State of Washington
Joint Legislative Audit and Review Committee (JLARC)

An Assessment of General Contractor/ Construction Manager Contracting Procedures

Report 05-9

June 22, 2005

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The Joint Legislative Audit and Review Committee (JLARC) carries out oversight, review, and evaluation of state-funded programs and activities on behalf of the Legislature and the citizens of Washington State. This joint, bipartisan committee consists of eight senators and eight representatives, equally divided between the two major political parties. Its statutory authority is established in RCW 44.28.

JLARC staff, under the direction of the Committee and the Legislative Auditor, conduct performance reviews, program evaluations, sunset reviews, and other policy and fiscal studies. These studies assess the efficiency and effectiveness of agency operations, impacts and outcomes of state programs, and levels of compliance with legislative direction and intent. The Committee makes recommendations to improve state government performance and to correct problems it identifies. The Committee also follows up on these recommendations to determine how they have been implemented. JLARC has, in recent years, received national recognition for a number of its major studies.

AN ASSESSMENT OF GENERAL CONTRACTOR/ CONSTRUCTION MANAGER CONTRACTING PROCEDURES

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REPORT DIGEST

JUNE 22, 2005

STATE OF WASHINGTON

JOINT LEGISLATIVE AUDIT REVIEW COMMITTEE

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Background

Public entities in Washington State construct and operate a wide variety of facilities including prisons, office buildings, schools, hospitals, convention centers, and sports stadiums. Over the past decade, spending for state government major public works construction alone totaled over $4 billion for approximately 200 projects. Of these projects, 53 were or are being constructed using the General Contractor/Construction Manager (GC/CM) method of contracting. An additional 55 GC/CM projects have been identified at the local level.

In a traditional Design-Bid-Build (DBB) public works project, the project design is completed by the owner and architect. Once the design is complete, the construction phase is put out for competitive bid and is awarded to the lowest responsible bidder. In a GC/CM project, however, the construction contract is negotiated with the contractor after a qualification-based selection process, rather than a low-bid selection. And, unlike DBB, the GC/CM is hired early in the design phase to allow the contractor to provide input during design development.

Authorization to use GC/CM, first granted in 1991, was initially limited to construction of corrections facilities. This has since been expanded to include four state agencies and several large local governments, ports, public utility districts, school districts, and hospital districts. This statutory authorization will expire in 2007. The 2003-05 Capital Budget directed the Joint Legislative Audit and Review Committee (JLARC) to review the use of GC/CM contracting procedures in major public works projects to provide a better understanding of Washington State's GC/CM experience.

Study Method

In this study, JLARC examines Washington's experience with GC/CM in the public sector, and compares our state's experience with current industry research. Consistent and reliable GC/CM project information for state and local facilities is not available, therefore JLARC used a three-pronged study approach to gather project level information, including:

- Interviews and focus groups with owners, GC/CM firms, and subcontractors;
- Evaluation of 21 state and local case studies to assess the performance of GC/CM and DBB projects in Washington State; and
- Development of a GC/CM Project Inventory using survey information to collect and analyze project level data on 108 state and local projects.

This report provides a brief overview of GC/CM in Washington State, including a discussion on who is using this method, the types of projects that are being constructed using GC/CM, and which contractors are working in this segment of the construction industry.

Evaluation of GC/CM Performance

JLARC used project-level data to determine the feasibility of assessing the public benefits and costs of using this alternative method of public works contracting. We found evidence suggesting that agencies are benefiting from using the GC/CM contracting method; however, our conclusions are tempered by the limitations inherent in the study data. With this in mind, we found:

- Generally, owners use GC/CM on highly complex projects, but there is evidence that some agencies are using the method to avoid problems associated with DBB contracting.
- There are indications that GC/CM projects stay closer to their projected schedules than DBB projects.
- Owners appear to be able to reach a negotiated Guaranteed Construction Cost and stay within an acceptable budget range upon completion.

- Some owners seem to believe risk for design errors and omissions is being shifted to contractors and subcontractors when this may not, in fact, be occurring.
- Most agencies are investing additional resources to manage GC/CM projects, but we did find instances where agencies lacked the experience or involvement to benefit fully from the process.
- GC/CM facilitates a team-orientated relationship between the owner, GC/CM, and the architect, that can result in more collaborative projects.
- GC/CM appears to reduce the number of change orders on a project, possibly reducing overall project costs.
- It is unclear whether GC/CM contracting methods produce better quality design or facilities.

Future of GC/CM

During the 2005 session, the Legislature passed Engrossed Substitute House Bill 1830, establishing the Capital Projects Review Board. The Board is charged with providing an evaluation of public capital projects construction processes, including the impact of contracting methods on project outcomes, and advising the Legislature on policies related to alternative public works delivery methods. The work of this Board will play a critical role in informing the policy discussions that need to take place between now and July 1, 2007, when GC/CM is currently set to expire.

Summary of Findings and Recommendations

Finding 1: Some agencies may be using GC/CM to overcome deficiencies in the DBB contracting method.

Recommendation 1

The Legislature, through the Capital Projects Review Board, should further analyze the implications of the low-bid requirement on capital construction projects.

Finding 2: Executive-level oversight is critical to the ongoing development of sound public works contracting policy.

Recommendation 2A

The Capital Projects Review Board should be convened as quickly as practical to develop recommendations for the Legislature regarding the elimination, retention or expansion of the alternative public works contracting methods.

Recommendation 2B

The Capital Project Review Board should develop an initiative to improve the consistency of GC/CM project documents across projects and jurisdictions.

Finding 3: Lack of sound, reliable and consistent data collection is a major impediment to understanding the impacts of GC/CM.

Recommendation 3A

The Capital Projects Review Board, in consultation with the Office of Financial Management, should develop standardized statewide performance indicators and benchmarks for all major public work projects.

Recommendation 3B

Project performance data should be collected for state and local capital construction projects in one database in order to develop standards for evaluating comparable projects.

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CHAPTER ONE – INTRODUCTION, BACKGROUND & CONCLUSIONS IN BRIEF

INTRODUCTION

Construction of major public works is a key sector of the Washington economy. Public entities construct and operate a wide variety of facilities including prisons, office buildings, schools, hospitals, convention centers, and sports stadiums. Over the past decade, spending for state government major public works construction alone totaled over $4 billion for approximately 200 projects.[1] Of these projects, 53 were or are being constructed using the General Contractor/ Construction Manager (GC/CM) method of contracting at an approximate total value of $2.7 billion.[2] At the local level, 55 GC/CM projects at an approximate total of $3.8 billion have been identified.

Construction of public works projects is generally performed by private firms. State and local governments contract with private architectural and construction companies for the design and construction of facilities. In a Design-Bid-Build (DBB) project, the project design is completed by the owner and architect. The construction phase is put out for competitive bid and is awarded to the lowest responsible bidder. In a GC/CM project, however, a contract is awarded competitively to a single firm for a guaranteed construction cost before the design is completed. Unlike DBB, a GC/CM contract requires the contractor to participate in the design phase by providing input during design development and to act as the general contractor during the construction phase.

BACKGROUND

Authorization to use GC/CM, first granted by the Legislature in 1991, was initially limited to construction of corrections facilities. This has since been expanded to include four state agencies, several local government jurisdictions, ports, public utility districts, school districts, and hospital districts. In most cases, GC/CM may only be used on projects over $10 million. This authorization is scheduled to expire in 2007.

The 2003-05 Capital Budget instructs the Joint Legislative Audit and Review Committee (JLARC) to review the use of GC/CM contracting procedures in major public works projects.[3] This study follows JLARC's Performance Audit of Capital Budget Processes which was a *comprehensive review* of capital planning, design, and construction processes in Washington State. In contrast, this GC/CM study focuses more narrowly on this alternative public works contracting method for state and local entities.

In this study, we provide an overview of the GC/CM project delivery method, including a brief policy history and a nuts-and-bolts description of GC/CM, contrasting it with DBB. We provide an inventory of the public agencies using GC/CM and the types of projects completed; and an

[1] *Performance Audit of Capital Budget Processes,* p. 1, Joint Legislative Audit and Review Committee, 2005.

[2] Four projects were started prior to 1995: Airway Heights (GA/DOC); Washington Correction Center for Women (GA/DOC); Harborview Research & Training Facility (UW); and the City of Everett's Wastewater Pollution Control Facility.

[3] Substitute Senate Bill 5401, Section 923, 2003 Regular Legislative Session.

analysis of the performance of the GC/CM delivery method. In addition, we outline issues related to the process and provide our conclusions, findings, and recommendations to improve the state's ability to make informed decisions about the use of GC/CM.

Study Approach

Each major capital project is unique, and agencies use a variety of design, construction, management, and oversight approaches to carry out their projects successfully. To better understand the effect of GC/CM contracting procedures in Washington, JLARC staff reviewed past and current projects constructed using GC/CM contracting procedures. Project-level data was used to determine the feasibility of assessing the public benefits and costs of using this alternative method of public works contracting. Questions to be addressed by this review include:

- How does GC/CM compare to traditional DBB public works contracting, and how do GC/CM procedures applied in Washington State compare to best practices in public works contracting from a national perspective?
- What project characteristics have been found by prior industry studies to contribute to successful GC/CM projects (e.g., project team experience, project type, and project budget), and to what extent are these evidenced by projects in Washington?
- What quantitative and qualitative measures are available to gauge the results of these projects?
- What key performance indicators might the Legislature use to weigh the benefits and costs of GC/CM in Washington?

JLARC staff used a combination of case studies, interviews, document reviews, and an owners' survey to assess the critical factors associated with GC/CM that effect project outcomes (e.g., schedule, scope, and cost). A series of case studies were developed to provide a comparative analysis of the use of GC/CM and DBB. In addition, JLARC worked with consultants to update the 2000 study of GC/CM contracting practices, originally commissioned by the Alternative Public Works Methods Oversight Committee. This update was accomplished by surveying owners of all 108 state and local GC/CM projects. This update yielded a comprehensive inventory of GC/CM projects, from its initial authorization to the present.

The data collected through the survey are used with some caution, as it is self-reported and has not been audited by JLARC staff or consultants. This raises some concerns about the accuracy and comparability of the data since each governmental jurisdiction uses different data collection and monitoring methods and systems, and definitions of some key terms may not be consistent across jurisdictions.

CONCLUSIONS IN BRIEF

Overall, it appears that Washington's approach to GC/CM is producing the results that would be expected in several key areas identified by industry research.

- Results of the case studies, owner surveys, and participant interviews suggest that GC/CM projects in Washington generally experience lower levels of ***schedule and cost growth*** than DBB projects of similar size, although survey results indicated that GC/CM projects came in slightly over their planned schedules and budgets. In addition, owners and

GC/CM firms were generally able to successfully negotiate a guaranteed contract cost and stay within a reasonably acceptable range of that set amount.

- Owners and contractors feel GC/CM fosters more ***collaborative working relationships*** between owners and contractors. In fact, in some cases the owners believed that it was this collaborative relationship that helped keep a project progressing through obstacles and challenges that may arise.

We did find evidence that GC/CM is still evolving in some areas.

