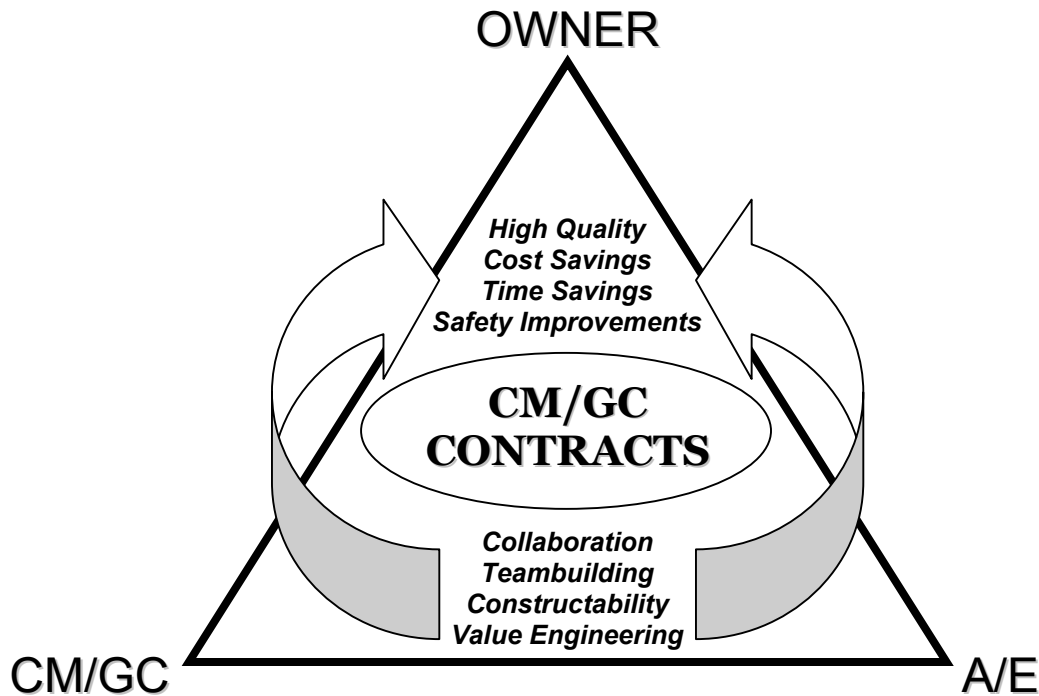


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Oregon Public Contracting Coalition Guide to CM/GC Contracting



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Oregon Public Contracting Coalition Guide to CM/GC Contracting

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Oregon Public Contracting Coalition Guide to CM/GC Contracting

EXECUTIVE SUMMARY

Since the early 1980's, the Construction Manager/General Contractor (CM/GC) project delivery method has been utilized to successfully deliver construction projects in the State of Oregon. Public agencies that have traditionally employed the design-bid-build method of project delivery increasingly select CM/GC. CM/GC offers opportunities for success that are not necessarily available through traditional contracting methods. Greater use of the CM/GC contracting method has provided the construction community with insight regarding the benefits and limitations of its use along with knowledge of the best practices for implementing it on public construction projects. Drawing on the knowledge gained from past projects, the Oregon Public Contracting Coalition (PCC) has developed this guide to assist owners with the implementation of the CM/GC contracting method on construction projects in Oregon.

What is CM/GC?

CM/GC augments the traditional scope of work of the general contractor with that of a construction manager under a single contract with the owner. At an early point in the design phase, the owner, using a competitive selection process, selects a contractor to provide construction management and general contracting services. By joining the project team during design, the CM/GC firm can collaborate with the architect/engineer (A/E) on the development of the design and preparation of the design documents. Once the design has progressed to an acceptable level, the CM/GC firm submits a guaranteed maximum price (GMP) for the project to the owner. After agreement on a GMP is reached, the CM/GC firm undertakes the construction of the facility. The CM/GC firm procures subcontracts with trade contractors using multiple bid packages to construct the project, and manages the construction process on behalf of the owner. General conditions work is typically self-performed by the CM/GC firm and, in some cases, the CM/GC firm may be allowed to self-perform portions of the trade work.

The CM/GC contracting method can benefit a construction project in a variety of ways. The process of selecting a CM/GC firm typically involves the consideration of more information than simply price. Owners can craft their own responsibility-based selection criteria tailored to the specific, and often unique, requirements of the project. This allows the owner to make a more informed selection to better benefit the project. Following CM/GC firm selection, early interaction between the A/E and CM/GC firm allows for improving constructability, conducting value engineering reviews, and developing precise phasing plans to efficiently perform the work and limit disruption of ongoing owner operations. Opportunities for saving cost result from the early input of construction knowledge and project management skills. Total project time is often reduced as a result of the ability to overlap the design and construction phases, the elimination of a stand-alone bid period, and early determination of efficient and effective

construction methods. One significant benefit of the CM/GC method comes from the close interaction of the project team members. Early involvement of the CM/GC firm helps build positive relationships between the team members that result in a collaborative, team approach to the project.

Legal Requirements

The public contracting laws in Oregon, primarily contained in ORS Chapter 279, do not provide a statutory framework for alternative contracting methods such as CM/GC. Rather, ORS 279.015 requires that public improvements be undertaken through competitive bidding (award to the lowest, responsive, responsible bidder), while allowing exemptions to competitive bidding under strict procedural safeguards. Public agencies seeking an exemption from competitive bidding must follow a specific process outlined in ORS 279.015. The process includes the submittal of findings which demonstrate that it is unlikely that the exemption will encourage favoritism or substantially diminish competition and that award pursuant to the exemption will result in substantial cost savings to the agency. Justification of these conclusions must be provided and include information on: operational and financial data, public benefits, value engineering, specialized expertise, public safety, market conditions, technical complexity, and funding sources. Public notice of the proposed exemption and an opportunity for the public to comment on the findings are required before approval of the exemption is considered. The Oregon Attorney General's Model Public Contract Rules, which some public agencies have adopted, address the use of alternative contracting methods. Regardless of whether an agency is required to adhere to the Model Rules, the Rules provide a useful reference and guide for CM/GC procurement.

Selecting CM/GC for a Project

When considering CM/GC for a project, public agencies should take into account a number of factors to determine if CM/GC is appropriate not only for the project, but for the agency as well. The CM/GC method contains certain complexities and places unique demands on all project team members. Consequently, a public agency needs to consider its own capabilities and resources to determine if it should use CM/GC. The CM/GC process requires that an agency participate and collaborate to a great extent with the other project team members, be able to provide information and feedback in a timely manner, facilitate effective team communication, and maintain trust throughout the project because CM/GC is a collaborative, coordinated, and open process.

The benefits resulting from the use of CM/GC can be greatest for projects that are high risk, possess a high level of technical complexity, are governed by significant schedule constraints, require complex phasing, contain budget limitations requiring a construction cost guarantee during design, or will realize substantial cost savings from value engineering analyses. The primary considerations that should be taken into account when evaluating CM/GC for use on a project are: time savings, cost savings, technical complexity, and not diminishing competition or encouraging favoritism. If at least two of these measures indicate that an alternative contracting method is in the best interest of the public, and the public agency has the requisite experience and resources to administer the CM/GC process, the use of CM/GC is appropriate for a

project. When extraordinary circumstances arise, a public agency would need to satisfy only one of these criteria in order to justify the use of an alternative contracting method. Examples of extraordinary circumstances are in times of emergency and when the project phasing and/or complexity are so extremely difficult that final design and other pre-construction services cannot be completed effectively without the direct involvement of the construction firm.

The process of selecting CM/GC for a project requires that the public agency take certain steps that are not required for traditional contracting methods. Initially, the public agency must make the decision that CM/GC is the best contracting method for the project. An objective assessment of the factors surrounding each project and an understanding of the benefits and drawbacks of the CM/GC contracting method will allow the agency to decide if CM/GC will offer the greatest likelihood of delivering quality construction in a timely manner and at a reasonable cost. Findings are developed to justify, and gain approval for, exemption from competitive (low bid) bidding requirements. Integral to this process is gaining support from the public for the agency's decision to use the CM/GC method. Exempting a public project from competitive bidding requirements in order to use an alternative contracting method can be of concern to some individuals. To alleviate any public concern, the agency should take steps to explain its findings to the public and other stakeholders, and allow for public comment through open forums.

The Solicitation Process

After an agency has made the decision to move forward with the CM/GC process, and received approval for exemption from competitive (low bid) bidding requirements, the next step is to solicit CM/GC services. The solicitation process can often be fairly administered with a two-step format that includes the publication of a Request for Proposals (RFP) followed by formal interviews of proposing firms. A three-step process that begins with a Request for Qualifications (RFQ) prior to the RFP may be desired if the agency feels that it is in the best interest of the project. A scoring system is typically developed and used to guide the agency in the review of proposals, assessment of interviews, and, ultimately, the selection of the CM/GC firm. The scoring system should be fairly structured, comprehensive, and consider, in addition to price, such characteristics as the contractor's experience, proposed work plan, safety performance, working relationships, and approach to team efforts. Post-selection briefings should be offered by the public agency to all proposers. Regardless of which solicitation process is used, it is imperative that the process be conducted in a manner that ensures fair competition and does not involve partiality. Sample RFP's and scoring criteria can be obtained by contacting one of the public agencies listed in Appendix A.

The CM/GC Contract

The contract that the owner creates with the CM/GC firm plays a significant role in the CM/GC process. The contract outlines the roles, responsibilities, and legal obligations of each party, and establishes the levels of risk that each party shoulders. When developing the contract, the public agency should strive to create a contract that meets the needs of the project and fairly allocates risk in a manner consistent with

industry standards. CM/GC contracts should address a number of issues that may not normally be found in other types of contracts, such as the scope of pre-construction services, a description of reimbursable costs, phasing of the work, setting the GMP, and managing the contingency. In addition, the CM/GC contract should be fully coordinated with the A/E's contract. Agencies are encouraged to seek qualified legal counsel to assist with the development and negotiation of the contracts.

The Guaranteed Maximum Price (GMP)

For CM/GC projects, it is especially important that the owner have a clear understanding of the GMP and when it will be set. The GMP is a significant aspect of the CM/GC process and often the primary focal point of the CM/GC contract. The owner is essentially asking the CM/GC firm to guarantee that the scope of work that has been defined can be accomplished within a certain dollar amount. The GMP essentially covers all costs necessary to have a completed project that is ready for owner occupancy and use as described in the scope of work. The framework within a CM/GC contract typically divides the GMP into four different cost categories: cost of the work, general conditions, fee, and contingency. The framework created for compensating the CM/GC firm should be clearly defined, objective, and fair in order to eliminate any misconceptions about the value and competitiveness of the CM/GC process.

The fee portion of the GMP can take many forms, include or exclude a variety of items, and vary from one project to another. On small or relatively simple projects, the CM/GC firm will typically submit one fee for the entire project covering both pre-construction and construction phase services. For larger, complex projects, especially those that will require significant pre-construction effort, it may be advisable to divide the fee between the pre-construction phase and the construction phase. In some cases, the CM/GC firm may offer to perform the pre-construction services without compensation should the CM/GC firm and the owner be unsuccessful in negotiating a GMP.

To develop the GMP, the CM/GC firm must understand the scope of the project from incomplete documents. For this reason, the GMP typically includes a contingency to cover items that will be necessary to complete the project but which are not fully defined at the time the GMP is set. There is no specific level of contingency commonly set for all CM/GC projects. The contingency should be the amount that the CM/GC firm reasonably feels is enough to cover coordination issues, omissions, and other costs necessary to complete the project that may or may not be fully addressed in the contract documents. The amount of contingency set for a project is typically less when the GMP is set later in the design phase when the design is more fully defined.

An important decision for the public agency is when to set the GMP. Discussions and negotiations regarding the GMP should begin early in the design phase and no later than the beginning of design development. Typically, the point in which the GMP is established should be towards the end of design development. It is at this point that the project has been developed to sufficient detail such that a realistic GMP can be established. While specific job circumstances may dictate the need for a different approach, the GMP should not be negotiated until the design has been sufficiently

documented to make the GMP meaningful. If the GMP is set too early, many design elements are unknown and the CM/GC's contingency will be higher to account for these unknowns. Additionally, it is difficult to accurately record what is included in the GMP until documentation of the design is fairly complete. If, on the other hand, the GMP is set too late, such as after most or all of the bid packages have been bid, the CM/GC firm has not really guaranteed anything and the owner has absorbed most of the risk for establishing the final project scope. The actual timing of when the GMP is set will vary from project-to-project, depending on the size, complexity, and importance of the project, the parties involved, and other project characteristics. The owner should carefully consider all factors that may have an affect on the GMP along with the ramifications to the project associated with the timing of the GMP.

In the CM/GC process all subcontracts are written and executed directly between the CM/GC firm and the subcontractors. Inherent in the public sector CM/GC process is an expectation that a very large percentage of the subcontract work will be procured by competitive means. To reap the advantages of a competitive marketplace, subcontractor selection is typically based on a competitive low bid. The process by which this is accomplished may vary from one project to another. On some projects the CM/GC firm is allowed to bid and self-perform some of the trade work. This may be beneficial if the CM/GC firm has specialized construction expertise or resources, or if the subcontracting community lacks the necessary expertise or resources. If such allowance is granted, special procedures should be followed that provide for and ensure fair competition for the work.

It is often the case that modifications to the project are needed after contracts for the work have been signed. Some of these changes may be necessitated by items that were inadvertently left out of the original design, not recognized in the design process, changed following the exposure of jobsite conditions, or added as a result of additional available funds. Regardless of the reason, the issue of what constitutes a change on a project can be contentious. Therefore, the owner needs to give significant consideration to the process by which changes will be addressed. Especially important is the determination of whether the cost associated with a change is to be absorbed within the GMP or is an increase in the GMP. Addressing this issue in the contract beforehand helps prevent disputes and ensures a smooth and efficient construction process.

No set formula or framework exists which prescribes how the CM/GC contracting method is to be implemented. A public agency can modify the general process to suit its particular capabilities and needs. However, agencies should be cautioned that developing new practices that are too far removed from common practice may attract additional audit scrutiny. This document addresses significant practices and issues that are important to the process and should be considered by public agencies when employing the CM/GC process. It is recommended that legal counsel be sought as well to help provide guidance throughout the process. The Oregon PCC along with other industry organizations can also provide additional information and guidance.

Oregon Public Contracting Coalition Guide to CM/GC Contracting

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I. Introduction

1. ABOUT THIS GUIDE

This guide is a resource created for public agencies in the State of Oregon to reference when considering and implementing the Construction Manager/General Contractor (CM/GC) project delivery method on public projects. The guide was developed based on the extensive knowledge and experiences of a multi-disciplined team of construction industry professionals, and presents the practices that, when implemented, are believed to promote successful utilization of the CM/GC method. The information contained in the guide incorporates the current characteristics and nature of public projects and public contracting regulations in the State of Oregon.

1.1 Background

Public agencies have traditionally employed the design-bid-build method of project delivery for the construction of public projects. While this contracting method has led to the successful procurement and delivery of many public improvements, public agencies have increasingly desired and chosen alternative contracting methods that provide opportunities for success which are not available through the traditional design-bid-build process. Alternative contracting methods are often chosen for projects that contain special characteristics or when project conditions make the design-bid-build contracting method less desirable. Circumstances upon which the decision to use an alternative contracting method are based, have typically included: limited project delivery time, unusual project technical complexity requiring specialized knowledge or skills, complicated project phasing, substantial work coordination issues, and limited project budget.

Use of an alternative contracting method is not universally permitted on public projects. The Oregon Revised Statutes (ORS) prescribe the contracting structure and procedures for public projects undertaken in the State of Oregon. The statutes state that it is the policy of the State of Oregon to encourage public contracting competition which supports openness and impartiality to the maximum extent possible. In reflection of this policy, the statutes stipulate that all contracts for public improvements, with specific exceptions, shall be based upon competitive bidding (low bid). As a result, the design-bid-build contracting method is typically employed. Projects may be considered exempt from this provision, though, if specified criteria are met. Consequently, in order to employ an alternative contracting method which is not necessarily based on a competitive, low bid process, public agencies must justify its use by showing that the specified exception criteria are met on the project.

CM/GC is one alternative contracting method that has been allowed and successfully used for a variety of public projects throughout Oregon. Since it was first

employed in the mid-1980s, use of CM/GC by public agencies in Oregon has increased as a result of the project successes realized from its use. The push by public agencies to minimize total capital project cost and schedule has been a predominant factor in the development of the CM/GC process. Greater comfort with and understanding of the CM/GC process, along with a changing contracting climate throughout the construction industry in Oregon and the United States, have also led to greater use of CM/GC. The process has been employed on a wide variety of project types and sizes, and by many public agencies throughout Oregon. (See Appendix A for a list of projects on which CM/GC was used). Increased use of the method over the past couple of decades has provided the construction community with insight regarding the benefits and limitations of using CM/GC and the best practices for implementing the CM/GC contracting method on public construction projects.

In April 1997, the PCC utilized knowledge gained from past CM/GC projects to develop and publish a white paper on the CM/GC contracting method. The white paper describes the CM/GC process and provides guidelines for determining when it should be used, how the CM/GC firm should be selected, and how the CM/GC contract should be administered and reviewed. Following the publication of the white paper, the PCC set out to augment the paper with other information related to the CM/GC process, such as writing the CM/GC contract, bidding the work, developing the guaranteed maximum price, and managing changes. This guide represents the resource developed by the PCC as a result of these subsequent efforts. It incorporates the additional information with the initial white paper to provide a more comprehensive CM/GC contracting resource.

1.2 Objective

The purpose of this document is to provide a guide to assist in the use of the CM/GC project delivery method on construction projects in the State of Oregon. It is intended that this document act as a resource for public agencies to reference when considering the CM/GC method for public projects and when implementing the CM/GC method on projects. Through its use and the application of the practices described herein, this document is intended to facilitate the implementation of the CM/GC process and help bring about the benefits that can be realized through the process. While it is written with public agencies as the primary audience, non-profit, private, and other organizations may benefit from this document as well.

No set formula or framework exists which outlines how the CM/GC contracting method is to be utilized. A public agency can modify the general process to suit its particular capabilities and needs. However, agencies should be cautioned that developing new practices that are too far removed from common practice may attract additional audit scrutiny. This document was not written to cover all aspects or variations of CM/GC contracting, or be the definitive CM/GC resource for the construction industry. It addresses significant practices and issues that are important to the process and which should be considered by public agencies when employing the

CM/GC process. Consequently, public agencies should not rely on this document as the sole source of information about CM/GC contracting. It is recommended that legal counsel be sought as well to help provide guidance throughout the process.

1.3 Contributing Organizations

This document was developed through contributions by the Oregon Public Contracting Coalition membership. Established in 1995, the PCC was created to address issues related to public contracting in the State of Oregon. The purpose of the Coalition is to discuss public contracting issues of interest to the Oregon construction community, to develop a consensus opinion regarding those issues, and to assist with educating the public about effective practices associated with public contracting in the State of Oregon. PCC membership comprises a diverse group of individuals representing public agencies and construction, design, and construction management firms. PCC members, which include professional architects, engineers, constructors, and construction managers, have extensive experience with the CM/GC process on public projects in Oregon. Appendix B contains a list of the PCC membership.

1.4 Other Resources and Points of Contact

In addition to this document, other resources are available that provide information and guidance related to CM/GC contracting. Review of other resources is encouraged when additional information and understanding of the CM/GC process is needed. A list of useful resources is provided in Appendix C.

Questions and comments regarding CM/GC contracting or this document can be directed to:

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Fax: (503) 682-1696
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II. CM/GC Basics

2. WHAT IS CM/GC

Part of the process of undertaking a construction project involves the formation of a project team and the determination of how best to accomplish the project. This task includes the creation of contractual relationships between some of the team members. The arrangement of the formal relationships between the owner, designer, constructor, and other team members on a project is known as the construction contracting method or project delivery method. The particular arrangement of the relationships utilized on a project essentially defines the relative roles and responsibilities of each team member within the project team. CM/GC is one type of construction contracting method.

The contracting method selected for a project is often tailored, to some extent, to be compatible with the characteristics of the project and the project team members. This document describes the CM/GC method as it is commonly used for public contracting in the State of Oregon. However, many variations of CM/GC have evolved since its first use in the State. It is recommended that a public agency consider the many possible variations to the CM/GC process and adapt the method to meet its own needs and capabilities. At the same time, though, public agencies should be aware that devising unique and unusual processes may subject the agency to audit concerns.

2.1 The CM/GC Contracting Method

The CM/GC contracting method augments the traditional scope of work of the general contractor with that of a construction manager into a single contract as illustrated in Figure 1. During the early stages of the design phase, the owner selects a CM/GC firm using a competitive selection process. Contractual arrangements are also made with a design team, typically prior to contracting with a CM/GC firm. The owner contracts with additional organizations to provide other needed project services such as inspection and commissioning. While no contract is formed between the CM/GC and A/E firms, their respective contracts with the owner include provisions that require significant coordination and interaction with each other. It is this considerable interaction between the CM/GC and A/E firms, along with the early involvement of the CM/GC firm, that sets the CM/GC process apart from the traditional design-bid-build contracting method.

By joining the project team during design, the CM/GC firm can collaborate with the design team on the development of the design and preparation of the design documents. This interaction allows for improving constructability and for conducting value engineering reviews. The CM/GC firm may also provide assistance with material selection, scheduling, estimating, and other related services during design. Involvement

of the CM/GC firm during design provides the opportunity to commence construction on portions of the work before all of the design is complete (fast-tracking).

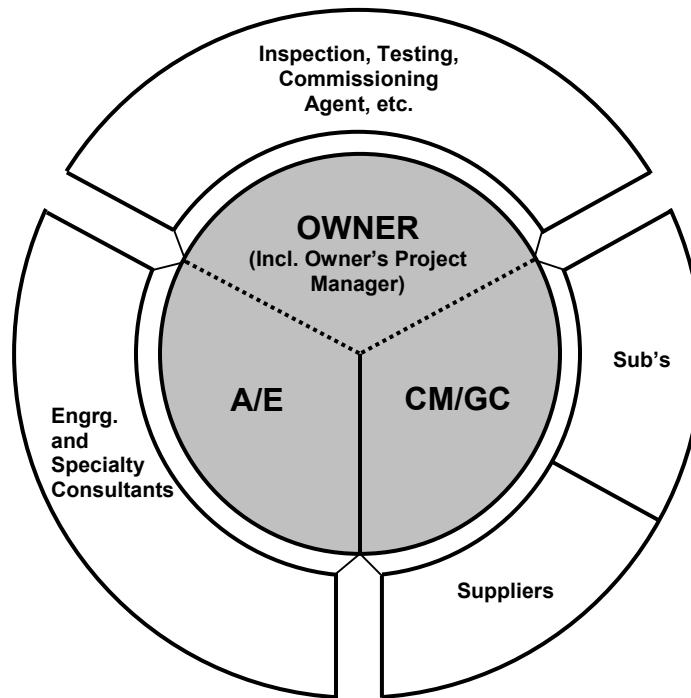


Figure 1. CM/GC Contracting Method

Once the design has progressed to an acceptable level, the CM/GC firm typically submits a guaranteed maximum price (GMP) for the project to the owner. The price guarantee given by the CM/GC firm places the firm “at risk” and gives incentive to the firm to ensure a successful project for the owner. After agreement on a GMP is reached, the CM/GC firm undertakes the construction of the facility. Performance and payment bonds for the full value of the GMP may be provided by the CM/GC firm to the owner. The CM/GC firm procures subcontracts with trade contractors using multiple bid packages to construct the project, and manages the construction process on behalf of the owner. General conditions work, along with other minor “pick-up” work, is typically self-performed by the CM/GC firm. In some cases, the CM/GC firm may be allowed to self-perform portions of the trade work by competitively bidding for the work against trade contractors.

Figure 2 illustrates the CM/GC project timeline from conception through occupancy. The figure shows the involvement of the A/E and CM/GC firm in each of the project phases, the timing of when the GMP is typically set, and the level of contingency expected to be included in the GMP at different milestones in the project timeline. The timeline is drawn to reflect a typical CM/GC project. The actual timeline for some projects will differ depending on the particular project circumstances and owner desires.

