering experiences to help develop comfort and confidence with regard to the effective implementation of the Partnering program.

Summary

Partnering is a challenging endeavor with lofty goals. It is not a panacea. The participants must be committed to change and to working in a team environment which stimulates win/win relationships.

Successful construction projects do not simply happen; they are made to happen. The essence and spirit of Partnering is a winning strategy to make construction projects successful.

Partnering has the potential to change our industry, one project at a time!

C.3
Guideline on Sequenced Project Schedules

The purpose of this guideline is to describe the sequence and schedule of work, and to establish project criteria for managing the work and responsibilities of all trades. This guideline will allow contractors the opportunity to define the job conditions and sequencing necessary to complete their work in a timely and productive manner. It will also assist the general contractor in determining the responsibility of those contractors whose actions fail to properly maintain a sequenced project schedule.

Definitions

- **Sequenced Project Schedule:** A preliminary depiction of project activities in sequential order that identifies the critical path controlling project duration.
- **Critical Path:** The longest sequence of project activities that has no float and therefore determines the actual completion date.
- **Float:** Amount of time an activity finish can be delayed without delaying the follow-on activity or the total project completion.

Why plan and sequence project schedules?

- To provide an aid to visualize the parts of the project and identify conflict and problems before they occur.
- To communicate the project schedule plan.
- To facilitate better time management.
- To permit identification of activities most “critical” to timely project completion.
- To develop documentation of scheduled, and completed, work.
- To allow for more efficient use of people and equipment, minimize unproductive time, and promote equal level of commitment from all participating parties.

When should a contractor develop a sequenced project schedule?

- A "general" schedule for major trades should be part of all projects.
- For bid projects, scheduling should occur well before any work starts, with the possible exception of preparatory site work, such as grading.
- A "detailed" schedule should be provided "up front" for negotiated projects.

What information should be included in the sequenced project schedule?

- Project and task durations and milestones (e.g. delivery dates for critical material and equipment).
- Responsibility for various tasks (owner, designer contractor, subcontractor, or vendor).
- Design tasks.
- Plan and permit review and acquisition.
- Pertinent codes and building regulations.
- Submittal review, response and procurement activities.
- Establish start and completion times for each task and provide an estimate of project completion date.
- Effects of weather, other project conditions.
- Inspection, punch list, and closeout activities.
- Integration of the schedule with milestones and known or anticipated time constraints and impediments.

Building project sequencing into a schedule

- Assign a competent scheduler.
- The scheduler should be familiar with all of the various trades and be able to communicate with each trade.
- The schedule should receive input and support from all stakeholders.
- Break the project down to discrete activities, establish the necessary and logical sequence of these

activities, and represent the plan with a diagram or chart.

- Particular attention needs to be given to timely receipt and approval of shop drawings, submittal data and procurement times.
- Determine duration, start and completion time for each activity.
- Determine early/late starts – including the possibility of "float."
- Seek input for alternate sequencing in case problems arise.
- Consider alternate resources for labor and equipment, and the adjusted costs for each activity (resource loading).

Communicate the sequenced project schedule

- Distribute the sequenced project schedule to all project participants and identify critical path items.
- Confirm all participants' understanding of the sequenced project schedule and obtain each party's agreement to accept the agreed-upon schedule.
- Monitor the progress of the job and compare with the target schedule, and take corrective action if required.

Summary

All parties will clearly benefit from the development and implementation of sequenced schedules. Schedule development will help guide the contractor through the sequencing process, force the identification of what activities must be accomplished and identify who is responsible for each phase of the project and its schedule. Conflicts or problems can be discovered before they occur, enabling the contractor to avoid them or prepare alternate solutions.

Remember that success will only be achieved if ALL parties are committed to the creation of a properly sequenced project schedule. Participation in the development of the sequenced schedule and its implementation are imperative for a successful project. In view of increased owner awareness and enforcement of liquidated damages, proper project scheduling and avoidance of delays are critically important.

For more information on scheduling, see *A.1. General Contractor-Subcontractor Relations, B.2. Project Scheduling, Delays and Liquidated Damages,* and *C.1. Preconstruction Conferences.*

C.4
Guideline on Site Logistics

Overview

Providing the necessary facilities and services to support successful project delivery is sometimes overlooked or put low on the priority list when bidding or setting up a project.

This section provides a simple checklist for analyzing, developing, implementing, and maintaining a comprehensive Site Logistics plan. It is also suggested that the following "service obligations" serve as a guide for use by contractors and subcontractors in discussing job site conditions relative to safety, temporary job utilities and temporary services. Such discussions may help eliminate misunderstandings and promote cooperation among the members of the construction team. When adequate identification of temporary services is provided and logical assignments of responsibilities are made, the costs of such services may be adequately covered in contract arrangements. **This guideline is a comprehensive outline of key issues to be considered and should be adapted to local conditions, preferably by local industry liaison committees of contractors and subcontractors.**

Achievement of these desirable relationships can be initiated by segregating requirements for each type of temporary service in a manner which is consistent with the organization of the contract documents, the scope of the work of contracting parties who would ordinarily establish and maintain the services, and any jurisdictional divisions of work that may exist. The following general guidelines are suggested:

1. Each employer whether it be general contractor, prime contractor or subcontractor shall be separately responsible for all specific safety requirements promulgated by any governmental authority, including without limitation, the requirements of the Occupational Safety and Health Act of 1970, as amended ("OSHA"), and all standards and regulations which have been or shall be promulgated by parties or agencies which administer the Act. With respect to the requirements of OSHA, each contractor and subcontractor is responsible for the acts of its employees and for appropriate recordkeeping and reporting.
2. Specific timing for the availability of each temporary facility should be established during the preconstruction conference *(see C.1. Preconstruction Conferences).* Before the established times, each contractor or subcontractor should satisfy its own requirements for such services.
3. The contract documents prepared by the architect and engineer should clearly indicate the location of existing on-site and off-site utilities, and, where applicable, the quantity and conditions of use with respect to the specific type of temporary services and temporary facilities.

Analysis/Scope/Plan Development

Understand requirements applying to your work by reviewing:

- Your contractual responsibilities
- Responsibilities of the owner, CM/GC, GC or other participants

When determining the responsible party, the appropriate specification section can be utilized and modified to fit project specific requirements. After determining your contractual responsibilities, a plan can be developed by using the guideline below supplemented by project specific requirements, including who is to pay the temporary services costs.

1. Access

The general contractor should provide an adequate access and/or roads to the site of the structure, if required. The general contractor should maintain onsite road conditions to allow for easy access around the project and for a minimization of debris being tracked into the buildings or carried offsite by traffic. The general contractor should also provide and maintain at least one temporary or permanent access to each working elevation which is to be permanently occupied.

a. Familiarize yourself with the area surrounding the project (including visiting the project site if possible).

b. From what direction will most construction traffic come?

c. How will nearby businesses, schools, or other facilities be impacted?

d. Are there any overhead utilities that will impede deliveries or cranes?

e. What type of onsite traffic flow is optimal to support your plans for the project?

f. How many access points are needed and who will develop the traffic flow on and off the site?

g. Is a truck wheel wash or other method required to clean vehicles tires prior to leaving the project site?

h. How will access be provided to each level of any structures?

i. Review your plan with the appropriate project organizations and with local officials as required.

2. Hoisting Facilities

The general contractor and individual subcontractors should be responsible for providing hoisting of their own materials on construction of (fill-in based on grade state or local practice) floors or less above. A tower hoist or other hoisting facility of suitable capacity to carry all normal items of material should be provided on a **pre-agreed basis** to subcontractors by the general contractor on construction more of than (fill-in) floors. Subcontractors should conform to a mutually agreeable schedule during normal working hours. Hoisting facilities should be maintained until the bulk of all materials are stored in the building. When materials exceed the capacity of normal hoisting facilities in either size or weight, or demand excessive time, the individual subcontractor should be required to make its own arrangements. When the magnitude of the work force and the height of the work requires, a suitable personnel elevator or man lift should also be provided by the general contractor.

OSHA compliance for all hoists, conveyors, and elevators on the job site is the responsibility of the installing contractor. Maintenance of the facilities in compliance with the law is the responsibility of the contractor or subcontractors operating the equipment.

3. Guardrails, floor and wall openings and stairways

The general contractor should provide guardrails, handrails and covers for floor, roof and wall openings and perimeters, and stairways installed and/or constructed by its own forces. If movement of these protective facilities is required for the subcontractor to perform its work, it should be the responsibility of that subcontractor to give prior notification to the general contractor and to replace same in satisfactory manner.

4. Security

a. Does the project require security fencing?

b. Will you be interfacing with or subject to existing client security plans? If so, familiarize yourself with the requirements and determine any impact to your personnel and plan.

c. Does the project require off-hours security patrols and/or staffed gates?

d. Locate adequate gates to support traffic flow.

e. Determine who will be responsible to open and close gates to support work hours.

f. Will the security plan require modification throughout the project to support different phase requirements?

5. Parking

a. Where will onsite management, workers, visitors, inspectors, client representatives, and others park?

b. If space is limited, investigate options for offsite parking and logistics for getting workers to and from the site. Review local labor requirements for terms related to offsite parking and travel time for additional cost impacts.

6. Safety Orientation/Training

a. Determine what type of safety training will be required *(see D.1.a. Project Safety and Health).*

b. Determine who will provide the training:

i. CM/GC or GC.

ii. Your company or outside resources.

iii. Client (for interfacing with their facilities/operations).

7. Trailers/Shantys

a. What are the space needs for your staff and subcontractors?

b. Determine a location for your trailers/shantys (Can you use existing ones or other existing structures instead?)

c. Locate utility connection points *(see Section 9 below).*

8. Break/Lunch Facilities

a. What are the local requirements for break/lunch facilities?

b. Determine peak headcount for your employees.

c. Determine your space requirements (25sf/person average).

d. Where can you locate or can you use existing facilities or the work area?

9. Toilets/Wash Facilities

The general contractor should be responsible for furnishing adequate temporary toilet and wash-up facilities on the job site.

a. What are the local requirements for facilities?

b. If flush toilets and running water are required, locate facilities to minimize utility runs.

c. Provide separate facilities for men and women as needed.

10. Storage Facilities

The general contractor should coordinate the allocation of storage areas to the various subcontractors.

a. Determine lay-down, storage, staging requirements.

b. Will there be any onsite storage available other than inside the work area?

c. Establish maximum loading restrictions, if appropriate.

11. Temporary Utilities

a. Drinking water: Potable drinking water on the job site should be provided free of charge to subcontractors, in convenient and accessible locations, by the general contractor, so long as the general contractor has personnel on the job requiring drinking water.

b. Sewer: The general contactor should extend and connect sewer service to support construction toilets as required.

c. Water service: The general contractor (through the plumbing contractor) should furnish a temporary water supply at each floor of a building, and at other access points if indicated by the architect/engineer in the specifications, which should also indicate the size, quantity and pressure at the water outlets. In any case, the plumbing contractor should provide at minimum a ____-inch hose bibb supply (state/local practice). During the course of construction the water bill should be paid by the general contractor. Any contractor or subcontractor whose water requirements are in excess of those specified should be responsible for their facility.

d. Electrical service: The general contractor (through the electrical contractor) should furnish and maintain temporary electrical service for both power and lighting, if indicated by the architect/engineer in the specifications, which should also indicate the type, quantity, wattage, amperage and voltage characteristics of temporary lighting, power circuits and outlets. But in any case the electrical contractor should provide at a minimum, _____ amperage (state/local practice), _____ voltage (state/local practice), _____ phase electrical receptacles (state/local practice) at each floor of each building so that any point on each floor can be reached by a _____-foot extension cord (state/local practice). Energy charges should be paid by the general contractor. Any contractor having requirements for power, lighting or service other than those discussed in this guideline should make the necessary arrangements at its own expense.

e. Telecommunication Service: The general contractor should provide for sufficient voice and data phone lines to support the anticipated needs of the general contractor and onsite subcontractor offices. A convenient connection terminal should be provided by the general contractor to minimize installation costs. Each subcontractor should be responsible for placing orders and paying for their phone charges.