- Although GC/CM contracting methods are generally being used by owners to complete significantly ***complex projects***, there is evidence to suggest that some agencies are using their alternative public works contracting authority as a means of avoiding risks associated with the DBB method of contracting. We recommend that there be further study of the implications of the requirement in DBB to accept the lowest bid on capital construction projects.
- The concept of ***shared risk*** in GC/CM projects is not clearly understood by all owners and contractors. The GC/CM's role during the design phase is that of a consultant and the ultimate control over the quality of the design documents rest with the owner. Therefore, the legal responsibility remains with the owner's designer of record, unless the parties have specifically contracted otherwise.
- Most GC/CM projects are being carried out with ***experienced staff*** or with contracted third parties to provide project management and advice. In many cases, less experienced owners contracted with a third party to provide advice and guidance, or in some instances to act as the owner's representative. This role, however, is (and should be) distinct from the role played by the GC/CM. However, both the case studies and our field interviews found that some state and local project management staff believed that the GC/CM would substitute for owner experience. This is largely untrue, and instead may have adverse affects on cost of the project.
- Finally, one of the frequently cited reasons for adopting GC/CM in Washington is the goal of ***reducing change orders, litigation and end-of-project claims*** found in DBB projects. However, without comparable claims data for DBB projects, it is not possible to conclusively determine whether the GC/CM contracting method results in reduced costs associated with change orders, claims and litigation.

The passage of ESHB 1830 this past session establishing the Capital Projects Review Board is strongly supported by the findings of this report. This board will provide a needed forum in which all the key stakeholders—including Legislators, owner/agencies, labor, contractors and subcontractors—can work through public works contracting issues, and allow for the informal resolution of contentious issues. The Board should be convened as quickly as practical to develop recommendations for the Legislature regarding the elimination, retention or expansion of alternative public works contracting methods. The Capital Projects Review Board should also develop an initiative to improve the consistency of GC/CM project documents across projects and jurisdictions.

This study makes three important steps forward in the development of a capital projects data collection and analysis system.

Basic data on all GC/CM projects has been collected. The project-level data compiled through owner surveys provides important insights into completed and current projects, and it can form the core of a comprehensive alternative public works contracting database. It is clear, however, there are still many areas in which common definitions and data collection methods have not been developed.

Performance metrics, best practices, and benchmarks have been identified. In addition to the project survey, this study provided the opportunity to identify performance metrics, best practices, and to a lesser extent project benchmarks.

Tools are developed to identify strengths and weaknesses across projects. Qualitative data were gathered on adherence to best practices to identify general weaknesses and strengths in the evolving policy area of alternative public works contracting.

CHAPTER TWO – PUBLIC CONSTRUCTION DELIVERY METHODS – TRADITIONAL AND ALTERNATIVE CONTRACTING

BACKGROUND

Designing and constructing a building is one of the most complex commercial transactions conducted on a regular basis, regardless of the size of the project. Few commercial events involve managing the labor and expertise of as many people with competing interests, varying levels of business sophistication, and unique sets of risk as does construction. The strong interest of industry and public owners to deliver projects faster, spend less money, improve quality, reduce litigation and create less conflict has prompted policymakers to provide alternatives to traditional project delivery methods. This chapter will explain the basic nuts and bolts of DBB and GC/CM and provide a comparison of the strengths and weaknesses of each procurement method.[4]

Exhibits 1 and 2 on the following pages provide an overview of both the DBB and GC/CM contracting methods.

TRADITIONAL PUBLIC WORKS CONTRACTING – DESIGN-BID-BUILD

Design-Bid-Build is the traditional method for delivering major capital projects and has been available to most Washington jurisdictions since the original competitive bidding statute was codified in 1923. It has been used to construct the vast majority of state and local public works facilities in Washington and throughout the nation, and is still used for most projects today.

At the heart of DBB is the requirement for open, competitive bidding and subsequent award to the lowest responsible bidder. The primary purpose of the competitive bidding requirement is to prevent fraud, collusion, and favoritism by public officials and to obtain the best work at the most reasonable price.[5] The open competitive process satisfies this by making the selection process transparent to the public.

Weaknesses in the DBB Method

Although DBB continues to be the predominant project delivery method used today, a number of weaknesses in the process have caused project owners to look for alternatives. The most significant problem arises from the strict separation of design and construction. This separation deprives the owner of contractor skills during the design process, such as sensitivity to the labor and material markets and knowledge of construction techniques. It also provides little or no opportunity for a contractor to evaluate the coherence and completeness of the design or the cost of any proposed design changes.

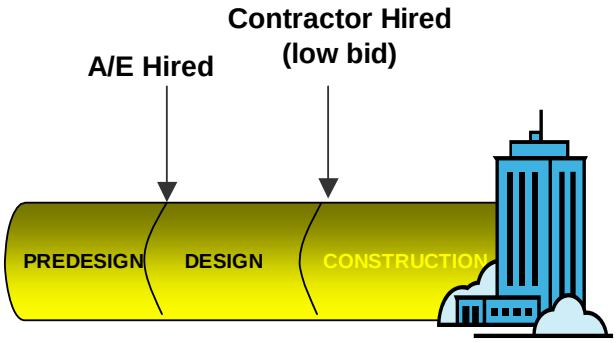
[4] This section draws extensively from *Construction Manager At Risk: What's In a Name?*, by Richard Flake and Donovan Oliff (2001).

[5] *Gostovich v. The City of West Richland*, 75 Wn.2d 583, 587 (1969). The court went on to state that a secondary purpose of the low-bid approach is to provide a fair forum for those interested in undertaking public projects.

Exhibit 1 – Design-Bid-Build

Definition

Design-Bid-Build (DBB) is a linear delivery method in which the public owner selects the Architect/Engineer (A/E) to design the project. Once construction documents are fully complete, the public owner requests lump sum bids from general contractors to perform the work. Selection of the General Contractor is based solely on the lowest price submittal and award is made to a single contractor.



Characteristics

This delivery method is known as the "traditional" method since it is the method most commonly used by public agencies. DBB is also known as a "lump sum" or "hard bid" delivery method.

Delivery Schedule is three linear phases resulting in the longest time duration:

Design	Bid	Build

Pros

- Familiar delivery method
- Defined project scope
- Single point of responsibility
- Open, aggressive bid competition

Cons

- No design phase assistance from builder
- Longer schedule duration than other methods
- Price not established until bidding is complete
- Lack of flexibility for change
- Adversarial relationship
- Selection based solely on price

Best Suited to

New projects that are not schedule sensitive or subject to potential change.

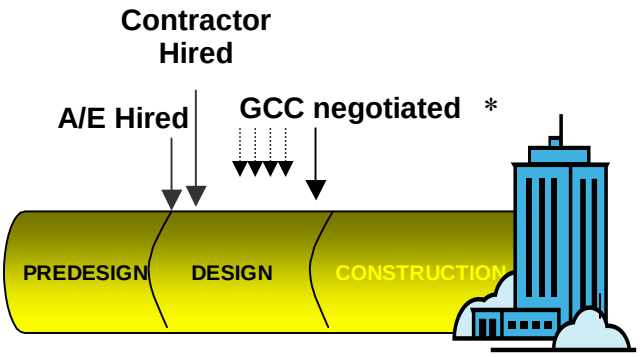
Least Suited to

Complex projects that are sequence or schedule sensitive. Projects subject to potential change.

Exhibit 2 – General Contractor / Construction Manager

Definition

General Contractor/Construction Manager (GC/CM) is a delivery method in which the public owner selects an Architect/Engineer (A/E) to design the project, and separately selects a GC/CM to serve as the general contractor. The GC/CM assumes the risk for construction at a guaranteed price and provides design phase consultation in evaluating costs, schedule, implications of alternative designs and systems and materials during and after the design of the facility. Selection is based on criteria that combine qualifications, experience, and price.



* Opinions vary about when the GCC should be negotiated – early in design or near the end.

Characteristics

The GC/CM is normally selected at the same time or shortly after the A/E and provides assistance in evaluating costs, scheduling and constructability. The owner and GC/CM negotiate a Guaranteed Construction Cost (GCC) to fix the cost and the GC/CM competitively bids subcontracts. The GC/CM contracts directly with trades or subcontractors and has single point of responsibility for delivery of the project, as in DBB. The public owner can speed construction by starting elements of the construction, such as demolition and site preparation, prior to the design being complete.

Delivery Schedule is three-phased, and has the potential to overlap:

Select | **Design** | **Build**

Pros
- Builder selection flexibility
- Design phase assistance
- Single point of responsibility for construction
- Team relationship established early
- Faster delivery schedule potential

Cons
- Owner needs to have experience and be involved
- Difficult for public owner to evaluate validity of the GCC
- Potential adversarial relationship with A/E

Best Suited to

Larger complex projects that are schedule-sensitive, difficult to define, or subject to change.

Least Suited to

Smaller, less complex projects.

Another problem that arises under the traditional DBB system is that any kind of construction work is typically precluded until the design is complete. Therefore, this method requires the longest time period for completing the project.

Finally, with an emphasis on a fixed-price contract and competitive bidding, the DBB system fosters an adversarial relationship among the major participants in the system. Owners find it difficult to build a team that has as its common goal accomplishing the objectives of all parties. Each contractual relationship (owner-architect/engineer [A/E] and owner-contractor) creates a unique set of risks and economic interests.

Moreover, a lack of consultation between the various disciplines, as evidenced in the separate contracts, creates a high potential for distrust and conflict when the design is interpreted into a constructed building. When problems develop on a DBB project, accusatory positions emerge between the participants rather than an effort to pull together and solve the problem. All too often, a project owner will find itself caught in the middle of a dispute over a defect where the design team contends the construction team failed to execute the design properly and the construction team asserts the design was defective. When this occurs, the division between design and construction under the DBB system becomes more a division of responsibility for failure, rather than an efficient method of [6]construction.

THE RISE OF ALTERNATIVE PUBLIC WORKS CONTRACTING—GENERAL CONTRACTOR/CONSTRUCTION MANAGER

This study focuses on the General Contractor/Construction Manager (GC/CM) model as an alternative to DBB. In the design phase, and throughout the entire project, the GC/CM provides advice and construction leadership, contract management, direction, supervision, and coordination. During construction, the GC/CM has control over the means and the methods of construction (the GC/CM holds the subcontractor contracts), the management of the safety of the workers, and the delivery of the completed project.

The selection of the GC/CM is based on experience and qualifications criteria, not just cost. And, although the construction contract for a GC/CM project is negotiated rather than competitively bid, it should be noted that the construction subcontracts on a GC/CM project are all still competitively awarded to the lowest qualified bidders. Thus, the largest single cost component of a construction project continues to meet public contracting goals in the traditional sense.

COMPARING GC/CM WITH DESIGN-BID-BUILD

Determining which procurement method to use depends a great deal on the characteristics of the project being built. **Exhibit 3** on the next page, based on industry research, compares the traditional DBB project delivery method with GC/CM. This chart highlights the most significant areas of difference between these two delivery methods—issues that should be considered by a project owner when deciding which method to use in a particular project.

[6] Flake and Oliff at 313.