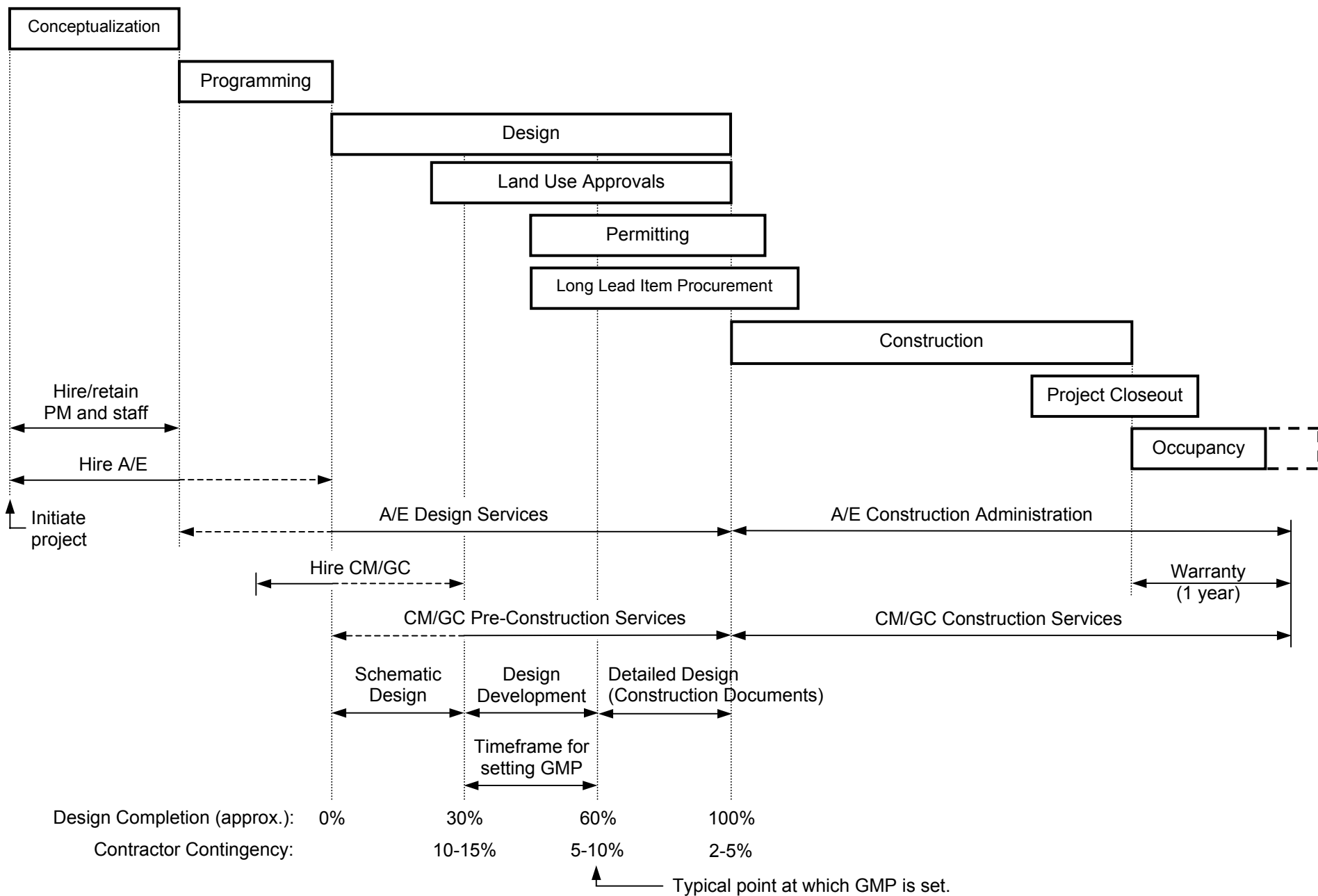


Figure 2. The CM/GC Project Timeline

CM/GC is one of a variety of contracting methods utilized by the construction industry to deliver construction projects. In addition to CM/GC, two other contracting methods – design-bid-build and design-build – are commonly employed by public agencies for procuring services for public improvements. Design-bid-build is the most common of the three and the method generally prescribed by law. CM/GC and design-build are considered to be alternative contracting methods that may be utilized only if an exemption from competitive bidding is allowed. Design-bid-build and design-build are described below to allow for comparison with CM/GC.

Design-Bid-Build

The design-bid-build process is the traditional approach to delivering public improvement projects. In this approach, the owner typically contracts with a design professional to design the project and develop construction plans and specifications. Construction documents are prepared and advertised for bids. Interested contractors review the construction documents and submit bids for the construction work. Selection of a contractor is determined based on a competitive bidding process. While the design professional usually will either employ an independent cost estimator or prepare its own cost estimates, the actual cost of the project is solely determined by the bidding contractors during the bidding process. Following receipt and review of the bids, and confirmation by the owner that sufficient funding exists, the contract is awarded to the lowest responsive and responsible bidder. The contractor then proceeds to construct the project according to the plans and specifications. During construction, the design professional observes the work to ensure that it conforms to the design plans and specifications.

Design-Build

Design-build is an alternative contracting method used for delivery of both the design and construction services under one contract. This contract provides a single point of responsibility to the owner, namely the design-build firm. Many variations of this method exist, but all have “single point of responsibility” as a common element. Design-build can be undertaken when a performance specification is developed and the entire package of design and construction services is competitively bid. More commonly, the design-build firm is selected based on a combination of qualifications, technical approach, and price. Occasionally, the selection is made primarily on the basis of a design competition. By combining design and construction services under one contract, an opportunity exists to totally integrate the work of the contractor and the design consultant. This allows the selected firm to work with the owner during the design process to provide design, value engineering, constructability review, scheduling, estimating, and other related services. It also allows construction to start before the design is entirely complete. Though many variations exist, compensation for the design-build firm is typically based on a fixed price or, similar to the CM/GC process, a GMP.

The selection of a contracting method to use on a project will depend on the project characteristics. Table 1 briefly summarizes how each of these methods relates to different project characteristics. In the table, the most typical variation of each contracting method was used as the basis for the comparison.

2.2 Benefits of CM/GC

The CM/GC contracting method can benefit a construction project in a variety of ways. Benefits arise as a result of various CM/GC characteristics including the nature of the working relationships that are established amongst the project team, the timing and level of involvement of project team members, and the opportunities to gain optimum value to the public in the resulting project. Described below are significant benefits that can result from using the CM/GC method. It should be noted that successes resulting from the use of CM/GC on a project will vary on a project-by-project basis. Benefits received will depend on the project characteristics, effectiveness of CM/GC implementation, and the attitudes and personalities of the people involved. Public agencies should not expect that all of the benefits described below will result on all CM/GC projects.

Time Savings

Construction projects by nature typically require a significant length of time to progress from initial conception to final completion. It is not uncommon for projects to take several years to plan, design, and construct. Minimizing the total project duration benefits the public by making public improvements available for use earlier and by avoiding potential inflationary costs that can accrue with longer duration projects. Shorter project durations allow public agencies to respond to public needs in a timely manner. In addition, shorter durations make it easier to meet mandatory completion dates, which often exist for projects such as schools, performing arts centers, and athletic facilities.

With the CM/GC firm coming on-board during the design phase, design and construction can take place simultaneously (fast-tracking). That is, construction can commence before the design work is entirely complete. Work on portions of the project can progress on the construction site while remaining portions of the design are being completed. To accomplish such phased construction, design packages that cover different portions of the work are released to the CM/GC firm as the designs for each package are completed. For example, sitework and foundation work packages are often released for construction before final designs are prepared on interior finish details. This overlapping of the design and construction efforts is particularly beneficial as well when the project contains items with very long lead times. These items can be ordered before the design is complete so that they are available earlier in the construction process.

Table 1. Comparison of Contracting Methods

Criteria	CM/GC (Alternative)	Design-Bid-Build (Traditional)	Design-Build (Alternative)
Project Characteristics			
Complexity	Probably high; may have multiple bid packages.	Moderate to low.	May be driving factor; usually either high or low, but not in-between.
Schedule	Aggressive; fast-tracking possible.	Reasonable; not a key factor.	Aggressive; fast-tracking possible.
Budget	High priority; likely fixed; usually GMP.	Normal importance	Likely fixed
Program resolution	Not a driving factor.	Well resolved	Not a driving factor
Design quality	Complexity may drive higher quality.	Not a driving factor	Not a driving factor
Construction quality	Complexity implies higher quality.	Not a driving factor	Not a driving factor
Contractual Structure			
Compensation	Standard fees to design team; GMP to CM/GC.	Lump sum – all participants	Lump sum to consolidated team.
Contract arrangement	AIA contract form or variant for design; bid or negotiate for construction.	Agency – Design professional Agency – Contractor	Single-point contract with Design-Builder.
Delivery Team Structure			
Disciplines required	Standard design team plus CM/GC.	Typical project design and construction teams.	Contracting and design consolidated.
Experience needed	Complex project - high degree of experience required for all participants.	Moderate	Experience in design-build needed.
Communications	Design professional as agent; CM is contractor; “open book”	Traditional design professional as agent.	Consolidated
Legal/Risk Management			
Liability	CM/GC “at risk”, but design team further exposed.	Standard	Single point of response with design-build firm.
Dispute resolution	Standard, but in partnering atmosphere.	Standard ADR, mediation, litigation.	Standard ADR, mediation, litigation.
Conflict of interest	Potential to CM/GC – dual roles during pre-construction and construction.	None	Potential professional conflict for design team.
Project Control			
Schedule control	By CM/GC	By Contractor	Agency looks to D-B team for guidance. Distribution of responsibilities within D-B team is internal issue.
Cost control	By CM/GC with design team consultation.	Contractor/Design professional	Design-Builder
Quality control	By CM/GC with design team consultation.	Design professional/ Contractor	Design-Builder
Owner staff	Must be able to meet owner’s obligations in pre-construction services and contract administration.	Standard	Depends upon degree of owner control over the design and construction.

Not only is time saved as a result of overlapping the design and construction work, but also from the elimination of a stand-alone bid period. The time spent to select the CM/GC firm and trade contractors overlaps with the design effort. Consequently, the time required to bid the work, as is required in the design-bid-build method, is eliminated resulting in a shortening of the entire project duration.

Lastly, it is often the case that selecting the contractor prior to completion of the design helps to speed up the construction process. This occurs because the contractor can add its experience to the design team and identify at the outset any aspects of the design that could create problems in construction. By modifying the design before it is issued for construction, delays and changes on the construction site should be minimized.

Cost Savings

CM/GC provides opportunities for cost savings in a variety of ways. The inherent flexibility and openness of the process allows the owner to more easily change the design and scope of work as necessary to meet the project budget. The greatest impact on cost occurs during the planning and design stages of a project. As a result of early involvement in the project, the CM/GC firm works closely with the designer to develop the design. Early involvement allows for enhanced perception of project costs and for increased opportunity to allocate these costs to meet the owner's needs before they are incurred. The importance of early consideration of construction issues is illustrated in Figure 3. It is much easier to impact the completed project, and impacts can be much greater, while the design is being conceived and is in its infancy.

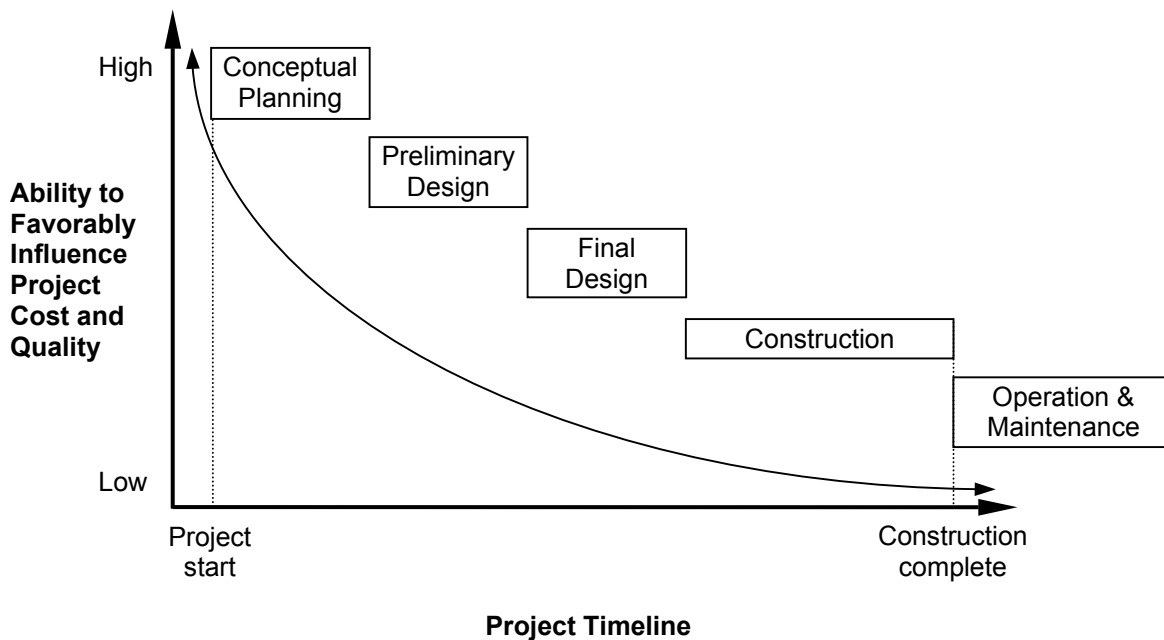


Figure 3. Ability to Affect Project Cost and Quality over the Project Timeline
(Source: Construction Industry Institute, Publication 3-1, July 1986)

When the schematic design is complete, or later in the design process if desired, the CM/GC firm prepares a comprehensive estimate of the cost to construct the planned project. This cost estimate is used as the basis for a contractually agreed upon GMP. Included in the GMP are the expected cost to construct the project, the CM/GC firm's fee, and a contingency amount that the CM/GC firm believes should be available to cover changes to the proposed scope. Any increase in cost due to subcontractor bids higher than estimated, or added cost of scope items included in the contract documents but left out of the CM/GC firm's estimate, must be absorbed by the CM/GC firm within the GMP. The CM/GC firm has no incentive to identify change orders that require additional funds and an overhead premium. All costs must be held within the GMP.

Additionally, if the owner requests a major scope change that increases the GMP, the CM/GC firm receives only reimbursement for the cost of the change plus its stated fee percentage (typically 3-4%) applied to the cost of the change. This percentage is far less than the typical amount of approximately 15% that a general contractor will charge on a scope change on a design-bid-build project.

Contractor Selection

As opposed to the traditional process of soliciting bids for a project and basing selection on low bid, the process of selecting a CM/GC firm typically involves the consideration of more information than simply price. Other factors considered typically include relevant experience, personnel committed to the project, financial strength, and management style. Such a selection process allows the owner to make a more informed selection to better benefit the project. It allows public agencies to conduct a more detailed review of the contractor's experience and work history, and rank their qualifications accordingly. In addition, owners using this selection process can craft their own responsibility-based selection criteria tailored to the specific and often unique requirements of the project at hand to go along with fee and other cost-related criteria. All of these factors lead to the selection of a well-qualified contractor rather than the contractor that simply offers the lowest price.

Constructability

Constructability reflects the ease with which a project can be built and the quality of a project's contract documents. Constructability is affected by the consideration of construction methods, capabilities, and resources in the project design, and by the attention paid to creating complete, clear, and error-free contract documents. Involvement of the CM/GC firm early in the design can lead to improvements in constructability. Using its construction knowledge, the CM/GC firm can foster innovative design concepts that are "construction-friendly" and help develop novel construction approaches to the project. Periodic plan reviews by the CM/GC firm can help eliminate errors and mistakes in the construction documents that, if not found, could possibly result in extra cost and misunderstandings during construction. As a result, overall improvement in the project's constructability benefits the project through enhanced construction productivity, better safety performance, higher quality work, and lower construction costs.

Value Engineering

Value engineering (VE) is a creative, organized effort to optimize the cost or performance of a construction project. It can be defined as a structured, function-oriented approach to cost reduction in construction projects which yields savings without compromising quality, performance, or usefulness. VE focuses on critiquing the necessity, scope definition, and the costs versus benefits of a project and its various elements. It can be expected that design alternatives developed through the VE process will result in significant cost savings with equal or improved functional value. Given its knowledge of the construction industry, the CM/GC firm can play a big role in VE efforts. Early involvement of the CM/GC firm provides the opportunity to capitalize on the CM/GC firm's knowledge and expertise.

A Team Approach

One significant advantage of the CM/GC contracting method comes from the close interaction of the project team members. In the traditional design-bid-build contracting method, it is often difficult to establish effective working relationships because of the structure of the contracting method, the nature of competitively bid projects, and the late addition of the contractor to the project team. In the CM/GC process, early involvement of the CM/GC firm allows the owner and the contractor to build a strong relationship and avoid adversarial situations later on in the project. A team approach is also typically created between the designer and CG/CM firm. Full-time coordination between the designer and construction contractor helps to minimize errors and maintain open communications.

The collaborative approach of CM/GC also reduces risks to the owner. The CM/GC firm becomes an ally of the owner through independent evaluation of project costs, schedule, and overall construction performance, including similar evaluation of changes. Additionally, the structure of the CM/GC process offers a system of checks and balances to assure that owner's decisions and the decisions of the A/E are prudent.

The significance of a team approach to a CM/GC project cannot be understated. It is often that this aspect of the CM/GC process signifies success or failure of the project. The team makeup needs to be carefully considered so that working relationships and communications are open and positive, and the result is a level of team chemistry that leads to a successful project.

2.3 Drawbacks of CM/GC

Drawbacks associated with the CM/GC contracting method come mainly from its complexity. For the owner, the process of selecting a CM/GC firm, and the CM/GC contracting process in general, are complex and difficult to administer for "first-time users". The negotiation of a guaranteed maximum price requires knowledgeable and experienced staff who have the authority to make timely decisions. The consultative and collaborative aspects of the CM/GC process require a significant number of decisions

about program issues and a need to referee design and specification issues. Owners without construction knowledge on staff are hard pressed to participate actively in the CM/GC process. As with design-bid-build and design-build, time and money are needed as a result of the significant owner resources, participation, and oversight required in the process.

For the CM/GC firm, smaller, less experienced contractors often perceive themselves to be at a competitive disadvantage when competing with larger firms on CM/GC contracts because of the complexity of the process and the extensive design, schedule, and management responsibility required of the contractor. Consequently, this contracting method is used more often for large, complex projects. This can result in somewhat of a barrier for emerging contractors to work as prime contractors. Additionally, firms that traditionally base their business on design-bid-build contracting and lack CM/GC experience, often find it difficult to adapt to the openness and collaborative mindset required to make a CM/GC project successful.

Typically, the majority of the work - in some cases up to 95% of the work - is competitively bid, and the ability to overlap design and construction usually results in faster project completion. If the A/E and/or CM/GC firm lack sufficient experience or expertise, significant problems might arise and drive up the cost and/or delay the schedule. If the design is not carefully controlled, or the local construction market becomes hot, costs may still be problematic on a CM/GC project. Owner expectations often have to be trimmed during the design phase of the project to arrive at a satisfactory GMP. Change orders and minimal scope change decisions may rapidly deplete any contingency amount built in as part of the GMP, forcing scope reductions and unanticipated budget increases.

Therefore, we recommend that owners do not view CM/GC as a “silver bullet” that will solve all problems at the lowest cost to the public agency. CM/GC should be carefully selected after analyzing the strengths and weaknesses of all project delivery options.

3. LEGAL REQUIREMENTS

Use of the CM/GC process in Oregon was made possible by a revision to the State’s public improvement procurement policy that permit certain contracts or classes of contracts to be exempt from competitive public bidding. Like other alternative contracting methods, CM/GC has significantly different legal requirements than the typical design-bid-build project delivery method. It is recommended therefore that public agencies seek qualified legal counsel before attempting to award a CM/GC contract. The following discussion summarizes Oregon statutory and administrative rule requirements (through February 2002) related to the competitive bidding exemption process and other legal considerations related to use of the CM/GC method. Note, however, that the underlying statutes are likely to be changed in the 2003 legislative

session as part of a planned general revision of ORS Chapter 279 (reference House Resolution 1, 2001 Oregon Laws, and industry-wide efforts through the House Interim Work Group on Public Contracting Law).

3.1 Oregon Revised Statutes (ORS)

a. Framework

The public contracting laws in Oregon, primarily contained in ORS Chapter 279, do not currently provide a statutory framework for alternative contracting methods such as CM/GC or Design-Build. Rather, the approach under ORS 279.015 is to require that public improvements be undertaken through competitive bidding (award to the lowest responsive, responsible bidder), while allowing exemptions to sealed bidding under strict procedural safeguards. CM/GC is not directly referenced in ORS Chapter 279 and related public contracting statutes.

b. Exemptions

When an exemption to competitive bidding is required, ORS 279.015(2), (3), and (6) specify the process that must be followed, including required “findings” as set forth in those statutes and defined at ORS 279.011(5). The findings fall into three categories:

1. It is unlikely that the exemption will encourage favoritism or substantially diminish competition, as referenced in ORS 279.015(2)(a),
2. Award pursuant to the exemption will result in substantial cost savings to the agency, or to the public for certain ODOT projects, as referenced in ORS 279.015(2)(b) as amended in the 2002 Special Session, and
3. Justification for conclusions, including information on operational and financial data, public benefits, value engineering, specialized expertise, public safety, market conditions, technical complexity and funding sources, as referenced in ORS 279.011(5).

c. Public Improvement Contract Requirements

CM/GC contracts are considered to be public improvement contracts when undertaken by public agencies in Oregon. ORS 279.015(3) therefore requires special public notice and an opportunity to comment on draft exemption findings. ORS 279.103 also requires a written post-project evaluation to address statutory factors and provide an objective assessment of the use of the alternative contracting method. This statutory framework is described in detail in the administrative rules noted below. The relevant statutes are also contained in the attached Appendix D.

d. Subcontractor Disclosure

The subcontractor disclosure requirements at ORS 279.027(3) and related substitution of disclosed subcontractors under ORS 279.322 apply only to competitive bidding, and not to CM/GC contracts that have been exempted from competitive bidding requirements. ORS 279.027(3)(d).

3.2 Oregon Administrative Rules (OAR)

a. Attorney General's Model Public Contract Rules

Whether or not an agency is required to adhere to the *Oregon Attorney General's Model Public Contract Rules* ("Model Rules") as referenced below, the Model Rules do provide a useful guide for CM/GC procurement. Those rules are contained in a special series on "Alternative Contracting Methods" for public improvement contracts. See OAR 137-040-0500 to 0590. The general procedural rules are:

- OAR 137-040-0510 Definitions.
- OAR 137-040-0520 Use of Alternative Contracting Methods.
- OAR 137-040-0530 Findings.
- OAR 137-040-0540 Pricing Mechanisms.
- OAR 137-040-0550 RFP Process.

In addition to the above, OAR 137-040-0570 specifically addresses the CM/GC form of contracting, including benefits that should be anticipated, selection criteria, agency authority and basis for payment. OAR 137-040-0570(5) contains a checklist for matters to be addressed in CM/GC contracts, including setting the GMP, adjustments to the GMP, disposition of cost savings, cost reimbursement matters, audits, fees, incentives, owner or contractor controlled insurance programs, early work, subcontractor selection (including approvals and protests) and socio-economic programs.

b. Determining Applicable Contracting Rules

ORS 279.049 provides the statutory authority for promulgation of the Model Rules. Public agencies that have not adopted their own contracting rules under provisions of that statute, including local governments as well as state agencies, are subject to the Model Rules pursuant to ORS 279.049(4). This statute may be inapplicable where a statutory exemption exists, such as for the State System of Higher Education under ORS 351.086 (and see OAR 580-050-0032 for authority to utilize CM/GC within the Oregon University System). Public agencies may also have opted out of the Model Rules by adopting their own rules under ORS 279.049(5). See, for example, ODOT rules at OAR 731-007-0010 to 0190, which closely parallel the structure of the Model Rules (including a section on Alternative Contracting Methods, but omitting reference to CM/GC since that method is not typically used for highway construction projects).

c. State Purchasing Rules

The Oregon Department of Administrative Services (DAS) functions as the central purchasing authority for most state agencies under ORS 279.710 to 279.746 and related statutes. The relevant DAS rules in this area are:

- OAR 125-030-0000 Definitions (see CM/GC)
- OAR 125-310-0220 Request for Proposal - CM/GC

The DAS rules further summarize the competitive bidding exemption process and related requirements. Also, note that DAS adopts nearly all of the Model Rules, including those referenced above for CM/GC projects, through OAR 125-030-0002.

3.3 Socio-Economic Programs (Federal, State, and Local)

Overlaying these general procedural rules are a variety of federal, state, and local “socio-economic” programs, all of which are intended to accomplish additional benefits in the expenditure of public funds. For example, most state agencies administer affirmative action programs that benefit Emerging Small Businesses in subcontracting practices (see ORS Chapter 200 and OAR provisions applicable to a particular contracting agency). Other state or local programs may require sustainability initiatives, use of inmate labor (e.g., for certain Oregon Department of Corrections contracts), compliance with “Work Force Training and Hiring” standards (for certain contracts with the City of Portland, the Portland Development Commission and Multnomah County), or other special program compliance.

Federal law may also require that state and local public agencies desiring to use federal funds comply with special grant conditions, many of which support federal socio-economic programs. For example, Tri-Met and ODOT administer a federally mandated Disadvantaged Business Enterprise (DBE) Program, in which strict subcontracting goals (or a demonstration of Good Faith Efforts) are utilized to the benefit of certified DBE firms. Note that ORS 279.056 and similar statutes (such as ORS 279.748) provide an override of state contracting statutes when federal funds are utilized and federal laws either conflict with state law or require additional conditions in public contracts.

Because socio-economic programs vary between jurisdictions, and sometimes depend upon different funding sources (local or federal) even within the same agency, it is imperative that such programs be clearly articulated in both the CM/GC procurement documents and contracts. Note that some of those requirements apply only to the solicitation process, while others are continuing obligations that run throughout the contract term. Specific requirements in this area should be clearly identified.

III. Selecting CM/GC for a Project

4. WHO SHOULD CONSIDER USING CM/GC

Success from using CM/GC depends to a great extent on the owner. The CM/GC method contains certain complexities and places demands on all project team members that are not present with other, more commonly used contracting methods. These factors can considerably affect the owner's performance on the project. Consequently, when considering the use of CM/GC, public agencies need to take into account their own capabilities and resources in addition to the characteristics of the project itself.