12. Temporary Lighting

During construction, the general contractor should provide temporary lighting (via the electrical contractor) as follows:

a. Exterior: Provides security lighting and general lighting in trailer, parking, lay down, traffic, and other exterior areas to support project work hours.

b. Interior: Meets the OSHA minimum requirements for general access lighting. Subcontractors should be responsible for task specific lighting needs.

13. Weather Protection and Temporary Heat/ Ventilation

During construction, weather protection and heating/ventilation may be required for protection of workers and protection of construction:

a. Before permanent enclosure of the building;

b. After enclosure but before finishing operations; and

c. During finishing operations.

Local agreements prior to bidding for use in the contract documents should establish the type, duration and level of requirements for heating/ventilating and weather protection.

Generally, the general contractor should be responsible for providing general weather protection. The heating/ventilating contractor should be responsible for providing heating/ventilating of workers and construction after permanent enclosures have been installed and the permanent heating system is sufficiently completed to allow safe operation, as determined by the architect/engineer and/or owner. Subcontractors having specific or unusual HVAC requirements should be responsible for their own requirements.

Because of the many variable climatic conditions which occur throughout the United States, no guidelines are suggested regarding the specifics of weather protection and heating/ventilation requirements. However, such specifications for local use may be prepared in such a manner that the heating and/or ventilation contractor should be required to furnish temporary connection to the permanent heating or ventilation system and the removal of the same. (This also should include placing the system back in first class condition before turning the system over to the owner.) Also, in order that an allowance can be established in the contract price, the architect/engineer should incorporate in the specifications a lump sum dollar amount or a total number of hours that the HVAC contractor should include in its bid for the cost of temporary heat and/or temporary ventilating labor. The HVAC contractor also should state the hourly rates for furnishing labor for temporary heat, in order that a cost adjustment may be made against the stated allowance. The cost of all fuel, water, electricity and other consumable products should be paid by the owner.

14. Trash/Recycling:

The general contractor should be responsible for providing trash receptacles on each floor of the building. Each contractor or subcontractor should be responsible for collecting and depositing its debris in such collection facilities. The general contractor should be responsible for the removal of all debris from the jobsite. Trash and debris should not be allowed to accumulate.

a. What are the contract requirements for trash and recycling?

b. Depending on local availability, incorporate recycling into your trash plan including separate receptacles for:

- Wood
- Cardboard
- Metal
- Drywall
- Others

15. Fire Protection

The general contractor should provide the general temporary fire protection requirements. Subcontractors should be responsible for their own specialty requirements. Permanent fire protection equipment used for fire protection during construction should be the responsibility of the installing contractor.

C.5
Guideline on Surety Bonding

Contract surety bonds offer an important means of protection for project owners and for project participants to address construction risks of non-performance and/or financial failure. They are statutorily required on most public projects and a requirement on a significant number of private construction projects.

Public Projects:

At the Federal level, the Miller Act (40 U.S.C. § 3131 et. seq.) requires that contractors performing contracts for the construction, alteration or repair of public buildings or works exceeding $100,000.00 furnish performance and payment bonds. States have enacted similar laws, termed "little Miller Acts," which require performance and payment bonds on state and local construction projects. These laws ensure that federal, state, and local governments are positioned through requirements for contract surety bonds to manage the risk of contractor nonperformance, thereby protecting precious taxpayer dollars. Payment bonds assure payment to certain categories of subcontractors and materials suppliers, who are not in direct contractual relationships with contracting agencies and in most jurisdictions are without lien rights against public property. Project delivery method selection, such as design-bid build, construction management at risk or design-build, does not change the need for public sector bonding requirement.

Private Projects:

Many private owners also seek to manage project risks through contract requirements for performance and payment bonds. Commonly used standard form documents include provisions in which the owner can require performance and payment bonds. In addition, prime contractors performing commercial construction often decide to handle the risk of subcontractor default through inclusion of subcontract requirements for performance and payment bonds.

Important Surety Issues & Considerations

Traditional

The relationship between a contractor and its surety producer is one of trust and confidence, similar to the relationship of a contractor with its banker, attorney, or accountant. The surety and the surety producer should be selected by the contractor to best serve the contractor. An important role for the surety producers is to develop a high degree of knowledge of the contractor's character, experience and financial capacity to present to the surety. Items to consider when specifying and/or selecting the surety include that the surety be certified by the U.S. Department of the Treasury and listed in Circular 570 and admitted in the state where the bond is issued.

The bond amount will be the same amount as the contract price.

Default Insurance Products

Subcontractor default insurance (SDI) is an insurance policy that is intended to address the risk of subcontractor default. SDI is marketed to prime contractors as an alternative to bonding subcontractors. It requires prime contractors to undertake rigorous pre-qualification of subcontractors, a service otherwise performed by the sureties, and to self-insure a significant portion of the risk associated with subcontractor default through deductibles and co-pays. The information obtained in this prequalification process is confidential and will be used for this process only.

SDI programs are not a substitute for prime contractor performance and payment bonding on public sector projects. Lien or claim rights for all contractors should be protected at all costs.

Directed Suretyship

Direct suretyship is the practice of forcing a contractor to use a designated surety producer or surety company unfamiliar with the contractor's needs and service requirements. It imposes a relationship not voluntarily assumed and subjects the contractor to disclose business information to persons that may not act in the best interest of the contractor.

Further, the practice of directed suretyship may serve to lessen competition on projects: a single surety likely will not accept all bidders and many contractors likely will be reticent to disclose confidential personal and business financial information to an unknown third party. For these reasons, most states and the federal government have enacted statutes that prohibit the practice of directed suretyship.

References

ConsensusDOCS 200 – Owner/Contractor Standard Agreement & General Conditions (Lump Sum) **(www.consensusdocs.org)**

American Institute of Architects (AIA) A201 – General Conditions of the Contract for Construction **(www.aiacontractdocuments.org)**

D.1.a
Guideline on Project Safety and Health

Safety must be the number one concern in the construction industry!

The construction industry, by its inherent nature, is susceptible to potentially dangerous conditions that affect the safety of all personnel working on construction projects. As a result, it is imperative in all planning, design, bidding, and implementation that safety be the one constant built into each project.

The Associated General Contractors of America (AGC), the American Subcontractors Association (ASA), and the Associated Specialty Contractors (ASC) are committed to maintaining a safe, healthful industry and to protecting the public against any potential hazards caused by construction operations. Every member of the construction team is responsible for safety and should be held accountable for ensuring a safe and healthful worksite.

Developing a project culture that supports worker safety

The foundation to executing a safe project is the early establishment and nurturing of a project culture that is based on the values of good working relationships and candid communication. Without these values, the probability of a safe project is likely to decrease.

The development of the project team's approach to safety is intertwined with the overall approach developed by the general contractor in partnership with the owner and architect and in consultation with major subcontractors. Safety should be an integral part of any Partnering *(see C.2. Partnering)* or Preconstruction Meetings *(see C.1. Preconstruction Conferences).*

The General Contractor holds the key role in developing coordination and communication methods that will allow for the planning and execution of the work safely *(see D.2.a. Communication).* These communication channels should allow for:

- Early analysis of the project scope to identify key risk areas;
- Clear communication of the project safety approach, programs, roles and responsibilities;
- Early involvement of key subcontractors;
- Candid dialogue between the General Contractor, Subcontractors, and Craft workers without fear of retribution.

All parties involved must be totally committed to safety

Each contractor and subcontractor must make a commitment to support the development of the project safety culture. This commitment includes:

- Training their employees to work in a safe and respectful manner.
- Developing a written safety policy that spells out its commitment to run each project in a safe manner. That policy should emphasize the firm's pledge to comply with all federal and state safety laws and regulations.
- Informing employees of employment requirements for safety, and advising them that they will be held accountable for their own actions on the job site.
- Making available to all jobsite personnel a list of all available safety equipment, jobsite safety requirements and prohibited unsafe work habits.
- Enforcement by subcontractors of safety their responsibilities and penalties.

Every member of the construction team, including the project owner, design team, general contractor, and subcontractors, must appreciate the value of a good safety program.

AGC, ASA and ASC each have produced comprehensive safety materials for the use of employers and employees in the construction industry, as have many other trade and professional organizations associated with the construction industry. For more information on safety, contact your sponsoring association.

D.1.b
Guideline on Unforseen Environmental Problems in Construction

Impact of Unforeseen Environmental Problems

1. Few changed conditions can adversely affect a construction project more than the discovery of environmental hazards. Whether the problem is hazardous waste that was not discovered or anticipated by the Owner, or some other environmental contamination, invariably it will require highly specialized responses that are expensive, time consuming, and sometimes risky. A contractor who did not anticipate the performance of environmental work because it was not specified cannot reasonably be expected to assume the cost or the liability related to handling the unforeseen environmental complication.

2. The discovery of an unforeseen environmental problem also damages the owner or client. Because the cost of the problem will not have been built into the original project budget, dealing with it will mean that the project will likely exceed its anticipated cost. As the problem has been uncovered midway through a project, the pressure to take care of it quickly and remain as close to the schedule as possible will mean less opportunity to get the most competitive price for the environmental work. Environmental problems may also jeopardize project funding by triggering concerns about a lender's liability or affect the availability and cost of insurance.

Industry Practice and Relevant Authorities

3. Best practices in the industry recognize that the fairest and most cost-effective allocation of this risk and responsibility is for the project owner who did not disclose the conditions to undertake full responsibility for the proper remediation of the condition. Environmental laws and regulations, such as the Resource Conservation and Recovery Act, have made owners responsible for all environmental wastes and byproducts of construction projects as the "generator." This means that owners will always retain the authority and control over how environmental issues are handled.

4. Owner responsibility for remediation is embodied in the recognized industry standard form documents such as the AIA A201 form General Condition of the Contract for Construction (contract between the owner and the general contractor) and the Federal Acquisition Regulation Changed Conditions clause. The relevant passages of these documents are indicated below.

4.1. AIA A201 (1997 edition)

4.1.1. Article 10.3.1

"If reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to person resulting from a material or substance, including but not limited to, asbestos or polychlorinated biphenyl (PCB) encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the area affected and report the condition to the Owner and Architect in writing."

4.1.2. Article 10.3.2

"… When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. The Contract Time shall be extended appropriately and the Contract Sum shall be increased in the amount of the Contractor's reasonable additional costs of shut-down, delay, and start-up…"

4.1.3. Article 10.3.3

"To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants and agents, and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if, in fact, the material or substance presents the risk of bodily injury or death as described in Subparagraph 10.3.1 and has not been rendered harmless … and provided that such damage, loss or expense is not due to the sole negligence of a party seeking indemnity."

4.1.4. Article 10.5

"If, without negligence on the part of the Contractor, the Contractor is held liable for the cost of remedia-

tion of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall indemnify the Contractor for all cost and expense thereby incurred."

4.2. FAR Changed Conditions Clause, 48 CFR § 52.243-5

"(b) The Contractor shall promptly notify the Contracting officer, in writing, of subsurface or latent physical conditions differing materially from those indicated in this contract or unknown unusual physical conditions at the site before proceeding with the work.

"(c) If changes under...paragraph (b) increase or decrease the cost of, or time required for performing the work, the Contracting officer shall make an equitable adjustment...."

Conclusion

5. The relevant authorities, industry practice and history, and common sense all support owners bearing responsibility for unforeseen environmental conditions discovered on a construction project. A properly drafted contract should reflect the owner's responsibility for such work.

6. Before relying on any language cited above, the contractor should consult an attorney and the full documents from which these passages have been taken.

7. Further information on the subject can be found in AGC #1184, *Construction Contractor's Environmental Risk Management Procedures Manual,* published by the Associated General Contractors of America: **http://www.agc.org/contractdocuments/**

D.2.a
Guideline on Communication

A key ingredient in all successful construction projects is clear, efficient and effective communication between all participants. Good communication does not automatically occur on construction projects, but must be nurtured from project inception through close-out.

The owner, general contractor, and designer must set the stage for effective project communication during initial contract negotiations and teamwork discussions. Use of the Partnering process can facilitate the beginnings of good communication *(see C.2. Partnering)*. Effective Pre-Construction Conferences can also be a vehicle to develop communication channels including subcontractors and inspectors *(see C.1. Preconstruction Conferences)*. The use of clear and concise meeting minutes can minimize miscommunication between parties *(see D.2.b. Project Meetings)*.