Exhibit 3 – Factors To Consider When Deciding A Project's Contracting Method
(based on construction industry research)

	Traditional Design-Bid-Build	Alternative GC/CM
Project complexity	Low-moderate complexity – e.g., new construction, in open space	High complexity – e.g., significant scheduling issues, complex building design, and/or renovation
Schedule	Best suited for projects with reasonable timeframe, schedule not a critical factor	Best suited to project on an aggressive schedule, fast-tracking possible
Compensation	Fixed price, low bid contracting	Negotiated maximum guaranteed contract cost
Risk sharing	Primarily owner	Some risk shared with contractor
Experience and involvement required	Moderate	High degree of experience required of all participants
Team relationship	Adversarial	Collaborative
Project cost	Lower design and management costs, potential for significant change orders	Higher design and management costs, potential for reduced change orders
Project quality	Standard quality expected	High quality expected

Project complexity is one critical factor in deciding which delivery method to select. Low to moderate complexity levels tend to involve new buildings constructed in open spaces (also known as "greenfield" sites). When a project involves working around tight construction space in a building that is still operating, the level of complexity is greater. According to this chart, DBB is best suited for projects that are of low to moderate complexity. For example, the building of a new elementary school may be best served using DBB. In contrast, GC/CM is best used for highly complex projects such as the renovation of a hospital while it is still administering to the needs of their patients.

Project Schedule is also influenced by the procurement method selected. For projects that are less dependent on strict deadlines for completion, DBB is a good choice. If, however, it is critical that the project follow a certain schedule timeline, it is best to use GC/CM. For example, a convention center may lose a great deal of ticket sales profit if it is not opened on time.

As mentioned earlier, DBB and GC/CM differ in the setting of **compensation**. Under DBB, the compensation amount is set by the lowest bidder after the design documents and specifications have been completed. The Guaranteed Contract Cost (GCC) in a GC/CM project is negotiated between the owner and the contractor, rather than derived through a hard bid as in a DBB project. Once the GCC has been negotiated and the contract signed, the contractor is responsible for delivering the project within that amount. (Typically, if the bids for construction

subcontracts are lower than the amount set in the GCC, this is considered a "buyout savings" and reverts to the project owner.)

Risk sharing may only be slightly different between DBB and GC/CM. All construction projects share common risks, such as cost management and control; design or construction errors; scheduling and coordination; and financial stability of contractors. Restricting liability or allocating risks to members of the project team are important to any construction project. In all projects, the owner is initially responsible for all risk associated with a project. The owner has the ability to allocate or shift some of this risk to other members of the project team through their contractual relationship with that entity. In DBB, the general contractor typically does not bear any of the risk related to errors and omissions in design documents. However, in GC/CM there may be some *reduction* of risk to the owner because of the early involvement of the contractor in the design process.

The **experience** level and **involvement** of the owner also distinguish these two procurement methods. DBB is the most widely used method in the construction market. Owners tend to need a moderate level of experience in capital construction to execute a DBB project because it is a process that is familiar to the owner, general contractor, subcontractors, and architect. In contrast, GC/CM, as a relatively new contracting method, is not as familiar to the participants. In addition, a GC/CM project involves negotiating a GCC; working through value engineering and constructability reviews; and constantly overseeing on-site construction work. To meet these project demands requires experienced project management and involvement on the part of the owner.

The ability to develop a **team relationship** on a project tends to be vastly different from DBB and GC/CM. In a DBB project, the contractor is selected based solely on the fact that he has submitted the lowest bid. This structure encourages the contractor to base his bid on the barest budget possible. Any small variation from the project plan can tip the project into the red. As a result, from the beginning of the contract, the contractor and owner are put in an adversarial relationship. The GC/CM process in contrast to DBB is thought to foster a collaborative relationship between the owner, the architect, and the contractor. In GC/CM, the general contractor is working with the owner and architect at the early design phase and has time to more accurately cost out the project. In addition, the contractor is typically given a contingency to manage risks associated with the project.

DBB and GC/CM tend to differ in which **project costs** are higher. As mentioned earlier, the general contractor in a DBB project is not involved in a project until after the designs are complete. This keeps the design costs lower, but increases the potential for change orders later in the process. On the other hand, in a GC/CM project, the owner pays the contractor to provide preconstruction services during the design process. This early involvement of the contractor is expected to lessen the likelihood of change orders later in the project.

Finally, GC/CM projects are expected to result in a **higher quality design and facility**. Periodic plan reviews by the GC/CM during the design phase 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 higher quality work.[7]

[7] *Oregon Public Contracting Coalition Guide to CM/GC Contracting*, pp. 9 and 11, Oregon Public Contracting Coalition, February 2002.

DEVELOPMENT OF GC/CM IN WASHINGTON

In Washington, the GC/CM delivery method can be used by authorized public entities on any project over $10 million,[8] per RCW 39.10.061, if:

- The project has complex scheduling requirements;
- The facility has to remain open while the construction is under way, or
- The contractor's involvement in the design of the project is critical to the project's success.

In addition, RCW 39.10.030 requires the public body to determine whether using GC/CM will provide a substantial financial benefit, or that DBB will not meet the desired quality standards or delivery schedule.

Since 1994, the agencies authorized to use these alternative procedures under RCW 39.10 has been expanded and at this time includes:

- Department of General Administration;
- University of Washington;
- Washington State University;
- Cities with over 70,000 people and public authorities chartered by those cities;
- Counties with over 450,000 people;
- Public utility districts with revenues from energy sales over $23 million per year;
- Port districts with total revenues over $15 million per year;
- Public hospital districts where projects are approved by the Public Hospital District Review Board;
- School districts whose projects are approved by the School District Project Review Board; [9]
- Washington State Ferry (terminal projects only); and
- Baseball Stadium Authorities.

This list was expanded once again this past legislative session, when ESHB 1830 extended authorization to cities meeting certain revenue and population criteria.[10] This authorization is only valid for contracts entered into prior to March 2006.

[8] There are a few limited exceptions to the $10 million threshold. For example, two school district projects and up to ten public hospital district projects between $5 million and $10 million may be authorized.

[9] School districts are limited to 18 demonstration projects.

[10] Engrossed Substitute House Bill 1830, Section 3, authorizes one demonstration project in any city that is a member of the Puget Sound Regional Council with populations between 25,000 and 45,000 and reporting revenues exceeding $60 million.

Public policy related to alternative public works contracting has been evolving in areas beyond simply expanding the list of authorized entities. Substantive policy modifications have been made in a variety of areas. In 1997, for example, the Legislature:

- Authorized and established criteria for prequalification of subcontractors; and
- Modified the GC/CM selection criteria allowing owners to evaluate a number of qualification-based factors when selecting a GC/CM firm.

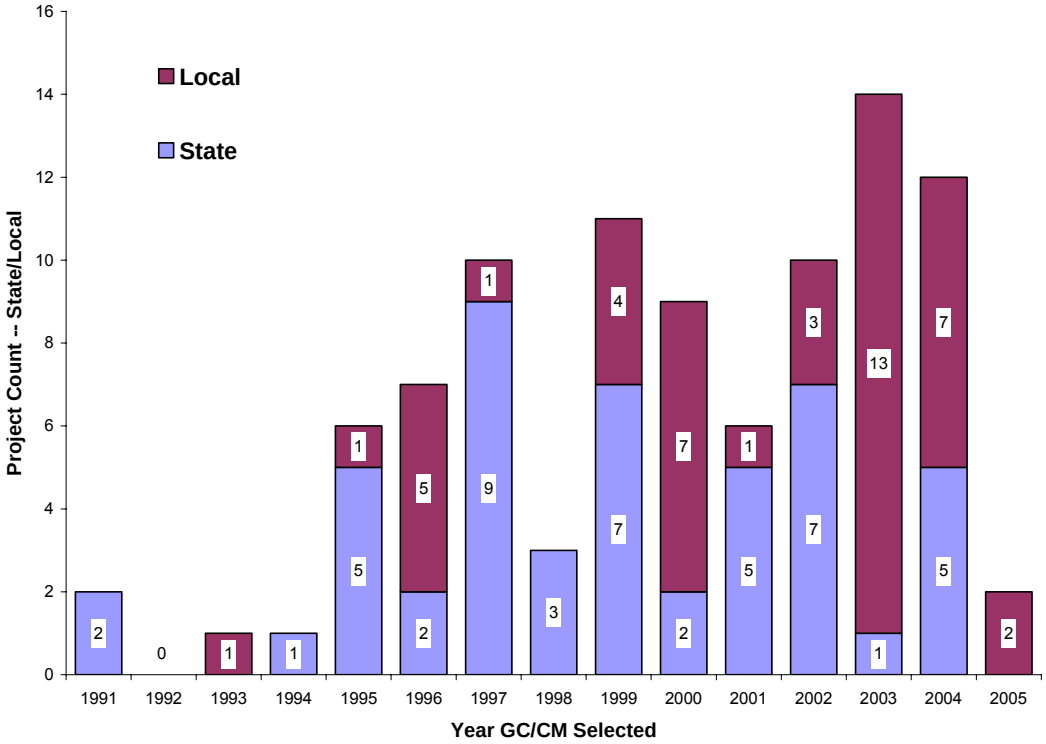
Another key area of policy development deals with "self-performance"—the GC/CM's ability to bid on, and complete, one or more of the work packages on their project. Initially, GC/CM firms were prohibited from bidding on any of the actual construction work on a project, reflecting a fear that these firms would have an unfair competitive advantage over the other subcontractors. Over time, however, some project participants have recognized that having the GC/CM involved in a subcontractor role makes the GC/CM firm a more effective superintendent since the staff is more aware of, and attentive to, what is happening on the job site. Today, GC/CM firms are allowed by statute to self-perform up to 30 percent of the construction work on a project and some stakeholders, including subcontractors, advocate for allowing GC/CM firms to self-perform an even larger percentage of the construction work.

CHAPTER THREE – AN OVERVIEW OF GC/CM IN WASHINGTON

This chapter provides a brief description of who is using GC/CM, where in the state GC/CM projects are concentrated, and what types of projects are being constructed.

Exhibit 4 below illustrates the increase in the number of GC/CM projects from 1991 to today. As the exhibit shows, use of this contracting method has increased significantly, particularly after the Legislature expanded authority in 1994 to include certain cities, counties, the University

Exhibit 4 – Use of GC/CM Has Increased Since 1991



Source: "Survey of General Contractor/Construction Management Projects in Washington State (2005) Septelka and Goldblatt.
Note: No data available for 14 projects. 2005 data are reported for the first quarter.

of Washington, Washington State University, and ports. Today, the total value of all GC/CM projects is estimated at approximately $6.6 billion since 1991.[11] As shown in **Exhibit 5** on the following page, the total value of the 53 state projects were (or are being) constructed using GC/CM represents approximately $2.7 billion; and, at the local level, GC/CM projects represent over an estimated $3.8 billion in construction spending. At the project level, nearly 40 percent of these projects are under $30 million, and well over half (61 percent) are under $50 million, based on those projects responding to the survey conducted as part of this study.

[11] These figures are estimates based on the data provided in the owners' surveys. Several project owners did not respond to the survey. In these cases, we used an estimated project cost based on an average of all GC/CM projects.

Exhibit 5 – Most GC/CM Projects Cost Less Than $50 Million

Size of Completed Project	Percent		
Up to $9 m	**3%**	37%	61%
$10m to $19m	**18%**		
$20m to $29m	**16%**		
$30m to $39m	**12%**		
$40m to $49m	**12%**		
$50m to $59m	4%		
$60m to $69m	6%		
$70m to $79m	8%		
$80m to $89m	7%		
$90m to $99m	1%		
$100m to $149m	6%		
$150m to $199m	4%		
Over $200 m	3%		

WHO IS USING GC/CM?