4.1 Types of Owners

Use of CM/GC is not restricted to any particular type of public agency. The method can be employed by all public agencies. However, gaining approval for exemption from competitive bidding requirements, and thus the use of CM/GC, does not necessarily suggest that a public agency *should* use CM/GC for a project. The public agency should consider other factors, especially its own capabilities and resources and the requirements that CM/GC places on the owner, when weighing whether to use CM/GC for a project. The consideration of owner capabilities is reflected in ORS 279.011(5)(d), which states that the findings must include information regarding the "specialized expertise required" for the project. The findings need to show that the agency has the capacity, through staff or contract, to bring the needed owner's representative resources to the project.

4.2 Owner Requirements

It is essential that an owner administering CM/GC on a project possess certain critical attributes. The nature of the CM/GC method is such that a significant amount of owner participation is required compared to other contracting methods. The owner participates and collaborates to a great extent with the other project team members to administer and coordinate the CM/GC process, identify and develop the project scope, manage the project budget, and evaluate and negotiate changes. A public agency must have sufficient resources available to undertake these duties. This requirement may be met through the use of in-house personnel assigned to the project or through hired consultants.

Those working for the owner on the project must also have prior experience with CM/GC contracting. Due to the complexities and unique features of the CM/GC contracting method, experience with other contracting methods does not necessarily apply to CM/GC projects. Practical experience with coordination and administration of specifically the CM/GC process is needed. The A/E and CM/GC firms will rely on the

public agency to possess this experience in order to effectively perform their respective duties.

The ability to provide information and feedback when it is needed is also required of the owner. Time pressures associated with efficient project progress, especially if the project is fast-tracked, require timely input of information. It is imperative that the owner be able to provide information and feedback such that the project progress is not delayed. For the same reasons, the owner must be able to make timely decisions. Delays in making decisions can impede the efficient progress of the project and cause work to be completed out of sequence. To meet this requirement, owner personnel assigned to the project should have the authority to make the needed decisions. The personnel must stay abreast of what is happening on the project and be able to attend and participate in project meetings.

The mindset which the owner brings to the project is of importance as well. It is critical to the success of the project that the owner view CM/GC as a collaborative, coordinated process as opposed to separate and confrontational. Public agencies that do not recognize and participate in an open, cooperative manner will have difficulty realizing the successes that CM/GC can provide. Part of this requirement is the need for the owner to be able to facilitate excellent team communication. A lack of communication between the project team members inhibits needed collaborative efforts and can lead to confrontational interactions. The owner is in the best position to actively promote and ensure that communication channels are available and open.

5. WHEN SHOULD CM/GC BE USED

The choice of a contracting method to employ on a project rests with the owner. It is believed that CM/GC, as it has been used in Oregon, is suitable for some projects but not others. To gain approval for exemption from competitive (low bid) bidding requirements, the public agency must show that the project meets a clear set of criteria outlined in ORS 279.015. It is recommended as well that, in order to use CM/GC on a project, the public agency should show why the use of CM/GC is necessary to meet the project objectives. Demonstration that CM/GC is appropriate for a project should include consideration of the project itself and the current construction contracting industry and marketplace.

5.1 Types of Projects

CM/GC can be used for any type of construction project. However, the benefits resulting from the use of CM/GC can be greatest for projects that:

- are high risk,
- possess a high level of technical complexity,
- are governed by significant schedule constraints,
- require complex phasing,
- contain budget limitations requiring a construction cost guarantee during design, or
- on which value engineering will result in substantial cost savings.

Giving consideration to these factors, examples of types of construction projects that are well-suited to the CM/GC project delivery system include:

- Projects expected to cost more than approximately \$2 million.
- Projects that have complex site issues such as limited lay down space and unusual topography.
- Projects that are technically complex (e.g., environmental sensitivity or remediation problems; unstable soil; significant data/telecommunications, health facilities; high security facilities).
- Projects that have strict budget constraints.
- Projects that need to be phased (e.g., projects that require remodeling in space that must continue to function; projects that will result in multiple buildings).

It is believed that the primary considerations that should be taken into account when evaluating CM/GC for use on a project are: time savings, cost savings, technical complexity, and not diminishing competition or encouraging favoritism. If at least two of these measures indicate that an alternative contracting method is in the best interest of the public, taxpayers, and other stakeholders, and the public agency has the experience and resources to administer the CM/GC process, the use of CM/GC is appropriate for a project. Each measure is described in detail below.

Time Savings

Time savings can be demonstrated if the public agency finds that the project has significant schedule constraints, and that concurrent design and construction is necessary to meet critical deadlines or shorten the overall duration of the construction process. Potential time savings must be substantiated. To do so, the public agency might consider operational and financial data that shows significant savings and/or increased opportunities for generating revenue as a result of early project completion. Other findings influencing these criteria include demonstrated public benefits as a result of a shorter construction duration or disruption to the public facility.

Cost Savings

Demonstration of cost savings can be accomplished by finding that early contractor input during the design process will contribute to significant savings in construction cost. Potential or expected cost savings must be substantiated. In order to justify cost savings, the public agency might consider the following: value engineering, building systems analysis, life cycle analysis, and construction planning that will lead to

substantial savings to the public, taxpayers, or other stakeholders. Factors which might influence these criteria include: high rates of inflation, market uncertainty due to material and labor fluctuations or scarcities, and the compelling need for specialized construction expertise due to technical challenges.

Technical Complexity

Projects are often of such complexity that technical input is needed from a variety of organizations in order to effectively design and construct the project. CM/GC provides an opportunity to incorporate the technical knowledge of a construction contracting firm in the development of the project's design. The use of CM/GC may be justified when the public agency finds that the project presents significant technical complexities which are best addressed by a "team approach", with the CM/GC firm helping the public agency and designer solve specific project challenges during pre-construction. The public agency must show that the public, taxpayers, and other stakeholders will benefit as a result of contractor input on issues such as:

- Operations (e.g., keeping the facility functioning during construction).
- Tenant occupancy (e.g., maintaining tenant safety and efficiency throughout construction).
- Public safety (e.g., developing a comprehensive project safety plan early in the project in concert with the owner and architect).
- Delivery of an early budget and/or GMP. This enables the public agency to provide the public, taxpayers, and other stakeholders with greater cost reliability and more effective management of the budget process.
- Fundraising (e.g., the contractor's involvement facilitates in-kind giving).
- Historic preservation (e.g., seismic upgrades while maintaining historic facades).
- Difficult remodel projects with many unknown factors.
- Projects requiring complex phasing or highly coordinated scheduling.

Not Diminishing Competition or Encouraging Favoritism

ORS 279.015 requires the public agency to demonstrate that it is unlikely that the process of selecting a CM/GC firm will encourage favoritism in the awarding of the public contract or substantially diminish competition for the public contract. This can be demonstrated by opening up the project to all interested and experienced contractors, and by incorporating a contractor selection process that is fair and unbiased. Descriptions of the processes should be clear and concise, and made available to the public for review.

Special Considerations

It may be that, given special circumstances, use of an alternative contracting method should be considered. When extraordinary circumstances arise, it is felt that a public agency would need to satisfy only one of the criteria described above (time savings, cost savings, technical complexity, or not diminishing competition or encouraging favoritism) in order to justify the use of an alternative contracting method. Extraordinary circumstances would include the following:

1. A time emergency in which the public sector has an immediate contractual requirement for private sector services and where a competitive method will not work effectively (e.g., for a fire destroyed structure that requires an immediate start of construction to repair).
2. A project in which the phasing and/or complexity are so extremely difficult that complete design and other pre-construction services cannot be completed effectively without the direct involvement of the construction firm.

6. THE PROCESS OF SELECTING CM/GC

The process of selecting CM/GC for a project requires that the public agency take certain steps that are not required for traditional contracting methods. This section presents the steps that a public agency is required to take, along with those that it is suggested an agency take, in the process of selecting the CM/GC contracting method for a project.

6.1 Initial Agency Decision

Initially, the public agency must make the decision that the use of CM/GC is necessary to meet the project objectives. Each construction project, large or small, is unique. There are a number of relevant questions to answer in making the decision to use CM/GC. The decision to use CM/GC should be directly related to the attributes of the project to be undertaken, and the ability of the agency to staff the project appropriately. Program and performance issues that the agency has identified for the project also can affect the decision. The following list contains some of the questions that a public agency should answer when considering CM/GC for a project:

- Is the project very large or very small?
- Is the project technically complex or very simple?
- Are the features of the project repetitive or more unique?
- Does the project involve substantial design effort or can you “buy one in a box”?
- What level of design control is desired?
- Is the site suitable or will construction difficulties be encountered?
- Do environmental issues exist on the site?
- Are there neighboring structures or is the project being built at an isolated site?
- Is schedule a critical issue?
- Does the agency have sufficient in-house project management expertise?
- Are there occupancy challenges (e.g., adjacent businesses that must be operational throughout construction)?

It is the combination of project-specific and organization-specific factors that make each construction project unique. An objective assessment of the factors surrounding each project and an understanding of the benefits and drawbacks of the CM/GC contracting method will allow the agency to decide if CM/GC will offer the greatest likelihood of delivering quality construction in a timely way at a reasonable cost.

6.2 Developing the Justification for Using CM/GC

ORS 279.015 requires the public agency to submit findings that justify the exemption of the project from competitive (low bid) bidding requirements. The findings are used to gain approval for use of an alternative contracting method such as CM/GC. It is recommended that, as a minimum, findings supporting the use of the CM/GC method of contracting should:

1. Demonstrate that the public agency has knowledgeable staff or consultants who have the capacity to manage the CM/GC process.
2. Provide a clear description of the process to be used to select a CM/GC firm.
3. Describe how subcontractors will be selected and the process used if the CM/GC firm wishes to perform some of the work.
4. Discuss how the process is unlikely to encourage favoritism in awarding the contract or substantially diminish competition.
5. Provide evidence to demonstrate that the process should result in substantial cost savings to the public agency.
6. Address any other administrative requirements for this process imposed by the public agency's public contract review authority.
7. List the minimum requirements the public agency intends to require of prospective CM/GC firms.

6.3 Gaining Support for CM/GC

Exempting a public project from competitive (low bid) procurement requirements in order to use an alternative contracting method can be of concern to some individuals. Findings may show that the benefits of using CM/GC are not significant compared to a more traditional contracting method. Support from the public for the agency's decision to use CM/GC should be gained. Gaining support for CM/GC is best accomplished through effective and informative communication with the public and other stakeholders.

Prior to final adoption of findings justifying the use of an alternative contracting method, agencies should hold a public meeting to discuss the project and findings. Notification of the public meeting should be published in at least one trade newspaper of general statewide circulation. Publication of the meeting notice should occur a minimum of ten days prior to the meeting. The notice should state that the public meeting is for the purpose of taking comments on draft findings for an exemption from the public contracting requirement. As a part of the meeting, the public agency should present its

findings and offer an opportunity for any interested party to provide comments. At the time of advertisement, copies of draft findings should be made available to the public. If a situation exists that requires prompt action by the agency, notification of the public meeting can be published simultaneously with the advertisement of the solicitation, as long as responses to the RFP/RFQ are due at least five days after the meeting and final approval of the findings.

IV. Implementing CM/GC on a Project

7. THE SOLICITATION PROCESS

After the public agency has made the decision to move forward with the CM/GC process, and received approval for exemption from the competitive (low bid) bidding requirements, the next step is to solicit CM/GC services. The public agency should thoroughly plan and schedule the solicitation process prior to issuing any documents to the public. The process developed should be as streamlined and short as possible while still maintaining fairness.

7.1 Elements of the Solicitation Process

It is recommended that the process of soliciting qualified CM/GC firms for the project include both written and oral presentations. In many cases, and especially when time is of the essence, the CM/GC solicitation process can be fairly administered with a two-step format as illustrated in Figure 4. A two-step format involves the publication of a Request for Proposals (RFP) followed by formal interviews. Initial questions of the RFP can elicit qualifications (history, bonding capacity, special capabilities, etc.) with subsequent questions becoming more project specific. Following a review of the RFP responses that are received, a short-list of top-ranked firms is developed by the public agency. These firms are then invited for an interview.

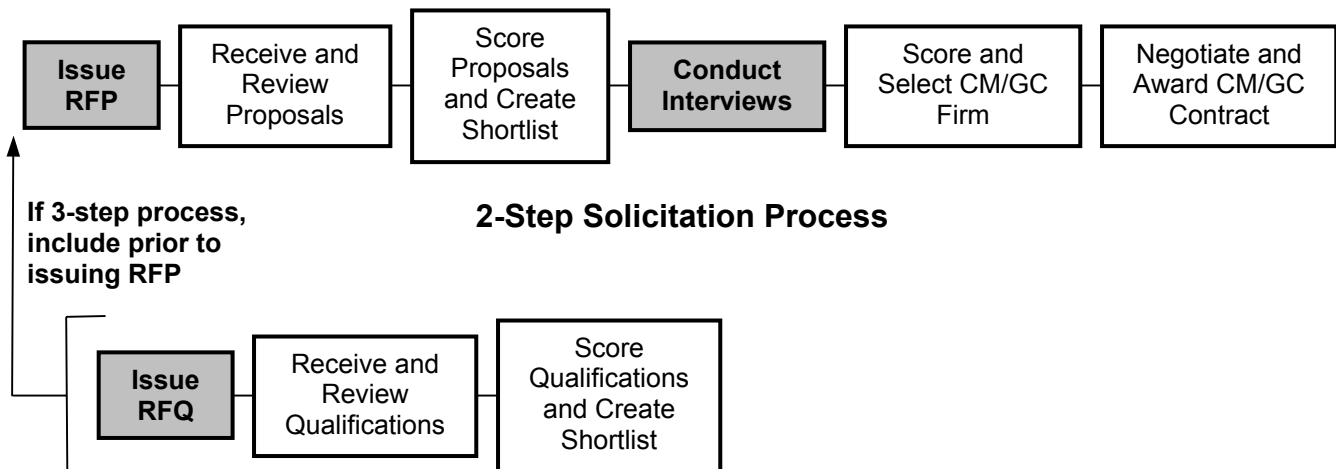


Figure 4. CM/GC Solicitation Process

The public agency, however, should have the leeway to use a three-step format if it feels that it is in the project's best interests. A three-step format begins with the publication of a Request for Qualifications (RFQ), followed by an RFP, and interviews (see Figure 4). The RFQ solicits information (company history, bonding capacity, special capabilities, etc.) that is used to qualify firms for the project. Qualified firms are then issued an RFP for the project. As with the two-step format, those responding to the RFP are short-listed and then invited for an interview.

7.2 Ensuring Fair Competition

The solicitation process is used by the owner to solicit proposals from CM/GC firms for the project. The RFP documents used in the process are developed by the owner and should be designed to clearly communicate the needs of the project, the requirements for submission, and the evaluation criteria. In addition, it is imperative that the RFP process be conducted in a manner that ensures fair competition and does not involve partiality.

A formal RFP process begins with issuing the RFP and the receipt of proposals. This is followed by the narrowing down of the number of qualified proposers and then interviews to help the owner select the firm that it feels is best for the project. Within this process, maintaining fair competition between those proposing for the CM/GC contract is critically important. Ensuring fair competition is a key part of the public agency's findings used to substantiate the use of an alternative contracting method. It is important that all qualified firms participate on a "level playing field" during the selection process. The following steps can be taken to help eliminate unfairness in the RFP process:

1. Publish the CM/GC selection panel membership. The composition of the selection panel should include representatives beyond the staff of the public agency and consist of at least five panel members with sufficient expertise and experience. Modify the composition of the selection panel from project-to-project to avoid favoritism.
2. Limit, or even prohibit, pre-bid contact between the public agency and interested proposers unless needed to clarify the project documents or issue addenda.
3. Provide all questions and answers in writing and make the answers available to all proposers.
4. Provide adequate training of selection panel members to ensure consistency in their actions.
5. Provide scoring criteria to bidders.
6. Conduct a post-bid debriefing.
7. Impose strict criteria for refusal to consider proposals.

7.3 RFP Package and Contents

The public agency's solicitation documents should be designed to clearly communicate the needs of the project, the requirements for submission, and the evaluation criteria. The documents should create a road map and set of rules for the proposers to follow in completing and submitting their proposals. A well-drafted set of instructions can make the difference between a smooth, problem-free procurement and a heavily-disputed procurement. The solicitation documents should include the following information:

1. An explanation of goals and objectives that the public agency is attempting to accomplish with the project.
2. A thorough description of the project, including background information, special requirements, etc.
3. A clear description of pre-construction, construction, and post-construction deliverables.
4. The project timeline and milestones including critical dates such as:
 - GMP due date
 - Estimated (or desired) time of completion
 - Pre-proposal meeting date
 - Final date requests for clarification can be submitted
 - Final date addenda will be issued
 - Proposal closing/opening dates
 - Date initial scores available
 - Date(s) negotiations/interviews begin
 - Date second round scores available (optional)
 - Date to announce intention to award
 - Date proposal protests of award determination are due
 - Date of award
5. Minimum requirements for the proposer to be considered as a CM/GC for the project, such as: bonding capacity, insurance requirements, and demonstrated capabilities (e.g., three projects of \$xx; current state license, etc.).
6. The public agency's project team members (A/E, special consultants, etc.).
7. A single point of contact at the public agency for answering questions and obtaining information.
8. The public agency's position on product or subcontractor substitutions.
9. Minority and disadvantaged businesses requirements, if any.
10. The alternative contracting method exemption findings.
11. The scoring criteria and evaluation methodology to be used for CM/GC firm selection. (For example, when evaluating the proposed fees, the low proposer gets all points allocated for the fee and the other proposers are awarded points proportionally based upon the ratio of the amount of their proposed fee to the low proposer's fee proposal.)
12. The public agency's intended selection panel, identifying the anticipated number of persons and their background and qualifications.
13. The required form and content of proposals submitted.

Each project is different and therefore requires the consideration of different provisions in the RFP. The fundamental goal should be to provide the needed information while ensuring fairness for all proposers that encourages competition but also protects the public agency from exposure to protests or litigation. Sample RFP documents are available from many of the public agencies that have used the CM/GC process. Appendix A provides a list of some of these agencies.

The proposing firms should be asked to provide a variety of information that allows the public agency to make an educated and fair evaluation of the proposing firm's ability to perform the project. The RFP should request information related to the company itself, the personnel in the company and proposed for the project, the plan for the project, prior CM/GC experience, safety plan, and fee. Listed below is specific information that should be required of the proposing firms.

1. Company overview:
 - Years in business
 - Bankruptcy
 - Contract defaults
2. Personnel:

For each of the following project team members, their level of participation in the project phases of pre-construction, construction, and commissioning should be provided (this may be expressed as a percentage of their work time):

 - Project organizational structure
 - Principals (highest person with authority)
 - Project manager
 - Superintendent
3. Plan for the project:
 - Flow chart showing project schedule
 - Methodology
 - Unique management strategies
 - The value brought by the company to the project
4. Experience/references relative to the particular project under question related to the following:
 - Size
 - Type
 - Complexity
 - Schedule
5. Safety plan as it applies to this project.
6. Fee for pre-construction and construction phase services:
 - The RFP should define explicitly what should be included in the fee proposed for the project so that each submitting firm bases its fee on the same scope.
 - If fixed dollar proposals on general conditions are desired, the scope of general conditions should be very well defined (quantifiable) within the

RFP. If adequate definition is not provided, bidders should be instructed to carry an owner-stipulated allowance within their proposals.

- Fee for change orders.

8. SELECTING THE CM/GC FIRM

The task of selecting the CM/GC firm following the receipt of proposals is often difficult and can be highly controversial. If legal disputes on a project occur, they often arise from the actions taken when selecting a contractor using any type of contracting method. Paying close attention to this task is especially important for alternative contracting methods in which fairness and open competition are closely monitored.

8.1 Interviews

Interviews of those firms desiring to act as the CM/GC firm on a project should be conducted as part of the selection process. Interviews are in many ways beneficial to both the public agency and to the proposing firms. Interviews can provide the owner with information that is not readily gained from written material. They also give the owner a chance to ask questions about each proposer's RFP response, and allow for the owner to become familiar with the proposing firm's personnel. The interviews should be used to clarify and better understand the material presented in the proposal, and not to introduce new selection criteria. The information gained from the interviews is used to a large extent by the owner to score and select the proposing firms. The proposing firm benefits as well from the interviews by having a chance to meet and get to know the public agency staff, gain additional information about the project, promote their firm, and further learn about the agency's goals and objectives for the project.

Interviews should be scheduled with each qualified proposer. The interviews should be formal and of a consistent format. It is recommended that an interview agenda be prepared beforehand so that the interviews are conducted in a uniform manner and cover all desired issues. The owner should consider requesting that the individuals who will be directly involved with the project be present during the interview. This will benefit the relationship and understanding between the owner and the individuals who the owner could be directly working with during the project. Also, it will help the owner to see how familiar the individuals, who will actually be in charge and directly involved, are with the project.

8.2 Scoring

A scoring system is typically developed and used to guide the public agency in the review of proposals and selection of the CM/GC firm. A well-structured and

comprehensive scoring system allows for selecting the best firm for the project and, if implemented appropriately, ensures that the CM/GC firm is chosen fairly.

Prior to the review of proposals and interviews, the public agency should provide scoring guidelines to those evaluating the firms. The scoring guidelines should educate the scorers about the factors that are important to the public agency with regards to the project and a CM/GC firm, and the features that constitute a superior, appropriate, and inferior answer to the RFP questions. Included with the guidelines should be criteria on which each proposer is to be graded. The owner should choose criteria that are felt to be necessary for the CM/GC firm to possess. Use of the criteria is intended to eliminate price as the sole selection factor. The following characteristics are suggested, in addition to price, as criteria to be used for scoring qualified CM/GC firms:

- Experience with projects of similar size and complexity.
- Qualifications and experience of key people proposed for the project and the involvement of senior management on the project.
- Experience with the CM/GC contracting method and other project delivery methods involving design phase (pre-construction) services as well as construction work.
- Project specific work plan (approach to project).
- Safety performance.
- Type of working relationships commonly established by the firm and previous project experience with the agency.
- Financial health and bonding capacity.
- Other logistical qualifying considerations as deemed significant by the public agency, such as workload and office location relative to the project.
- Other objective technical qualifying considerations as determined important by the public agency, such as the project building type, functions, use, or degree of technical challenge.
- Other socio-economic and social considerations, such as the plan for meeting MBE/WBE goals and their approach to community relations.

The criteria given above do not represent the entire list of criteria that can be used. Public agencies have the latitude to develop other criteria that reflect the specific goals of the specific project or the public agency.

When scoring the criteria, public agencies may wish to weight the criteria differently. That is, some criteria may be considered more important than others. The importance that each criterion is given should incorporate factors based upon the nature and needs of each project. For example, if the project contains significant safety hazards, greater weight might be placed on the contractor's safety record and work plan. If the public agency's projects are highly similar or redundant, then qualification criteria could be more standardized. The weighting factors should be developed in advance and included within the original RFQ and subsequent RFP. The amount of CM/GC experience is often regarded highly and therefore heavily weighted. Public agencies are cautioned, though, that lack of experience on prior CM/GC projects, or

with “negotiated work”, should not be used to preclude otherwise competent firms from qualifying.

The scoring process entails each scorer providing a numerical score for each proposal. The scores are based on the scoring criteria published in the RFP and the guidelines provided by the public agency. Scorers should fill out their evaluation sheets individually, and the scores should be totaled to determine final scores and ranking. In addition to being evaluated based on the aggregate total for each firm, final ranking should be verified through “cross-checking”. This process involves looking at each scorer’s ranking of the proposals along with the total points using the following process:

1. Each scorer’s top-scoring proposal receives one point. The second highest proposal receives two points, and so forth.
2. The rankings for each proposer are totaled. (The best score a proposer can receive is equal to one multiplied by the number of scorers. The poorest score that a proposer can receive is equal to the number of proposers multiplied by the number of scorers.)
3. The proposer with the best ranking should be the same as the proposer with the highest numerical score total. If these methods do not agree, then the points assigned by one or more of the scorers may be skewed and the selection committee should discuss and resolve the apparent discrepancy.

8.3 Post-Selection Briefing

At the conclusion of the process following the selection of a CM/GC firm, the owner should offer post-selection briefings to all participants. Post-selection briefings help both the public agency and all participants by providing an opportunity to present and discuss what worked well and what did not work well with the selection process. Future projects can benefit from the lessons learned. Time should be set aside by the public agency for each participant, if the participant is interested, to meet and discuss the proposal and interview. The scoring documents should be available to all participants and anyone else who may ask for them as part of the briefing.

9. THE CM/GC CONTRACT

The contract that the owner creates with the CM/GC firm plays a significant role in CM/GC process. The CM/GC contract, along with the contract between the A/E and owner, provides structure to the project team. The contract is of such importance that the owner must commit the necessary time and effort needed to ensure that the contract is clear, concise, and contains the appropriate content. Public agencies are encouraged to consult with legal counsel and obtain the services of a professional construction consultant, if needed, for assistance with the development of the contract.