Basic concepts of coordination and cooperation, as summarized below, can foster continuing effective communication throughout the project.

Coordination

1. The general contractor should have a competent full-time superintendent on the project backed up by a general superintendent and/or project manager. Each major subcontractor should have a competent foreman on the job backed up by an outside superintendent and/or project manager who is readily available to represent the subcontractor. Each subcontractor employing only one or two workers on the job should have at least a competent crew leader in charge of the work backed up by an outside superintendent and/or project manager who is readily available to represent the subcontractor.
2. Coordination should be assured through regular on-the-job meetings of the general contractor's authorized project representative and the on-site subcontractors' authorized project representatives. Additional meetings may be required for subcontractors whose work might interfere with another at a given time. Minutes of such meetings should be prepared promptly and distributed to all attendees and their home offices.
3. The general contractor and each subcontractor should organize their own work in such a way as not to deviate from the schedule, interfere, or otherwise adversely affect the work of others. The general contractor should monitor and coordinate the work of all parties to ensure compliance with the project schedule.
4. The general contractor should establish a comprehensive Site Logistics plan to support all phases of the project *(see C.4. Site Logistics)*. This plan should include, for example:
   - Storage areas for all subcontractors at the appropriate time. Such areas should not obstruct the work. Relocating materials is costly and should be avoided. Subcontractors should store material in designated areas only.
   - Adequate personnel lifts, when required, and cranes and hoists at times and places that will minimize waiting time as much as possible, regardless of who is contractually responsible.
   - Adequate lighting, heating, weatherproofing, ventilating, fire protection, and cleanup is provided in a timely manner regardless of who is contractually responsible.
5. The general contractor should monitor and expedite the processing of shop drawings, samples and other submittals for approval. This procedure is especially important when change orders are involved.
6. The general contractor and all subcontractors should respect one another's work. When damage or loss does occur, it should be reported immediately to the injured party, appropriate insurance carriers, and the general contractor, and corrected promptly.

Cooperation

1. The general contractor should make a good faith effort to effectively and equally represent each subcontractor in disputes with the owner or architect and invite the affected subcontractor to attend and participate in any conferences related to the subcontractor's work.
2. The general contractor and subcontractors should negotiate disputes in good faith with the intent of achieving a fair and expeditious agreement. The general contractor also should make a good faith effort toward resolv-

ing disputes between subcontractors on the project. Monetary issues in connection with disputes should be settled as promptly as possible; however, every effort should be made to avoid departing from the schedule or delaying the project *(see D.3.a. Avoidance and Resolution of Construction Disputes).*

3. A work authorization form should be completed and signed prior to performing any work for another contractor or subcontractor. "Back charges" work should not be performed unless authorized by such a form or a specifically agreed alternative *(see D.3.e. Charges for Non-contracted Construction Services* and *E.3. Work Authorization Form).*

4. Each subcontractor should submit progress and final payment applications in accordance with the contract's established procedure *(see E.2. Subcontractor's Application for Payment).*

5. It is improper to demand releases or waivers of future claims or claims that, although properly made, remain unpaid.

6. Communications between the subcontractor and the architect/engineer or its consultants for the project should go through the general contractor, in the absence of a specific agreement to the contrary. For example, one such agreement may be for the subcontractor to make reasonable requests directly to the architect/engineer, upon the architect engineer/s consent, about action taken on that subcontractor's payment application.

7. On-the-job relationships should be conducted between the general contractors' and subcontractors' authorized project representatives. Conflicts or problems not promptly settled on site should be handled by home office personnel without disruption to the job.

Communication can either bolster the development of a positive project culture, or can lead to its downfall. All project parties must invest time in developing an effective system for communication and then effectively implement the process.

D.2.b
Guideline on Project Meetings

Regularly scheduled project meetings, when correctly planned and conducted by the controlling/coordinating contractor/owner agent (responsible contractor), will facilitate the orderly and cost-effective construction and completion of a project.

Meeting Schedule and Participants

Typically, meetings should be held weekly at the same time each week with bi-weekly meetings appropriate on some projects. Each contractor's authorized representatives should attend meetings starting two weeks prior to mobilization and continuing until their work is completed. Attendance should be required and with authorized representatives knowledgeable of the project scope and requirements. In the event a specific contractors' work is intermittent, it may not be necessary to attend meetings when not on site. One meeting per month should include home office management from each contractor and owner's representative.

Meeting Content and Structure

The responsible contractor should have previously completed project schedule and sequencing *(see C.1. Preconstruction Conferences* and *B.2. Project Scheduling, Delays, and Liquidated Damages).* In addition, the responsible contractor should assign a person who has a comprehensive knowledge of overall project requirements. That individual will have the responsibility to:

1. Prepare and distribute a written agenda.
2. Notify all parties expected to attend. Pre-determine order of each contractor's participation and when practical, excuse contractors from the meeting after receiving their input and determining if subsequent agenda items are irrelevant to their operations.
3. Promptly prepare and distribute minutes of each meeting to all contractors (whether in attendance or not), including a specific list of follow-up tasks with assigned responsibilities. The task list automatically becomes an item on the agenda for the next project meeting.
4. Prepare, distribute in advance, review and revise a two week "look ahead" schedule and update at each meeting.
5. Keep and distribute in advance of each meeting a "running" log of outstanding items.
6. Start meetings promptly and keep discussion short and "to the point" with an agreed upon time for adjournment.
7. Have current information on changes requested, changes approved, approved drawings and related project updates at each meeting.

Web Site Projects

On projects where communications and information exchange is in an electronic format, integrate project meeting minutes with follow-up lists of assigned responsibilities, sequencing, changes, and other pertinent project information into the web site.

Summary

Properly planned and conducted "Project Meetings" will result in positive attitudes, committed participants, less "lost motion," better production, on time completion and higher profits.

D.3.a
Guideline on Avoidance and Resolution of Construction Disputes

The construction industry is, by nature, a complex one. In the process, inevitable differences arise concerning scope definition, delays, accelerations, obstructions, and changed conditions. All the while, the process of building must go forward with a minimum of disruption.

Resorting to lawsuits can be costly and time consuming, and judges and juries generally lack an understanding of the construction process. The net result is all too often that only lawyers, consultants and expert witnesses benefit from lengthy court actions.

Disputes avoidance

The Associated General Contractors of America, the American Subcontractors Association, and the Associated Specialty Contractors support programs to minimize disputes through equitable allocation of risks in contracts and fostering cooperation among members of the construction team throughout the building process. Dispute avoidance and resolution may be accomplished through teamwork programs such as the partnering concept that involves post-award, several-day meetings of owner, design professional, construction manager, and major contractor representatives working together to identify potential problems and to develop practical solutions *(see C.2. Partnering).* The concept also may involve group bonuses payable only if all trades achieve established project goals.

In principle, a vast majority of construction disputes are susceptible to settlement through a give-and-take process by decision-makers of construction team members without resort to formal third party intervention. All parties in construction projects are urged to minimize the role of lawyers, inasmuch as construction problems usually relate to fact and customary industry practice rather than emphasis on legal issues.

Because of the desirability of settling disputes quickly and inexpensively, language calling for the parties to endeavor to settle disputes through direct discussions before considering mediation or arbitration should be included in all contracts.

Non-binding alternative disputes resolution (ADR) methods

The most frequently used method of non-binding alternative disputes resolution (ADR) is mediation. Mediation consists of one or more impartial parties advising and consulting with those involved in a dispute. The mediator can not impose a settlement, but rather guides the parties toward their own settlement. Mediation is available to the parties by mutual agreement even though a contract may specify arbitration. Language recommending consideration of mediation prior to arbitration, if the parties so agree, is strongly encouraged for inclusion in all contacts.

Another non-binding ADR method available for use is the mini-trial. This process is not a trial in the usual sense of an adversarial judicial proceeding. Instead, it is a relatively structured process whereby management representatives of the parties to a dispute operate within mutually-agreed upon time limits to conduct informal conferences and hold non-binding, confidential discussions. Typically, attorneys prepare positions for the parties. The basic idea is to have the principals of firms see the relative strengths and weaknesses of their cases and to serve as a basis for negotiations between them to resolve the dispute. Disputes resolution and counseling panels are other non-binding ADR services. These panels use members who are ordinarily technical experts, chosen in advance, to address disputes at the times they arise on a project. The aim is to act quickly on moderate size disputes before confrontational attitudes harden. Panel decisions entered as evidence in arbitration or litigation or, by agreement of the parties can be accepted as final and binding.

Still other ADR techniques are:

1. Step negotiations involving the passing of disputes to successively higher levels of management until resolved,
2. Referral of technical questions to project architects for initial decisions,
3. Advisory rulings by neutral experts and,
4. Fact-based mediation whereby a mediator suggests a settlement amount and then assists in negotiation.

4. Fact-based mediation whereby a mediator suggests a settlement amount and then assists in negotiation.

Arbitration

Unlike most other ADR methods, arbitration is final and binding. Decisions are subject to challenge only on narrow grounds such as prejudice or bad faith. Arbitration is used widely in the construction industry, and the practice is encouraged by provisions in standard documents calling for arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association **(see http://adr.org/commercial_arbitration).**

Arbitration may involve one or three arbitrators jointly chosen by the parties. The process normally is faster and less costly than litigation and has the major advantage of cases being heard by persons experienced in the construction industry. The desirability of using the flexibility of arbitration by tailoring rules to fit specific cases is an advantage to this approach. However, excessive use of legalistic approaches that unnecessarily slow the settlement process and increase costs to the parties is deplorable.

Conclusion

AGC, ASA and ASC support initial efforts to settle disputes through direct negotiations. If it becomes necessary to use neutral third parties to assist in the resolution process, we encourage consideration first of the use of mediation or other non-binding ADR methods because of speed and cost considerations. Finally, where parties to a dispute want final and binding resolution, the associations support arbitration using qualified, properly trained persons as arbitrators and utilizing expedited procedures to the extent practical.

D.3.b
Guideline on Benefits to the Owner of Effective Allocation, Delegation, and Performance of General Conditions Responsibilities

1. As construction processes change to meet the needs of effective construction project delivery, owners must take care to ensure that all necessary functions of the building process, often called general conditions, are performed on a coordinated, interactive basis.

2. In the traditional project delivery system, there is a clear relationship between the general contractor and its subcontractor. Contract documents, prepared by the owner and/or the owner's representative, spell out the obligations for which each is responsible. The general contractor maintains continuous supervision, administration, and control of a project. Communication of the many details and coordination of the various phases is handled by the general contractor as the job progresses. These responsibilities are part of the general conditions of the project, and the general contractor has a contract with the owner to deliver these services. These general conditions include the temporary infrastructure and services which are needed to support successful completion of the project, but are not a part of the completed project.

3. Alternate project delivery systems have evolved in an effort to shorten project delivery times and to gain other efficiencies and savings. Responsibilities are often divided among unrelated parties and management, and control of the overall project, including general conditions, may not be clearly established. A project may have a general contractor and/or construction manager, but they may not be contractually required to perform all of the traditional duties contained in the typical general conditions. The use of such alternate delivery systems can create confusion among the stakeholders on the jobsite and problems for the owner in the form of delays and additional costs.

4. Regardless of the project delivery system used, owners must ensure that a general contractor or appropriate entity responsible to the owner performs and is liable for the completion of general conditions items. The person or entity responsible for delivery or performance of general conditions items should maintain a jobsite presence. These include, but are not limited to:

   - Safety *(see D.1.a. Project Safety & Health)*
   - Scheduling/Coordination *(see B.2. Project Scheduling, Delays, and Liquidated Damages)*
   - Site Logistics (site access, temporary utilities, storage, etc.) *(see C.4. Site Logistics)*
   - Communication *(see D.2.a. Communication)*
   - Inspection *(see D.4.b. Project Inspections)*
   - Project closeout *(see D.5.a. Project Closeout)*

5. While each construction project must be defined in contract terms that express the unique characteristics and requirements of the project, maximum efficiency and successful project delivery are achieved when the owner ensures that a responsible party performs the general conditions work. The value to the owner includes timely project completion, reduced costs, delivery of a quality project, and reduced likelihood of claims.