The use of GC/CM in Washington was first authorized to provide the Department of Corrections with a mechanism to fast-track prison construction. The types of public entities authorized to use GC/CM has increased steadily since that time, and today 15 types of public entities are authorized users.[12] In addition, several public entities are expressly authorized under separate statutes to use alternative public works contracting methods. Appendix 3 summarizes legislation authorizing state and local entities to use GC/CM under specified circumstances.

A Note on Methodology

Several of JLARC's conclusions are based on the use of case studies. While designed to reflect the "state" of alternative public works contracting procedures, case studies are appropriately used to highlight and illuminate, not to provide statistically sound measurements. Since we used a limited number of case studies, we did not publish project- or agency-specific ratings in this review. Of equal importance, official performance benchmarks do not exist for Washington agencies as evidenced in JLARC's Performance Audit of Capital Budget Processes Report. This points to a current weakness in the oversight of the capital process.

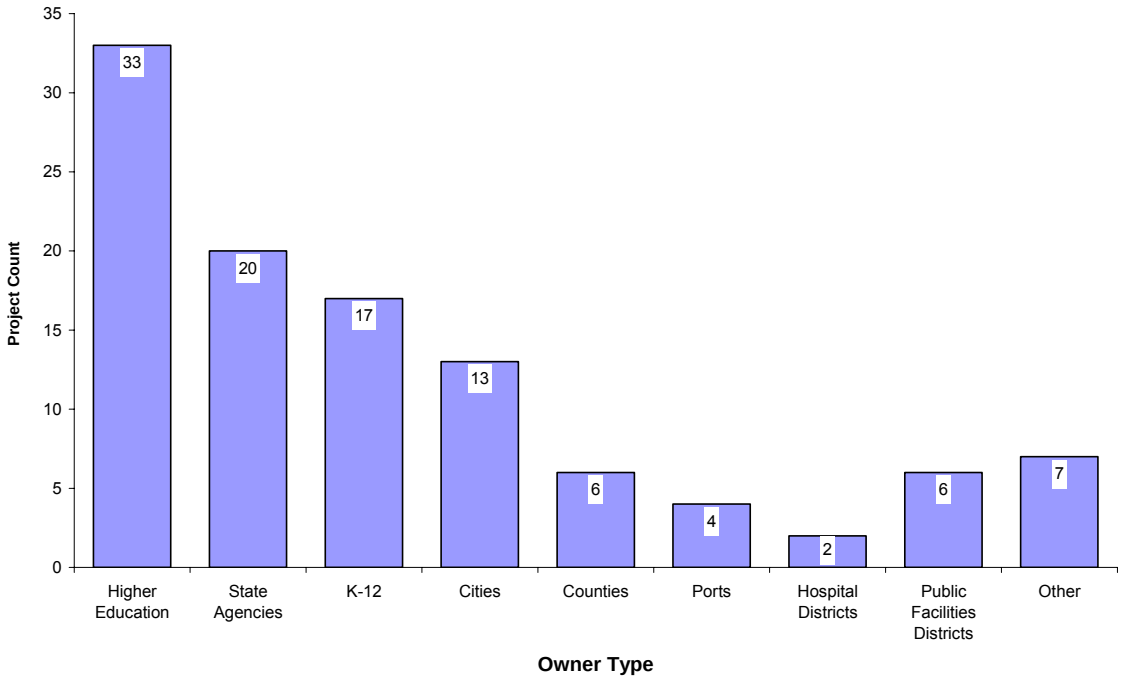
[12] In addition to the public entities authorized under RCW, other entities are eligible to use or are using GC/CM under authority provided in other statute, including public facilities districts; city monorail systems; public transportation benefit areas offering passenger-only ferry service; and public housing authorities.

State agencies are the most frequent users of GC/CM

Almost half (53) of the GC/CM projects identified were (or are being) conducted by state entities, including the Department of General Administration (GA), the University of Washington (UW), Washington State University (WSU), and the Washington State Ferries, as shown in **Exhibit 6**. The GA acts as project manager for most state agencies undertaking major capital projects. Of the 19 GC/CM projects undertaken by GA, only one was a project in which GA was itself the public owner. The remaining projects were/are managed by GA on behalf of another state entity—over half (ten) are prison construction projects for the Department of Corrections; another six are community college construction projects; and the remaining two projects were/are managed on behalf of the Department of Veterans Affairs and the Department of Social and Health Services, respectively.

A complete list of projects is included in Appendix 4.

Exhibit 6 – State Entities Are the Most Frequent Users of GC/CM



Use of GC/CM at the local level is less concentrated

At the local level, cities and school districts are the most active users of GC/CM. The city of Seattle is the single most active local user of GC/CM, with 11 projects completed or underway. Seattle's projects are also quite diverse, ranging from a concert hall to a police station to a fish passage. The Port of Seattle and King County are also repeat users of the GC/CM project delivery method, with four and three projects respectively.

School districts and public hospital districts are authorized to use GC/CM; however, their authority is more limited than other public entities. Use of GC/CM by both of these groups is governed by separate project review boards. Both school districts and public hospital districts must obtain approval from the respective project review boards before proceeding with a

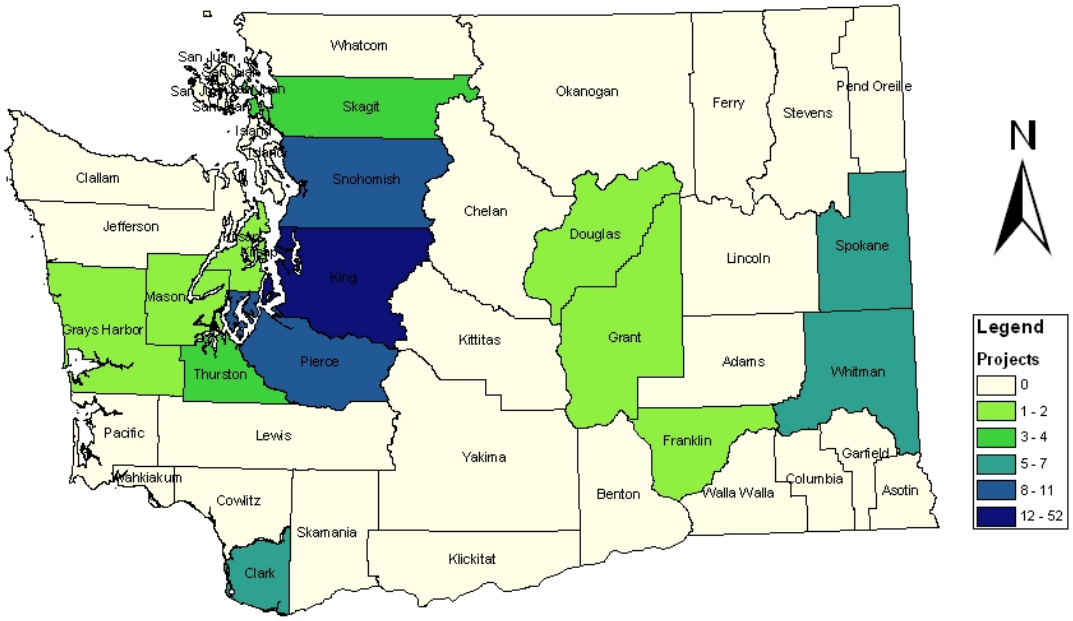
GC/CM project. Public hospital districts were granted authority to use GC/CM in 2003, and since that time three projects have received approval to proceed. One of these projects, however, failed to pass their bond and the project is currently on hold.

School districts are limited to 18 demonstration projects. All 18 school district demonstration projects have been authorized. However, the Olympia School District declined their authority on the Washington Middle School project, deciding instead to use DBB on the project. (In addition, the Olympia School District was unable to negotiate a GCC with their GC/CM firm on the Capital High School project due to project cost escalation during the design phase. The school district chose to abandon the GC/CM approach and instead competitively bid the project.)

Most GC/CM projects are located in major urban areas

Exhibit 7 shows that the majority of the 108 projects are located in major urban areas and heavily focused in the Puget Sound region. This is not surprising since initially the Legislature limited GC/CM local government authority to only the largest cities and counties. Projects outside of those areas typically are prisons, K-12 facilities, or convention centers. Washington State University accounts for the majority of GC/CM projects in Eastern Washington.

Exhibit 7 – Most GC/CM Projects Are Located In the Puget Sound Area



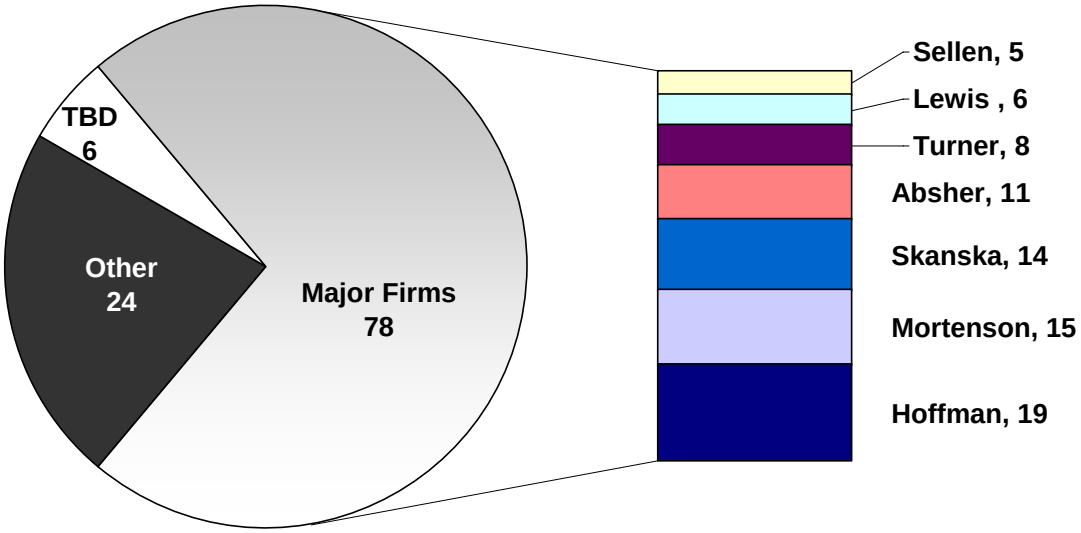
Source: JLARC derived from Septelka and Goldblatt 2005 survey.

The Number Of Construction Firms Successfully Competing For GC/CM Projects In Washington Is Limited

As demonstrated in **Exhibit 8** on the following page, seven firms have received the majority of GC/CM work in Washington. These firms have been selected as GC/CM on 78 of the 108 projects, representing about 75 percent of the total dollar volume. There is a concern, particularly among contractors, that the use of GC/CM is limiting market competition, and is therefore antithetical to the primary goals of public contracting—that is, avoiding fraud,

collusion, and favoritism and ensuring the best work at the most reasonable cost. This issue is discussed in more detail on page 26 under "GC/CM Experience."

Exhibit 8 – Majority of GC/CM Projects Are Awarded to Seven Firms



Source: JLARC derived from Septelka and Goldblatt 2005 Survey.

WHAT TYPES OF PROJECTS HAVE BEEN CONSTRUCTED USING GC/CM?