9.1 Writing the Contract

The initial version of the contract is created by the owner. The owner may use its own staff and resources to write the contract or, if needed, may obtain the services of a project manager to assist with the task. If the contract is supplied by a consultant, the owner should thoroughly review the contract together with legal counsel. Regardless of who writes the contract, it is recommended that the owner seek qualified technical and legal guidance in its development. The initial version of the contract should be included as part of the RFP package.

The contract is finalized with input from the CM/GC firm. Input from the CM/GC firm is typically incorporated by one of two means as described below.

1. Pre-selection Negotiation

During the RFP process, discussions are held regarding the terms and conditions of the contract. The discussions are opened up to all interested parties to ensure fairness. The contract is then finalized after a CM/GC firm has been selected and includes any modifications that may have arisen as part of the discussions. In some cases, after the CM/GC firm has been selected, the owner may choose to negotiate the contract if it is in the best interest of the owner. Pre-selection negotiation tends to be less risky to the owner because the negotiations take place with a group of interested proposers, all competing for the work, as opposed to one single firm. One possible drawback for the owner is that during the RFP process, interested proposers may not bring up issues that they do not want others to know about, such as profitable ways of packaging insurance. If this is the case, potential benefits to the project may be suppressed and not realized.

2. Post-selection Negotiation

After selecting the CM/GC firm, the owner enters into negotiations with the firm to finalize the contract. Contract discussions are made solely with the selected firm, rather than having all interested bidders involved in the discussions. As the sole party negotiating with the owner, the CM/GC firm has additional leverage that it did not possess prior to being selected. In this case, the owner may need to “draw a line in the sand” to signify what is, and what is not, negotiable. If negotiations fail to produce a contract acceptable to both sides, the owner proceeds to select another CM/GC firm. Owners must be aware that in the negotiations it is important to not significantly alter the project scope or field of competition. Doing so could generate concerns regarding assurances of maintaining fairness in the solicitation process.

9.2 Contract Content

The owner may use any contract format that it has available and with which it is comfortable. Unless a public agency has developed its own standard agreement or adapted that of another agency, it is recommended that an industry standard form of agreement, such as that offered by the American Institute of Architects (AIA), be used

as a template and then modified and augmented to meet the particular characteristics of the owner and the project. It is beneficial to utilize a standard form of agreement for various reasons. Standard agreements have been developed to represent actual industry practice. An attempt is made to accurately reflect the roles and responsibilities of each project team member. Over time as the industry evolves, the provisions are updated to incorporate any shifts in industry practice that have occurred. Additionally, an effort is made to balance the interests of the parties. That is, the risks associated with each provision are considered such that one party does not shoulder a level of risk that is not justified. For public agencies that undertake annual construction programs which include many different projects, standard agreements assure that the projects are administered and conducted in a uniform manner. This saves the public agency time and effort by not having to re-draft a unique set of contractual provisions for each new project. In addition, it promotes consistent interpretation among the proposing contractors on a project, and from project-to-project. Lastly, commonly used standard agreements have been examined many times in legal cases. The provisions have been court-tested and a common interpretation has been formed.

When developing the contract, the public agency should strive to create a contract that fairly allocates risk in a manner consistent with industry standards. Contracts should not be written as one-sided or adversarial. The CM/GC contract should contain a variety of provisions to ensure adequate coverage. Fairness and appropriate risk allocation are often communicated through reasonable notice procedures, the incorporation of teambuilding requirements, and the inclusion of a workable and prompt dispute resolution process. The content of the contract may be similar to that of a typical design-bid-build contract with modifications to reflect the CM/GC process. The following is information that is not typically part of a design-bid-build contract but which should be included in a CM/GC contract:

- A clear definition of the scope of pre-construction services, including the amount of compensation and timing.
- A clear description of the scope of construction services and associated fee.
- A definition and description of what is considered a reimbursable cost.
- A definition and description of what is not considered a reimbursable cost.
- A description of issues related to phasing of the work or scheduling the project.
- A description of the GMP development process (i.e., how it is to be done, who has responsibility for what, when is the GMP set, what does the GMP cover).
- Procedures and timelines for terminating the contract if an acceptable GMP cannot be agreed upon, and how the owner moves on to negotiating with another firm.
- A clear provision relating to the schedule including who owns the float, if any, and who manages the schedule.
- A clear description of the responsibility for managing costs within the GMP and the lines of approval authority for use of the contingency(ies) and allowances.

- A provision that describes what happens to “savings” accrued from contingencies and allowances.
- A clear description of the change process and how changes are to be implemented. The issue of concern here is whether a change that occurs during construction is to be considered within the GMP. The contract needs to address how this decision will be made, provide guidelines for making the decision, describe the process for addressing this issue, and how it will affect the Schedule of Values line items. Designation must be given as to the required approval/authority to change the Schedule of Values line items before buyout and after buyout.
- A clear description of the subcontracting rules for the project.

9.3 Coordinating the A/E and CM/GC Contracts

In the CM/GC contracting method, the owner contracts separately with the A/E and the CM/GC firm. Under direction of the owner, the A/E and CM/GC firm collaborate to design and build the project. While no written contract is created between the A/E and CM/GC firm, these organizations must work together as part of a team to successfully build the project. Teamwork is essential to the success of the project. Therefore, it is imperative that the language in the contracts with the A/E and CM/GC firm be coordinated. The owner needs to think through the contract coordination issues prior to issuing the RFP because a copy of the CM/GC contract should be included in the RFP.

Each contract needs to be consistent with the other contract with respect to the responsibilities of the other party and the terms and conditions in the other contract. Consistency and coordination of the contracts help to alleviate any problems in the field over roles and responsibilities, particularly with respect to budget, schedule control, safety, and quality. This coordination needs to be present within all parts of the contracts, including the general conditions and supplementary provisions.

Beyond the particular scopes of work and compensation, normally there are no large differences between the A/E and CM/GC contracts. Some important differences exist, though, regarding coordinating and managing the work. Specific attention should be given to coordination of the following issues:

- Roles and responsibilities of each party.
- Processing of payment applications, change orders, submittals, and RFI's.
- Project schedule.
- Coordination of timely design review by the CM/GC firm.
- Development and issuing of bid packages.
- Submittals processing.
- Procuring/processing certain “bidder-designed” elements.
- Pursuing and obtaining permits.
- Jurisdictional coordination/approval and permits for required “off-sites”.

The approach, coordination, and differences regarding these issues need to be reflected in both contracts.

Prior to signing the contract with the A/E, it is important that both the owner and A/E understand that the CM/GC process will be utilized, or is being considered, for the project and, therefore, that the A/E will need to work closely with the CM/GC firm. Utilizing CM/GC, as opposed to another contracting method, may affect the A/E's fee. The A/E's fee may be affected because CM/GC is an iterative process that requires greater coordination efforts and more meetings than on a typical design-bid-build project. The A/E may also have additional costs if required to prepare multiple bid packages, have a substantial on-site presence, or, if part of the A/E's scope of work, coordinate the CM/GC process on behalf of the owner. Therefore, the contract with the A/E should note that the project is or may be delivered using the CM/GC process.

9.4 Roles and Responsibilities

The structure of the CM/GC process establishes the general role assumed by each project team member. The specific responsibilities undertaken by each project team member, however, may change. The function and duties of the CM/GC project team members can vary from one project to another. Therefore, the CM/GC contract must clearly outline the roles and responsibilities of, not only the owner and CM/GC firm, but the A/E as well. The roles and responsibilities must be coordinated so that there are no gaps or overlaps in responsibility. In addition, the responsibilities should be coordinated to ensure an effective, efficient project team. Further discussion of the specific roles and responsibilities of each project team member is provided in Section 10.

9.5 Fee Structure

Included in any contract is the framework for compensating the contractor for its services. The framework within a CM/GC contract typically divides the guaranteed maximum price into four different cost categories: cost of the work, fee, general conditions, and contingency. (See Section 11 for additional descriptions of each cost category.) When developing the contract, it is important that the framework created for compensating the CM/GC be clearly defined, objective, and fair in order to eliminate any misconceptions about the value and competitiveness of the CM/GC process. The public agency should make every effort to provide for a quantitative measurement of the services provided by the CM/GC firm to ensure objectivity and fairness. To do so, the public agency must clearly define, with as much specificity as possible, the nature and extent of the different cost elements.

The structure of the fee paid to the CM/GC firm can take many forms. It can include or exclude a variety of items, varying from one project to another. The structure depends on the size and complexity of the project. On projects that are small or not

complex, the CM/GC firm will typically submit one fee for the entire project covering both pre-construction and construction phase services. For larger, complex projects, especially those that will require significant pre-construction effort, it may be advisable to divide the fee between the pre-construction phase and the construction phase.

During the pre-construction phase, the CM/GC firm provides a variety of services involving costing, value engineering, constructability reviews, and construction expertise. At the time of publishing the RFP, these services can be quantified and a fixed amount of pre-construction fee established. The “quality” of the fee amount established relies on the quantity and detail of the information provided to the CM/GC firm. A greater amount of detailed information will lead to a fee that is more reflective of the work that will eventually take place. Owners, therefore, need to specify with as much detail as possible the services to be required during the pre-construction period. Based on the information provided, the fee can be established in a number of ways, including:

- Time and materials, not to exceed
- Lump sum
- Cost plus fixed fee
- Percentage of estimated construction costs

The total amount of pre-construction services fee is typically capped. If the owner and CM/GC firm cannot agree on a GMP, even with some amount of re-design, value engineering, or re-scoping, the only other recourse available to the owner is to terminate the contract with the top-ranked CM/GC firm and begin GMP negotiations with the second-ranked firm. The adverse impact of this kind of a switch is minimized by not being too heavily invested, time-wise, with the first firm. This type of change does occur on rare occasion. In the few instances where it has occurred, the owner either was able to negotiate a successful GMP with the second-ranked firm or elected to convert to a design-bid-build methodology. From the owner’s perspective, in these instances of change, the top-ranked firm was not adequately comfortable with the particular type of construction involved and hence desired to carry too large a contingency. In some cases, the CM/GC firm may propose to perform the pre-construction services without compensation should the firm be unsuccessful in negotiating a GMP with the owner.

There are too many unknowns prior to the completion of the pre-construction phase to establish a meaningful fixed amount for the construction phase fee. Therefore, for the construction phase, the fee is typically calculated as a percentage of the estimated cost of work. While not a given, CM/GC firms that propose to perform the pre-construction services without compensation may request a higher percentage for construction phase services in order to gain compensation for their pre-construction work. Additionally, in general, a smaller fee will be requested for larger jobs and when there is more competition. The workload of the CM/GC firm also affects the fee. A contractor will often reduce its fee if its workload is low in order to attract jobs.

A range of costs may be included in the fee. On one end of the spectrum, the fee might include only home office overhead and profit. This may occur if there is a need for

the owner's project manager to have all job costs reimbursed in the general conditions. On the other hand, the fee might include project management for the life of the project, office staff, and other administrative costs. Certain costs might be left to the discretion of the CM/GC firm, such as safety program costs, and therefore included in the fee. In this case, the general conditions portion of the GMP could be negotiated at a fixed cost if there is a concern for budget control. Whatever method is used, it is important that it be consistent with agency policies.

It is recommended that when going into the project, the owner maintain a mindset that the project will be treated and negotiated as whole rather than separate pre-construction and construction "contracts". This mindset helps when negotiating a fair and equitable contract that leads to successfully completing the project. The fee structure in the contract, though, must recognize a separation between pre-construction phase and construction phase services because if a GMP cannot be agreed upon, the owner may elect to go with another CM/GC firm after the pre-construction phase.

Problems often arise regarding whether costs should be considered within the general conditions or the CM/GC firm's fee. General conditions usually defines a group of costs that are reimbursable, while the fee is set as a fixed percentage of the total estimated cost. An example of a cost that could be included in either the general conditions or the fee is the cost of the contractor's personnel that are not present at the jobsite all the time. With any type of fee structure, the structure and amount of compensation need to be clearly defined and presented. As much specificity as possible needs to be provided regarding the specific cost elements and other factors that are included in the fee and that are to be in the general conditions. Regardless of the actual form or contents, the fee structure should also be sufficiently detailed in the RFP documents.

9.6 Indirect Costs

The CM/GC contract should address indirect costs. Indirect costs are those that cannot be directly attributed to a specific work item. These costs should be determined by negotiation based on the needs of the project. For example, on a project in or around a major city, the owner should not reimburse a contractor for personnel relocation or travel to and from the jobsite. However, a project located in a remote location might be better administered if relocation costs are borne by the project in order to provide labor for the project. There is not, nor should there be, any hard and fast rule on what indirect charges are acceptable. Common sense, agency policies, and the needs of the project need to be considered in all negotiations.

Indirect costs are placed in either the general conditions or the fee depending on the contract. For owners, it is beneficial to have the indirect costs included in the fee. There is no set level of indirect costs that should be expected on a CM/GC project. The level of indirect costs will vary depending on the project characteristics and on what is allowed to be included in the fee. The agency needs to provide a detailed listing of the

costs that are reimbursable. In some cases, the CM/GC firm must abide by the agency's own regulations. It is important for the owner to outline in the RFP how the CM/GC firm is to account for the indirect costs and reimbursables.

9.7 Performing the Work

As with any construction contract, the CM/GC contract should provide direction to the CM/GC firm regarding performing the work. A description should be provided of the work that is expected of the CM/GC firm during both the pre-construction and construction phases, and the responsibilities and expectations of the CM/GC firm in the performance of their work should be clearly outlined. In addition, direction should be provided regarding expectations for interaction with the A/E over the course of the project. The specific role and responsibilities of the CM/GC firm are described in more detail in Section 10. One of the responsibilities of the CM/GC firm is to procure and manage subcontracts for the work. The topic of subcontractor procurement is discussed in Section 12.

The RFP should state clearly the coordination efforts required of the CM/GC firm along with what the owner considers or defines as coordination. Normal coordination of the work expected of a general contractor should be expected of a CM/GC firm. Included in the contract should also be a list of the critical items that the CM/GC firm must coordinate. The requirements should address the pre-construction phase and be coordinated with the role of the A/E. It is recommended that the contract stipulate that there be coordination with the design team regarding issuing design packages. While the CM/GC firm must have ultimate responsibility for coordination of the trade contractors, the A/E should have the responsibility for oversight of the coordination to see that the coordination efforts are maintaining the project schedule. That is, the A/E needs to ensure that the CM/GC firm is managing the schedule such that the worksite is available to each subcontractor as shown on the schedule and that each contractor is progressing as shown on the schedule.

9.8 Permitting

The requirements regarding all permitting issues should be clearly spelled out in the CM/GC contract. In general, the owner would take responsibility for all land use issues because the owner is more likely to have the necessary political connections important to that process. For example, a condition of land use approval that requires off-site street or utility improvements would be taken care of by the owner. The CM/GC firm is typically given the responsibility for obtaining plan check permits and some discipline permits.

Sometimes obtaining permits can be a complicated process. If it lacks the requisite expertise or resources, the owner may wish to give the entire responsibility to the CM/GC firm. By doing so, the owner should expect to pay a mark-up for the services

that the CM/GC firm provides. Ultimately, though, the owner pays for all related costs. In some cases, the owner may direct the CM/GC firm to submit separate invoices for each permit. This allows the owner to pay the invoices immediately and eliminate any extra costs.

9.9 Errors and Omissions

CM/GC is a process that changes the traditional roles of designer and constructor. With mandated participation of the CM/GC firm during the design phase, no longer is sole responsibility of the success of the design entirely clear cut. The CM/GC firm participates in the development of the documents and is, therefore, part owner of those documents. The CM/GC firm, as a result of its efforts to develop the design, provide constructability input, and collaborate on meeting budget requirements, possesses a level of accountability for the documents that is not present in the typical design-bid-build contracting method. For this reason, it is important for the owner to establish with the A/E and CM/GC firm a clear understanding of the responsibility for problems that occur which are associated with the design or design documents. During the GMP negotiations with the CM/GC firm, it should be understood that the GMP will include the “intent” of the documents.

The process for addressing mistakes, “everyday unplanned occurrences”, and unforeseen but needed changes, should be clearly outlined in the contract’s general or special conditions. It is important for the owner to clearly allocate the risk associated with these issues. The owner must decide whether they should be included as part of the contingency and, therefore, within the GMP. Items to be addressed include: how will these issues be taken care of, and will the associated costs be covered within the contingency. It is recommended that constructability changes and extra costs to cover “everyday unplanned occurrences” be included in the contingency. An example of a cost that should not be included in the contingency is one that stems from negligence by the A/E or CM/GC firm.

Construction costs associated specifically with design errors may or may not be included in the GMP. If a design error is exposed during construction, the owner would be held liable to the CM/GC firm, but the A/E would be held liable to the owner for any design error falling outside standard practice. For this reason, it is important that the owner outline the role of the A/E and the A/E’s responsibility regarding design errors, constructability issues, and the standard of practice expected. This issue needs to be discussed beforehand, and addressed in both the A/E and CM/GC contracts.

Often as a result of unrealistic owner expectations, project costs may challenge an initial project budget. Since the engagement of the CM/GC firm for the pre-construction services is, in part, for the purpose of “smoking out” problems with the design, owners generally expect most design errors and constructability issues to be resolved before construction. Owners, though, must realize that it takes time to perform the constructability reviews, and that time should be set aside for performing the

reviews. Additionally, with the significant number of drawings and volumes of specifications developed for some projects, the owner should understand the difficulties encountered and limitations associated with developing a clearly coordinated and concise set of documents. It is important that the owner not only communicates its expectations to the project team, but also ensures that its expectations are reasonable.

One of the positive benefits of CM/GC is that it can greatly accelerate the completion and delivery of a construction project. But in doing so, certain risks are increased because various activities that are traditionally undertaken in series are being performed concurrently. This reduces review times and complicates the smooth interfacing of project segments. Ample time and necessary expertise must be made available for document review and assessment.

The CM/GC process typically incorporates agreement on a GMP prior to the completion of the design and specifications. The timing of this agreement, coupled with phased construction and multiple bid packages, creates greater potential for coordination errors, both in terms of design and construction, than is typically experienced with the design-bid-build process. The term “coordination errors” includes discrepancies and incompatibilities between activities of two separate project segments. Examples of coordination errors are: incompatibility of the mechanical layout with the supporting structure; incorporation of a change into one side of an interface but not the other; and a concrete slab being poured prior to the completion of underground utilities. The owner should recognize this potential for coordination errors when considering the timing of the GMP. A lower chance for errors generally exists when the GMP is set later in the design.

The owner and CM/GC firm can contractually agree that the contractor will cover such errors as a reimbursable cost to the owner within the GMP, provided the errors are not the result of negligence. Naturally, the shifting of such risk to the contractor involves an increase to the contingency within the GMP. Nevertheless, such a risk allocation shift can be of benefit to an owner that wants the GMP to be a true guarantee of total cost. That is, the costs of remedying construction coordination errors in the design-bid-build process are fully borne by the contractor; whereas with CM/GC, a certain extent of the construction cost of remedying non-negligent design error is borne, in whole or in part, by the owner.

10. ROLES AND RESPONSIBILITIES

The contracting method utilized on a project influences the role and responsibilities taken by each of the project team members. The structure and nature of the CM/GC contracting method requires that the owner, A/E, CM/GC firm, and subcontractors participate in ways which are not necessarily in common with other contracting methods. Technically, CM/GC is an exemption from competitive (low bid) bidding requirements and can be accomplished in a number of ways. On the other hand, without norms or standard approaches, public agencies are subject to criticism for doing things in an unconventional manner. Departure from these norms needs to be specified and clarified before the fact. All parties need to have a clear understanding of their own role and responsibilities and an idea of the roles and responsibilities of the other parties. These should be outlined in the RFP documents.

As with other contracting methods, there are assumed basic roles and responsibilities that exist with the CM/GC process. Clearly, these general roles and responsibilities should not be modified within the CM/GC contract. That is, there should be an expected series of roles and relationships that are “default” for the process established by rules. For example, the CM/GC firm should have responsibility for the construction means and methods. The A/E must have responsibility for the design and for reviewing and approving shop drawings. The owner should have the responsibility for determining the roles of the various parties because it is the owner’s money that is paying for the project. The owner should be willing to take advice from the professionals it hires, but ultimately it will be the owner’s “call” as long as all parties clearly understand their respective roles and the owner’s expectations. Table 2 describes the activities undertaken on a typical CM/GC project and the extent to which the owner, A/E, and CM/GC firm play a part in each activity. The table is based upon a typical CM/GC project. The roles and responsibilities taken on a specific project may differ as a result of the characteristics of the project and each project team member.

Table 2. Responsible Parties for CM/GC Project Activities

Legend: L = Leadership role S = Support role N/A = Not applicable; no role taken

RESPONSIBILITY	OWNER	A/E	CM/GC
TEAM SELECTION			
Owner selects A/E. ¹	L	N/A	S
Owner selects CM/GC. ¹	L	S	N/A
Execute A/E's contractual agreements.	L	L	N/A
Execute CM/GC's contractual agreements and notice to proceed.	L	N/A	L
Establish team responsibilities.	L	S	S
Establish communication procedures.	L	L	L
CONCEPTUAL PLANNING			
Develop owner's program. ²	L	S	S
Establish owner's budget. ³	L	S	S
Establish construction budget controls.	S	S	L
Analyze program vs. budget.	L	L	L
Adjust program vs. budget.	L	L	L
Assess environmental compliance.	L	S	S
Site selection and evaluation.	L	S	S
Retain special consultants.	L	S	N/A
Obtain survey and soils test. ⁴	L	S	N/A
Coordinate with governmental agencies. ⁵	L	L	S
Study spatial relationships.	N/A	L	N/A
Develop conceptual estimate.	S	S	L
Evaluate budget vs. estimate.	L	L	L
Study financial feasibility.	L	S	S
Establish quality assurance program.	L	L	L
Develop preliminary project master schedule.	S	S	L
Set A/E production schedule. ⁶	S	L	S

¹ Typically, the owner selects the A/E first and the A/E helps select the CM/GC firm. Occasionally the owner selects the CM/GC firm first and then the CM/GC firm helps select the A/E.

² The owner has primary responsibility to develop its building program, but is assisted by the A/E, who interprets the needs of the owner into schematic plans.

³ The owner establishes limits of expenditure; the CM/GC firm develops breakdown for total cost.

⁴ The A/E identifies requirements for the necessary surveys and soils tests to properly execute its work. The services are contracted and paid for directly by the owner to the survey and testing firms.

⁵ The owner coordinates inter-governmental agency reviews as required and is assisted by the A/E and CM/GC firm.

⁶ The A/E sets its production schedule based on the overall project milestones established by the owner and CM/GC firm. The A/E is then responsible to meet that schedule.

RESPONSIBILITY	OWNER	A/E	CM/GC
Establish occupancy schedule. ⁷	L	S	L
Owner's review and approval.	L	N/A	N/A
SCHEMATIC DESIGN			
Refine program (relating to program/budget/estimate).	L	L	L
Prepare detailed design schedule.	N/A	L	L
Prepare alternate schemes.	L	L	S
Analyze alternate schemes.	L	L	L
Recommend basic materials and systems.	N/A	L	S
Prepare schematic drawings.	N/A	L	N/A
Prepare outline specifications.	N/A	L	N/A
Conduct value engineering analysis. ⁸	S	S	L
Perform constructability analysis.	S	S	L
Establish reporting and accounting procedures.	S	S	L
Develop bid package format.	N/A	S	L
Identify long-lead purchase items.	N/A	S	L
Develop phased construction schedule.	N/A	S	L
Begin permitting process.	N/A	L	S
Review with Fire Marshal plan and code officials.	N/A	L	S
Prepare local planning or Zoning Board applications.	N/A	L	S
Initiate preliminary utility company review.	S	L	S
Update conceptual estimate (preliminary GMP estimate).	S	S	L
Update master construction schedule.	S	N/A	L
Analyze budget vs. estimate.	L	L	L
Schematic design report.	N/A	L	L
Owner's review and approval.	L	N/A	N/A
DESIGN DEVELOPMENT			
Finalize selection of components and systems.	L	L	L
Refine outline specifications. ⁹	N/A	L	S
Conduct value engineering analysis. ⁸	S	S	L
Complete design development drawings.	N/A	L	N/A
Establish phased bidding schedule and scope.	N/A	S	L
Establish general conditions planning.	S	S	L

⁷ The owner sets the desired occupancy schedule based on the design and construction duration anticipated by the CM/GC firm.

⁸ The CM/GC firm recommends cost-effective alternate systems for analysis by the A/E and joint concurrence in recommending the alternate system to the owner.

⁹ Owner reviews plans and specifications for program requirements; CM/GC firm reviews for cost and duration control; A/E reviews for quality control. The CM/GC firm assumes no responsibility or liability for the design from these reviews.