D.3.c
Guideline on Consequential Damages

Overview

1. Growing windfalls and disproportionately large court and arbitrator awards on lost profit and similarly speculative claims have led to major losses by owners and contractors and increased litigation. These claims involve highly subjective, ripple-effect cost impact estimates growing out of project delays and disruptions.

2. Individual consequential damage awards may far exceed the total value of a contract or subcontract. They are neither insurable nor subject to being recouped through pricing in today's highly competitive construction marketplace. Besides legal and award costs, valuable time is often required of key employees to defend claims. Finally, delays and their resulting costs generally involve complex circumstances where fault is shared by numerous parties. The end result has been uncertainty and a misallocation of risk to those lacking adequate control.

Contract Language

3. All parties in the construction process are best served through clear contractual understandings that achieve certainty and restrict recovery of claimed damages to amounts, if any, specifically agreed upon by the parties. Accordingly, relevant text should be included on mutual consequential damage waiver language in construction agreements. Both AGC 200 and AIA A201 contain language that accomplishes this goal. Section 4.3.10 of The American Institute of Architects document A201, *General Conditions of the Contract for Construction* (1997 Edition) reads as follows:

   > The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes:
   >
   > .1. damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons, and
   >
   > .2. damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing business and reputation, and for loss of profit except anticipated profit arising directly from the Work.

4. Owners benefit from the mutual waiver of consequential damages by avoiding potential claims for contractors' and subcontractors' extended home office overhead. These costs are extremely complex and owners and contractors have had to devote significant resources to deal with these claims.[1]

5. Specific waiver language is necessary on each job to avoid liability for consequential damages. Contracts and subcontracts that are silent on the subject offer no protection against all sorts of indirect cost claims for alleged damages or performance deficiencies.

6. Construction projects are frequently based on aggressive target completion dates that make no allowance for delays due to weather, late infrastructure work, labor shortages, changes to plans, and coordination problems. Owners who place reliance on these aggressive target dates in obtaining financial commitments and leasing the premises should be prepared to accept the associated risks.

7. Consequential damages may arise from performance as well as delays. For example, an owner may contend that office-building leasing was slower than anticipated and rental rates were below plan because of intermittent HVAC problems.

8. Liquidated damages, unlike consequential damages, allow contractors and subcontractors to make business decisions about whether or not to bid the work and to include contingencies in their pricing. On projects where it is foreseeable that delay beyond a given date will result in known, specific costs, the parties may agree in advance on a reasonable dollar amount of liquidated damages for each day of unexcused delay. Owners should be aware that inclusion of liquidated damages generally may result in higher prices and perhaps fewer bidders.

Conclusion

9. Certainty and predictability are principles on which construction contracts should be based. AGC, ASA, and ASC support the concept that risks should be limited to those foreseen and agreed upon in contracts, with each party specifically disclaiming any right to assert a claim for consequential damages.

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[1] *General Contractors and subcontractors may wish, instead, to routinely charge project specific costs (such as salaried supervision) to each job to avoid the consequential damages waiver impact on these well-established cost items.*

D.3.d
Guideline on Procedures for Change Orders

Reasons for a change order

There are many reasons for issuing a change order on a construction project. The most common reason is to accommodate a change in the owner's requirements. Other common reasons for change orders include: changing requirements of public authorities; deletion of project features; resolution of project coordination problems; correction of errors or conflicts in the plans or specifications; changes in materials or equipment; unavailability or delayed delivery of specified items; or changes in technology.

As the number of change orders on a project increases, so does the possibility of misunderstanding among the contracting parties. Such a misunderstanding may occur because one or more of the parties lacks full knowledge of the change order process itself, the costs involved in implementing changes, or the delays, conflicts, and interruption of the construction sequence and schedule which can adversely impact project coordination.

The following procedures are recommended to owners, architects, contractors, and subcontractors to minimize the possibility of misunderstanding and project disruption stemming from change orders.

Owner-initiated change order

When a change order is initiated by the owner or owner's agent, the process should begin with a request for proposal (RFP). The RFP should contain all the information needed by the contractor or subcontractors to make a reasonable and realistic estimate of the costs and the time needed to implement the change. This information should include, but may not be limited to:

1. Revised plans and specifications that permit accurate quantification of work to be added, deleted, or substituted and its relation to unchanged work.
2. The time span for making the change and specific authorization for overtime, if required.
3. The amount of supplemental work to be performed if the change is in a completed area.
4. The degree of detail expected in the cost breakdown of the contractor's change order proposal.
5. The period of time during which the change proposed will be open for review, acceptance, or rejection.

Contractor or subcontractor-initiated change order

When a change order is initiated by the contractor or a subcontractor, the approved project procedure should be followed. The change order should include, at a minimum:

1. The reason for the proposed change, a reference to the plans and specifications, the benefit to the owner and the project, and the effect of the change on the project sequence.
2. The effect of the proposed change on the contract time and price in sufficient detail to permit proper evaluation by the contractor, the owner, and the owner's agent.
3. A reasonable but definite time period for the owner to accept or reject the change proposal without interruption or delay in the project schedule.

The timely issuance of change orders can prevent excessive costs, delays, and friction between the parties. All parties must understand the time constraints in the contract and subcontracts for and abide by these constraints. Accumulating change order requests until the end of the project is not acceptable and will most likely lead to a dispute. Late changes in the contract documents can be reduced by the owner through continual review of the documents and inspection of the work as it progresses.

The owner's agent, the contractor, and subcontractors also can reduce conflicts and last-minute revisions by reviewing plans and specifications before construction and making timely requests for necessary clarifications. The owner's agent should be diligent in the issuance of clarification responses and submittal approvals, thus avoiding interruption in the work and substantial delays in the project schedule.

Types of change orders

The lump sum change order

The lump sum change order is the most common type of change order. It is preferred because it defines precisely

the total cost or credit and time variation to the contract. It is negotiated by the parties and agreed upon before the work is executed, in most cases.

Unit price change order

The unit price change order is used when unit prices for specific items or trades are prenegotiated and made part of the contract. Thus, only quantities of each item of work are estimated or measured before or after the changes are performed. However, problems or inequities can arise when the performance of the work conflicts with other trades or delays the construction schedule, or when substantial variations are made to the total quantity of work on which the original prices were based.

Time and material change order

The time and material change order is most often used when the scope of the change cannot be defined properly before work must begin, either because the parties can not agree or because there is not enough time for standard change order processing. When using a time and material change order, the parties should be sure to have a clear definition of reimbursable costs before the work is begun. Following are some examples of reimbursable items to be clearly defined:

- Labor rates to be charged, including specific percentages for payroll taxes and other statutory and employer-provided benefits.
- Rates for machinery and equipment supplied by the contractor, whether owned or rented.
- Costs of small tools and miscellaneous material, regardless of whether consumed in the work (this may be stated as either a percentage of labor and materials incorporated into the work, or as individual line items).
- Expenses for estimating, engineering coordination and field supervision.
- Overhead expenses on the job and in the home office and a reasonable fee for the additional work. Overhead and fee or profit is not normally deducted on deductive change orders.

Change directive

Construction change directives formally alter the scope of the work in the same manner as a change order, but without formal agreement as to the proper adjustments for time and price. A contractor or subcontractor does not waive its rights to time and price adjustments when it proceeds pursuant to a signed change directive.

Recorded minor change order

The recorded minor change order in most cases is initiated by the owner's agent and is used when the change is so minor that there is no significant effect on project cost or time, but the variations to the plans or specifications nevertheless should be recorded for later incorporation into the as-built drawings. This type of change order also is useful to avoid problems later when memories of unrecorded changes might fail or when authorization for the change may be questioned. This procedure also permits the contractor or subcontractor to recover expenses when a large number of minor changes accumulate.

Authorization of change

Change order work should not begin until after the owner or owner's agent issues a written authorization to proceed. Adherence to this precedence will promote smooth and efficient adjustments by all parties. This written authorization should reflect the variations in the work and the contract cost or time schedule. The authorization also should specify that variations are made in accordance with the terms of the original contract, and, to the extent provided in the contract documents, allow for payment of undisputed amounts as part of monthly progress payments.

When the contract is finalized, the owner should identify those individuals who have authority to authorize changes on the owner's behalf. The contractor and subcontractors also should identify which of their employees are authorized to accept or negotiate changes (preferably job superintendents, job engineers, or the project manager). It is important that the owner or the owner's agent deal only with the contractor's authorized representative.

Special care should be taken with subcontractors and material suppliers to clarify the proper communication paths and to identify the persons in authority. Direct communication between subcontractors and the Owner, Owner's agent, designer, or designer sub-consultants can result in ambiguous contractual issues. Appropriate communication processes should be clearly outlined during the Pre-Construction Conference attended by all parties *(see C.1. Preconstruction Conferences).*

The major problem affecting the proper execution of change orders is the time lag between the submittal of the cost and time estimates for the changes and later acceptance or rejection by the owner *(see B.2. Project Scheduling, Delays, and Liquidated Damages and D.5.a. Project Closeout)*. The longer the time lag between submittal and acceptance or rejection, the greater the possibility of an increase in cost to the owner or a delay in the completion of the work. The contractor and subcontractors must state prominently, on the face of each proposal, a reasonable time period during which the quoted price may be considered firm and after which the project will be delayed.

Emergency changes require expedited procedures which should be developed and communicated as part of the Pre-Construction Conference. Regardless, emergency changes should be documented by written authorization immediately following.

Conclusion

Although each change order must be evaluated separately, certain procedures are applicable to most change orders and should be followed.

1. Establish change order handling procedures at the preconstruction conference.
2. Identify those individuals who have authority to negotiate and approve change orders. Also, notify others of any limits on the authority of those individuals. This information should be made known to all parties during the preconstruction conference.
3. No work beyond the scope of the base contract should be performed without prior written authorization from the owner, except in emergencies.
4. The scope of the change order should be clear and the request for the change should contain enough information to enable the contractor or subcontractors to make a realistic estimate of the costs and time involved.
5. Proposals should be submitted as soon as possible after the receipt of a request and, once submitted, should be acted upon immediately.
6. The proposal should acknowledge the contractor's or subcontractor's right to include overhead and profit percentages in additive changes, and to exclude these from deductive changes.
7. All parties should acknowledge and honor the contractor's or subcontractor's right to compensation for the cost of time delays, the cost of processing additive as well as deductive changes, the cost of legally disposing of materials, and all other costs incurred in the execution of the change.

D.3.e
Guideline on Charges for Non-contracted Construction Services

The following guidelines are recommended to ensure proper notice and compensation for additional services:

(1) Services should be rendered or material or equipment furnished by the contractor to or on behalf of the subcontractor only on the basis of prior notice by the contractor and concurrence by the subcontractor *(Appendix E.3. Work Authorization Form is suggested)*.

(2) Services should be rendered or material or equipment furnished by the subcontractor to or on behalf of the contractor on the basis of prior notice by the subcontractor and concurrence by the contractor *(Appendix E.3. Work Authorization Form is suggested)*.

(3) Where prior notice cannot be given due to the need for immediate action, such action as is necessary may be taken by the contractor or subcontractor on behalf of the other.

(4) No charges for services rendered or materials furnished by the contractor to the subcontractor or by the subcontractor to the contractor should be valid unless a written claim is given by the contractor to the subcontractor, or by the subcontractor to the contractor, during the first ten days of the calendar month following that in which the claim originated.

This guideline applies to construction services only, as distinct from changes in the work as required by the contract documents *(see D.3.d. Procedures for Change Orders)*.

D.3.f
Guideline on Prompt Payment

Undue delays by owners, architects/engineers, general contractors, subcontractors and sub-subcontractors in processing payments or in making timely payments impose hardships and improper financial burdens on the contractors and suppliers who await payment, and amount to extensions of credit by the contractor and suppliers to their respective higher tiers.

In order to avoid such problems, all payments should be made on all contracts promptly. This should include payment for all labor, services and materials stored on the job site or other approved storage sites as of the closing date of requisitions. This applies to both progress payments and final payments.