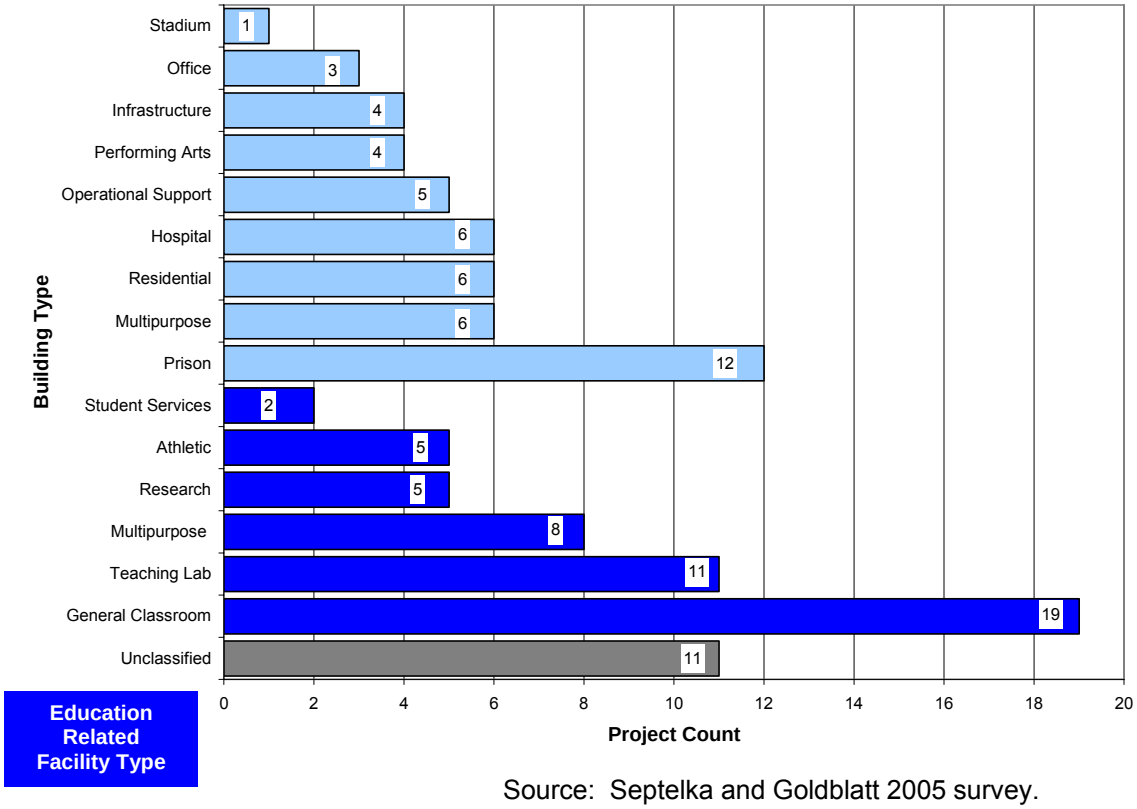
Exhibit 9 on the following page illustrates the variety of facility types being constructed using GC/CM. This delivery method is most frequently used in *building* construction; nearly 50 percent of all projects are education-related, including classrooms, athletic facilities, teaching labs, and research facilities. This delivery method has also been used frequently for building or renovating prison facilities (12 projects) and six hospital projects have been constructed using GC/CM, including two public hospital district projects and four projects at the University of Washington.

The use of GC/CM is not limited to buildings, however. GC/CM has also been used in ***infrastructure*** projects—King County and the city of Everett are using this delivery method in the construction/expansion of wastewater treatment facilities; for example, the city of Seattle used GC/CM in the construction of the Landsburg fish passage; and the Port of Seattle is using GC/CM to construct a baggage handling facility.

Most of the projects appear to meet one or more of the statutory criteria for GC/CM projects (valued over ten million dollars).[13] For example, about 25 percent of the projects included substantial (40 percent of the project or greater) renovation. In several cases, the affected facility remained open during the construction. In other cases, constructing in a highly urbanized location created significant staging issues. These factors (and myriad others not listed here) are likely to cause significant scheduling and complex design challenges sufficient to justify the use of GC/CM per the statutory criteria.

[13] GC/CM statutory criteria: (a) Implementation of the project involves complex scheduling requirements; (b) The project involves construction at an existing facility which must continue to operate during construction; or (c) The involvement of the GC/CM during the design stage is critical to the success of the project.) RCW 39.10.061.

Exhibit 9 – Number of Projects by Building Type



Source: Septelka and Goldblatt 2005 survey.

CHAPTER FOUR – EVALUATION OF GC/CM PERFORMANCE

Exhibit 10 shows how Washington State's experience with GC/CM compares to expected benefits of the process as noted in national literature. Most public owners that have used GC/CM generally expressed favorable opinions of the process. Almost all reported that compared to the traditional DBB process, the team relationships resulted in a more collaborative and positive experience; their project(s) generally experienced fewer disputes or claims; and they received a better product at the end of construction.

Exhibit 10 – GC/CM Characteristics Compared to Washington State's Experience

	GC/CM	WA	COMMENTS
Project Complexity	High (significant scheduling issues, complex building design and/or renovation)	Partially Present	Generally used on complex projects. Some evidence that agencies may use to avoid problems associated with DBB.
Schedule	Aggressive, fast-tracking	Present	GC/CM projects appear to adhere closer to projected schedule than DBB projects.
Compensation	Negotiated guaranteed maximum price	Present	Agencies appear to be successfully negotiating their guaranteed contract cost and staying within an acceptable budget range.
Risk	Shared risk	Inconclusive	Some owners may believe more risk is being shifted to GC/CM than is occurring.
Experience and Involvement Required	High degree of experience and involvement required for all project participants	Partially Present	Most agencies are investing additional resources in managing GC/CM, but we found instances where agencies lacked experience or involvement on the owner's part.
Team Relationship	Collaborative	Present	GC/CM does in most cases provide a more collaborative approach.
Project Cost	High design and management costs, but potential for reduced change orders and litigation	Inconclusive	GC/CM increases preconstruction and, in some cases, management costs. Impact on change orders, claims and litigation is inconclusive.
Project Quality	The quality of the design and facility is better	Inconclusive	It is unclear whether GC/CM contracting methods produce better quality design or facilities.

Interestingly, owners felt GC/CM is a valuable tool to have available, even when that tool did not perform as well as expected on a particular project. (The Olympia School District, for example, expressed an interest in using GC/CM again in the future, even though they were unable to negotiate a GCC with their contractor on the Capital High School project and ultimately ended up putting the project out to bid as a traditional lump sum bid.)

DOES GC/CM IN WASHINGTON MATCH INDUSTRY EXPECTATIONS?

Below we have summarized Washington's GC/CM experience as it compares to expectations for GC/CM delivery methods based on industry research.

Project Complexity: Partially Present	
GC/CM	**Washington's Experience**
High – significant scheduling issues, complex building design and/or renovation	Generally used on complex projects. Some evidence that agencies may use on less complex projects primarily to avoid problems associated with DBB.

In general, we found that agencies are using the GC/CM method on larger and more complex projects as a means of minimizing costs while completing projects on scope and on schedule. Project complexity is one critical factor in deciding which delivery method to select. According to national literature and many of the project participants interviewed, the GC/CM method is best applied in situations that have a high level of complexity—that is, projects that require design and scheduling processes that are flexible and can be changed to some extent during construction to overcome unusually difficult design and scheduling challenges. Such difficult challenges include: projects with mobilization and access challenges, renovations of old institutional buildings with unknown latent conditions, and renovation or new construction either in or adjacent to continuously occupied buildings.

The case study projects that were eligible to use the GC/CM method appear to have benefited from its use by managing complexity.

- The Washington Corrections Center for Women expansion involved working around functioning high security facilities in a tight space. Working around existing buildings in use and tight sites, especially those with the complex security needs of an operational prison, requires a higher level of coordination that is generally aided by the use of the GC/CM method.
- The King County Courthouse retrofit and renovation work was originally planned as a DBB project. However, based on higher-than-expected bids and the assessment of an external consultant, the project was then procured as a GC/CM project. In retrospect, this was likely a good decision because the project site was tight (highly urbanized with limited space for staging, etc.), and the building remained open and operational during the retrofit and renovation work. There were savings of almost $10 million due to value engineering and buyout savings on the project, and the project was finished in 22 months instead of the initially scheduled 27 months.

We did find, however, some evidence that agencies may be using GC/CM on noncomplex projects over $10 million:

- The Washington State University Engineering/Life Sciences Building on the Vancouver campus could have been equally well-managed as a DBB project. The project was new construction on a greenfield site, and the design, while specialized, did not present to our consultants as any more complex than a recently constructed DBB research facility on the Pullman campus. The schedule, complexity, and type of work for this project did not, in itself, justify the use of GC/CM, which may have imposed an additional cost when compared with a low bid approach. The more appropriate delivery method for this project was DBB.
- Seattle-Tacoma International Airport parking garage was procured as a GC/CM project so that the staff could gain experience with the GC/CM method, and the staff acknowledged that using design-build may have been a cheaper alternative.

Through our interviews with agencies, we also found that some agencies may be using GC/CM in order to get around construction issues associated with DBB by using the $10 million dollar threshold as proxy for project complexity. In DBB, agencies are required to take the lowest responsible bidder, but that firm may not be the best qualified to do the work. In cases where owners had concerns about the qualifications of low cost vendors, the resulting higher potential for claims and litigation made the DBB process unattractive to owners. For these reasons, owners may in some cases be defaulting to GC/CM when the project is over $10 million even though the project may be better suited to DBB. The Capital Project Review Board should investigate alternatives to the low bid approach on DBB projects, such as selecting the middle rather than lowest bid or using a two-tiered selection process by pre-qualifying firms who then compete an a low bid basis. There is a high potential that some agencies will continue to use the $10 million threshold as a proxy for complexity without independent monitoring at the local and state level.

See Recommendation 1 on page 35.

Schedule: Present	
GC/CM	**Washington's Experience**
Aggressive, fast-tracking possible	GC/CM projects appear to adhere closer to projected schedule than DBB projects.

Both the survey and the case studies support the conclusion that using the GC/CM contracting method can result in less schedule growth than DBB. Using GC/CM does not eliminate schedule growth, however. Survey results indicated that, on average, GC/CM projects came in slightly over schedule. For agencies dependent on project revenue to pay off bonds, a late start to the opening of a facility can have significant fiscal impacts. For example, the Safeco Field project began site construction before the final designs were complete in order to meet the opening day deadline. If the construction delayed the opening of Safeco, it could have meant significant loss in revenue (e.g., from ticket sales).

Compensation: Present	
GC/CM	**Washington's Experience**
Negotiated guaranteed construction cost (GCC)	Agencies appear to be successfully negotiating their guaranteed contract cost and staying within an acceptable budget range.

The guaranteed contract cost (GCC) in a GC/CM project is negotiated between the owner and the contractor, rather than derived through a hard bid as in a DBB project. Once the GCC has been negotiated and the contract signed, the contractor is responsible for delivering the project within that amount. Unless cost increases are due to owner-related items (scope increase, unforeseen site conditions, design errors and omissions), any cost above and beyond the GCC will be borne by the GC/CM.

The Guaranteed Contract Cost (GCC) is comprised of the following items:

- **Fee** (percentage of the Maximum allowable construction cost [MACC] – includes overhead and profit).
- **Specified general conditions** (fixed amount).
- **Maximum allowable construction cost** (the summation of the cost estimates for the site work, related project costs, and facility construction).
- **Sales tax** Typically, the firm's fee, specified general conditions, and an estimated MACC are known to the owner during selection as they are included in a firm's proposal. At some point during design, the owner and the GC/CM firm negotiate the actual MACC. The GCC is considered "set" when agreement is reached on the MACC.