RESPONSIBILITY	OWNER	A/E	CM/GC
Prepare construction estimate for a GMP.	S	S	L
Update construction schedule.	S	N/A	L
Coordinate with governmental agencies and utilities.	S	L	S
Evaluate labor and subcontractor market.	N/A	S	L
Prepare subcontractor marketing plan.	N/A	N/A	L
Update master construction schedule.	S	S	L
Update GMP vs. budget.	S	S	L
Refine project budget.	L	S	L
Prepare long-lead purchase and phased construction documents. ⁹	N/A	L	S
Bid and purchase long-lead items.	S	S	L
Design development report.	N/A	L	L
Prepare a guaranteed maximum price (GMP).	N/A	N/A	L
Negotiate CM/GC contract amendment for the GMP.	L	S	L
Owner's review and approval.	L	N/A	N/A
CONTRACT DOCUMENTS			
Prepare contract plans and specifications.	N/A	L	N/A
Review contract plans and specifications. ⁹	S	S	L
Conduct constructability review.	S	S	L
Final governmental agency review and approval.	S	L	S
Final conformance of GMP vs. scope.	S	S	L
Establish subcontractor conditions. ¹⁰	S	S	L
Finalize bid divisions of work.	N/A	N/A	L
Prepare instructions to bidders. ¹¹	N/A	S	L
Finalize owner occupancy schedule.	L	S	L
Prepare cash flow schedule.	S	N/A	L
Update construction schedule.	N/A	N/A	L
Contract document report.	N/A	L	L
Owner's review and approval.	L	N/A	N/A
Procure building permit.	S	S	L
BIDDING AND AWARD			
Advertise for subcontractor bids.	S	S	L
Place legal ads for bidding.	N/A	N/A	L
Distribute bidding documents.	N/A	N/A	L

¹⁰ CM/GC to initiate subcontractor conditions to be reviewed and approved by the A/E and owner.

¹¹ CM/GC to prepare description of work for each subcontractor for incorporation in specifications by A/E.

RESPONSIBILITY	OWNER	A/E	CM/GC
Conduct subcontractor pre-bid conference. ¹²	S	S	L
Receive and tabulate subcontractor's bids. ¹³	S	N/A	L
Evaluate bids for specification compliance.	N/A	N/A	L
Evaluate bids for award recommendation.	S	S	L
Evaluate cost of project as bid.	N/A	N/A	L
Update construction and master schedule.	N/A	N/A	L
Award subcontractor contracts.	S	N/A	L
Develop detailed CPM construction schedule.	N/A	N/A	L
Conduct pre-construction conferences.	S	S	L
Set disbursement schedules.	N/A	N/A	L
CONSTRUCTION			
Mobilization for construction.	N/A	N/A	L
Monitor subcontractors' work.	S	S	L
Observe for conformance to design.	S	L	S
Evaluate progress and update construction schedule.	S	S	L
Process shop drawing and sample control.	N/A	S	L
Check and approve shop drawing and samples.	S	L	S
Approve subcontractor progress payments. ¹⁴	S	S	L
Disperse payments to contractors.	L	S	N/A
Disperse payments to subcontractors.	N/A	S	L
Provide project cost control.	N/A	N/A	L
Conduct job meetings.	S	S	L
Prepare and log RFIs.	N/A	N/A	L
Respond to RFIs.	S	L	S
Issue change orders and construction change directives.	L	S	S
Administer safety program.	N/A	N/A	L
Administer security program.	N/A	N/A	L
Administer quality control program.	S	S	L
Maintain as-built drawings.	N/A	L	L
Coordinate owner occupancy schedule.	L	S	L
Prepare punch list.	S	L	S

¹² Chaired by CM/GC firm with A/E in attendance for questions, minutes, and drafting of addenda.

¹³ CM/GC firm receives bids and may be assisted at the bid opening by the owner unless CM/GC firm bids on the work--in which case the owner receives the bids.

¹⁴ CM/GC firm approves payment to subcontractors at joint meeting with A/E for certification and submits summary to owner for payment.

RESPONSIBILITY	OWNER	A/E	CM/GC
Coordinate completion of punch list.	S	S	L
Notify substantial completion.	N/A	N/A	L
Certify substantial completion. ¹⁵	L	L	L
Inspect for final compliance.	S	L	L
Determine final accounting.	L	N/A	L
Determine final payments.	L	L	L
Owner's review and approval of CM/GC payment.	L	N/A	N/A
POST CONSTRUCTION			
Prepare record drawings based on assembled as-built drawings.	N/A	L	N/A
Post-project evaluation (ORS 279.103).	L	N/A	N/A
Coordinate work under warranty. ¹⁶	L	S	L

¹⁵ Note that several closeout items are not included in this list because they are the same as that required in the traditional design-bid-build contracting method.

¹⁶ The owner will contact specific subcontractors responsible for the work under warranty with A/E and CM/GC firm assistance, if required.

10.1 Owner

The primary role of the owner is as the coordinator and decision-maker for the project. The owner decides the “who, what, when, and where” of the project. It is crucial not only that the owner makes these decisions, but that the decisions are made promptly. Prompt decision-making is needed to maintain the project schedule and prevent delays. When making decisions, and providing other project information, the owner must also talk with one voice. That is, what is said by one owner’s representative should be the same as that said by all other owner’s representatives and stated in the contract. To assure that this happens, it is recommended that the owner provide one centralized person to act as the information source to alleviate problems related to conflict of information and provide one contact that all other parties can go to for information. The owner’s representative should be identified in the RFP. In the RFP, the owner must also define a workable hierarchy for decision-making (communication hierarchy) that can be used if the designated owner’s representative is unable to provide the necessary information or make the necessary decisions.

The owner defines the scope of the project and specifies the roles and responsibilities of all parties on the project. These roles and responsibilities are initially outlined in the RFP. Since capabilities and resources differ between organizations, a process should be included that allows for redefining the roles and responsibilities once all the players are known. The owner communicates these roles and responsibilities primarily through the RFP and contract, and via project meetings and correspondence. Owner attendance at project meetings is required to ensure such communication. Attending meetings also helps to develop relationships with the other parties and keep the owner abreast of the project progress.

The CM/GC process requires a greater amount of owner involvement than is required in other contracting methods. In addition, the owner’s involvement is typically different than that which is required in other contracting methods. With CM/GC, the owner acts as the “third leg of the stool” for the project. Without the required owner involvement, the project will not be successful. The owner must be able to provide this involvement. It is critical that the owner be ready to take on this responsibility. If the owner cannot do this with its own staff, the owner should hire a consultant to provide the necessary work. Additionally, the owner’s representative should have expertise in both construction, in general, and specifically negotiated work.

The specific responsibilities of the owner include, but are not limited to, the following:

- Developing the selection process for the design team, including the architect and engineers.
- Supplying all site information: (e.g., soil conditions, existing utilities, existing building information). This will require obtaining the services of a soils engineer and a utilities locating service, and commissioning a hazardous materials study along with other investigations.

- Developing and managing a total project budget.
- Developing a program for the project that describes what the owner would like the completed project to accomplish.
- Deciding on the appropriate construction delivery system for the project (e.g., design-bid-build, CM/GC, or some other method).
- Managing the project from inception through the warranty period.
- Contracting for and managing a system performance program (i.e., commissioning).
- Managing project performance evaluation, if applicable.

10.2 Architect/Engineer (A/E)

The primary role of the A/E is to design the project and guide the project through construction (construction administration). The design that is created must meet the owner's expectations and needs, and be responsive to the owner's budget for the project. It is the responsibility of the A/E to provide thorough communication of the owner's functional performance and financial requirements and needs via the drawings and specifications and by monitoring the work. The owner conveys these responsibilities to the A/E through the A/E's contract.

During programming, the A/E takes into consideration the owner's expectations and needs to develop a functional program statement. The A/E then creates a design that addresses the functional program requirements. As part of this effort, it is the responsibility of the A/E to interface with the local planning and building agencies to ensure that the design meets the applicable building codes and local regulatory requirements. The A/E maintains co-responsibility for drawing coordination with the CM/GC firm.

When selecting an A/E, the owner should inform interested A/E firms that the project will, or is likely to, be delivered using the CM/GC process (if the owner knows at that time). It is recommended that the owner make the decision whether to go with CM/GC before the A/E selection process. The A/E must work with the CM/GC firm during the design phase of the project to develop an acceptable design. The A/E should consider and incorporate suggestions put forth by the CM/GC firm, including VE and constructability improvements. The duty to work alongside the CM/GC should be outlined in the A/E's contract.

Because many, if not all, CM/GC projects are fast-tracked, it is crucial that the A/E produce and issue design packages to the CM/GC firm in a timely manner. In addition, the designs need to be complete with all the detail and information necessary to bid the work. The A/E should not issue incomplete designs and rely on addenda to pick up any missing design elements or information.

During the course of construction, the responsibilities of the A/E include: document interpretation, quality inspection, reviewing changes, issuing design

corrections as needed, review and processing of submittals, certifying pay requests, and responding to RFI's. The owner (or owner's representative) should have the ultimate responsibility for reviewing and approving any changes as that is the final cost control for the project. It is essential that the A/E provide timely responses, especially to RFI's, submittals, and proposed changes. To facilitate this, on-site representation by the A/E beyond occasional jobsite visits (e.g., an A/E job office located and staffed on-site) should be considered for large or complex projects.

10.3 Construction Manager/General Contractor (CM/GC)

The CM/GC firm provides services both prior to and during construction. Prior to construction (pre-construction services), the CM/GC performs a variety of services including conducting value engineering and constructability analyses of the project. The CM/GC firm should be asked to submit an estimate and schedule for the project immediately after being hired. Significant savings can be received from upfront involvement of the CM/GC firm. Such involvement can be beneficial, for example, when locating the project on the site, choosing the materials of construction, and selecting effective building systems.

During the development of the design, the CM/GC firm participates in all the design discussions, making suggestions as to product options, providing comparative estimates, researching performance and availability of materials, and advising as to the time impacts of various building systems. The CM/GC firm prepares periodic cost estimates that include breakdowns of each project element to ensure that the project is within the owner's budget and to establish a GMP. The CM/GC firm develops the phasing of the bid packages and the work sequence, and ultimately develops a GMP for the project which it in turn negotiates and formalizes with the owner.

When the CM/GC firm is "at risk" and committed to a GMP, cost, schedule, and quality are the responsibility of the CM/GC firm. It is essential that the CM/GC firm have expertise and experience in conceptual estimating. The conceptual estimate provides guidance in the development of the design and is used to establish a GMP. The programming phase should outline the pertinent information that is needed to develop a conceptual estimate for the project.

During construction, the CM/GC firm performs the normal functions of a general contractor, controlling and managing the schedule, budget, construction means and methods, quality, and safety. It is the CM/GC firm's responsibility to assure full coverage of the work by bidders and to conduct periodic audits to ensure that the project is on track. Record keeping by the CM/GC firm should be performed with an eye towards an audit. This promotes an open book feeling on the project.

If it is in the best interest of the project, the CM/GC firm may be allowed to self-perform some of the work outside of the general conditions. In some cases the CM/GC firm might be allowed to perform work without being required to compete for the work,

while in other cases the CM/GC firm might be required to compete for the work with other contractors. The public agency must decide which work must be competitively procured. The agency needs to judge whether or not bidding out the work is more cost effective. Bidding the work is typically judged to be beneficial during a slowdown in the economy and in periods of high inflation. If the project is relatively simple, lacks special phasing of the work, or is a green-field project, competitively procuring the work may not provide benefits that are significant compared with not bidding out the work. In any case, it is recommended that the CM/GC firm take advantage of the marketplace by actively soliciting bids for all subcontracts, unless special circumstances prevail. In the majority of Oregon CM/GC contracts, 90% to 95% of the work has been competitively bid, with the owner receiving the benefit of the marketplace.

The process developed by the owner for determining the work that the CM/GC firm does not have to competitively procure needs to be outlined in the contract. Flexibility is needed in the process to account for non-competitive work. The specified process needs to be in the best interest of the public as well. That is, it is shown to be competitive or demonstrated why competitive procurement is not the best way to go. If the CM/GC firm is required to bid on work, a third party should be designated to oversee and control the selection of the contractor.

In some instances when the CM/GC is required to bid on work which it would like to perform, no other bids may be submitted. In this case, the CM/GC is the only bidding contractor. This circumstance is discussed in further detail in Section 12.

When work is put out to bid, the CM/GC firm may participate in pre-qualifying subcontractors if it is in the best interest of the project. The CM/GC firm can use its construction experience and expertise to help highlight the benefits of one subcontractor versus another. Having the CM/GC firm pre-qualify subcontractors, though, may create audit problems since there may be a perception that favoritism is entering into the qualification process. Therefore, the owner must ensure that the pre-qualification process allows for competitive selection. The pre-qualification process should be outlined in the contract and, regardless of how pre-qualification is performed, or not performed, the CM/GC firm should have ultimate responsibility for managing the subcontractors to make sure the schedule is achieved.

10.4 Subcontractors and Vendors

Subcontractors play a significant role in the completion of the work. The vast majority, if not all, of the construction work that is put in place on a CM/GC project is performed by subcontracting firms working in the specialty trades. During construction, their role is similar to that of the CM/GC firm, but limited to their particular scope of work. Whereas the CM/GC firm is responsible for the completion of the entire project, the subcontractor is given responsibility for solely that portion of work for which it has contracted. An electrical subcontractor, for example, is hired to complete the electrical work on a project. This task is similar to that undertaken with other contracting methods

and includes supplying labor, materials, and equipment necessary to perform the electrical work, supervising the electrical work, coordinating the electrical work with that of the CM/GC firm and other trades, and ensuring that its workers are safe in the performance of their job. Subcontractors are also tasked with submitting required shop drawings and samples related to their work, providing input on their progress to allow for updating overall project schedules, and helping maintain a clean and orderly site. Subcontractors must supervise the work of any sub-subcontractors that they hire as well.

Subcontracting firms enter into a contract for the work directly with the CM/GC firm. No formal contract is created between the owner and subcontractor. Likewise, there is no contract between the designer and subcontractor. As a result, formal interaction between the subcontractor and the project team takes place through the CM/GC firm. When the steel erection subcontractor is confused about a particular design detail, for example, communication with the structural design engineer to clarify the detail will pass through the CM/GC firm.

Though a subcontract exists solely with the CM/GC firm, the CM/GC contract typically requires that all subcontractors abide by conditions within the CM/GC contract. That is, the subcontractor must adhere to conditions of the contract between the owner and CM/GC firm. While the subcontracting firm is a distinct entity, the owner does not recognize the subcontractor as separate from the CM/GC firm in the execution of the construction contract. Such a clause in the contract is called a “flow-through clause”. When such a clause is included in a CM/GC contract, it is important that the subcontractor be aware of the conditions of the CM/GC contract because requirements may exist which affect the ability of the subcontractor to perform the work. Therefore, it is prudent for the subcontractor, when entering into a sub-contractual agreement, to review the CM/GC contract for such requirements.

10.5 Relationships

CM/GC works best as a collaborative, team process. If the parties treat it like a hard bid project, it becomes less successful. It should be made clear in the CM/GC documents that the project is based on cooperation, trust, and a team approach so that issues get quickly raised and addressed. It is expected as well that all parties act in the best interest of the project. To facilitate a cooperative effort, the CM/GC firm needs to be pro-active in its interactions with the design team, rather than reactive. Compared with the design-bid-build method, the CM/GC firm needs to work more closely with the A/E and owner rather than “on the other side of the fence”. A “win-win” mentality is required, rather than “win-lose” as is often the stance taken on a design-bid-build project. To help ensure effective team interaction, the owner should consider these requirements when scoring the proposers and selecting the project team members.

A process needs to be in place that promotes the CM/GC firm’s close working relationship with the A/E. This process should include the following:

- Clearly and thoroughly defined roles and responsibilities.
- A complete respect and partnering chemistry between all parties, active participants, and decision-makers.
- Experienced, realistic expectations of the owner.
- Thorough, well-coordinated construction documents.
- Effective CM/GC project management and supervisory skills.
- Appropriate A/E technical knowledge.

With respect to the level of involvement by each party, there needs to be a clarification of interactions. When seeking input from one of the project parties, it needs to be clarified whether the response will be “advising” or “approval”. A lack of understanding of how the parties are to interact is one barrier to a successful project. Barriers to establishing and maintaining the relationships exist in a variety of forms. Examples of common barriers are:

- When the objectives of each party are not being met.
- Unclear contract language, or poorly conceived and executed contracts. If this is the case, to prevent disputes the parties may be willing to resolve issues by ignoring the contract language and developing a system that works in the field for the particular circumstances.
- Harboring old attitudes developed from the use of other project delivery methods, especially the low bid, design-bid-build method. Working with such a mindset can prohibit effective teamwork and collaboration.
- A lack of construction industry experience within any of the parties.
- A lack of experience utilizing CM/GC within any of the parties.
- An unwillingness to work as a team.
- An unwillingness to compromise.
- The personalities of the people involved.
- Unrealistic owner expectations.
- A lack of money (if one of the parties is over budget).
- Possibly a tight schedule.

Maintenance of relationships between project team members over the course of the project is important to the continued progress of the project. The following are ways in which relationships can be maintained during a project:

- Facilitate formal or informal partnering. While partnering on a CM/GC project happens informally due to the very nature of the CM/GC process, it is often beneficial to proactively work to facilitate partnering and collaborative efforts.
- Maintaining clear and open communication channels. There should be regular communication between the parties of the project’s progress and planned activities.
- Co-location of key project staff, if possible.
- Each party taking the responsibility for their portion of the project’s risks.

- Each party fulfilling their responsibilities in a timely manner so as not to affect or delay the project.
- Describing and clarifying the goals and expectations of each party to the other parties. The goals should be prioritized to help with decision-making, and the actions of each party should be aligned with the goals.
- The A/E, CM/GC firm, and owner working interactively as a team to meet each other's needs. The following are examples of how this can take place:
 - The CM/GC firm might recommend to the owner how the program and design could be altered to save operating budget.
 - The owner might work with the CM/GC firm to allow the CM/GC firm to switch project managers in "mid-stream" to maximize the CM/GC firm's ability to concurrently perform another job for another owner.
 - The A/E might travel regularly to the CM/GC firm's offices and establish an on-site presence to facilitate a collaborative effort on design and construction administration.
- All parties working together to find solutions to bring the project in on time and under budget.

10.6 Partnering

To help maintain relationships on construction projects and prevent the occurrence of disputes, the construction industry has adopted the use of partnering. Partnering is used to establish teamwork and a collaborative mindset among the contracting parties. It begins with a meeting, sometimes one to two days long, between the key project team members – owner, A/E, and CM/GC firm – at the start of the project. The meeting typically consists of an organized workshop that focuses on teambuilding, group awareness, and conflict awareness. The workshop concludes with the signing of a partnering agreement. The agreement states the common goals of the participants, communication objectives, performance objectives, and the framework for resolving conflicts and disputes. With partnering, disputes are ideally resolved at the lowest managerial level in order to settle the disputes quickly and often without costly claims.

Fundamental to the success of partnering is the fair and equitable sharing of risk. Those in favor of partnering point to its ability to help reduce the exposure of contracting parties to claims, lower the risk of cost overruns, lead to better quality projects, foster open communication, decrease administrative costs, and generally improve project performance. Compared to non-partnered projects, decisions are made quicker and changes are embraced more readily as a result of the improved communications that result.

While many proponents of partnering exist, there are some who do not view partnering in the same light. It is often felt that efforts to "keep the peace" come at the expense of project quality. Others feel that project requirements and specifications do not get as rigorously enforced because of the efforts to not provoke conflicts. The

lasting effects of partnering are obviously reflective of those who participate in the project.

11. DEVELOPING THE GUARANTEED MAXIMUM PRICE (GMP)

The guaranteed maximum price is a significant aspect of the CM/GC process and often the primary focal point of the CM/GC contract. There is, however, no consensus in the construction industry as to when the GMP should be set and how the GMP should be structured. A wide range of practices exists with respect to the GMP. While many different practices are used, there are recommended practices that provide for the best opportunity to benefit from setting a GMP and for ensuring that optimum value is received for the price of the project. These recommended practices are described in more detail in this section.

11.1 When to Set the GMP

The process of setting the GMP requires time and effort over a period of time. Generally speaking, the greatest opportunity for cost management on a project exists prior to development of the construction documents (as illustrated previously in Figure 3). To capture this opportunity, GMP discussions and negotiations with the CM/GC firm should begin early in the design phase and no later than the beginning of design development. The GMP is set when the owner and CM/GC firm negotiate and agree to an acceptable GMP. Ideally, the point in which the GMP is established should be towards the end of design development. That is, the recommended timeframe for negotiating the GMP is between the end of schematic design and the beginning of detailed design, i.e. during design development, and the typical point in which experienced owners set the GMP is at the end of design development. It is at this time that the project has been developed to sufficient detail such that a realistic GMP can be established. At the same time, it is important for the owner to structure the contract so that the date for the GMP can be extended if project circumstances prove that a delay in the timing of the GMP is necessary.

While specific job circumstances may dictate the need for a different approach, the GMP should not be negotiated until the design has been sufficiently documented to make the GMP meaningful. If the GMP is set too early, many design elements are unknown and the CM/GC's contingency will be higher to account for these unknowns. Additionally, it is difficult to accurately record what is included in the GMP until documentation of the design is fairly complete. If, on the other hand, the GMP is set too late, such as after most or all of the bid packages have been bid, the CM/GC firm has not really guaranteed anything and the owner has absorbed most of the risk for establishing the final project scope.

Contractors that have a high level of expertise and extensive resources may be able to develop an accurate GMP with documents that are not necessarily complete. Other contractors with less expertise and fewer resources may require more complete documents to develop an accurate GMP. For this reason, the owner should consider the capabilities of the CM/GC firm when developing the schedule for setting the GMP.

Following selection of a CM/GC firm for the project, the CM/GC firm can develop a preliminary GMP and schedule, and work with the design team to adjust the project scope to fit into the budget. This effort can take place as design development documents are being completed. Setting the GMP on the basis of schematic design documents presents more challenges to adequately define the work. It also means that portions of the value engineering efforts will occur after the GMP has been set. This situation – excluding from the GMP any favorable changes that result from the value engineering process – can produce additional complications. After establishment of the GMP, it is important as well for the CM/GC firm to continue to monitor the design process to assure that no significant design variations occur which might alter the GMP.

The actual timing of when the GMP is set will vary from project-to-project, depending on the size, complexity, and importance of the project, the parties involved, and other project characteristics. A number of factors need to be taken into consideration when deciding when to set the GMP. Provided in Table 3 are reasons why a public agency might want to set the GMP earlier or later in the project than is standard practice (assuming standard practice is to set the GMP near the end of design development).

Table 3. Basis for Timing of the GMP

Reasons for setting the GMP earlier than standard practice	Reasons for setting the GMP later than standard practice
Do not have any prior experience working with the CM/GC firm.	Worked with CM/GC firm in the past and confident in their performance.
Larger size CM/GC firm. In general, larger firms can support a separate estimating department that can produce accurate cost estimates and value engineer options in-house, often at the program and schematic design levels.	Smaller size CM/GC firm. In general, smaller firms more frequently rely on subcontractors to do cost estimating, which is generally less accurate the further one gets from 100% documents.
CM/GC firm lacks experience in doing CM/GC on the particular type of project.	CM/GC firm experienced in doing CM/GC on the particular type of project.
A/E firm lacks experience in doing CM/GC on the particular type of project.	A/E firm experienced in doing CM/GC on the particular type of project.
Owner wants to ensure that the selected CM/GC firm can contractually agree to provide the desired facility within the allocated funds and timeframe.	Estimates are close to the budget. More design to verify that the cost of the project will be within budget may be needed.
Simple or common project.	Complex or unique project.
A majority of the cost can be represented in the schematic drawings.	A large amount of expensive, detailed work cannot be easily represented in the schematic drawings.
Owner cannot proceed unless it has a contract with the CM/GC firm for the work.	
Owner needs to lock in specialized funding.	

The owner should carefully consider all factors that may have an affect on the GMP and the project. The ramifications associated with early or late establishment of the GMP relative to standard practice are presented in Table 4.

Table 4. Consequences of GMP Timing

Ramifications of setting the GMP earlier than standard practice	Ramifications of setting the GMP later than standard practice
Higher contractor contingency.	Lower contractor contingency.
GMP includes a less accurate reflection of the potential final scope of work.	GMP includes a more accurate reflection of the potential final scope of work.
Greater risk to CM/GC firm.	Less risk to CM/GC firm.
Minimized loss of time and effort if owner and CM/GC firm cannot agree on a GMP.	
Design documents may not be sufficiently developed to provide the owner with confidence that the project can be completed within the GMP.	

The practice of setting the GMP earlier than what is considered standard practice is preferred by some owners. In fact, some public agencies set the GMP at the time of signing the CM/GC contract. For example, the CM/GC firm may be selected shortly after the A/E is selected with the GMP fixed from the beginning of the CM/GC firm's involvement. Described below are the benefits and risks associated with setting the GMP earlier than standard practice:

Benefits:

- Provides a contractual guarantee early in order to lock in specialized funding.
- Helps to ensure that the selected CM/GC firm really can contractually agree to provide the desired facility within the allocated funds.
- Helps to maintain and set an appropriate schedule. This is especially important if time is of the essence (e.g., when there is an upcoming schedule deadline that must be met such as for schools).
- Helps to keep the budget under control. This is especially important if budget is of the essence.

Risks:

- In the early stages of design, the design documents may not be sufficiently developed to allow the owner to have realistic confidence that the project can be completed within the GMP.
- Any foreseen scope decisions will have to be managed through the use of alternates.
- There is a risk that the owner is paying too much for the project because of exceptionally high contingencies legitimately included in the contractor's pricing.

The other extreme taken by some owners is to set the GMP after the bidding of all the major bid packages when the design is fully complete. The benefits and risks associated with this strategy are outlined below:

Benefits:

- Guarantees to the owner that every dollar will be spent on the facility and will not be tied up in unused contingency.
- Allows the owner to get as much scope outlined in the documents as possible. This is especially important if scope is of the essence.
- Changes that are made late in the design can become part of the base bid (no need for alternates or change orders).