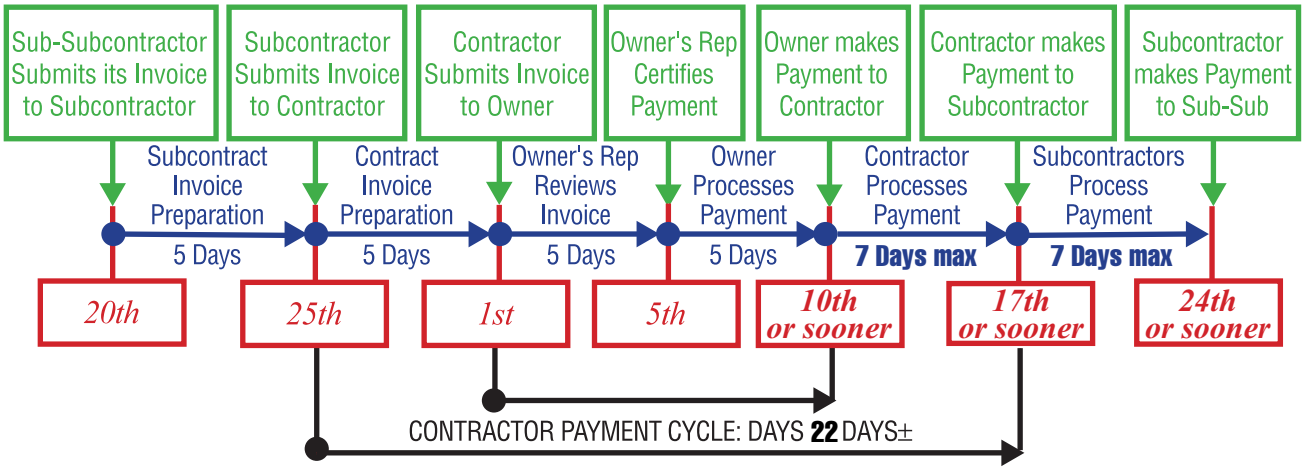
Contractor and subcontractor requisitions should not include amounts that the requisitioner does not intend to pay its subcontractors or suppliers because of a dispute or other reason.

The following schedule of billings, certificates and payments by various participants in the construction process is suggested. The schedule assumes normal trade contract terms allowing monthly progress payments for work performed and materials suitably stored through the end of the month. This schedule does not refer to payments to suppliers who are not subcontractors.

It is important to note that along the sequence of events, any recipient of a payment request who takes exception to an item of billing should immediately contact the initiating party by telephone and attempt to resolve the matter. Failing resolution, the party taking exception should notify the other party in writing of the reasons for the action.

The schedule should be adjusted by making appropriate billings and payments on the last working day prior to any listed Saturday, Sunday or holiday. It is also suggested that collection efforts be commenced immediately following the day any payment due was not paid.

Prompt Payment Cycle



D.3.g
Guideline on Payment for Stored Materials and Equipment

Advance procurement of construction materials and equipment is a prudent practice that saves money and promotes the timely completion of construction projects. Construction project owners garner the full benefit of advance procurement by allowing progress payments to include payment for materials and equipment stored at the construction site or some other agreed location.

As a matter of careful construction practice, contractors and subcontractors often purchase and request delivery of construction materials and equipment soon after a contract is executed and well before the equipment or material is needed. The purpose of advance purchases is to assure that specified materials and equipment are available for installation or use in accordance with the construction schedule. Early procurement of materials and equipment also guards against escalating costs, particularly in long-term contracts, and enables the contractor and its subcontractors to make timely purchases when shortages may be a problem.

The contractor's and subcontractor's progress payments for suitably stored material or equipment should not be withheld until the material or equipment is actually installed in the work. Owners that fail to provide for payment of stored materials and equipment discourage prudent business practices and prompt schedule compliance. Safeguards can be taken to assure that the owner's interests are protected from diversion, destruction, theft, or damage to stored materials or equipment that the contractor or subcontractor is holding for future installation. These safeguards may include, but are not limited to:

- Provision of delivery tickets, packing lists, and/or photographs to substantiate delivery.
- Inspection of stored material by the owner or owner's representative.
- Provision of proof of insurance coverage for off-site storage material.
- Inclusion of all of the above with the progress payment request.

D.3.h
Guideline on Purchase of Materials or Equipment by Owner

When an owner decides to purchase materials or equipment directly, it is imperative that adequate details for proper installation be included in all bid documents. In addition, owner purchased materials or equipment may increase the project price because a contractor will have to cover contingencies over which it has little or no control. Before deciding to exercise the direct purchase of equipment or materials option, owners are encouraged to consider the following:

- When an owner purchases equipment and when equipment is installed by the owner's or equipment supplier's employees, there will always be the additional burden of coordinating delivery and installation. There is also a possibility of craft jurisdiction problems.
- Contract performance can be adversely affected on projects experiencing untimely, unscheduled or failed delivery of equipment and materials.
- A contractor is most familiar with local building code requirements, which often address both materials and equipment installation requirements.
- The issue of shipping charges is also important because most manufacturers ship materials so that title passes to the purchaser at the manufacturing or shipping point.
- Under an owner direct purchase option, unless other arrangements are made, the owner may have to assume responsibility for warehousing, transfer and security of materials or equipment.
- When an owner buys materials or equipment, the owner also assumes the responsibility of resolving any warranty issues with the manufacturer.
- A contractor's overhead cost remains the same. In addition, in states in which a contractor is required to pay the sales tax on any equipment it installs whether it purchases it or not, the contractor may build taxes on the retail price of the equipment into its bid.

Owners should consider potential consequences of directly purchased equipment or materials. Complete and full disclosure of all aspects of owner purchases should be communicated and coordinated with the contractor.

D.3.i
Guideline on Overtime, Construction Costs and Productivity

The practice of scheduling overtime in machine-paced fabricating and other types of manufacturing operations is widespread. Perhaps some scheduled overtime to maintain production schedules is less costly than bringing new employees into the work force in some repetitive, machine-paced factory operations. However, any advantages of scheduled overtime which might be found in manufacturing do not apply to construction. Non-repetitive work, fatiguing physical labor and other features make construction work far different from machine-paced factory employment.

Scheduled overtime is seldom found on competitively bid, firm-price contracts. Most contractors are mindful of some of the negative effects of overtime on costs and productivity. However, scheduled overtime is sometimes ordered by owners or construction managers, particularly on large cost-reimbursable projects, in an effort to:

- Accelerate completion;
- Make up for previous delays;
- Complete as originally scheduled a project which has been increased in size and complexity by change orders; or
- Compensate for shortages of skilled construction workers in the area.

One of the worst but most common reasons to use overtime premium pay is to induce needed workers to leave other jobs and accept employment on the project on which the overtime is scheduled.

Productivity Impacts

Simple arithmetic shows that premium pay for double time or time and one-half makes overtime work much more expensive. However, people who insist on overtime seldom realize that other costs associated with overtime may be even more significant than premium pay. Premiums affect only overtime hours, but continuing, scheduled overtime drastically affects the costs of all hours.

All available research findings indicate a serious inverse ratio between the amount and duration of scheduled construction overtime hours and productivity. In the first few weeks of scheduled overtime, total productivity per worker is normally greater than in a 40-hour week, but not as much more as the number of additional work hours. After seven to nine consecutive 50- or 60-hour weeks, productivity is likely to be no more than that attainable by the same work force in a 40-hour week. Productivity will continue to diminish as the overtime schedule continues. After another eight weeks or so of scheduled overtime, the substandard productivity of later weeks can be expected to cancel out the costly gains in total weekly production realized in early weeks of the overtime schedule, so that total work accomplished during the entire period over which weekly overtime was worked will be no greater, or possibly even less, than the work accomplished if the regular schedule had been used.

When the loss of productivity is added to the higher wage cost with premiums, productive value per wage dollar paid after several weeks of scheduled overtime drops to:

- Less than 75 percent for five 10-hour days
- Less than 62 percent for six 10-hour days
- Less than 40 percent for seven 12-hour days

Studies on this subject conducted by the Bureau of Labor Statistics of the U.S. Department of Labor, the Construction Industry Institute, the Business Roundtable, the National Electrical Contractors Association, and the Mechanical Contractors Association of America produced similar results. All of them showed that continuing scheduled overtime has a strong negative effect on productivity which increases in magnitude proportionate to the amount and duration of overtime. Abandonment of the overtime schedule appears to be the only effective remedy. Only the BLS study evaluated what happens when scheduled overtime is discontinued. That study showed a dramatic jump in productivity per hour upon return to a 40-hour week.

Reasons for declining productivity under overtime schedules

Several logical reasons have been found to account for declining productivity under overtime schedules.

Work pace inertia

Industrial engineers have found that workers expend energy at an established pace determined by long periods of adaptation. Hence, when the hours of work increase, there is a tendency to adjust the pace to accomplish about the same amount of work in an extended workday or workweek as was accomplished before the extension. The interdependency of construction workers with others on the same crew and with workers of other trades on the same project make it difficult or impossible for any individual worker who may attempt to overcome this tendency to do so without the problem of "running out of work" while waiting for other work to be performed.

Absenteeism

Bureau of Labor Statistics Bulletin 917 states: "But, whatever the reason, one fact stands out clearly in the survey: the longer the hours, the more scheduled work time lost through absenteeism." Absenteeism is promoted when the effects of cumulative fatigue, desires of workers to spend more time with their families, and need for time away from the job to take care of personal business combine with lack of economic necessity to work all available hours because of the high pay received during overtime weeks. Absenteeism of even a few employees seriously disrupts scheduled daily operations and reduces total project efficiency.

Accidents

When extended overtime is employed, the result is increased accidents and injuries, along with the productivity-killing effects on morale. The BLS Bulletin states: "Injuries also increased as hours increased, not only in absolute numbers, but also in rate of incidence. In most of the observed instances, the number of injuries per million hours worked was very much higher at the longer hours."

Fatigue

Physical and mental fatigue build up at an accelerated rate from excessive hours on the job and lack of recuperative time off the job, even when overtime work is resulting in little or no additional work being accomplished. In work such as construction, which is not machine-paced and which requires sustained physical effort as well as mental alertness, fatigue obviously reduced productivity during all hours worked. The BLS Bulletin stated: "For hours above 8 per day and 48 per week, it usually took 3 hours of work to produce 2 additional hours of output when work was light. When the work was heavy, it took about 2 hours of work to produce 1 hour of additional output."

Morale and attitude

Anything which adversely affects morale and which lessens cooperative and positive attitudes toward the work, the employer, and the customer will result in lowered output. Fatigue causes deterioration in morale and positive attitude along with an overall negative impact to the project culture. In addition, continuing expensive overtime can quickly result in an attitude that, "Cost means nothing to the customer, so why should we workers worry about efficiency?" Deteriorating morale and attitude coupled with fatigue increase friction among the workers, grievances against management, and jurisdictional disputes with other trades.

Turnover

Frequent turnover of workers is expensive and disruptive. Regardless of the skills of new workers, a considerable amount of time is needed to train them to the specific needs of the project and orient them to what they will be doing and how it meshes with the work done by others on the job. Turnover can be expected at an accelerating rate as overtime schedules continue because of fatigue, poor morale and attitude, and lack of economic need to continue working.

Job shopping

In an area where one or more large projects have scheduled overtime, workers seem to spend more effort finding the project having the highest premiums than in getting the work accomplished. If other construction employers feel induced to schedule overtime to keep their share of the area work force, a daily "auction" for available manpower is likely to occur.

Supervision problems

Because of their greater responsibilities, supervisory employees are likely to feel the fatiguing and demoralizing effects of prolonged overtime schedules even more than production workers. Loss of key supervisors part way through a construction job can have highly detrimental effects, but such loss can be expected on a job with prolonged overtime due to illness or resignations because of overwork. Pressures resulting from scheduled overtime also cause supervisors to become careless, to make errors

time also cause supervisors to become careless, to make errors in judgment and to become irritable, adversely affecting their relations with workers and others. Obviously, the alternative of not having experienced supervisors present during all overtime hours being worked can have even more serious consequences.

Stacking of trades

Scheduled overtime almost always distorts the orderly sequence schedule originally adopted. This inevitably results in space conflicts and undesirable mixing of employees of different crews and different contractors.

Pressure for more overtime

It is common for jobs with scheduled overtime to have worker pressure for more overtime and slowdown among workers receiving less overtime pay than others. Competition to get the largest paychecks seems to become a greater motivator than pride of participating in a successful project.