  A **construction (risk) contingency** amount is usually also part of this negotiated amount. This contingency is usually controlled by the contractor, but at the end of the project, any unused contingency is typically returned to the owner.

  The construction contingency fund is separate from the **owner's contingency** fund. The owner's contingency is an amount set aside by the owner to pay for unanticipated costs associated with items such as owner scope changes, design errors, and unforeseen site conditions. The owner's contingency is ***not included*** in the GCC.

We found evidence in both the case studies and the project survey data that owners and GC/CM firms were able to successfully negotiate a GCC and stay within a reasonably acceptable range of that set amount.[14] Although the case study results showed that both DBB and GC/CM projects

[14] Some owners prefer to set the GCC early in the design phase. These owners believe that because the GC/CM is committed to a specific price for delivery, the GC/CM has a greater incentive to actively participate in keeping the project costs within budget through value engineering, for example. Other owners prefer to wait until construction documents are almost complete. These owners believe that if the GCC is set too early, it will include premiums for the items that have not yet been defined in the design.

were generally over their initial budget estimate, within the case study group cost growth on GC/CM projects was lower than DBB. The owner survey results, however, indicate GC/CM projects generally came in on budget. (The survey results however may not provide an accurate portrayal of what is actually occurring since the surveys are self-reported and therefore have inherent validity issues.)

Division of Project Risk Between Owner and GCCM Firm

As a general rule, specific liability for an identified risk should be assigned to the member of the project team with the greatest ability to prevent and control that risk. The city of Seattle, for example, uses a typical division of project risks:

Owner:

- Owner-directed changes in scope;
- Design errors and omissions, including incomplete project drawings;
- Coordination errors in the documents that could not reasonably have been anticipated by the GC/CM;
- Unforeseen site conditions; and
- Regulatory requirements that differ from construction; for example, a regulatory agency approves something on the plans that the inspector later rejects in the field.

GC/CM firm:

- Errors and omissions in buyout of the subcontract packages;
- Coordination errors a professional should have detected in the design drawings; and
- Interference by the general contractor or a subcontractor with the ability of others to proceed with work for which they are responsible.

We did find instances where owners were unable to agree upon a GCC with the GC/CM firm, although there were only a few. The most recent example is the Capital High School project. The GC/CM's GCC was several million dollars above what the Olympia School District had originally budgeted for the project. After several attempts to lower the cost through value engineering and scope reduction, the school district paid the GC/CM for preconstruction services and terminated the relationship. The school district then bid the project using the traditional DBB method.

Risk: Inconclusive	
GC/CM	**Washington's Experience**
Some risk shifted to contractor	Some owners may believe more risk is being shifted to GC/CM than is occurring.

The concept of shared risk in GC/CM projects is not clearly understood by all users, particularly those less experienced with GC/CM. Many project owners expressed the belief that the

traditional allocation of project risk is shifted in a GC/CM project simply because the GC/CM firm is involved in the design phase of a GC/CM project. As a result, they would expect that to some extent the cost of design errors and omissions will be paid by the GC/CM. This perception is not entirely accurate. Although this risk-sharing can be accomplished through careful negotiation and contracting, it does not occur automatically.

An Example of Risk Allocation – Design Errors

In a typical project, the project owner contracts with an architect to develop the plans and specifications. When the architect provides those plans to the owner, he usually does not warrant that the work is error-free, but rather that they were developed according to the industry standard of care. If the plans are ultimately found to be inaccurate, the architect will be responsible to the owner for errors or omissions only to the extent that the design professional failed to exercise the care and skill of a reasonably prudent design professional.

When the owner, in turn, furnishes those same plans and specifications to the contractor, the owner generally bears responsibility for any deficiencies in the documents. Since the contractor is legally bound to build the facility according to the plans and specifications provided by the owner, the contractor will not be held responsible for the consequences of any defects in those documents absent a specific contractual agreement otherwise.

All construction projects share common risks, such as cost management and control; design or construction errors; scheduling and coordination; and financial stability of contractors. Restricting liability or allocating risks to members of the project team are important aspects of any construction project. In all projects, the owner is initially responsible for all risk associated with a project. The owner has the ability to allocate or shift some of this risk to other members of the project team through their contractual relationship with that entity.

Having the GC/CM involved in the design phase may mean that design flaws will be caught before moving into construction, and that the GC/CM firm may have a better understanding of the project design and therefore may be able to better interpret the documents. Since the GC/CM does not hold the contract with the design team, the GC/CM's role during the design phase is that of a consultant, and the ultimate control over the quality of the design documents rest with the owner. It does not appear that the liability or legal allocation of risk for any errors or omissions that remain has been fundamentally altered.

If, after a thorough examination of a project's risks, an owner determines that it would be prudent to alter the allocation of risk, this could be accomplished through contractual negotiation and agreement. To be effective, the transfer of risk must be explicitly outlined in the contract language. The reader of the contract should not be left to infer which risks are the responsibility of the owner versus those of the GC/CM. If the design risk is not clearly shifted in the contract between the owner and the GC/CM the owner may not be positioned to take legal recourse. So, for example, if an owner believes the GC/CM should assume risk for the portion of the design documents they have expertise to review and influence through the design period, this needs to be clearly spelled out in the contract.

A shift in risk is typically associated with a shift in project contingency funds as well. The contingency is a fund set aside to mitigate project related risks. On a typical GC/CM project, the

owner would hold a contingency fund (generally about 5 percent of the total project cost) to cover additional costs associated with owner-related risks. The GC/CM would have access to, and some control over, a construction contingency fund, generally 2-3 percent of the total project costs. Although the GC/CM typically controls the construction contingency, at the end of the project unspent funds revert back to the owner.

Contractually shifting additional risk to the contractor may have unintended consequences if the contractor is ill-suited to manage these risks. There is concern by some subcontractors and owners that GC/CM firms may be requiring subcontractors to absorb the cost of certain items (e.g., subcontractor coordination) instead of paying for these unanticipated costs out of the contingency fund. Subcontractors in our focus group were particularly concerned where financial incentives were tied to the GC/CM's use (or rather non-use) of the construction contingency. The subcontractors are worried that these incentives may create a potential for the GC/CM to have a conflict of interest between meeting the needs of the subcontractor and limiting the use of the contingency. In these cases, this may be forcing subcontractors to absorb costs that should be another party's responsibility. As a result of these concerns, some the subcontractors in our focus group have started to add a financial premium to their bids for GC/CM projects to cover the higher risk.

Experience and Involvement: Partially Present	
GC/CM	**Washington's Experience**
High degree of experience required of all participants	Most agencies are investing additional resources in managing GC/CM, but we found instances where agencies lacked experience or involvement on the owner's part.

Owner Experience

According to national literature and interviews with industry experts, project management on the part of the owner must be as great or more intensive with the GC/CM methods as it is with the DBB method. A GC/CM project involves negotiating a GCC; working through value engineering and constructability reviews; and constantly overseeing on-site construction work. Meeting these project demands requires experienced project management and involvement on the part of the owner.

We found through our case study review that most projects are being carried out with experienced agency staff, or with contracted third parties to provide project management and advice. The case studies further found that the owner agency's close attention to project and construction management in general, and their day-to-day involvement on the project in particular, was the most critical success factor; no alternative contracting model can substitute for the owner agency's close attention to the project.

However, both the case studies and our field interviews found that some state and local project management staff believed that they can compensate for their own limited project management resources by using the GC/CM method to construct major projects. This is largely untrue, as mentioned in the national literature studies and by many of the project participants. While the GC/CM method offers more positive relationships among the parties to a construction project, it

does not provide any significant opportunities for owners to abrogate their project management responsibilities.

The lack of experience or project involvement by the owner may have adverse affects on project costs. For example, subcontractors in our focus group were concerned that the GC/CM firms were pushing the cost of work typically provided by the general contractor down to the subcontractors, such as coordination. This work is outlined in the general conditions in the GC/CM contract with the owner. However, if the owner does not check the scope of work in the bid contracts, the GC/CM may push this work onto the subcontractors. If this happens, the owner is essentially billed twice for the same scope of work—first by the GC/CM as part of their fee and second by the subcontractor as part of their bid.

GC/CM Experience

GC/CM selection criteria often (if not always) include some requirement for previous experience with GC/CM or similar type of public or private negotiated work. The GC/CM delivery method is quite complex compared to the traditional DBB method and requires that participants (owner, A/E, and contractor) approach the project with a different mindset as well as additional skills, particularly in the area of preconstruction services. The more experienced the project participants, the better they are able to capitalize on the unique aspects of a GC/CM project such as the emphasis on a team approach, and the structural items such as cost estimating and participation in the design process. The result, however, of including public or private GC/CM-type experience as a selection criterion is that firms without prior experience will likely not be successful in the selection process.

Some contractors, however, have expressed a concern that the use of GC/CM is limiting market competition, and is therefore antithetical to the primary goals of public contracting—that is, avoiding fraud, collusion, and favoritism and ensuring the best work at the most reasonable cost. As noted in the previous chapter, there is some limited evidence that this may be occurring in Washington. Most GC/CM projects have, however, had a minimum of three proposers, meeting the industry standard for sufficient competition, and most have had a much larger bidder field.

There may be alternative explanations for this concentration of work. For example, the number of firms capable of competing successfully for large capital projects is limited, regardless of whether the project delivery method is GC/CM or DBB. (It is interesting to note, according to the results of our owners' survey, of the 51 firms that have competed unsuccessfully on GC/CM projects, the vast majority of these firms (62 percent, based on returned surveys) have submitted proposals on one or two projects.

Team Relationship: Present	
GC/CM	**Washington's Experience**
Collaborative relationship	GC/CM does in most cases provide a more collaborative approach.

The GC/CM process fosters a collaborative relationship between the owner, the architect, and the contractor. In a DBB project, the contractor is selected based solely on the fact that he has submitted the lowest bid. This structure encourages the contractor to base his bid on the barest

budget possible. Any small variation from the project plan can tip the project into the red. As a result, from the beginning of the contract, the contractor and owner are put in an adversarial relationship. In GC/CM, contractors are selected by the owner based on qualifications rather than simply low bid. This "reputation" dynamic has the potential to increase pressure on the GC/CM to maintain a good working relationship with the owner in order to get future work. Also, the general contractor is working with the owner and architect at the early design phase and has time to more accurately cost out the project. In addition, the contractor is typically given a contingency to manage risks associated with the project.[15]

Throughout our interviews, owners overwhelmingly agreed that GC/CM did foster a more collaborative working relationship between them and the contractor. Owners stated that contractors appear to be more invested in the project because the contractor is chosen by the owner and they are involved in the process at an early stage. In some cases the owners believed that it was this collaborative relationship that helped keep a project progressing through obstacles and challenges that may arise. For example, project managers for the Spokane Convention Center stated that it was the GC/CM process that helped keep the project progressing through a period of hyperinflation. They cited the GC/CM firm's willingness to work with the architect to aggressively value engineer the design in order to keep the project on track and minimize loss of scope. In a DBB project, they would have had to stop and redesign the project—losing valuable time, money, and scope.