Risks:

- The market for construction services may change unfavorably during the course of design.
- After expending extensive time and effort to develop the design, the final project cost may not meet the budget.
- The CM/GC firm is “let off the hook”. All of the risk is transferred to the owner.

11.2 Identifying the Scope of Work

The use of the term GMP in the CM/GC context is important to understand. By entering into the contract, the public agency is asking the CM/GC firm to guarantee that the scope of work that has been defined can be accomplished within a certain dollar amount. To develop the GMP, the CM/GC firm must understand the scope of the project from partial documents. For this reason, the GMP typically includes a contingency to cover items that will be necessary to complete the project but which are not fully defined.

The guarantee given by the CM/GC firm only applies to the defined scope and to what the CM/GC firm knows or should have known relative to the project. For example, if hazardous materials are discovered on the site during excavation or demolition, the cost of handling and disposing of the unforeseen materials would be outside the GMP. Similarly, if after the GMP has been set, the owner decides that a building would function better with additional fixtures in the restrooms, adding additional fixtures would be outside the GMP. On the other hand, for example, if the drawings used to define the GMP scope of work do not show reinforcing steel in the concrete footings, the cost of the steel would be included in the GMP because the CM/GC firm should have reasonably known that steel is required in concrete footings.

Clearly identifying the GMP scope is critical to a good contract and a key to the successful use of the CM/GC process. Most disputes with the CM/GC firm during the project arise from questions about, or a poorly developed, GMP scope of work. As mentioned previously, the time when the GMP is set can have a significant impact on

the success of defining the GMP scope. To adequately set the project scope, some reasonable level of design drawings and specifications is essential. The development of these documents and the GMP needs to be a collaborative process between the owner, A/E, and CM/GC firm with all understanding the design intent and the work that has been included in the GMP.

The GMP typically consists of the CM/GC firm's fee, the estimated cost of the work, the general conditions costs, and a contingency (See Figure 5). The GMP essentially covers all costs necessary to have a completed project that is ready for owner occupancy and use as described in the scope of work. While the above descriptions of costs will be defined in different ways by different owners, it is important that they all be addressed such that the owner, CM/GC firm, and A/E have a clear understanding of where specific costs are going to be charged. The owner needs to clearly identify in the contract what is to be included in each of the different cost categories.

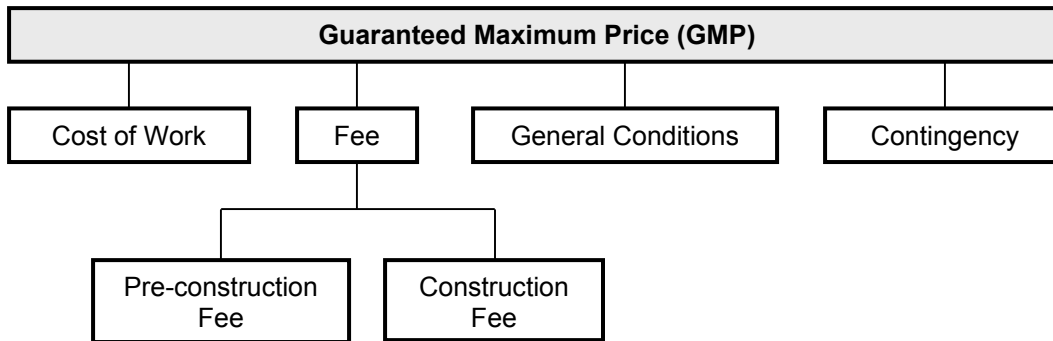


Figure 5. Structure of CM/GC Compensation

For most projects, the major component of the GMP is the cost of supplying materials and constructing the project. This is referred to as the cost of work (reimbursables). The cost of work generally includes all direct costs of constructing the project such as labor, materials, and equipment. These costs should be fully burdened and include profit. Another cost category is the CM/GC firm's costs associated with the on-site management and supervision of the work. Along with the costs of insurance, bonds, and other related miscellaneous items, these costs are referred to as general conditions costs. The CM/GC firm will often plan to include a variety of costs within its general conditions. When developing the RFP, GMP, and CM/GC contract, the owner needs to make sure clarity exists for not only the general conditions costs but the other cost categories as well. Additional costs that should be included in either the cost of work or general conditions are: escalation projection dollars (unless handled by a contract re-determination provision), and fully burdened price of necessary indirect business costs such as socio-economic programs and legal support.

If the A/E has performed its services well, most of the elements of the project will be well defined by the drawings and specifications. If, on the other hand, a number of building elements have not been sufficiently defined for the CM/GC firm to feel comfortable including them in the GMP, allowances may be considered. An allowance provides a stipulated sum of money for a particular piece of work. Allowances cover “identified” unknowns, and are estimated and included as part of the GMP at the time the GMP is established. To make sure that the cost of specified unknowns is taken into consideration, the owner may elect to include a cost of work allowance in the CM/GC contract. If the actual cost of the work exceeds the allowance, the owner is responsible for paying the difference. If the actual cost is below the allowance, the owner is credited the difference. While allowances can be a useful technique on public contracts, they should be used with caution. Care must be taken that costs accruing to the allowance are kept separate from other expenditures. The owner also needs to have the CM/GC firm monitor the expenses so that it is clear if the costs will exceed the allowance. The owner may choose to carry an allowance on its own (owner-controlled) outside of the GMP to cover potential unknowns.

Another means employed to manage scope uncertainty is the use of bid alternates. This involves creating a base bid package with additional pieces of work, or additive alternates, that the owner may choose to incorporate into the design if the bids for the alternates are acceptable. By using additive alternates, the owner can consider including additional work that may be outside the GMP or to determine which product choice is more cost effective.

The CM/GC firm and the owner agree to a GMP for all the actual work, including subcontracts and general conditions work. The actual cost of all subcontracts, purchase orders, change orders, and general conditions work is called the “buyout” of the project. The difference between the total buyout and the GMP is savings to the project. The savings to the project can be shared between the owner and CM/GC firm (“Share of Savings”), kept by the owner, or used for adding scope to the project. It should be noted that the savings are not actual until the project is complete. That is, savings from one buyout package should be considered “off limits” until the end of the project in order to protect the GMP from later bid package results.

11.3 Setting a Contingency

Several types of contingency may be kept on a project. Included in the GMP is typically a cost of work contingency controlled by the CM/GC firm. These reserve funds are carried by the CM/GC firm to cover unknown costs that may surface during construction, such as unforeseen coordination issues, bad bids, out of sequence work, mistakes, and fill-in work.

There is no specific level of contingency commonly set for all CM/GC projects. The CM/GC’s contingency should be the amount that the CM/GC firm reasonably feels is enough to cover coordination issues, omissions, and other costs necessary to

complete the project that may or may not be fully addressed in the contract documents. This contingency is subject to negotiation. The CM/GC firm will want the contingency set high to cover potential risks, and the owner will want the contingency set low to minimize payment for risks that are unlikely to occur.

As discussed previously, the CM/GC firm will be motivated to vary the contingency based on the stage and clarity of the design. The clearer that the project scope has been defined, the more accurate the estimate. Greater accuracy in the estimate will require a smaller contingency. The less defined the scope is, the higher the CM/GC firm's risk and the greater the contingency amount that will be included in the GMP. The CM/GC firm may be able to obtain very good cost information, but until the bids are received and contracts signed, the cost is an estimate. Consequently, if the GMP is set early in the schematic design phase, the CM/GC's contingency will realistically be higher than if it is set after design development. It will also generally be greater prior to buyout than after, and may be larger on renovation projects than on new projects.

If the contingency is set too high, the project scope may be unnecessarily reduced to fit in the budget. If the owner presses to keep it too low, it will likely lead to many future arguments about what is within and outside the GMP. As a team-centered process, a good discussion about the project risks, scope, and contingency is important. Ultimately, the size of contingency is a risk and business decision by the CM/GC firm. The process works best if the owner and A/E understand the CM/GC firm's concerns and risks. The owner is best served if the contingency contained in the GMP is a reasonable number.

The actual amount of contingency should diminish as the project goes on when it is used to cover unforeseen costs. It is recommended that the CM/GC firm keep an "open book" regarding its contingency (i.e., keep the available amount of contingency "visible").

In addition to the CM/GC's contingency, the owner commonly carries a project contingency outside of the GMP. This contingency is controlled by the owner to cover scope changes and other changes necessary for overall development of the project (e.g., schedule). Although not common, under special circumstances the owner may also elect to carry an owner-controlled contingency within the GMP to cover unknowns and extra scope. By including this additional amount within the GMP, owner initiated changes can be made to the project without continually amending the contract. While this technique can ease and speed execution of the work, it is not common and care must be taken to maintain a clear audit trail of these expenditures.

11.4 Bid Packages

Much of the success and benefit of the CM/GC process comes from the close collaboration among the owner, A/E, and CM/GC firm. One of the areas where this collaboration is especially critical is defining the scope and schedule for bid packages. Bid packages are often issued for the separate divisions of work and to facilitate a condensed construction schedule. Extra coordination needs to occur between the A/E and CM/GC firm to identify the best sequence and content of the bid packages. The owner may initially suggest a process and schedule for issuing bid packages. This is beneficial because both the A/E and CM/GC firm need to know the type and number of packages in order to determine their fee. The owner should let the A/E and CM/GC firm modify the process and schedule if warranted.

After the schedule of bid packages has been determined, the owner and A/E need to commit to providing the necessary information and producing the documents according to the agreed upon schedule. Overlapping design and construction places clear demands on the owner for timely information and decisions. If the owner cannot accommodate these needs, then the CM/GC process may not be right for the project.

Once all of the bid packages have been completed and bids have been received for all the work, buyout has occurred. At this time, the CM/GC firm can determine where the project stands relative to the estimates and what portion of the CM/GC's contingency remains. Since the CM/GC firm is still responsible for completing the full scope of the project within the GMP, the CM/GC firm needs to retain sufficient contingency to deal with items that are part of the project scope, but which may not have been included in the subcontractors' bids. One way of looking at this issue is the difference of the standards between designers and contractors. The designer does not guarantee perfect documents. Designers are held to a standard of producing documents of a quality consistent with other professionals in the area. Minor errors and omissions are common. In contrast, contractors develop their bids based on the bid documents. On design-bid-build projects, the owner's contingency usually deals with these gaps. For a project with a GMP, the contractor's contingency should deal with these types of issues that are necessary to complete the project scope.

On the other hand, if the project bids were under the estimate or most of the CM/GC's contingency exists, the owner and CM/GC firm may want to adjust the contract amount. Some owners attempt to deal with the bid packages as individual GMP's. Unless the contract has specifically been structured toward this approach and the CM/GC firm has prepared its estimates accordingly, the GMP and contingency should be considered as a single total that the CM/GC firm needs to work within.

Some projects result in bids coming in substantially below the estimates. This situation creates a dilemma for a public owner. Often, items have been cut from the project scope to fit within the budget. Certain enhancements may make the project function better for the users and the public. Again, care needs to be exercised in the use of the extra funds. The means of including additional work in the project scope needs to

be well documented. When making changes, thought must be given to the ultimate post-project evaluation that is required by statute. Also, unnecessarily enhancing a public project is viewed with suspicion by taxpayers.

Often the GMP is set prior to putting bid packages out for bid. If the GMP is established during the schematic design phase prior to putting the bid packages out to bid, the bid packages can simply be used as an early indication of whether the GMP is realistic. Occasionally, bid packages may be put out for bid prior to establishing the GMP. This frequently happens for some of the early bid packages, such as the sitework and foundation packages. If bid packages are put out to bid prior to establishing the GMP, the agency may elect to proceed with the work under some other contracting arrangement with the CM/GC firm, such as time and materials or design-bid-build. The following is an example of a contract provision that addresses this issue:

“It is contemplated that the CM/GC firm will issue multiple bid packages with multiple trade contracts within each bid package. The first bid package will be for site demolition, and will be bid by the agency because it is anticipated that the GMP will not yet be developed. After execution of the GMP, the contract for the demolition package will be assigned to the CM/GC firm, who must accept such assignment. Prior to such assignment, the CM/GC firm will manage the work of that bid package as a conventional construction manager, with the cost of site supervision to be negotiated.”

11.5 Incentives/Disincentives

The use of incentives in construction contracts is common with some contracting methods. Although not commonly included in CM/GC contracts, incentives could take a variety of forms. For example, if the GMP is a lump sum, the CM/GC contract might contain an early completion incentive that is paid outside the GMP if the project is completed ahead of schedule. If the contract is based on cost plus a fixed fee with a GMP, there might simply be an additional incentive payment by the owner tied to early completion. For any incentives, it is important that the incentive structure does not allow for the potential outcomes to be manipulated. It should be verified that incentives are good for the project since they are typically an audit concern.

If project savings accrue as a result of efficient production or other cost savings measures taken during construction, the public agency may elect to share those savings with the CM/GC firm. The sharing of cost savings gives the CM/GC firm added incentive to utilize innovative construction techniques and other means to minimize construction cost. When such sharing is desired, the agency should outline in the contract documents how the savings are to be distributed amongst the project team members.

Liquidated damages are commonly incorporated into CM/GC contracts as disincentives. It is recommended that liquidated damages be included in order to give the CM/GC firm and subcontractors incentive to complete the project on time. Liquidated damages are typically set at some amount of dollars for each day in which the project remains uncompleted following the contracted completion date. The amount of liquidated damages needs to be an accurate representation of the losses actually incurred and cannot be punitive in nature. Given the nature of the CM/GC process, it is expected that the CM/GC firm would expose potential problems beforehand so that liquidated damages do not become an issue.

Many owners elect to incorporate a “grace period”, lasting from a few days to a few weeks depending on the size of the project, during which time is not counted towards the contract. The grace period allows the project team to focus on the multiple deliverables without focusing on schedule at the expense of other project goals.

12. SUBCONTRACTOR AND VENDOR PROCUREMENT

A significant portion of the trade work on a CM/GC project is performed by subcontractors. In recognition of their extensive involvement in CM/GC projects, and the common concerns regarding competitive procurement of public contracts, public agencies need to put a significant amount of thought into how the procurement of subcontractors is to take place. Guidance should be provided to the CM/GC firm regarding such issues as bidding the work, subcontractor pre-qualification and selection, CM/GC self-performance, and agency oversight. The agency’s guidelines for subcontractor procurement should be included in the CM/GC contract documents.

12.1 Bidding the Work

In the CM/GC process, all subcontracts are written and executed directly between the CM/GC firm and the subcontractors. The procurement requirements set forth in ORS 279 and the procurement (Model) rules of OAR 137, Divisions 30 and 40 (except for OAR 137-40-0570), generally do not apply to these subcontracts regardless of whether the subcontracts are for materials and/or labor. In lieu of statutory guidelines and administrative rules, those CM/GC projects established by public agencies that have adopted the Model Rules are required by OAR 137-040-0570(5)(j,k) to conform their CM/GC contracts to describe the subcontractor selection and award process as follows:

The Contract shall clearly describe the methods by which the CM/GC shall publicly receive, open, and record Bids or price quotations, and competitively select subcontractors to perform the Contract Work based upon price, as well as the mechanisms by which the agency may waive those requirements. The documents shall also describe the methods by

which the CM/GC and its affiliated or subsidiary entities may compete to perform the Work, including, at a minimum, advance notice to the public of the CM/GC's intent to compete and a public opening of the Bids or quotations by an independent party.

The Contract shall clearly establish whether the Agency must approve subcontract awards, and to what extent, if any, the Agency will resolve procurement protests of subcontractors and suppliers. The related procedures and reporting mechanisms shall be established with certainty, including whether the CM/GC acts as the Agency's representative in this process and whether the CM/GC's subcontracting records are considered to be public records. In any event, the Agency shall retain the right to monitor the Subcontracting process in order to protect the Agency's interests.

Inherent in the public sector CM/GC process is an expectation that a very large majority of subcontract work will be procured by competitive means. While current findings do not specifically require competitive bidding at the subcontractor level, a project that lacks such competitiveness may attract additional political scrutiny. To reduce the chance of generating any political problems, subcontractor selection is typically based on a competitive low bid. The process by which this is accomplished depends on the project. To achieve such competition, and to meet the requirements of the above Model Rule if applicable, an agency could start by including the following statement in the CM/GC contract:

"Except for general conditions work, work under certain dollar amounts, and change order work, the CM/GC firm shall obtain publicly advertised and opened bids from subcontractors and from suppliers of materials or equipment fabricated for the work."

If this statement is used, the CM/GC contract would then need to specify the dollar amount for which quotes could be used rather than bids. For example, the dollar amount specified by the State Department of Administrative Services exemption in OAR 125-310-012 might be specified. The CM/GC contract also needs to specify, either specifically or in general terms, what is meant or intended by general conditions work, which for smaller dollar amounts, is generally exempt from the requirements of competitive procurement.

Some of the provisions of ORS 279 and OAR 137 Division 30 can be used as a guide for providing specificity with regard to bid/quote advertisements and publication requirements and the format for bids/quotes (including the acceptability, or non-acceptability of fax transmissions). The CM/GC contract should specify the options available to the CM/GC firm if either no bids/quotes are received or all bids/quotes received are over budget. The ability of the CM/GC firm to self-perform a portion of the work, and how this will occur, in this circumstance of no bids or all bids over budget, or on any other basis, should be clearly defined in the CM/GC contract.

The CM/GC contract must specify that State (BOLI) prevailing wages are to be paid to all workers and that all subcontractors must be licensed with the State Construction Contractors Board (CCB) at the time of submitting a bid or quote. The CM/GC contract should further clarify other subcontractor requirements, such as MBE/WBE/DBE set-aside requirements and whether or not some or all of the general contract provisions between the public agency and the CM/GC firm apply to the contracts between the subcontractors and the CM/GC firm, including requirements for drug testing, bid securities, first tier subcontractor disclosure at the time of bid, and performance bonding.

12.2 Selecting a Subcontractor

The public sector CM/GC process in Oregon has been fashioned to meld together the best private contracting methodologies with public sector requirements for open bidding and awards made based on the lowest price. Unless otherwise restricted by the owner, the CM/GC firm is typically responsible for selecting its subcontractors. Often an agency will want to be involved in the selection process and require that the agency either co-select subcontractors or that selection be conducted with “owner collaboration” or “approval from the owner”. The extent to which an owner collaborates in the selection or approves the selection must be sufficiently described in the CM/GC contract.

In the public bid arena, subcontractors bid on precise plans and specifications and are generally not permitted to take exception to or make modification to the bid/quote requirements. The contract is generally awarded to the firm submitting the lowest responsive bid. In the private sector, however, in order to maximize the efficiency of expertise of different subcontractors, the general contractor typically allows subcontractors to submit bids/quotes on modified portions of the specifications. If the CM/GC firm is allowed to accept bids/quotes submitted on different portions of the specifications, then an objective process for determining the lowest cost to the owner must be specified.

In developing the rules for subcontractor procurement, the State of Oregon has allowed a fairly large range of latitude so that a public agency can style its particular CM/GC process to the specific needs of each project. As a result, if done correctly, the process is more complex than traditional design-bid-build in that each CM/GC contract and process has to have its own set of rules and guidelines (although many CM/GC processes are very similar if not identical). For this reason, as well as others stated throughout this guide, a public agency that is unfamiliar with using the CM/GC process is strongly encouraged to ensure that it has appropriate expertise for addressing technical requirements. As mentioned elsewhere, this expertise can be gained through direct employment of experienced project management personnel, or by contracting with sufficiently experienced architects and/or program management consultants. It is suggested that public agencies contact other agencies that have used the process to

look at their documents and talk with other users about their experiences, both positive and negative.

One of the benefits of the CM/GC process is the opportunity to incorporate construction expertise during the design phase of a project. The CM/GC firm is typically asked to provide this expertise. Bringing subcontractors in during the early stages of design has a number of benefits as well. Subcontractor input can help in the development of accurate cost estimates and the performance of value engineering analyses and constructability reviews. Recognizing the benefits gained through early subcontractor involvement suggests that the services of the subcontractor be solicited prior to construction. Gaining early subcontractor involvement and input can be accomplished in a number of ways. The following are examples of ways this can be accomplished:

1. The CM/GC firm directly hires subcontractors to perform pre-construction services for a fee without any construction phase involvement.
2. The CM/GC firm asks subcontractors to voluntarily assist with pre-construction services without compensation or a guarantee of being awarded the work. This may be attractive to subcontractors who would like to gain an understanding of the project prior to bidding the work.
3. The owner requests that the competing CM/GC firms assemble a team which includes itself and its subcontractors. The CM/GC contract is then written to incorporate the collaboration and involvement of the subcontractors.
4. The owner selects and hires subcontractors to provide pre-construction services, and then “gives” the subcontractors to the CM/GC firm for the construction phase. Payment for the subcontractor’s services during construction is made by the CM/GC firm.
5. If the agency has not adopted the Model Rules and competitive procurement of subcontracts is not a concern, mimic the CM/GC process at the subcontracting level.

12.3 Prequalification

State of Oregon public contracting requirements do not mandate prequalification of subcontractors prior to bidding on the work. Many public agencies, though, choose to pre-qualify subcontractors for specific types of work. Prequalification is typically desired for highly skilled or complicated work, or for “key” systems work requiring timely performance, high quality, or other specialized efforts. If prequalification of subcontractors is employed, the prequalification process is the same as that used for other contracting methods. As with other contractual obligations, the agency should outline the prequalification requirements in the CM/GC contract.

12.4 CM/GC Self-Performance

On some projects the CM/GC firm is given the opportunity to self-perform some of the trade work. This may be beneficial if the CM/GC firm has specialized construction expertise or resources, or if the subcontracting community lacks the necessary expertise or resources. If such allowance is granted, the following help to ensure that the work is competitively bid in a fair manner:

- Public notices that advertise the subcontract work highlight that the CM/GC firm will be bidding on the work.
- Bids are submitted to, and opened by, the public agency at a public bid opening.
- The CM/GC firm is allowed to only bid on work of the type normally self-performed by the CM/GC firm.
- The CM/GC firm is not allowed to self-perform work in excess of 20% of the total project budget.
- The owner administers the work package and the contract under which the CM/GC firm self performs.
- All other statutory and contractual requirements of the CM/GC process shall apply.

Another instance in which the CM/GC firm might be allowed to self-perform work is in the event a subcontractor defaults on its contract. For this case, it is suggested that the CM/GC firm be allowed to self-perform the work if the work is of the type that the CM/GC firm normally performs. To facilitate the timely completion of the work, the owner may enter into a lump sum or time and material cost accountable form of contract with the CM/GC firm. Additionally, the owner should administer the work package and the contract for the work.

As mentioned previously in Section 10, it may be the case that no subcontractor bids are received for, or no bids are responsive to, an advertised bid package. This situation can occur when the local subcontracting community lacks the technical expertise, capabilities, or resources required of the work and in times of extensive construction activity when subcontractors cannot take on more workload. If the CM/GC firm is also allowed to bid on the work, and chooses to do so, the CM/GC firm becomes the only bidding contractor. In this instance, the owner must decide whether to award the work to the CM/GC firm or require that the package be modified, if necessary, and re-bid. The owner should initially verify that the bid package was structured and advertised to elicit competitive bids. If the CM/GC firm is permitted to perform the work, it is recommended that the CM/GC firm be required to perform the work under the same terms and conditions as would have been imposed upon a successful and responsive bidder. The owner's desired actions to take in this circumstance should be clearly outlined in the contract documents.

12.5 Bidding Concerns

Bidding of work and subcontractor procurement often bring about issues of concern common to different projects. One problem that can arise related to the selection of subcontractors is when the CM/GC firm would like to utilize a subcontractor that the owner does not want on the project, or vice versa. For example, the CM/GC firm may want to use the low-bidding subcontractor and the owner has some concerns regarding the subcontractor's ability to perform or working relationships. The CM/GC firm has the right to protect its GMP. Consequently, owner selection of subcontractors may lead to a change if the selected subcontractor significantly affects the GMP. Equitable adjustment in the GMP may be warranted. To resolve such an issue, a clear guideline must be presented in the contract documents which describes the amount of input and authority that the owner has regarding subcontractor selection. Resolution of issues regarding subcontractor selection should be clearly outlined in the contract documents.

V. CM/GC Project Administration

Successful management of the CM/GC process by a public agency requires a level of project management activity equal to or greater than that of a comparable design-bid-build project. This demand is especially true for first-time users of the CM/GC process and for projects developed on a phased construction basis. The process is very “owner-intensive” at all stages. Time demands on the public agency are particularly intense during the design process when value engineering options and the final GMP are being developed. During construction, active public agency involvement and decision-making remains essential.

A common misunderstanding often exists that the CM/GC firm, through its construction management function, can and will carry the majority of the project management load for the public agency. A responsible CM/GC firm takes on active management of its subcontractors and the overall guidance of the work to ensure the project is on schedule, within budget, and of acceptable quality. This role of the CM/GC firm does not replace the public agency’s responsibility for monitoring the progress of the work, processing payment applications (which is far more complex with CM/GC than the traditional design-bid-build process), and active participation in evaluating and prioritizing alternates, overall decision-making, and total project budget management.