Avoiding the effects of scheduled overtime

The following steps are recommended to avoid the effects of scheduled overtime:

(1) All parties concerned with planning and scheduling construction projects, including owners, construction managers, architects, engineers and contractors, should be fully aware of the magnitude of the extra costs caused by scheduling overtime and that productivity losses will affect work during normal hours as well as during overtime hours. All must recognize that the supposed benefits to be gained from scheduling overtime, such as accelerating completion or making up for previous delays, are unlikely to be realized and very costly to attempt.

(2) Initial completion schedules should be realistic and take into account such factors as availability of skilled manpower and potential delays from weather, strikes, licensing delays, interference by environmental interests, etc. Completion schedules should allow sufficient flexibility to absorb unexpected but unavoidable delays. Design should be completed and construction started early enough that the customer need for a completion date will be taken care of without artificial acceleration.

(3) Change orders of a size or number which will delay completion should be avoided unless the completion time can be extended to permit performance of both the changed work and the original work without resorting to overtime. No change should be contemplated or authorized without full consideration by all parties of its effect on completion time.

(4) If the costs of scheduled overtime are to be paid by the customer under a cost-reimbursable contract or under cost-reimbursement provisions for changes or acceleration orders, the contractor should not be permitted to proceed with scheduled overtime without the previous written agreement of the customer. Before agreeing to the proposed overtime schedule, the customer should thoroughly study the inherent disadvantages, consult with contractor associations in the area for their opinions on what the effects of scheduled overtime will be, and make sure that no other alternative is available.

(5) Contractors on firm-price contracts should be fully compensated for loss of productivity as well as for overtime premiums and additional supervisory and administrative costs resulting from working on overtime schedules when required by the customer to perform changed or accelerated work which necessitates scheduled overtime.

(6) An effort should be made to negotiate and utilize workable shift work clauses to perform much of the work which must be performed outside scheduled working hours with employees who are not employed during regular working hours. It should be recognized, however, that productivity during shift periods is not likely to equal that during regularly scheduled working hours.

(7) Overtime should never be used to induce needed workers to leave other jobs and accept employment on the project for which the overtime is scheduled.

D.3.j
Guideline on Risk Allocation

A guideline on this topic is being developed.

D.3.k
Guideline on Retainage

The holding of retainage is a traditional and common business practice in the construction industry and is used to assure a timely and satisfactory completion of the construction project.

Whenever practical, however, retainage should be eliminated or reduced. If the need for retainage can not be eliminated, an acceptable alternative form of security in lieu of retainage may be used. If retainage is required, the percentage retained should be as low as possible.

Where withholding a retained sum from progress payments is deemed necessary to secure performance on a construction project from prime or subcontractors, the following guidelines are recommended:

- The percentage level of any retainage should be the same for subcontractors as for prime contractors on the project. This approach is applicable provided the subcontractor exhibits the ability to provide the same level of security as the prime contractor and the prime contractor underwrites the cost of any excess required security that is not included in the contract documents.
- Early release of retainage for completed and accepted work should be encouraged. Upon substantial completion of a contractor's or subcontractor's work, a line item basis should be used by owners and contractors in determining the point of any reduction in the rate of retainage, the time for release of retained funds, and the time for making final payment. For unit price quantities, retainage is not released until final quantities are approved and paid by owner *(see D.5.a. Project Closeout* and *D.5.b Punch List Procedures).*
- Progress payments, reduction of retainage, release of retained funds, and payments for completed work should not be delayed because work under change orders has not been finalized. Final payments for change order work should be made promptly after its completion.
- Where retainage is used, retained amounts should be deposited in an escrow account accruing interest to the contractor and the subcontractor in their respective shares.
- Consideration should also be given to not holding retainage on subcontracts and material purchase agreements of less than $10,000 in order to minimize contract administration efforts.

D.3.I
Guideline on Terminations and Suspensions

Overview

Most construction contracts and subcontracts entitle the parties to terminate or suspend work for good cause and, under more limited circumstances, for the owner's convenience. Contract termination procedures typically call for adequate notice plus an opportunity to correct deficiencies before the owner or a contractor or subcontractor can be terminated for default.

Communication and Documentation

Good communications and documentation are helpful in avoiding or mitigating the impact of termination for cause and suspension for cause. All parties benefit when concerns about such problem areas as job performance and slow pay are addressed as soon as practical. Many premature terminations result from misunderstandings or insufficient information due to a lack of prompt, clear communications. This includes the need for complete job meeting minutes and regular communications between meetings. The faster that problems are reported, the better theses can be addressed cooperatively to mitigate any unfavorable impact and to lessen the chances of inappropriate terminations, suspensions or takeover of work.

Termination of Contractors and Subcontractors for Cause

Owners and prime contractors are customarily entitled to terminate a contractor or subcontractor for persistent or repeated failure to adequately supply sufficient workers, for failure to pass through payments to subcontractors and suppliers or for a material breach of contractual duties. Such terminations require prior written notice plus reasonable time for the contractor or subcontractor to commence and diligently pursue correction of the deficiencies. The owner or prime contractor is entitled to complete the work and to be reimbursed for its reasonable completion costs. The terminated party's jobsite material and equipment can be used by the owner or prime contractor provided payment has been made in full for such material and equipment. Hence, contractors having equipment such as cranes and rented equipment that they wish to exempt from such contract provisions should routinely clarify their contractual right to remove general purpose tools and equipment which will not be incorporated in the completed structure. Terminations should be a last resort because replacement of a contractor often causes job progress to be delayed and costs to increase, as well as creating divided responsibility for the completed work. Claims are often asserted by contractors alleging premature termination which require time and money to be spent defending actions seeking recovery for monetary losses and for damage to reputation. If an owner or prime contractor is unable to establish that a termination was for just cause, the termination is deemed to be for convenience, thereby entitling the terminated party to compensation as noted below in the Termination by Owner for Convenience section. In either event, contractors' and subcontractors' warranties may be voided when their work is completed by others.

Right to Carry Out the Contractor's or Subcontractor's Work

As an alternative to termination for cause, most construction contracts and subcontracts also allow an owner or prime contractor to correct deficiencies in contractors and subcontractors work. Deductions covering the reasonable costs for such work are made from payments owing to the contractors and subcontractors. Prior written notice is generally required along with reasonable time to cure the deficiency prior to such takeover of the work. Many contracts and subcontracts require a second notice to help avoid disputes which may result from an earlier lack of communication or clarity about the claimed deficiencies and action being taken to address them. Disputes also frequently arise concerning the reasonableness of correction costs and the divided responsibility for the completed work inasmuch as contractors' and subcontractors' warranties may be voided when others complete their work. Hence, owners frequently use the threat of takeover to speed job progress, but normally takeover the work only in extreme cases.

Termination by Owner for Convenience

Terminations by Owner for convenience ranges from situations where projects are cancelled for reasons well within the owner's control to drastic changes in circumstances

such as the owner running out of money. Construction contracts typically call for the contractor and its subcontractors to immediately stop work, follow the owner's instructions and strive to minimize further job costs by canceling subcontracts, orders and commitments. Recommended industry practice calls for contractors and their subcontractors to be reimbursed for work performed and material delivered to the termination date, plus an agreed upon premium.

Suspension by Owner for Convenience

Owners are customarily permitted by contract to order the contractor in writing to suspend, delay or interrupt all or a designated portion of project work for the convenience of the owner. The contractor and its subcontractors must then immediately suspend, delay or interrupt that portion of the work as ordered by the owner. Both contract time and price are subject to adjustment through change orders because of owner directed suspensions, delays or interruptions. This usually includes contractors' and subcontractors' shut-down and start-up costs associated with their suspension of project work.

Termination by Contractor for Cause

Construction contracts typically allow contractors to terminate their contracts if work is stopped for thirty consecutive days or longer, through no fault of the contractor or its subcontractors, because of owner's failure to make contractually required payments to the contractor, as well as for court orders, national emergences, or owner's failure to provide evidence of adequate project financing. Contractors are usually permitted to terminate for repeated, prolonged suspensions, delays or interruptions or for owner's persistent failure to fulfill its contract obligations following contractor's written notice. The same termination rights commonly flow through to subcontractors. Contractors and subcontractors initiating such terminations are generally entitled to be paid for their demonstrated losses, including overhead, profit and damages. However, contractors and subcontractors need to be sure that payment was unreasonably denied before discontinuing performance of their work for untimely pay. Otherwise, they may be portrayed as having improperly abandoned the job and charged with the costs of others finishing their work. Construction contracts typically allow the withholding of payments for work deficiencies and many other causes such as probable claims or unexcused contractor delays. Subcontracts may contain contingent payment terms whereby monies owing to subcontractors may not become due until paid by the owner to the prime contractor. Consequently, many subcontractors prefer to reduce the number of jobsite employees when experiencing payment delays rather than risking the many perils associated with terminating their contract work.

Suspension by Contractor for Cause

Contractors are often permitted by contract to suspend their work if not paid timely for properly performed work. Contractor suspension is similarly authorized if the owner fails to provide adequate evidence of project financing, upon encountering hazardous substances or for reasons beyond the contractor's reasonable control such as unusually severe weather conditions. These contractor suspension rights normally flow through as well to their subcontractors. Contractors and subcontractors who stop work because of owner or prime contractor failures are customarily entitled to additional completion time and payment for their reasonable costs of shut-down, delay and start-up. Many contracts also entitle them to interest if suspension is due to untimely payment. For reasons noted in the Termination by Contractor for Cause section above, contractors and subcontractors are generally reluctant to pull all of their workers off of a project because of late payment. By reducing a company's work force instead, there is less vulnerability to claims of work abandonment and also the opportunity to safeguard the contractor's or subcontractor's material and equipment stored at the jobsite.

D.4.a
Guideline on Total Quality Management

Every member of the construction team can benefit from the implementation of Total Quality Management (TQM) within their companies. The purpose of this guideline is to provide a brief overview of TQM and to assist construction company executives in their understanding of the benefits of implementing TQM in their companies.

There is misunderstanding by many in the construction industry over differences between Total Quality Management and Quality Control or Quality Assurance. TQM is a continuing process of improvement involving all aspects of the business. The wider aim of TQM is to prevent mistakes before they happen. Quality Control and Assurance is just one aspect of the process.

In the construction industry, a total commitment to TQM includes applying the principles of partnering to the individual construction project. All of the construction team members must be given the opportunity to participate in the TQM process *(see C.2. Partnering).*

There is nothing magical about TQM. It is a process to follow in reducing errors in work. The keys to continuous improvement are commitment and teamwork. This commitment must start with the chief executive officer and filter throughout the entire organization. TQM will not work without a total commitment and involvement from top management. Managers, in all areas of the company, must provide employees with the proper training, tools, equipment and work place environment to accomplish the assigned task. The task or requirements must be clearly defined.

TQM Benefits

Significant improvement in profitability has been achieved by companies embracing TQM. The TQM-focused company can expect:

- Improved project and company culture
- Increased customer satisfaction
- Greater efficiency
- Larger market share
- Reduced rework and warranty work
- Higher profits
- Improved reputation
- Safer work execution and resulting in lower insurance cost
- Lower absenteeism and turnover rate

The individual in a TQM company can expect:

- Fewer job-related injuries
- Greater self-satisfaction
- Higher morale
- Improved working environment
- Increased job security

Top management's commitment and involvement

Total Quality Management cannot be achieved without the active involvement and firm commitment of top management. The chief executive officer must initiate the quality policy and commit the necessary corporate resources to carry out that policy.

Management must undergo quality training and lead the improvement process in creating a quality attitude within the organization. This training should start at the top and filter down through all levels of management and on to the job site.

TQM is not a program. It is a management process through which quality products and services are provided on a continuing basis. A company can expect a behavioral change as well as a technical change in the corporate attitude. The commitment must be for the long term.

Develop and communicate mission statement

The company's first step in the TQM process is to develop a mission statement that describes the organization, its values, guiding principles, purposes and vision. It should identify the organization to employees, customers and community as one deserving of admiration.

When the mission is clearly transmitted throughout the organization, employees will identify with it and will be guided by its principles.