Subcontractors reported that the collaborative relationship developed between the GC/CM firm and owner has had less positive effects on the relationship between the GC/CM and the subcontractors. Subcontractors have been working to identify weaknesses they perceive in current policy that, if corrected, could strengthen alternative public works contracting policy in general, and impacts on subcontractors in particular. The Mechanical Contractors Association of Western Washington is preparing a report summarizing subcontractor issues related to GC/CM. This report will serve as a useful starting point for further subcontractor-related policy development.

Dispute Resolution is Key Component of the Team Relationship

Critical to the team relationship on GC/CM projects is the ability to resolve disputes quickly and fairly. Just over one-half of the case studies reviewed have a formal dispute resolution mechanism, which is identified as a "best practice" by industry research.

Having a dispute resolution mechanism such as an appointed project neutral or a dispute review board in place prior to any claims being made is beneficial on any project; it provides a second and intermediate step to settle disputes after negotiation fails and before litigation is launched. Agencies with more experience seem to realize that having a dispute resolution mechanism in place from the beginning may help avoid problems of large magnitude at later stages.

[15] Though the owner has ultimate authority of the contingency, we found in our interviews that owners tend to give contractors discretion over part of the contingency.

Project Cost: Inconclusive	
GC/CM	**Washington's Experience**
Higher design and management costs, potential for reduced change orders	GC/CM increases preconstruction and, in some cases, management costs. Impact on change orders, claims, and litigation is inconclusive.

The perception that GC/CM may reduce overall project costs is difficult to assess. No two projects are similar enough to conduct a "controlled" comparison. In most GC/CM projects, the GC/CM is brought on early in the process, sometimes at the same time as the A/E, and most often by the end of schematic design. This allows the GC/CM to participate in the design phase, providing value engineering, constructability reviews, and generally be a member of the design team. In the design phase, GC/CM will have higher costs than DBB, because the GC/CM is receiving a fee for preconstruction services. While the contractor is not involved in the design phase on a DBB project, the owner may still contract out for many of the same services such as value engineering and constructability reviews so it is important to make sure all equivalent project costs are included in any comparative cost analysis.

An expectation of this early involvement is that more design, construction, and coordination problems will be caught and resolved during the design phase, rather than during construction when it is much more expensive to fix the problem. Owners believe this dynamic should reduce the need for change orders during the project and limit claims and litigation at the end of the project.

During construction, some owners believe that GC/CM also may have a higher contracted cost because under a GC/CM approach, more resources are provided for supervision. While some may believe that GC/CM projects may be over-administered, others believe that DBB projects may be under-administered and could benefit from additional supervisory resources.

It is useful to note that during our interviews, project owners often said the benefit of GC/CM is less about reducing project costs than about having more certainty in project costs earlier in the project. The contractor in both GC/CM and DBB projects are required to construct the project for a certain specified dollar amount (although the way that that price is arrived at differs), unless the contract is modified through a change order. In a DBB project, because the contractor was selected based on his low bid, he typically has little room to absorb any unanticipated costs, and therefore has strong incentive to classify any changes as owner change or a design error resolved through change orders. Owners report that it is virtually impossible to anticipate in advance how much impact change orders will ultimately have on a particular project's final budget.

Reduced claims and litigation*:* One of the frequently cited reasons for adopting GC/CM in Washington is the goal of reducing the potential for litigation and end-of-project claims found in DBB projects. In a DBB project, the contractor is selected based solely on the fact that he has submitted the lowest bid. This structure encourages the contractor to base his bid on the barest budget possible. Any small variation from the project plan can tip the project into the red. As a result, from the beginning of the contract, the contractor and owner are put in an adversarial relationship. In contrast, a GC/CM project is designed to create a team approach. As a result, at least theoretically, claims and litigation will be reduced. Because the GC/CM is able to negotiate

the MACC with the owner, after he has had a significant amount of time to understand the project, and because the GC/CM is involved during the design phase, more errors are caught during design and those that are not identified early are resolved in a more collaborative way.

GC/CM does not eliminate the potential for claims or litigation. For example:

- Claims related to the Stafford Creek Prison project resulted in a $6 million arbitration award to the contractor;
- GC/CM and subcontractor claims on the Seattle City Library project were resolved through mediation; and
- City of Bellevue has unresolved budget issues with their GC/CM.

These projects indicate that GC/CM does not completely shield an owner from claims or litigation; however, their results must be interpreted cautiously. We do not know what the result would have been had they been constructed using DBB. Staff on the library project stated they felt the results would have been more unfavorable had they not been working with a GC/CM.

Further, it is unclear how representative these projects are of other GC/CM projects. Fewer than half of the owners surveyed responded to the questions related to formal claims on the project, and of those, 80 percent responded that no claims had been filed either by the GC/CM or a subcontractor.[16] Settled claims averaged about 3 percent of the total project cost, based on the four surveys providing claims settlement data. Unfortunately, without comparable claims data for DBB projects, it is not possible to determine whether the GC/CM contracting method results in fewer claims.

Project Quality: Inconclusive	
GC/CM	**Washington's Experience**
The quality of the design and facility is better	It is unclear whether GC/CM contracting methods produce better quality designs or facilities.

Creating a better quality facility was one of the benefits of using GC/CM cited by owners, contractors, and legislators. In our research, we were unable to isolate commonly used performance indicators or industry standards that directly linked to building quality. Our survey data did indicate that in general, owners believed that the project did meet or exceed their own quality standards. Most owners we interviewed stated that, at the end of the project, the facility they received was better quality than what they would have had under DBB. They cited the difference in quality as being due to the early involvement of the contractor in the designing of the facility. For example, one owner stated that the GC/CM brings their experience and skills to the table when conducting value engineering or constructability reviews. In DBB, the owner may hire five people with about 40 hours each to do value engineering, but this only gives the owner a snapshot at any given time. On the other hand, in GC/CM the owner has someone who has been there from almost the very beginning and is familiar with the project. The GC/CM can

[16] Septelka and Goldblatt caution that information regarding formal claims appears to be significantly underreported, based on their industry experience.

then do ongoing value engineering for the owner. In the owner's view, the ongoing value engineering from a contractor familiar with the project leads to a better quality facility.

HOW DOES GC/CM COMPARE TO DESIGN-BID-BUILD IN WASHINGTON?

When asked why GC/CM was an important alternative public works contracting method, public owners and legislators interviewed most frequently responded that GC/CM has the potential to:

- Reduce project-related claims and litigation;
- Provide more certainty about project costs and possibly reduce the overall project costs;
- Speed construction or reduce the risk of going over schedule; and/or
- Improve the design, constructability, and overall quality of the project.

Based on the data currently available, it is difficult to determine whether GC/CM has met these expectations because the state does not currently collect consistent, reliable comparative data for state capital projects, let alone local projects. Case studies were developed to get a sense of how GC/CM project performance compares to DBB projects in Washington. Twenty-one projects: ten DBB, 11 state and local GC/CM projects, were evaluated using both quantitative and qualitative data. **Exhibit 11** on the next page and **Exhibit 12** on page 32 summarize the findings of those case studies. Because we believe the assessment tools require further refinement and validation, project names have been withheld. It is useful, however, to see how the data can be used to identify general weaknesses and strengths in the evolving policy area of alternative public works contracting.

A review of Exhibit 11 summarizing project performance metrics suggests that GC/CM projects generally provide somewhat more satisfactory schedule and cost performance. Exhibit 12 suggests there is generally less adherence to industry best practices on DBB projects than GC/CM. For example, adherence to best practices in the areas of scope definition and control, and dispute resolution was more problematic on the DBB case study projects than on the GC/CM projects.

The data used in this analysis were gathered specifically for this study. Although the GC/CM authorizing statute does require a written report to be submitted to the project's public body at the end of each project, the statute does not specify what the reports must address and there is no centralized authority gathering the studies for analysis. In fact, there is little evidence that these reports are being prepared. Additionally, there is no similar reporting requirement for DBB or Design-Bid (DB)[17] projects, limiting our ability to conduct a comparative evaluation.

[17] Design-Build is another alternative public works contracting procedure authorized in RCW 39.10. Under this contracting method, the owner agency contracts with a single entity to complete both the design and construction of the public facility.

Exhibit 11 – GC/CM Case Study Projects Performed Better on Schedule and Cost Performance Metrics[18]

Project Number		Scope Satisfactory?	Schedule Satisfactory?	Cost Satisfactory?	Quality Satisfactory?	Competition Satisfactory?
GCCM Projects	1	no	yes	no	yes	yes
	2	yes	yes	yes	yes	yes
	3	yes	no	yes	yes	yes
	4	yes	yes	yes	yes	yes
	5	yes	yes	yes	yes	yes
	6	yes	no	no	yes	yes
	7	yes	yes	yes	yes	yes
	8	yes	yes	yes	yes	yes
	9	yes	yes	yes	yes	yes
	10	yes	n/a	n/a	n/a	yes
	11	yes	yes	yes	n/a	yes
DBB Projects	12	no	yes	no	yes	yes
	13	yes	yes	yes	yes	yes
	14	no	no	no	yes	yes
	15	yes	no	no	yes	yes
	16	yes	no	no	yes	yes
	17	yes	no	no	yes	yes
	18	yes	no	no	yes	yes
	19	yes	yes	no	yes	yes
	20	yes	no	yes	yes	yes
	21	n/a	n/a	no	yes	Yes

= Project not yet completed.

Source: JLARC as derived from Dye Management data.

[18] It should be noted that because of the small sample size included in the case studies, the averages of performance metrics should not be perceived as a reflection of all capital construction projects for Washington State. The projects studied were diverse, ranging from a $6 million library renovation project to a $70 million surgery medical center. Relative performance metrics like intensity of delivery; speed of delivery; and construction speed, therefore should ideally be compared to the respective industry standards or national averages for performance analysis, and not to the case study averages. It is important to compare performance metrics to national standards for projects of similar type and size.

Exhibit 12 – GC/CM Case Study Projects Out-Performed DBB
in Adherence to Industry Best Practices

Project Number		Delivery Method Selection	Defined Roles	Risk Identification	Coordinate Scheduling	Cost control	Scope definition and control	Quality assurance and safety	Open competition	Formal scheduling methods	Change Management	Working Relations	Dispute Resolution	Commissioning
GCCM Projects	1	No	Yes	Yes	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	Partial	Yes
	2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Partial	Yes
	3	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	Partial	Yes
	4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	8	Partial	Yes	Yes	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	Partial	Yes
	9	Partial	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	10	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	11	Partial	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
DBB Projects	12	NA	Yes	Yes	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	13	NA	Yes	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	Yes	Partial	Yes
	14	NA	Yes	Yes	Yes	Yes	Partial	Yes	Partial	Yes	Yes	Yes	Partial	Yes
	15	NA	Yes	Yes	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	Partial	Yes
	16	Partial	No	Yes	Partial	Yes	No	Partial	Yes	Partial	Yes	No	Partial	Yes
	17	NA	Yes	Yes	Yes	Yes	Partial	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	18	NA	Partial	Yes	Yes	Yes	Partial	Yes	Yes	Partial	Yes	Yes	Partial	No
	19	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Partial	Yes	Yes	Yes	Yes
	20	Partial	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Partial	Yes
	21	NA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Partial	Yes

Source: JLARC analysis of Dye Management data.