13. PROJECT MONITORING AND CONTROL

Project monitoring and control are important aspects of CM/GC contracts. Effective monitoring of the project not only helps to ensure satisfactory progress as the project moves forward, but also provides a means for managing the contingency and helps provide documentation for the post-contract audit. Project monitoring typically involves conducting periodic progress meetings and the development of progress reports.

It is often the case that, based on the information gained from regular project monitoring, efforts must be taken to control some facet of the project. Through effective project control efforts, the goals and objectives of the project can be more readily attained and assured. Project control should be an iterative process. Periodic checks are made to verify that the project is within the desired budget, schedule, and levels of safety and quality. Modifications are then made, if needed, as a result of the reported information to ensure that project goals are met.

13.1 Project Criteria/Characteristics to Monitor

Many aspects of construction projects are critical to overall project success. It is critical that the appropriate project criteria or characteristics be monitored so that project success can be accurately measured. Monitoring and controlling criteria that do not

affect the outcome of the project will not provide a good indication of project success. In addition, it is often the case that “what gets measured, gets improved”. Public agencies should determine which project criteria are of importance and develop monitoring and control procedures to effectively manage the criteria. Project criteria that a public agency should monitor and control on all projects are:

- Cost
- Schedule
- Safety
- Quality

Other project criteria and characteristics that a public agency might monitor and use for project control are:

- Project publicity (positive and negative)
- Socio-economic issues (e.g., how well MBE/WBE goals are met; use of local vendors; BOLI compliance)
- Communications (e.g., effectiveness of information dissemination; amount and level of dialogue between the A/E and CM/GC firms)
- Staffing of CM/GC personnel (e.g., level and experience of staff provided on the project; number of personnel provided)
- Level of constructability

13.2 Progress Meetings and Reports

Holding periodic progress meetings between the project team members is a common and effective means for monitoring project progress. The meetings are an opportunity for the CM/GC firm and A/E to keep the owner up to date on progress, and to discuss any changes affecting the work, future problems that may arise, and other issues of importance. In addition, the meetings help to effectively maintain constant communication and collaboration during the course of the project. The owner, CM/GC firm, A/E, and any other relevant parties involved in the project should attend the meetings. Meetings should be scheduled periodically during both design and construction. The frequency of the meetings depends on the project team and the extent of project progress. Meetings should be held at least once a month during design and once a week during construction. The actual meeting schedule should be discussed and determined by the owner, CM/GC firm, and A/E.

Progress reports should also be used to monitor a project. Periodic reports provide a record of the project activities that can be analyzed to assess project performance and referenced to evaluate the success of the project. Reports of such information as design and construction expenditures, work progress, change order status, quality assessments, and safety can be helpful for project monitoring. The CM/GC contract documents should outline the nature and format of the reports to be provided. It is important that all regularly scheduled reports be kept up to date

throughout the course of the project. Daily, weekly, and monthly progress reports are beneficial to the CM/GC firm and could also be helpful for the owner to see how the project is progressing. All of the contracting entities at the jobsite, such as the owner's inspector, the architect's inspector, and the subcontractor's foremen, should keep daily reports for their own use. The CM/GC firm and the owner should discuss the frequency of these reports and whether the CM/GC firm's reports will be available to the owner upon request or required to be submitted to the owner.

13.3 Project Control

During the design phase prior to construction, a majority of the project control effort is spent on controlling cost and schedule. Working alongside the A/E, the CM/GC firm should provide periodic estimates of cost and schedule. A consultative process should be developed such that cost and schedule can be affected by the owner up to project buyout, if desired. One additional benefit of the CM/GC process is the interaction that can occur between the CM/GC firm and the engineering consultants. Upfront involvement with the engineers can help the CM/GC firm recognize significant cost elements.

Cost estimates should be periodically developed by the A/E during the design phase as well. Independent cost estimates by the A/E allow the owner to verify the CM/GC firm's estimates and the GMP. The A/E's estimate also helps to reconcile the itemized costs.

During construction, significant efforts should be maintained to control cost and schedule. The CM/GC firm should provide regular reporting on the buyout of the work. The owner needs to be aware of any savings to allow for utilizing the savings on additional scope or gaining a higher level of quality if desired. The opportunity for the owner to utilize savings in this manner is different than with the traditional design-bid-build method. In design-bid-build, the contractor retains all savings that arise, whereas in CM/GC, the owner benefits as well.

While cost and schedule are primary areas of control throughout the entire project, during construction greater emphasis is placed on safety and quality. The CM/GC firm should have in place a jobsite safety program and a quality control program to ensure success in these areas.

13.4 Responsibility for Project Monitoring and Control

During construction, the CM/GC firm should be responsible for monitoring and controlling cost and schedule. The CM/GC firm is also typically responsible for safety and quality, with the owner playing a big role regarding quality. The owner can affect safety by presenting a pro-safety mindset for the project and by setting a high standard

for safety on the project. On projects that involve construction on an existing occupied facility (e.g., renovation project), the owner will play a bigger role in safety.

14. CHANGES

Even though many months of effort may be expended by the architect and engineers on the design of a project, modifications are invariably sought after contracts for the work have been signed. Some of these changes may be necessitated by items that were inadvertently left out of the original design, not recognized in the design process, changed following the exposure of jobsite conditions, or added as a result of additional available funds. Regardless of the reason, the issue of what constitutes a change on a project can be contentious. For this reason, the owner needs to give significant consideration to the process by which changes will be addressed and clearly describe the process in the contract documents.

14.1 Definition of a Change

Modifications to the design may be made at various points during the course of the project. Design modifications made during the design phase prior to establishing the GMP are included in the design documents and bid packages used for subcontracting the work. The cost of such modifications becomes a part of the GMP proposed by the CM/GC firm. No additional documentation or process is needed to administer and implement these modifications.

After the GMP has been established, modifications to the design become changes in the contracted scope of work. Changes may result for many different reasons on a project but typically arise on request from the owner or as the result of an RFI submitted by a subcontractor. Examples of when changes may occur include: added or deducted work scope, errors or omissions in the contract documents, unforeseen site conditions, varying interpretation of the building code by different building officials and building departments, and changes in technologies that come about over the course of the project. Owner-initiated changes are likely to be changes to the scope of the project. For example, the owner identifies a need for extra square footage or additional building features. Subcontractor-initiated changes usually are caused by a need to interpret less than fully detailed drawings or to reconcile actual conflicts in the design.

In general, a greater number of changes on a project occur earlier rather than later in the project. Initial construction efforts typically involve excavation and/or exploration of existing structures, which often result in the exposure of unforeseen conditions and the need for changes to the design. Early construction efforts also involve the processing of submittals which often reveal detailing problems and needed

design changes. Additionally, during this period, final code checks are being made which can result in mandated changes.

For many projects, changes that occur earlier in the project are generally more indicative of the actual cost of the work undertaken. That is, the price of changes (additive or deductive) made later on in the project may not represent the correct value of the change because of additional influences. Examples of additional influences include: work that is required to be done out of sequence; re-mobilization of workers and equipment; inefficient construction scheduling and work performance to accommodate the timing of the change (crowding, overlapping subcontractors, overtime, etc.). Higher prices may be given for work towards the end of the project because the contractor does not know if there will be sufficient funds to actually complete the work and has a need for its workforce and equipment on another project. Pressure from subcontractors on the CM/GC firm to push for additional funds may lead, as well, to inflated prices.

There is a perception based on current industry experiences that the percent of changes due to building code interpretations is increasing. Potential reasons for this increase include: different jurisdictions involved in the project interpreting the code differently; conflicts within the code itself; and difficulty in interpreting the building code due to its extensive detail and complexity. The GMP should cover construction that meets a reasonable interpretation of the building code. When developing the GMP, the CM/GC firm should include in its supporting documents its interpretations of any complex or potentially controversial code requirements. However, it is recommended that the CM/GC firm not be given the responsibility for code compliance.

14.2 Processing Changes

Processing changes, while often time consuming, is important to the continued progress of a project. The public agency should make every effort to process changes in a timely manner. Prompt processing of changes allows for continued work on-site without causing delays and helps maintain good working relationships between all parties. From the time the change issue first arises, direction on how to proceed should be given to the CM/GC firm as soon as possible so as not to delay the project. Negotiation and decision-making regarding compensation for the change should take no longer than one month for a typical change order. If work needs to proceed prior to negotiation and completion of a change order, a change directive may be warranted. Another option that has been used to allow work on a change to begin before the change is formalized, is to add a checkbox on the change order form that states, "GMP shall be negotiated". This box can be checked to formally allow for work to continue while the change is being negotiated.

When a need for clarification is identified, the subcontractor will complete a Request for Information (RFI) form, the exact format of which is usually agreed to by project participants at the start of the project. The A/E, owner, and CM/GC firm review

the RFI. If a change to the project work is necessary, and especially if the implementation of the answer to the RFI has a cost consequence to the subcontractor, a change order will be processed to commit to payment to the subcontractor for the work to be done. A comprehensive numerically sequenced log should be maintained by the CM/GC firm of all RFI's and change orders.

It is suggested that the contract require approval of the work by the owner before the change work is undertaken. However, given the fast-paced nature of construction work and the need for the contractor to meet a schedule, in the course of a project work on changes may need to take place before the owner can formally approve the change. While this is not desirable, it may be either in the best interest of the project or needed to get the work done in a timely manner. To prevent the need to commence work on changes prior to receipt of owner approval, efforts should be made beforehand to flag items that will potentially lead to changes. If approval cannot be gained beforehand, the owner and CM/GC firm might agree that the work is to be done on a time and materials basis with a not-to-exceed limit. In this manner, there never needs to be a rationale to perform changes without some kind of written authorization and price or price unit.

In most units of government, the owner representative has a limited ability to approve change orders on their own initiative unless the cost of the change falls within specific dollar limits established by the jurisdiction. For example, an owner's project manager may have signature authority to approve any change order that has a combined fiscal effect of \$25,000 or less. A change order with a cost in excess of \$25,000, in this example, would need to be presented to the unit of government's legislative body for approval prior to execution, a process that can take a substantial amount of time. As a result, a very low level of signature authority to an owner's project manager could have the very real possibility of substantially delaying the completion of the project if a large number of change orders are generated for the project. A level of signature authority should be established which is consistent with the overall size and scope of the project to facilitate timely decision making and project cost accountability.

In order to effectively manage changes, regular meetings should be scheduled to discuss existing and possible future changes and the available contingency. The meetings should be attended by owner, A/E, and CM/GC firm representatives along with subcontractors that may need to provide input on the proposed change work. The representatives at the meetings should have the authority to make decisions on behalf of their organization. Those attending need to be decision-makers for the project, and need to be able to make decisions promptly. The authority and ability to make decisions promptly is important if the changes are to be negotiated in a timely manner so as not to delay the project. If needed, when the representatives cannot attend the meeting, they may delegate authority to another individual present at the meeting. It is helpful as well if there is consistency in the attendees at the meetings so that historical project issues and information do not have to be re-stated and so that all those at the meeting are knowledgeable about the project.

The CM/GC firm is expected to review all RFI's and resulting requests for change orders submitted by subcontractors. It is typically assumed by the owner that the CM/GC firm will scrutinize any change order claims made by subcontractors in order to determine their validity before bringing the changes to the owner and A/E. As part of this duty, the CM/GC firm should evaluate the need for the proposed change, recommend if a change should be made, determine if the proposed change was in the subcontractor's original scope of work, establish a fair price for the change order based on negotiation with the subcontractor, and determine what impact the change will have on the project GMP. The CM/GC firm is working in this mode on the owner's behalf to minimize the need for changes and minimize the cost of changes when the changes are necessary. In some cases, the CM/GC firm may correctly conclude that a change proposal is the result of negligence or error on the part of the subcontractor, or on the part of the A/E. In this situation, the fiscal responsibility for the change may rest with other participants in the project. It is often necessary to negotiate final fiscal responsibility for some change proposals.

14.3 Changes Within and Outside of the GMP

Change orders will usually have a cost consequence, either additive or deductive. Either the cost associated with the change order will be absorbed within the GMP, or the change order will be described as a change in scope, requiring an increase in the GMP. Changes absorbed within the GMP are typically items that could have been more fully detailed in the drawings but were clearly anticipated to be a part of the project. Examples might include missing sections of ductwork, light switches, door hardware, wall penetrations, wall segments, floor coverings, etc. Scope changes might, for example, include additional ductwork to provide an extra air delivery capability, multiple switches to a primary fixture or bank of lights, higher-grade door hardware than specified, or additional wall segments to create additional private offices. It is important to note that a scope change does not need to be a major addition to a building to require a modification to the GMP.

The determination of whether the cost is to be covered within the GMP will be made on a case-by-case basis. The A/E typically gives an initial opinion regarding whether the change is covered within the GMP. It should be recognized, though, that the A/E is not the final authority. The A/E's opinion provides information from which the owner and CM/GC firm can base their decisions. For cases where the A/E may not be in the position, or have the experience needed, to give such opinions, the A/E would not be asked to give an opinion. Based on the A/E's opinion, the owner presents its position whether it thinks the change is within the GMP. If the CM/GC firm disagrees with the owner, the two parties enter into negotiations to discuss and resolve the issue. The contract documents should designate who will provide the initial opinion.

14.4 Contingency Management

There are typically two types of contingency funds maintained for the project: the owner's contingency (an amount held outside of the GMP) and the CM/GC's contingency (held within the GMP.) Change orders that are absorbed within the GMP are a claim against the CM/GC's contingency amount. Change orders that are deemed to be a scope change are paid from the owner's contingency. Some owners choose not to disclose the amount of contingency they hold outside of the GMP. On the other hand, the amount of CM/GC's contingency should be kept visible to the owner so that it can be used near the end of the project, if desired, to add more scope.

The amount of contingency set for a project varies with each project and during the project. Project contingency levels typically run at about 10-15% for the CM/GC's contingency before a GMP is established. After the GMP is established, a 2-5% contingency is typical for a CM/GC firm to hold within the GMP. Owner contingencies often are set at 10% of the project cost. These percentages, however, may vary based on numerous factors including the volatility of the construction market (higher contingencies in a volatile market), complexity of the project, owner's ability to control project costs and make decisions in a timely manner, general level of experience of the project team members, and owner sensitivity to possible project cost overruns. When possible, owners may wish to consider higher contingency levels for both the CM/GC's contingency and the owner's contingency to avoid stress in the project management process.

It is also important that contingency be managed appropriately. An accounting must be kept of the owner's and CM/GC's contingencies available to provide guidance on negotiating changes. Minimal contingency remaining for the project may affect the acceptance of changes or the method in which payment for changes is made. Deducting contracted work scope may be desired to accommodate changes if minimal contingency remains. If a large contingency remains near the end of the project, the owner and CM/GC firm may look for means to re-program those funds to add more scope to the project. To facilitate the change process, the owner should specify upfront how the contingency will be used so that there are no disagreements during the project.

14.5 Negotiating Changes

Disagreement between the owner and CM/GC firm regarding the cost of and payment for changes can potentially lead to disputes and claims. When disagreement occurs, the parties typically attempt to negotiate a resolution to the issue. During the negotiations process it is imperative that both parties are committed to the process and approach it with an honest, good faith effort. The owner and CM/GC firm need to listen to the other party, be willing to negotiate, and collaboratively strive to come to a decision (i.e., "collaborative collective bargaining"). The goals of each party cannot be at odds and the parties should look for "win-win" solutions. Compromises which are in the best interest of the project should also be considered.

One means used to resolve disagreements regarding change issues is by “trading” work. This typically involves agreeing that some items will be included in the GMP while other items will be scope changes, or even agreeing to split items such that a portion of the work is in the GMP and the remaining portion is a scope change. Trading work might be appropriate if it is in the best interest of the overall project. If work is traded, a paper trail must be kept which outlines the decisions and reasons why the trade was made. Lack of such a paper trail can lead to audit problems.

When negotiating changes, the owner must understand that the GMP that is established reflects only the scope of work from which the GMP was developed. Work scope that is added after the GMP is set would constitute a change outside of the GMP. It helps that owners, when going into projects, view the total project cost not as solely the GMP, but as the GMP plus the owner’s contingency to cover added scope changes and unforeseen circumstances.

The CM/GC firm needs to have a different mindset when negotiating changes within the CM/GC process as well. The CM/GC firm needs to recognize that it is more of a collaborative process as opposed to a “win-lose” scenario that can be common on a design-bid-build project. It helps to emphasize that a CM/GC contract be viewed as a performance contract. The CM/GC firm may use some of the CM/GC’s contingency for additional scope to benefit the project if the contingency is not needed anymore.

14.6 Problem Areas Related to Changes

Different CM/GC projects often experience similar problems related to changes and change management. The following are some commonly occurring issues that lead to problems on CM/GC projects:

- Interpretation of the building code. Facilities need to be built to meet the intent of the building code. As a result, there is often a need to interpret the intent of the code in order to resolve design issues. It is the A/E’s responsibility to interpret the building code and ensure that the design meets the code requirements. The owner typically has the expectation that the GMP will provide a functioning facility and that anything additional will be changes to the scope (as opposed to changes needed to meet code).
- Deficient design drawings. At the time the GMP is developed, there is an agreed upon set of drawings and specifications. Incomplete and inaccurate drawings lead to a GMP that does not reflect the required scope of work. The drawings used to develop the GMP, and bid the work, should be as complete and as accurate as possible. More specificity leads to less of a chance of controversy later on.
- Rapidly evolving technologies. Technologies available during construction may not have been known or available at the time of design. The specifications should be written as specific as possible when describing the qualities of the technologies.

- Owner-supplied equipment and furnishings. Equipment and furnishings supplied by the owner should be clearly specified in the contract documents with regard to the amount, features, and planned delivery dates.
- Changes to initial specifications. Outline specifications are typically prepared by the A/E and then priced by the CM/GC firm. The final specifications are often negotiated as a result of budget constraints. It is important that changes which occur to the initial specifications as a part of this process are clarified and made known to all parties so that problems do not arise during pricing and negotiation of the specifications. To prevent problems, the CM/GC firm might choose to prepare and submit to the owner its interpretation of the outline specifications (supporting document) which includes a description of the contractor's clarifications and assumptions.

14.7 Strategies for Resolving Problems Associated with Changes

If problems related to changes should arise, a process must be in place which the owner and CM/GC firm can use to come to resolution. The following are several means that have been used for resolving problems associated with changes:

- Create a "box" in which to place items that the owner and CM/GC firm "agree to disagree" on. These items are completed at the end of the project if the needed funds are available. This only becomes important if the items will potentially exceed the GMP and are not mandatory to the project.
- Resolve all issues as they arise to make sure that the project gets completed in an efficient and timely manner. Payment for these items at the time they arise may be accomplished under force account as a separate contract.
- If possible, the owner may elect to use funds from another account to cover the costs of changes which are outside of the GMP and which exceed the owner's contingency.

15. CONSTRUCTION COMPLETION

15.1 Substantial Completion

For CM/GC contracts, completion of the project is handled in a manner similar to that followed on traditional design-bid-build projects. At some point near the end of construction, a determination is made as to whether the project is substantially complete. Substantial completion for a project implies completion that is less than absolute or final. A project is typically defined as substantially complete when the project can be occupied by the owner and used for its intended purpose despite the need for contractor corrections of minor deficiencies. The point in which a facility can be occupied is typically established by obtaining a certificate of occupancy for the facility.

The determination of whether the facility can be used for its intended purpose is commonly made by the A/E and owner.

Legally, substantial completion defines the date from which the registration of liens is counted by lien statutes. At the time of substantial completion, the last periodic payment is made to the CM/GC firm. After substantial completion, the only funds remaining to be returned to the CM/GC firm are the amounts withheld by the owner as retainage. In terms of the physical project, the primary distinction between substantial completion and final completion is that a few minor noted items must be corrected before the release of any of the retainage. These minor work items are typically documented by the A/E in the form of a punchlist, and are given to the CM/GC firm to complete. The certificate of substantial completion will be similar to the certificate of occupancy, but will generally make specific mention of the punchlist items to address. Correcting the punchlist items will generally result in the release of all the retainage to the CM/GC firm.

15.2 Warranty Period

At the completion of the project, a warranty should be provided by the CM/GC firm to the owner which requires the CM/GC firm to take some form of responsibility for the completed project. This warranty is to assure proper functioning of the constructed project for a stated period of time. Like traditional design-bid-build construction contracts, CM/GC contracts typically carry the CM/GC firm's express or implied warranty that the project is constructed in a good and workmanlike manner (standard for the industry) and according to the contract documents. Depending on the type of project involved, the CM/GC contract may contain other express warranties pertaining to specific characteristics or capabilities of the completed project. The warranty typically guarantees that the CM/GC firm will rectify defects in workmanship or materials for a specified time after project completion. A 1-year warranty from the date of substantial completion is typically provided. It is during this first year of occupancy that the contractor is obligated to correct any work that is defective or not in compliance with the contract documents.

Changes in the contract are an area where the responsibility is not clearly vested in one party. As a result, if modifications to the design are made by the CM/GC firm during construction, such changes should be approved in writing by the owner and the A/E. If the CM/GC firm makes a minor design change, any positive assurances of the effect of the change may be interpreted as a warranty of performance. Whenever the CM/GC firm performs corrective work, it is important that accurate records be kept of all related costs. Some or all of the work may be beyond the scope of the warranty. The CM/GC firm may successfully seek full or partial reimbursement if the work, or part of it, is not within the scope of the warranty clause.

16. DISPUTE RESOLUTION

The collaborative nature and integrated structure of the CM/GC process helps to prevent potential problems and disputes from arising. The teamwork atmosphere involved in the CM/GC process encourages the resolution of problems before they become disputes. If disputes should arise among the owner, A/E, CM/GC firm, or subcontractors, it is important that each be open to collaborative attempts to resolve the dispute. The contract between the owner and CM/GC should fairly allocate risks, encourage teambuilding, and promote prompt dispute resolution.

Typically, there is an expectation by the owner that the CM/GC firm will take a pro-active role in working as the owner's agent in both preventing and resolving disputes and claims with subcontractors. This expectation extends to review and management of change orders where the CM/GC firm is expected to carefully assess all change order pricing and work in the owner's best interest to negotiate change orders with subcontractors that reflect fair and reasonable costs. Contractual language should be developed to clarify the owner's expectations.

16.1 Dispute Resolution Process

An effective dispute resolution process begins with the CM/GC firm selection process. When selecting a CM/GC firm, RFP and/or interview questions can be targeted to identify the proposer's approach to addressing subcontractor change order pricing, claims, and disputes. References specific to this issue, as well as other issues, can be sought from owners for whom the proposers have done previous CM/GC work. It is beneficial as well to all parties if a portion of the contract is used to specify how disputes should be handled and resolved. This eliminates potential questions and confusion regarding proper procedures to be used during the project.

If a particular issue expands into a dispute, a resolution process similar to one that would be used in other contracting methods should be implemented. The parties involved should attempt to negotiate a solution to the dispute that would be most beneficial to each party. If resolution cannot be attained based on face-to-face negotiations, alternative methods of dispute resolution should be considered before marching on to litigation. Examples of alternative dispute resolution methods are arbitration, mediation, disputes review boards, and minitrials. Arbitration and mediation are methods commonly used. A public agency should consult with legal counsel regarding which method to employ on a CM/GC project.

VI. Post-Contract Assessment

17. PROJECT ASSESSMENT

While the completion of construction is often viewed as the end of the project, additional steps need to be taken after construction is complete to learn from the project and evaluate its success. These efforts include the recording of lessons learned and the preparation of a post-contract evaluation report. Both of these efforts are important not only to the project just completed, but also to subsequent projects and to the future use of the CM/GC contracting method by the public agency.

17.1 Recording Lessons Learned

Following the completion of a CM/GC project, lessons learned from the project should be recorded by the owner, A/E, and CM/GC firm. The lessons recorded act as a database of knowledge that can help improve future projects and provide a reference for inquiries about the completed project.

It is beneficial to follow a particular process when recording lessons learned so that all the necessary information is gathered. The owner, A/E, and CM/GC firm should each review the completed project and record the positive and negative attributes of the CM/GC method for that particular project. Periodic recording of lessons learned during the course of the project is suggested so that lessons learned early on in the project are not forgotten. Lessons relating to different aspects of the construction project and contracting procedures should be recorded. Some of the specific categories that should be considered are: schedule, cost, quality, public disruption, MBE/WBE usage, teamwork, and safety. If any other particular aspect is worth noting to the owner, A/E, or CM/GC firm, it too should be included. Standard forms that prompt the parties to think about all the different aspects of the project when recording lessons learned can be useful. An example of such a form is provided in Appendix E.

17.2 Post-Project Evaluation Report

ORS 279.103 puts forth the requirements for evaluation of certain public improvement projects not contracted by competitive (low bid) bidding. Use of the CM/GC method for a project subjects the public agency to the ORS 279.103 requirements.

For public projects in excess of \$100,000 on which the competitive (low bid) bidding process was not employed, ORS 279.103 requires that a formal post-project evaluation of the project be conducted. The nature and content of the report for the public agency to file, as well as the requirements for filing, are described in ORS 279.103 (See Appendix D). The purpose of the ORS 279.103 evaluation is to determine

whether it was actually in the public's best interest to use an alternative contracting method. The following elements are required by the statute to be included in the evaluation:

1. Financial Information consisting of cost estimates, any guaranteed maximum price, changes, and actual costs.
2. The number of project change orders issued by the public agency.
3. A narrative description of successes and failures during design, engineering, and construction of the project.
4. An objective assessment of the use of the alternative contracting method as compared to the exemption findings required by ORS 279.015.