Quality policy

A clearly defined statement of an organization's public commitment to quality and continuous improvement makes a powerful impression on the entire company about the importance of quality. The quality policy is focused on quality as it relates to customers, whereas the corporate mission statement encompasses all aspects of a company's existence.

Resources

Implementation of the TQM process requires an investment of today's resources in the company's future. Training requires time and money. Top management must be prepared to commit both its time and its employees' time, including that of busy managers at all levels. This cost is the first part of the cost of quality, the cost of prevention. The cost of quality is defined as the cost of prevention, plus the cost of errors. The cost of errors includes rework, delays, unplanned work, accidents, excessive paperwork, lost jobs, idle time, excessive crew size, equipment failure and late starts. The cost of prevention includes supervision, training, inspection, planning and meetings.

Coordinate overall quality improvement process

Quality action teams are established to study needed improvements for targeted processes. Once implemented, the results are monitored and measured against previous performance standards and goals. Employees working in a given process are trained in monitoring and are empowered to affect continuous improvements.

Upward flow of communications

All participants need the freedom to make suggestions for improvement without fear of reprisal. For some companies or some individuals, this feedback will be foreign to their corporate culture. Management should be committed to recognizing individuals who offer good ideas when presented and again when implemented, regardless of the source. A formal feedback, or "lessons learned" process should be put in place to gather, evaluate, and implement corrective actions.

Recognition program

Recognizing individual and team achievement is critical to the success of the TQM process. Celebrate success stories by publishing them in the company newsletter along with a photo of the individual or team and discuss them at meetings. Indicate a description of the problem, the solution, cost savings and team members. Recognition should come from the chief executive officer to reinforce the commitment of the company to the process. Recognition helps to broaden participation. Celebrated successes stimulate participation in the quality improvement process.

Just as important as recognizing internal team members is the recognition of other members of the construction team, including the owner, the architect, engineers, the general contractors, subcontractors, major suppliers and inspectors.

Independent reading and research

There is a great deal of information available in books, periodicals, and videos on the subject of quality and TQM. External customers can help, too. When an executive gets serious about TQM, the first step is education through independent reading and research programs. Reading this overview is only a start in the educational process. The serious executive must dedicate time to the subject to gain more than a cursory understanding of TQM.

Continuous improvement process

Total Quality Management is a never-ending journey. It is a continuous process of investigation, prevention, evaluation, reviewing and taking corrective action. The process requires top management's total commitment and involvement and a willingness to change the corporate attitude if necessary.

All work is a process. As soon as one process is improved and functioning properly, a TQM company must improve the next process in order of priority and then do it all over again.

Conclusion

Nearly all successful companies practice some form of management improvement program based upon satisfying customers, striving to perform a task right the first time and knowing that improvement must be continuous.

Total Quality Management provides an art and science for the practice of good management. It also provides the intellectual foundation for advancing the study of management techniques and how they can be used to better satisfy the consumers of goods and services. TQM techniques have been successfully employed in many manufacturing industries for some time and offer substantial benefits to the construction industry.

D.4.b
Guideline on Project Inspections

Today construction projects are more complex with sophisticated and integrated systems requiring compliance inspections and/or corrections when installed and operated and throughout various phases of the construction process. As a consequence, traditional reliance on an end-of-project punch list is an inefficient and costly approach to ensuring that products, equipment, or systems operate as designed and specified. The goal of the inspections process should be a zero punch list performance through the use of periodic inspections throughout the project *(see D.5.b. Punch List Procedures).*

The type and intensity of inspections vary greatly depending upon project complexity and client needs. Virtually all projects come under some minimum code standards with inspections during various phases of the project by code officials. Clients will often specify inspections to occur at specified intervals, for purpose of approving progress payments.

Absent an effective inspection system, experience has demonstrated that "end-of-the-project" punch lists can be overwhelming and delay project completion.

The first step toward a zero punch list is a commitment to a project management process with all the key parties involved. A properly planned project involves a detailed pre-bid process, continuing planning meetings throughout the various phases with everyone involved, and an inspection team committed to a timely completion and a zero punch list. The cost of failing to implement a project-management process is substantial and often results in more time for corrective action and a negative impact on the operation of other integrated or related products, equipment or systems.

Purpose of the Inspections Protocol

- To ensure a higher level of quality by improving communications and understanding of project requirements.
- To produce a zero punch list and timely, cost effective project completion.

Coordination Requirements

A pre-project Inspection Conference should be held with the inspector(s), contractor, owner, and designers all present. The conference agenda should include the following items:

1. Scope of project.
2. Specification requirements.
3. Identification of design deficiencies.
4. Material product data sheets.
5. Pre-bid project minutes.
6. Project schedule.
7. Acceptance procedures.
8. Inspector(s) qualifications.
9. Inspector's authority - Prior to the project start, all parties should be advised on the level and limits of authority and responsibility of the inspector(s).
10. Testing procedures and instrumentation - Testing procedures and the required listing of instruments, including calibration, should be reviewed.
11. Procedure for the resolution of disputes.
12. Inspection HOLD Points and Documentation – (Hold Point – a point in the installation schedule at which a specific inspection or testing procedure is required by specification to be performed.)

Upon agreement to these inspection specifics, a second pre-project Inspections Conference should be held with the project subcontractors. Depending on the complexity of the project, inspections may be discussed as part of the overall Preconstruction Conference for the project in lieu of the second Inspections Conference *(see C.1. Preconstruction Conferences).*

Inspection Hold Points and Documentation

1. A schedule of hold points in the sequence of work operations, at which the testing procedures are to be employed (hold points) should be identified. In addition, inspection hold points must be mutually agreed to minimize disruption.
2. The inspector(s) must be committed to the project schedule with inspections conducted accordingly.

3. Conditions or work practices inconsistent with specification requirements or defective products, equipment, or systems must be reported in writing to the responsible contractor representative.
4. Quality Assurance/Quality Control reports should be provided to not only the owner, but also to the performing contractor.

Resolution of Dispute Procedure

A written procedure should be in place to resolve any dispute or conflict between specifications, manufacturer's literature, work in progress, or completed work *(see D.3.a. Avoidance and Resolution of Construction Disputes).*

Requirements for Inspection Personnel

1. Education, Training and Experience – Inspector(s) should have successfully completed an education and training program from a recognized organization offering a curriculum equivalent to the disciplines of the project and a minimum of five years experience in the discipline related to the type of work to be inspected.
2. Physical Qualifications – an inspector should be physically capable of performing the required inspection using standard, OSHA-approved, equipment.
3. Functional Qualifications – an inspector should have a current working knowledge of the operation and use of the inspection equipment required for the project.
4. Knowledge – an inspector should have an understanding of project specifications and plans.
5. Conflict of Interest – a full disclosure should be made by the inspector of any reasons that would prevent an impartial evaluation of the contractor's performance.

Completion of Work

1. If, after an inspection of work, proper completion is at issue, the inspector should issue a certificate that notes those items in question.
2. If the owner or an installer of the owner's equipment or furnishings damages the work, the inspector should promptly advise the owner of its obligation to repair the damaged work. If the owner wants the contractor to repair such damaged work, or perform maintenance work not specified in the owner/prime contractor agreement, the contractor should be reimbursed for such work.
3. If completed and inspected work is damaged after inspection, it should be repaired through change orders.

D.5.a
Guideline on Project Closeout

The general contractor and subcontractors should cooperate in accomplishing the following objectives:

- Assure the owner and architect/engineer representatives that all work on the project will be completed in a timely manner and at a level of quality in accordance with the contract documents.
- Cause the owner to provide the general contractor a positive incentive to complete the work properly on or ahead of time by prompt and proper payment for work satisfactorily performed.
- Provide the subcontractors a positive incentive to complete their work properly on or ahead of time by providing prompt and proper payment for work satisfactorily performed.
- Prevent multiple punch lists by encouraging the owner, its architect/engineer and their consultants to:
    - Communicate any known issues throughout the life of the project to the general contractor and subcontractors to allow early agreement and correction. The goal should be to create the shortest possible punch list upon final inspection.
    - Perform a prompt and thorough substantial completion inspection and prepare a punch list of all detected omissions and deficiencies of the designated portion of the project.
    - Include subsequently detected omissions and deficiencies, if any, in such substantially complete portions of the work as part of the warranty punch list.

1. After a subcontractor considers its work completed and before its workers leave the project, the general contractor's and subcontractor's authorized project representatives should prepare a list of items requiring correction or completion. The subcontractor promptly should satisfy such requirements and arrange for any contractually required tests.
2. No party should ask for a substantial completion inspection and punch list until the designated portion of the work has in fact reached substantial completion.
3. Upon achieving substantial completion of the work or designated portion, the general contractor should verify that each subcontractor's work is substantially complete and then request a prompt substantial completion inspection by the owner, its architect/engineer and/or their consultants as contractually required. The general contractor's authorized project representative should be present during the inspection process along with the project representative(s) of the subcontractor(s) whose work is being inspected.
4. Punch lists may contain items that fall into two categories that are difficult to resolve in a timely manner:
    - Scope issues: The punch list process may uncover incomplete work scope that has not been contracted to any subcontractor. The general contractor should expedite performance of such work by the appropriate party.
    - Finish details: Visual inspection, especially of detailed finish work can uncover the need for additional clarification between the general contractor, subcontractors, architect/engineer, and the owner. These items should be highlighted during the punch list process and the project's clarification process should be used to document and formally resolve these items.

These items should be pursued through the appropriate project processes and resolved quickly in order not to impede the overall completion and closeout of the project.

5. At substantial completion, the general contractor and each subcontractor should be preparing the paperwork necessary to complete the closeout. This documentation should include as-built drawings, operation and maintenance manuals, warranties, lien releases, etc.
6. Upon receipt of the substantial completion punch list, the general contractor should request release of final payment, including retainage, less withholding sufficient to complete the punch list of omissions and deficiencies. Upon receipt of such payment, the general contractor should make payment to each subcontractor in the same manner *(see D.3.k. Retainage)*.
7. The general contractor promptly should establish a schedule for correction and completion of punch list

items in a way that will minimize interference among trades. Disputes as to contractual requirements of any punch list omission or deficiency should be reported immediately in writing to the owner and/or architect/engineer as appropriate, seeking an early resolution. The general contractor and each subcontractor should immediately correct and complete all other items on the punch list, recognizing that failure to do so will delay payment to all parties.

8. Upon satisfaction that all omissions and deficiencies of the punch list have been completed, with the exception of any excusably delayed items, the general contractor should immediately request a certificate of final completion. Final inspection should determine only the satisfactory correction of the previously documented substantial completion punch list items. Release of withheld funds should be conditioned solely upon satisfaction of substantial completion punch list items. Omissions and/or deficiencies noted after the substantial completion punch list should be treated as warranty items and therefore independent of substantial completion, the punch list, and the final payment conditions. The general contractor should use its best efforts to assure such understanding by the owner and its architect/engineer.

9. When feasible, the general contractor should seek from the owner release of claim and final payment for that portion of the project performed by a single subcontractor and approved by the owner as satisfactorily complete *(see D.5.b. Punch List Procedures).*

D.5.b
Guideline on Punch List Procedures

The following punch list procedures are recommended to owners, owners' agents, contractors, and subcontractors to assure timely completion and delivery of projects to owners and bring prompt and full payment to contractors and subcontractors *(see D.5.a. Project Closeout)*.

Pre-punch list procedures

1. The contractor and each subcontractor should carefully check its work throughout the performance period.
2. The contractor should prepare, maintain and distribute a written record of all observed deficiencies as the job progresses, so that all necessary remedial action may be taken promptly.
3. Unsatisfactory work should be corrected immediately, to prevent it from becoming part of the punch list.
4. Correction of each subcontractor's work should be made before that subcontractor leaves the project.