An effective way to present the required report is to simply comment, point by point, on each statement made in the original project exemption findings.

In addition, to the above requirements, evaluation reports are to be made available for public inspection and must be completed within 30 days of the date that the public agency accepts the public improvement project. The report is to be delivered to the Director of the Oregon Department of Administrative Services or the local contract review board.

VII. Glossary

Addenda: Formal changes or clarifications issued to all identified bidders by the owner or the owner's representative during the bidding period.

Adjusted Low Bid: A form of best value selection in which qualitative aspects are scored on a 0 to 100 scale and expressed as a decimal. The proposal price is then divided by the qualitative score to yield an "adjusted bid" or "cost per quality point." Award is made to the proposer with the lowest adjusted bid. This is not "competitive bidding" for the purposes of ORS 279 compliance, and an exemption is therefore required.

Alternative Contracting Method: A selection method other than competitive, low-bid (Design-Bid-Build method) that generally considers other factors in addition to cost for the selection of a contractor. The most common alternative contracting methods are Design-Build and CM/GC.

Best Value: Also known as "greatest value". Any selection process in which proposals contain both price and qualitative components, and award is based upon a combination of price and qualitative considerations. Qualitative can be further subdivided into technical, aesthetic, and management factors.

Bid Package: A subset of the overall scope of work that relates to a specific work trade and for which a single contract is let. A project's scope of work is comprised of multiple bid packages.

Buyout: The actual cost of all subcontracts, purchase orders, change orders, and general conditions work. The difference between the buyout and the GMP is savings to the project.

Change Order: A directive, usually authorized in writing by the owner, to alter or modify some aspect of a project. Such a directive is generally accompanied by an adjustment to the contract amount and/or the contract duration.

Commissioning: The process of starting-up, checking, balancing, and adjusting, if needed, the project's operating systems for owner occupancy and use.

Constructability: A project property that reflects the ease with which the project can be built and the quality of the design documents.

Construction Documents: The documents developed to construct the project. Also used to signify the portion of the design phase, approximately from 60% to 100% completion of the design, in which the details of the design are developed, the design documents are finalized, and the construction documents are prepared.

Contingency: An amount of funds set aside to cover unforeseen occurrences that arise during the course of the project.

Cost of Work: The cost of supplying materials for the project and constructing the project. The cost of work typically includes all direct costs of constructing the project such as labor, materials, and equipment.

Criteria Package: The facility program, design criteria, performance specifications, and other project-specific technical information sufficient to provide the basis for best value proposals. The criteria package becomes part of the *Request for Proposals*.

Deliverables: The drawings, specifications commentary, models, and other documents prepared by the proposer in response to a Request for Proposals. RFP deliverables are sometimes referred to as “submittal requirements” in RFPs and are not to be confused with contract deliverables.

Design-Bid-Build: The “traditional” project delivery approach where the owner commissions an architect or engineer to prepare drawings and specifications under a design services contract, and separately and subsequently contracts for construction by engaging a contractor through competitive bidding or negotiation.

Design-Build: The system of contracting under which one entity performs both architecture/engineering and construction under a single contract with the owner. Also known as “design-construct” or “single responsibility”.

Detailed Design: The portion of the design phase, from approximately 30% to 60% completion of the design, in which the primary details of the design are developed.

Fast-Track Construction: Any process in which design and construction activities overlap. Design documents, equipment procurement, and trade subcontracts are released incrementally or in phases.

Float: Flexibility in the project schedule resulting in extra time to complete a project task without delaying immediately succeeding activities or the final completion date.

General Conditions: The costs associated with on-site management and supervision of the work including the costs of insurance, bonds, and other related miscellaneous items.

MBE: Minority-owned Business Enterprise

Owner: The entity for which the project is being designed and built, and with which the A/E and CM/GC firms will be in privity of contract.

Owner’s Consultant: A consultant or consulting firm that is employed or engaged by an owner to assist in the organizing and administering the CM/GC selection process,

and for other consulting services such as developing criteria, review of the detailed design and construction for compliance with the RFP.

Permitting: The process of obtaining permits required for project development and construction.

Prequalification: The process in which an owner, based upon financial, management, and other qualitative data, determines whether a firm is fundamentally qualified to compete for a certain project or class of projects.

Procurement: The purchasing of design or construction services.

Punchlist: A list developed at the time of substantial completion that itemizes all remaining work tasks that must be performed before a project reaches final completion.

Request for Proposals (RFP): The document issued by the owner that describes the procurement process, forms the basis for final proposals, and may become an element in the contract. The RFP consists of proposal requirements, contract requirements, program requirements, and performance requirements.

Request for Qualifications (RFQ): The document issued by the owner prior to an RFP that typically describes the project in enough detail to allow potential proposers to determine if they wish to compete and requests limited statements of qualification. The RFQ forms the basis for selecting finalists in a two-phase or shortlisting process.

Retainage: A stated percentage of the progress payment request that is withheld by the owner. This amount is generally used as an incentive for the contractor to complete the project in an expedient manner. It is generally returned to the contractor after final completion.

RFI: Request for Information

Schedule of Values: A list of prices, including overhead and profit, for all major work items on the project. The Schedule of Values subdivides the work into component parts in sufficient detail to serve as the basis for progress payments and costing changes.

Schematic Design: The portion of the design phase, from 0% to approximately 30% completion of the design, in which the major features of the design are laid out.

Scope of Work: The work incorporated into a contractual agreement.

Shortlisting: Narrowing the field of proposers through the selection, on the basis of qualifications, of the most qualified to perform the project. The number of shortlisted proposers invited to submit final proposals is most frequently between three and five. See *Request for Qualifications*.

Specifications: A qualitative description of the project and any additional information not present in the drawings. The technical specifications essentially describe the quality of the various aspects of the construction work and project features.

Submittals: Information concerning products to be incorporated in a construction project that must be approved by the owner before they are used. This information may include samples, calculations, performance tests, and manufacturer's literature.

Substantial Completion: A designation of when a project is sufficiently finished to be occupied by the owner and used for its intended purpose. The duration of the project is measured against substantial completion to determine when the last periodic payment can be made.

Value Engineering: A procedure in which the CM/GC firm, through an investment in additional architectural and engineering design, reduces prices or increases scope, or both, enhancing value by determining the most cost-effective means of achieving the owner's objectives. Value engineering should not to be confused with mere scope reduction to reduce cost.

Weighted Selection Criteria Process: A form of best value selection in which maximum point values are pre-established for qualitative and price components, and award is based upon high total points earned by proposers from both components.

WBE: Woman-owned Business Enterprise

VIII. Appendix

A. PUBLIC CM/GC PROJECTS IN THE STATE OF OREGON

The following is a list of public projects in the State of Oregon on which the CM/GC process was used. Those interested in learning more about the CM/GC process and its application on specific projects or types of projects are encouraged to contact the listed agencies.

CM/GC Project	Contract Amount	Year Completed	Location	Agency	Contact Telephone
Blue Mountain Comm. Coll. Additions/Renovations	\$12,000,000	2001	Pendleton	OATC	(541) 278-5858
Century High School		1997	Hillsboro	Hillsboro School District	(503) 693-3649
Civic Stadium Renovation	\$25,026,896	2001	Portland	City of Portland	(503) 823-6875
Clackamas County Intake	\$7,100,000	1990		Clackamas County	(503) 655-8581
Classical Chinese Garden	\$2,000,000	2000	Portland	City of Portland	(503) 823-5294
Columbia County Jail		2000	St. Helens	Columbia County	(503) 397-4322
Deschutes County Justice Facility	\$8,000,000	1994	Bend	Deschutes County	(541) 549-2781
Deschutes County Public Safety	\$15,500,000	1999	Bend	Deschutes County	(541) 549-2781
DOC Coffee Creek Correctional Facility	\$110,000,000	2002	Wilsonville	Dept. of Corrections	(503) 373-1572
DOC Snake River Correctional Institute Phase I	\$37,971,742	1991	Ontario	Dept. of Corrections	(503) 373-1572
DOC Snake River Correctional Institute Phase II	\$158,680,138	1998	Ontario	Dept. of Corrections	(503) 373-1572
DOC Two Rivers Correctional Institute	\$125,266,646	2000	Umatilla	Dept. of Corrections	(503) 373-1572
DOC Women Prison/Intake Center (Day Road)	\$110,000,000	In Progress	Wilsonville	Dept. of Corrections	(503) 373-1572
Expo Exhibit Hall D	\$18,000,000	2001	Portland	Metro/MERC	(503) 797-1716
Expo Exhibit Hall E	\$12,100,000	1997	Portland	Metro/MERC	(503) 797-1716
Findley Elementary School	\$8,000,000	1997	Portland	Beaverton School District	(503) 591-8000
Fourth & Yamhill Parking Garage Renovation	\$4,575,754	1998	Portland	City of Portland	(503) 823-6928
Grants Pass High School	\$34,800,000	1999	Grants Pass	Grants Pass School Dist.	(541) 474-5710

CM/GC Project	Contract Amount	Year Completed	Location	Agency	Contact Telephone
Headworks Intake and Control Building	\$4,340,650	2001	Portland	City of Portland	(503) 823-7629
Jefferson County Jail	\$8,400,000	2001		Jefferson County	(541) 475-4451
Josephine County Jail	\$10,500,000	2000	Grants Pass	Josephine County	(541) 474-5405
Lane County Adult Corrections Center		1999	Eugene	Lane County	(541) 682-4011
Lane County Housing Authority Housing Projects		1995-2002	Eugene	Lane Co. Housing Auth.	(541) 682-3755
Lane County Juvenile Justice Center		2000	Eugene	Lane County	(541) 682-4011
Multnomah County Branch Libraries	\$8,000,000	2002	Portland	Multnomah County	(503) 988-5111
Multnomah County Central Library	\$18,400,000	1996	Portland	Multnomah County	(503) 988-5111
Multnomah County Inverness Jail	\$36,400,000	1999	Portland	Multnomah County	(503) 988-5111
Multnomah County Justice Center	\$6,000,000	2002	Portland	Multnomah County	(503) 988-5111
Multnomah County Juvenile Justice Center	\$33,600,000	1995	Portland	Multnomah County	(503) 988-5111
Multnomah County Wapato Jail	\$50,000,000	2003	Portland	Multnomah County	(503) 988-5111
NORCOR Jail	\$13,500,000	1999	The Dalles	Wasco County	(541) 298-4344
North Precinct Remodel	\$1,400,000	1997	Portland	City of Portland	(503) 823-3188
OHSU Casey Eye Institute	\$18,600,000	1991	Portland	OR Health & Sci. Univ.	(503) 494-5075
OHSU Doernbecher Children's Hospital	\$60,000,000	1997	Portland	OR Health & Sci. Univ.	(503) 494-5075
OHSU Emergency Room	\$3,500,000	1997	Portland	OR Health & Sci. Univ.	(503) 494-5075
OHSU Hatfield Research Center	\$51,300,000	1998	Portland	OR Health & Sci. Univ.	(503) 494-5075
OHSU NCR Building	\$30,000,000	1995	Portland	OR Health & Sci. Univ.	(503) 494-5075
OHSU Renovations	\$8,800,000	1999	Portland	OR Health & Sci. Univ.	(503) 494-5075
OHSU School of Nursing	\$11,700,000	1992	Portland	OR Health & Sci. Univ.	(503) 494-5075
Oregon Convention Center	\$98,000,000	2003	Portland	Metro/MERC	(503) 797-1716
Oregon Department of Human Resources	\$26,500,000	1992	Portland	Dept. Human Resources	(503) 945-5944
Oregon Zoo	\$24,665,000	2000	Portland	Metro/MERC	(503) 797-1716
OSU Engineering Building	\$30,000,000	In Progress	Corvallis	Oregon Univ. System	(541) 737-7694
OSU Richardson Hall	\$22,000,000	1999	Corvallis	Oregon Univ. System	(541) 737-7694

CM/GC Project	Contract Amount	Year Completed	Location	Agency	Contact Telephone
OSU Student Housing	\$7,235,792	In Progress	Corvallis	Oregon Univ. System	(541) 737-7694
OSU Valley Library	\$30,800,000	1998	Corvallis	Oregon Univ. System	(541) 737-7694
OSU Weatherford Residential College	\$12,200,000	In Progress	Corvallis	Oregon Univ. System	(541) 737-7694
Parkrose High School	\$26,000,000	1997	Portland	Parkrose School District	(503) 408-2100
PDX Concourse C Extension	\$49,700,000	1998	Portland	Port of Portland	(503) 944-7360
PDX Concourse D Extension	\$16,200,000	1989	Portland	Port of Portland	(503) 944-7360
PDX Concourse M Extension	\$4,661,000	1986	Portland	Port of Portland	(503) 944-7360
PDX Parking	\$7,800,000	1989	Portland	Port of Portland	(503) 944-7360
PDX Terminal Access and Parking Project	\$135,000,000	2000	Portland	Port of Portland	(503) 944-7360
PDX Terminal Expansion South Phase I/Phase II	\$188,000,000	2001/2002	Portland	Port of Portland	(503) 944-7360
Pendleton High School	\$18,000,000	1996	Pendleton	Pendleton School District	(541) 276-6711
Peninsula Park/Montavilla Park Community Centers	\$1,700,000	1999	Portland	City of Portland	(503) 823-5591
Pleasant Hill Elementary School and Primary Addition	\$8,000,000	1998	Pleasant Hill	Pleasant Hill School Dist.	(541) 746-9646
Portland City Hall Renovation	\$18,810,272	1998	Portland	City of Portland	(503) 823-6987
Portland Public Schools Renovation	\$16,300,000	1999	Portland	Portland Public Schools	(503) 916-2000
PSU Birmingham Student Housing	\$7,000,000	In Progress	Portland	Oregon Univ. System	(503) 725-8952
PSU Native American Student Center	\$2,400,000	In Progress	Portland	Oregon Univ. System	(503) 725-8952
PSU Smith Memorial Center	\$3,600,000	In Progress	Portland	Oregon Univ. System	(503) 725-8952
Public Employees Retirement Systems Building		1997	Salem	Dept. of Admin. Services	(503) 378-4686
SOU Library Enhancement	\$15,000,000	In Progress	Ashland	Oregon Univ. System	(541) 552-6233
Southridge High School		1999	Beaverton	Beaverton Sch. Dist.	(503) 591-8000
State Library	\$5,840,538	2001	Salem	Dept. of Admin. Services	(503) 378-4686
Sunnybrook Service Center		1999	Clackamas	Clackamas County	(503) 353-4400
Swimming Pool Bathhouses		1998	Portland	City of Portland	(503) 823-4000
UO Autzen Stadium Expansion	\$73,102,975	In Progress	Eugene	Oregon Univ. System	(541) 346-2282
UO Gilbert Hall Renovation	\$26,600,000	In Progress	Eugene	Oregon Univ. System	(541) 346-2282

CM/GC Project	Contract Amount	Year Completed	Location	Agency	Contact Telephone
UO Law School	\$20,000,000	1998	Eugene	Oregon Univ. System	(541) 346-2282
UO Student Center Food Service Remodel	\$3,839,484	1999	Eugene	Oregon Univ. System	(541) 346-2282
Washington County Justice Complex	\$72,000,000	1998	Hillsboro	Washington County	(503) 846-4474
Washington Park Headhouse and Station Finishing	\$33,409,000	1998	Portland	Tri-Met	(503) 235-5022
WOU Campus Housing Project	\$8,700,000	In Progress	Monmouth	Oregon Univ. System	(503) 838-8174

B. OREGON PUBLIC CONTRACTING COALITION MEMBERSHIP

The Oregon Public Contracting Coalition consists of the following members:

Dana Anderson / Oregon Department of Justice
John Baker / Tarlow, Jordan & Schrader
Scott Bengel / Bengel Construction Co.
Pam Brown / Portland Public Schools
Bob Burns / Oregon Department of Transportation
Cindy Catto / Associated General Contractors, Oregon Columbia Chapter
Laird Cusack / Associated General Contractors, Oregon Columbia Chapter
Thomas Dean / Blumenstein-Dean Construction
David Douthwaite / J.E. Dunn-Portland
Bart Eberwein / Hoffman Construction Co.
Larry Eisenberg / Washington County
Bill Foster / Oregon Department of Administrative Services
Jim Green / Oregon School Boards Association
Michael Harrington / Multnomah County
Jessica Harris / Associated General Contractors, Oregon Columbia Chapter
Franna Hathaway / Multnomah County
Bill Hirsh / Eugene School District 4J
Jim Hirte / Colamette Construction Co.
Brett Hockley / Port of Portland
Sue Klobertanz / City of Portland
Brian Krieg / PAC/WEST Communications
Jacqueline Lescott / Associated Builders & Contractors
Jim Lynch / Beaverton School District
Dave Lutz / Oregon Department of Transportation
John Maloney / Tice Electric
Jerry Milstead / Milstead & Associates, Inc.
Dave Moyano / David Evans & Associates
Bill Penhollow / Association of Oregon Counties
Dean Phillips / Davis, Wright Tremaine
David Powell / City of Lake Oswego
John Rosenberger / Washington County
Richard Ross / Oregon Department of Corrections
Bob Shiprack / Oregon Building Trades Council
Joe Schweinhart / League of Oregon Cities
Steve Sivage / City of Portland
Hasina Squires / Special District Association of Oregon
Berit Stevenson / Project Management Consultant
Ken Stoneman / Oregon Department of Transportation
Lisa Strader / The Strader Group, LLC
Kevin Thiel / Oregon Department of Transportation
Mark Van Buskirk / Oregon Health & Sciences University
John Weekes / Dull Olson Weekes Architects

Scott Williams / Hamilton Construction Co.
Brian Woodall / Tri-Met
Ed Wundram / The Design Build Consulting Group
Doug Young / Oregon Department of Corrections

C. OTHER CM/GC RESOURCES

Contracts and Other Forms

American Institute of Architects (AIA)
1735 New York Avenue, NW
Washington, D.C. 20006
Telephone: (800) 242-3837
Fax: (202) 626-7547
E-mail: infocentral@aia.org
Internet: www.aia.org

The Construction Specifications Institute (CSI)
99 Canal Center Plaza, Suite 300
Alexandria, VA 22314
Telephone: (800) 689-2900
Fax: (703) 684-0465
E-mail: membcustsrv@csinet.org
Internet: www.csinet.org

The Associated General Contractors of America (AGC)
333 John Carlyle Street, Suite 200
Alexandria, VA 22314
Telephone: (703) 548-3118
Fax: (703) 548-3119
E-mail: info@agc.org
Internet: www.agc.org

U.S. Government Printing Office (GPO)
732 North Capitol Street, NW
Washington, DC 20401
Telephone: (202) 512-0000
E-mail: gpoinfo@gpo.gov
Internet: www.access.gpo.gov

Books and Reports

Dorsey, R.W. "Project Delivery Systems for Building Construction." Associated General Contractors of America (AGC), Alexandria, VA, 1997.

Hinze, J.W. "Construction Contracts, 2nd Edition." McGraw-Hill Companies, Inc., New York, NY, 2001.

“Project Delivery Systems: CM at Risk, Design-Build, Design-Bid-Build.”
Research Summary 133-1, Construction Industry Institute (CII), Austin, TX.

Articles

Eisenberg, L.H. “Construction Quality - A ‘How to’ Guide.” Washington County, Portland, OR, 11 pages.

Gordon, C.M. “Choosing Appropriate Construction Contracting Method.” *Journal of Construction Engineering*, American Society of Civil Engineers (ASCE), Vol. 120, No. 1, pp. 196-210, March 1994.

Hirsh, B. “Snake River Correctional Institute: A Team Approach to Public Work.” *Civil Engineering*, American Society of Civil Engineers (ASCE), Feb. 1992.

Konchar, M. and Sanvido, V. “Comparison of U.S. Project Delivery Systems.” *Journal of Construction Engineering and Management*, American Society of Civil Engineers (ASCE), Vol. 124, No. 6, pp. 435-444, Nov./Dec. 1998.

Rubin, R.A. and Wordes, D. “Changing Project Delivery Systems.” *Proceedings of the Construction Congress V*, American Society of Civil Engineers (ASCE), pp. 672-683.

Sanvido, V., Konchar, M., and Moore, S. “A Comparison of Project Delivery Systems.” *Proceedings of the Construction Congress V*, American Society of Civil Engineers (ASCE), pp. 573-581.

D. EXCERPTS FROM OREGON REVISED STATUTES (through February 21, 2002)

ORS 279.015 Competitive bidding; exceptions; exemptions

* * *

- (2) Subject to subsection (6)(b) of this section, the Director of the Oregon Department of Administrative Services, a local contract review board, or, for contracts described in ORS 279.712(2)(c), the Director of Transportation may exempt certain public contracts or classes of public contracts from the competitive bidding requirements of subsection (1) of this section upon approval of the following findings submitted by the public contracting agency seeking the exemption:
- (a) It is unlikely that such exemption will encourage favoritism in the awarding of public contracts or substantially diminish competition for public contracts; and
 - (b) The awarding of public contracts pursuant to the exemption will result in substantial cost savings to the public contracting agency or, if the contracts are for public improvements described in ORS 279.712(2)(c), to the agency or the public. In making such finding, the Director of the Oregon Department of Administrative Services, the Director of Transportation, or the local contract review board may consider the type, cost, amount of the contract, number of persons available to bid and such other factors as may be deemed appropriate.
- (3) (a) Before final adoption of the findings required by subsection (2) of this section exempting a contract for a public improvement, or a class of contracts for public improvements described in ORS 279.712(2)(c), from the requirement of competitive bidding, a public agency shall hold a public hearing.
- (b) Notification of the public hearing shall be published in at least one trade newspaper of general statewide circulation a minimum of 14 days prior to the hearing.
 - (c) The notice shall state that the public hearing is for the purpose of taking comments on the agency's draft findings for an exemption from the competitive bidding requirement. At the time of the notice, copies of the draft findings shall be made available to the public. At the option of the public agency, the notice may describe the process by which the findings are finally adopted and may indicate the opportunity for any further public comment.
 - (d) At the public hearing, the public agency shall offer an opportunity for any interested party to appear and present comment.
 - (e) If a public agency is required to act promptly due to circumstances beyond its control that do not constitute an emergency, notification of the public hearing can be published simultaneously with the agency's solicitation of contractors for the alternative public contracting method, as long as responses to the solicitation are due at least five days after the meeting and approval of the findings.

* * *

- (6) In granting exemptions pursuant to subsection (2)(a) and (b) of this section, the Director of the Oregon Department of Administrative Services, the Director of Transportation, or the local contract review board shall:
- (a) Where appropriate, direct the use of alternate contracting and purchasing practices that take account of market realities and modern or innovative contracting and purchasing methods, which are also consistent with the public policy of encouraging competition.
 - (b) Require and approve or disapprove written findings by the public contracting agency that support the awarding of a particular public contract or a class of public contracts, without the competitive requirements of subsection (1) of this section. The findings must show that the exemption of a contract or class of contracts complies with the requirements of subsection (2)(a) and (b) of this section.

ORS 279.011 Definitions for ORS 279.005 to 279.111

As used in ORS 279.005 to 279.111:

* * *

- (5) "Findings" means the justification for an agency conclusion that includes, but is not limited to, information regarding:
- (a) Operational, budget and financial data.
 - (b) Public benefits.
 - (c) Value engineering.
 - (d) Specialized expertise required.
 - (e) Public safety.
 - (f) Market conditions.
 - (g) Technical complexity.
 - (h) Funding sources.

ORS 279.103 Evaluation of certain public improvement projects not contracted by competitive bidding

- (1) Upon completion of and final payment for any public improvement contract, or class of contracts for public improvements described in ORS 279.712(2)(c), in excess of \$100,000 for which the public agency did not use the competitive bidding process, the public agency shall prepare and deliver to the Director of the Oregon Department of Administrative Services, the local contract review board, or, for a class of contracts for public improvements described in ORS 279.712(2)(c), the Director of Transportation an evaluation of the public improvement project or the class of contracts.

- (2) The evaluation shall include but not be limited to the following matters:
 - (a) The actual project cost as compared with original project estimates.
 - (b) The amount of any guaranteed maximum price.
 - (c) The number of project change orders issued by the public agency.
 - (d) A narrative description of successes and failures during the design, engineering and construction of the project.
 - (e) An objective assessment of the use of the alternative contracting process as compared to the findings required by ORS 279.015.

- (3) Evaluations required by this section shall be made available for public inspection.

- (4) The evaluations required by this section must be completed within 30 days of the date that the public agency accepts:
 - (a) The public improvement project; or
 - (b) The last public improvement project if the project falls within a class of contracts for public improvements described in ORS 279.712(2)(c).

E. SUGGESTED FORM FOR RECORDING LESSONS LEARNED

Project description: (one paragraph, including cost, scope of work, major challenges and other salient features)

	Does Not Apply	Failed to Meet Goals	Met Goals	Exceeded Goals
1. Schedule Notes:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Cost Notes:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Quality Notes:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. Public Disruption Notes:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. MBE/WBE Notes:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. Teamwork Notes:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. Safety Notes:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. Other Notes:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Other Notes:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Other Notes:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please summarize how this project met the findings outlined in the CM/GC exemption, and quantify if possible.

Submitted by: _____
 Title: _____ Date: _____