Punch list procedures

1. During the finishing stages of the work, the contractor and the owner's agent, accompanied by the subcontractors, should make frequent and careful inspections of the work in order to discover and ensure the correction of any faulty or deficient work. Specific dates should be established for equipment testing, acceptance periods, warranty periods, and instruction sessions not previously completed or agreed upon.
2. When the work is substantially complete in accordance with the terms of the contract, the contractor should notify the owner's agent immediately.
3. Upon such notification by the contractor, the owner's agent promptly should make arrangements to inspect the work. Representatives of the contractor and the subcontractors should be prepared to participate in this inspection and answer questions about the work.
4. Following the inspection, the owner's agent promptly should prepare a punch list setting forth in accurate detail any items of the work that are not in accordance with the contract documents. This punch list should be forwarded immediately to the contractor.
5. Upon receipt of the punch list, the contractor should assign appropriate punch list items and a list of deficiencies to each subcontractor.
6. The contractor and each subcontractor should correct assigned deficiencies in a timely manner.
7. When advised by the contractor that the punch list items have been completed, the owner's agent, accompanied by the contractor and the subcontractors, should conduct the final inspection of the work. If the punch list items have been completed satisfactorily, the owner's agent should issue a certificate of final payment for the work.
8. If after final inspection of the work, there remains a question of whether one or more punch list items have been properly completed, the owner's agent should issue a certificate that notes those items remaining in question. Final payment including any retained monies for that portion should be made, less an amount which the owner's agent reasonably estimates would be required to cover the cost of completing any remaining punch list item(s). This amount should be withheld only until satisfactory completion of the remaining item(s).
9. If the owner or an installer of the owner's equipment or furnishings damages the work, the owner's agent promptly should advise the owner of its obligation to repair the damaged work. If the owner directs that the contractor repair such damaged work or perform maintenance work not called for in the owner/contractor agreement, the contractor should be reimbursed for such work.
10. Neither the punch list nor the final acceptance of any portion of the work should be used arbitrarily to establish commencement dates of warranties or guarantees. Such dates should be established by contractual agreement between the parties.

D.5.c
Guideline on Warranty for a Construction Project

Warranty is the last component in the completion of a construction project. Action under a project warranty is best handled in the line of contract from General Contractor (GC) to subcontractor to lower tier subcontractor(s) for that specific project. Normally the GC is notified about an item subject to a project's warranty and the GC then notifies the subcontractor(s) responsible for the specific item or equipment in question.

The warranty document should be clear and direct. It should be understood by all parties that if materials, products, components or equipment need to be addressed under a warranty it should be addressed as soon as issues are identified.

Warranty Management

The General Contractor is responsible for warranty management. The GC is the first point of contact and manages warranty action according to the contract and through directions to the appropriate subcontractor to resolve the issue identified by the project owner.

A written warranty consists of three parts:

One is labor. The GC assigns one or more individuals to review, document and complete the repair or replacement.

Two is product warranty, which in line of contract is facilitated by the contractor whose area of responsibility includes the item installed. Generally, all repairs, replacement or alterations of a product installed by this contractor are the responsibility of that contractor unless the specific item at issue is outside the original contract for the construction project. In such a case, a change order must be issued, or in most instances a direct purchase order would be issued by the owner of the project.

Three is owner-supplied equipment. Owner-supplied equipment is not covered by the project warranty.

If materials, a product, component or piece of equipment is defective and in need of repair or replacement, the contractor or subcontractor responsible for its purchase must seek reimbursement of the costs for its repair or replacement from the manufacturer. The manufacturer is responsible for these costs through its contract with the contractor or subcontractor that has purchased the warrantied material, product, component or equipment. Likewise, labor costs for warranty repairs or replacements on or for structural and/or finish material, products, equipment or components purchased by a GC and installed by a subcontractor at the GC's direction are the responsibility of the GC.

Time

A construction warranty usually lasts for one year. However, product warranties may last for more than one year. In such a case, it is the Owner's responsibility to resolve warranty issues directly with the manufacturer of defective or malfunctioning materials, products, components or equipment.

The warranty starts on the earliest of the following two events: (1) the date the Owner begins to use the project for its intended purpose, whether the project is complete or partially complete, or (2) upon notice of substantial completion. However, installed equipment may be placed in use prior to either of these events. If there is an issue as to warranty start date it should be resolved with the construction team at the time installed equipment is placed in use. It should also be noted that warranty issues and contract retainage are separate and unrelated issues. Retainage is not intended, and should not be used, as a contingency to address potential warranty issues.

The Owner of a construction project should understand that notification is critical in the warranty process. Notification delays interfere with and impede the resolution of warranty issues.

E.1 Subbid Proposal

Subcontractor _____ Project _____

Address _____ _____

_____ Location _____

_____

_____

General Contractor _____ A&E _____

_____

Bid Time & Date _____

Address _____ Subbid Time & Date _____

_____

Type of Work (including specification sections) _____

_____

(List the category(ies) this proposal will cover, such as plumbing, heating, air conditioning and ventilation, electrical and elevators.)

This proposal includes furnishing all materials and performing all work in the category(ies) listed above, as required by the plans, specifications, general and special conditions and addenda _____

(Here list addenda by numbers)

Identify work to be excluded by specification paragraph. Otherwise, the subcontractor will be responsible for all work in the above category(ies) required by the specifications and plans.

If this proposal, including prices, is accepted, the subcontractor agrees to enter into a subcontract and, if required, furnish performance and payment bonds from _____

(Name of surety company or agency)

guaranteeing full performance of the work and payment of all costs incident thereto, and the cost of the bond is not included in this proposal.

This proposal will remain in effect and will not be withdrawn by the subcontractor for a period of 30 days or for the same period of time required by the contract documents for the general contractor in regard to the prime bid, plus 15 days, whichever period is longer.

_____

Subcontractor

_____

By (Title)

(Continued)

E.1 Subbid Proposal *(continued)*

BASE BID _____

_____

_____

Alternates

	Add	Deduct
1.	$	$
2.	$	$
3.	$	$
4.	$	$
5.	$	$
6.	$	$
7.	$	$
8.	$	$

UNIT PRICES
(Insert Unit Prices if Requested)

	Add	Deduct
1.	$	$
2.	$	$
3.	$	$
4.	$	$
5.	$	$
6.	$	$
7.	$	$
8.	$	$

(Any Additional Information and Clarifications)

E.2 Subcontractor's Application for Payment

TO: _____

FROM: _____

_____

PROJECT:

PAYMENT REQUEST NO._____

PERIOD_____, 20____, to _____, 20_____.

STATEMENT OF CONTRACT ACCOUNT:

1. Original Contract Amount	$_____	
2. Authorized Changes (Net) (Add/Deduct) (As per attached breakdown)	$_____	
3. Adjusted Contract Amount		$_____
4. Value of Work Completed to Date: (As per attached breakdown)	$_____	
5. Value of Authorized Change Orders Completed to Date: (As per attached breakdown)	$_____	
6. Materials Stored on Site: (As per attached breakdown)	$_____	
7. Total (4+5+6)		$_____
8. Less Amount Retained (_____%)		($_____)
9. Total Less Retainage		$_____
10. Total Previously Certified (Deduct)		($_____)
11. AMOUNT OF THIS REQUEST		$_____

CERTIFICATE OF THE SUBCONTRACTOR:

I hereby certify that the work performed and the materials supplied to date, as shown on the above represent the actual value of accomplishment under the terms of the Contract (and all authorized changes thereto) between the undersigned and _____ relating to the above project.

I also certify that payments, less applicable retention, have been made through the period covered by previous payments received from the contractor, to (1) all my subcontractors (sub-subcontractors) and (2) for all materials and labor used in or in conjunction with the performance of this Contract. I further certify I have complied with Federal, State and local tax laws, including Social Security laws and Unemployment Compensation laws and Workers' Compensation laws insofar as applicable to the performance of this Contract.

Furthermore, in consideration of the payments received, and upon receipt of the amount of this request, the undersigned does hereby waive, release and relinquish all claim or right of lien which the undersigned may now have upon the premises described above except for claims or right of lien for contract and/or change order work performed to extent that payment is being retained or will subsequently become due.

Date _____

Subscribed and sworn before me this _____ day of _____, 20_____

Notary Public: _____

My Commission Expires:

_____
SUBCONTRACTOR

BY: _____
(authorized signature)

TITLE:_____

E.3 Work Authorization Form

SHEET NO. _____ OF _____

DATE: _____ CUSTOMER ORDER NO._____

PROJECT_____ JOB NO. _____

WORK PERFORMED BY_____FOR _____

AUTHORIZED BY _____TITLE _____

DESCRIPTION OF WORK _____

_____

_____

LABOR **MATERIAL**

Name	Trade	Actual Hours Worked		Description	Quantity
		Straight Time	Premium Time		

EQUIPMENT & TOOLS

DESCRIPTION	TIME	DESCRIPTION	QUANTITY

REMARKS:_____

_____

CONTRACTOR _____ ARCHITECT OWNER _____ SUBCONTRACTOR_____

BY _____ BY_____ BY _____

BILLING ADDRESS_____ ADDRESS _____ BILLING ADDRESS _____

JOB COMPLETED ☐ YES ☐ NO

WORK AUTHORIZATION NOT SIGNED BECAUSE:

NOTE: COMPLETE A SEPARATE DAILY WORK ORDER FOR (1) EACH JOB (2) EACH DAY (DO NOT ATTEMPT TO COMBINE JOBS OR DAYS)

☐ UNABLE TO CONTACT REPRESENTATIVE
☐ AUTHORIZED BY PHONE
☐ FORM ISSUED FOR RECORD PURPOSE ONLY AUTHORIZATION IN DISPUTE

E.4 Change Proposal/Order Form

Instructions:

- Part I is to be completed by the Contractor;
- Part II is to be completed by the Subcontractor;
- Part III is to be completed by the Contractor and executed by the Contractor and Subcontractor.

Part I

Date: _____

Contractor: _____

Contractor Division No.: _____

Change Proposal Request No.: _____

Project: _____

Proposed By: _____ Submitted By: _____

To: _____
(Subcontractor)

Change Description

A Change in the Scope of Work is indicated below. Except as otherwise specifically mentioned, the general character of the work required by this Change Proposal Request shall be the same as originally specified in the project. Where an item is mentioned with no additional specifications given, reference is to be made to the original Contract Documents.

Detailed Labor and Material: Required_____ Not Required_____

Attachments: (Specify) _____

Description of Proposed Changes: _____

_____

_____

_____

_____

This is not an order to proceed with work unless signed below.

The undersigned hereby acknowledges that Subcontractor is authorized to perform the work and provide the material described above as an extra to the contract. Adjustments to the contract price caused by this extra work and material shall be computed and paid for at the fair and reasonable value of the work and material.

Authorized Signature: _____ Date: _____

Position: _____

Company Name: _____ *(Continued)*

Part II

Change Proposal

A. ❑ Subcontractor agrees, subject to Contractor's approval, to furnish all labor, materials, equipment and services to perform the work required for all items described in Part I for the sum of _____ dollars to (increase) (decrease) (unchange) the Contract Price and (increase) (decrease) (unchange) _____ calendar days in Contract Time. Except as changed by this change proposal/order form all terms and conditions of the Contract shall remain the same.

B. ❑ Subcontractor agrees, subject to Contractor's approval, to furnish all labor, materials, equipment and services to perform the work required for all items described in Part I on a time and material basis at a labor rate of _____ dollars per hour and a mark up rate of _____% for the sum of _____ dollars and an (increase) (decrease) (unchange) calendar days in Contract Time. Except as changed by this change proposal/order form all terms and conditions of the Contract shall remain the same.

_____ by _____

(Subcontractor)

_____ _____

(Address) (Title)

_____

(Date)

Part III

Change Order

Contractor _____ Contractor Division No.: _____

Owner's Change Order No.: _____

Change Order No.: _____ Contract Description: _____

This Change as described in the Change Description as shown on Part I of this document is hereby ordered on the above-described Contract and the Subcontractor's Change Proposal in Part II is hereby accepted. The Original Contract terms are modified as follows:

- The Original Contract Price $_____
- Net Change by Previous Authorized Change Orders $_____
- The Contract Price prior to this Change Order $_____
- The Contract Price will be (increased) (decreased) (unchanged) by this Change Order $_____
- The New Contract Price including this Change Order $_____

The Contract Time will be (increased) (decreased) (unchanged) by _____ days.

Date of Substantial Completion as of the date of this Change Order therefore is _____

IN WITNESS WHEREOF, the Contractor has executed this Change Order in four original counterparts.

Date: _____ Contractor: _____

By: _____

(Title)

Date: _____ Subcontractor: _____

By: _____

(Title)