CHAPTER FIVE – THE FUTURE OF GC/CM

The Alternative Public Works Contracting Statute—Chapter 39.10 RCW—expires on June 30, 2007. Over the next several months, the Legislature will be evaluating whether our state's historical experience with GC/CM has been sufficiently positive to warrant its continued support, and if so, what modifications to the existing policy framework will be needed to ensure this contracting method can be used to its fullest benefit.

It is clear from our interviews there will be a strong push in the Legislature to either extend the expiration date again, or to remove the expiration date altogether. Further, public owners not currently included in Chapter 39.10 RCW (i.e., the four-year colleges beyond WSU and UW) will likely be looking to the Legislature for expansion of alternative contracting authority.

Importantly, during the 2005 Session, the Legislature passed ESHB 1830 establishing the Capital Projects Review Board. The work of this Board will play a critical role in informing the policy discussions that need to take place between now and June 30, 2007. The Capital Projects Review Board, comprised of legislators, industry representatives, and state and local public owners, will provide a forum to air concerns about the evolution of alternative public works contracting methods, monitor the expansion, contraction or possible elimination of authority to use alternatives to DBB, and will provide a mechanism to develop and propose policy alternatives related to public works contracting.

See Recommendations 2A and 2B on page 36.

THIS STUDY PROVIDES EVALUATION TOOLS THAT CAN BE USED BY THE CAPITAL PROJECTS REVIEW BOARD.

The results of this study can be used by the Capital Projects Review Board as a starting point for their discussions and help in the development of future policy and evaluation mechanisms. In particular, this study makes three important steps forward in the development of a capital projects data collection and analysis system.

- **Basic data on all GC/CM projects has been collected.** As part of this review, a survey was conducted of all 108 GC/CM projects to gather basic project data. This information provides important insights into completed and current projects, and it can form the core of a comprehensive alternative public works contracting database. It is clear, however, there are still many areas in which common definitions and data collection methods have not been developed. If the state is to be able to fully understand the impact of alternative public works contracting methods, the Legislature and the executive branch will have to develop a consensus around these issues and implement tools to gather cross-jurisdictional data on all forms of contracting methods for major capital projects.

  See Recommendation 3A on page 37.

- **Performance metrics, best practices and benchmarks have been identified and tested.** In addition to the project survey, this study provided the opportunity to identify and test performance metrics, best practices, and to a lesser extent, project benchmarks. These tools were tested on 21 case studies, including state and local projects, both DBB and GC/CM. Again, we are concerned that lack of common definitions and data

- collection methods within each of the public entities makes it difficult to make definitive statements about individual projects or industry trends. However, using the preliminary metrics developed by Dye Management, the data can be compiled and used in a comparative analysis as illustrated in Exhibits 11 and 12.

  See Recommendation 3B on page 37.

- **Tools are developed to identify strengths and weaknesses across projects.** Tools, such as the summary charts presented in the previous chapter, are designed to assist policymakers in identifying trends, strengths, and weaknesses across the range of projects. They can be used to ensure that the contracting tools provided to public entities are achieving their intended purpose, and to identify where public policies may need to be recalibrated and adjusted. It should be noted that such tools must be used cautiously, as they are not designed to identify problems or errors in a *particular* project. Each project is unique and there may be valid reasons for falling outside the normal range of the measurement.

CHAPTER SIX – FINDINGS AND RECOMMENDATIONS

This study was a review of the GC/CM public works contracting procedure. As we noted at the beginning of Chapter 4, most public owners reported that compared to the traditional DBB process, the team relationships resulted in a more collaborative and positive experience; their project(s) generally experienced fewer disputes or claims; and they received a better product at the end of construction. However, strengthened state-level performance measures and benchmarking are needed to thoroughly evaluate whether state contracting methods are meeting the goals of the Legislature.

Finding 1

Some agencies may be using GC/CM to overcome deficiencies in the DBB contracting method.

The procurement process for GC/CM projects allows a pre-screening of general contractors' qualifications and capabilities, whereas the procurement process for DBB projects requires that the lowest bid among responsive contractors be accepted. Agencies place high value in cooperative and competent general contractors and may be tempted to use the general contractor/construction manager method as a way to avoid the risk of having to accept, in a design-bid-build project, an unscrupulous contractor.

Recommendation 1

The Legislature, through the Capital Review Board, should further analyze the implications of the low bid requirement on major capital projects, i.e., that agencies are required to accept the lowest responsive bid without allowing for pre-qualification.

Legislation Required:	Yes
Fiscal Impact:	TBD
Reporting Date:	June 2006

Finding 2

Executive-level oversight is critical to the ongoing development of sound public works contracting policy.

The passage this past session of ESHB 1830 which establishes the Capital Projects Review Board is strongly supported by the findings of this report. One of the most consistent messages heard throughout our interviews was the critical need for state-level oversight of alternative public works contracting policy. This board will provide a needed forum in which all the key stakeholders—including legislators, owner/agencies, labor, contractors and subcontractors—can be heard. It is expected to provide a good forum for working through public works contracting issues, and allow for the informal resolution of contentious issues. The bill directs the Board to facilitate mentoring opportunities, either formal or informal, for owner/agencies that are less familiar with using alternative contracting methods (e.g., school districts), and it should provide opportunities to vet key policy issues and work out compromises in proposed policy changes.

Recommendation 2A

The Capital Projects Review Board should be convened as quickly as practical to ensure the Board is prepared to provide recommendations to the Legislature regarding the elimination, retention, or expansion of alternative public works contracting methods.

The issues identified in this study can provide a useful starting point for the Board's discussions.

Legislation Required:	Yes
Fiscal Impact:	None
Reporting Date:	December 2005

Recommendation 2B

The Capital Projects Review Board should consider adding to its work plan improving the consistency of GC/CM project documents across projects and jurisdictions.

Both general contractors and subcontractors raised concerns that each jurisdiction has their own approach to project items such as contract language, specified general conditions, and prequalification documentation. This individualized approach fails to take advantage of lessons learned from prior projects and creates unnecessary confusion. This is not to suggest that project owners or GC/CM firms should be required in the future to use specific forms or documents—each project is unique and documents must be crafted to match the specific needs of the project. Developing model documents or general guidelines, however, would promote efficiency and reduce the opportunity for error and confusion.

Legislation Required:	Yes
Fiscal Impact:	None
Reporting Date:	June 2006

Finding 3

Lack of sound, reliable, and consistent data collection is a major impediment to understanding the impacts GC/CM.

The state does not currently collect consistent, reliable data with which to undertake a comparative analysis. This problem has two dimensions.

First, **it is necessary to have comparative data.** For example, it is necessary to know the amount of litigation not just on GC/CM projects, but also on DBB and DB projects. The Legislature recognized the need to gather information about the outcome of these projects by requiring all public bodies using GC/CM to submit to their governing body a written report at the end of the project. To determine if the use of GC/CM contracting methods reduces litigation, however, the statute provides no additional guidance on what should be included in these reports or how the data should be used. There is little evidence that these reports are in fact being prepared. Additionally, there is no similar reporting requirement for DBB or DB projects.

Second, both **state-level and local-level data needs to be collected for all major projects.** Currently, where data collection tools do exist in the capital budget process, they exist only for state-level projects. Gathering local-level data will be equally, if not more, important because there is much greater variation in the types of projects and the resources available for executing them. There is currently no mechanism in place for collecting consistent and reliable project data from local entities.

Recommendation 3A

The Capital Projects Review Board should, in consultation with the OFM, develop standardized statewide performance indicators and benchmarks for all major public works projects. At a minimum, the measures should allow basic comparisons of project performance by type, scope, cost, schedule, quality, and contracting procedure.

Legislation Required:	No
Fiscal Impact:	None
Reporting Date:	December 2006

Recommendation 3B

Project performance data used to evaluate the case study projects should be collected for state and local projects to form a portfolio of projects.

Using this information, standards can be developed against which performance of various projects can be evaluated. This will also help in identifying agencies that require more or less oversight, and lead to an improvement in management practices and overall project outcome. This type of information will also help in estimating future project costs more accurately, leading to optimization of the allotment of state funds. Though these preliminary metrics discussed in this report provide useful insights, further refinement would be useful and would encourage the Capital Projects Review Board to establish a subcommittee to refine and build on those provided here.

Legislation Required:	No
Fiscal Impact:	None
Reporting Date:	December 2006

Agency Responses

We have shared the report with the Office of Financial Management. Their written comments are included as Appendix 2. JLARC's comments on their responses follow as Appendix 2A.

Acknowledgements

We appreciate the assistance the staff of the numerous public agencies and private firms who provided information to assist with this report. In particular, we gratefully acknowledge the time and access afforded to us by agency officers of the entities we used as case studies for this project, the agencies that responded to the owners' surveys, and the contractors and subcontractors who participated in focus groups.

Interim Legislative Auditor

On June 22, 2005, this report was approved for distribution
by the Joint Legislative Audit and Review Committee.

Representative Ross Hunter
Chair

APPENDIX 1 – SCOPE AND OBJECTIVES

General Contractor/ Construction Manager Procedures Study

SCOPE AND OBJECTIVES

FEBRUARY 8, 2005

STATE OF WASHINGTON
JOINT LEGISLATIVE AUDIT AND REVIEW COMMITTEE

STUDY TEAM

Jill Satran
Isabel Muñoz-Colón

LEGISLATIVE AUDITOR

CINDI YATES

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MANDATE

The 2003-05 Capital Budget directed the Joint Legislative Audit and Review Committee (JLARC) to review the use of General Contractor/Construction Manager (GC/CM) contracting procedures in major public works projects. Traditionally, these projects have been carried out using the DBB (DBB) or "lump sum" method of contracting. Since the 1990s, the Legislature has also authorized a limited number of state and local entities to use alternative public works contracting methods, including GC/CM, in the construction of large public works projects as a means of addressing issues of design, schedule, or project complexity. Through this study, JLARC will examine the benefits and costs of using this alternative public works contracting method.

BACKGROUND

Construction of major public works is a key sector of the Washington economy. Public entities construct and operate a wide variety of facilities including prisons, office buildings, schools, hospitals, convention centers, and sports stadiums. Over the past decade, spending for state government major public works construction alone totaled over $4 billion for approximately 200 projects. Over 50 of these projects were (or are being) constructed using GC/CM. At the local level, over 45 GC/CM projects have been identified to date.

Construction of public works projects is generally performed by private firms. State and local governments contract with private architectural and construction companies for the design and construction of facilities. In a DBB project, the project design is completed by the owner and architect. The construction phase is put out for competitive bid and is awarded to the lowest responsible bidder. In a GC/CM project, however, a contract is awarded to a single firm for a guaranteed construction cost after competitive selection. Unlike DBB, a GC/CM contract requires the contractor to participate in the design phase by providing input during design development, for example, value engineering and constructability reviews, and to act as the general contractor during the construction phase.

Authorization to use GC/CM, initially granted in 1991, was limited to construction of corrections facilities. This has since been expanded to three state agencies and several large local governments, school districts, and hospital districts. In most cases, GC/CM may only be used on projects over $10 million. This authorization is scheduled to expire in 2007.

STUDY SCOPE & OBJECTIVES

To examine the use of GC/CM contracting procedures, JLARC will review past and current projects constructed using GC/CM contracting procedures. Project data will be used to determine the feasibility of assessing the public benefits and costs of using this alternative method of public works contracting. Questions to be addressed by the JLARC review include:

- How does GC/CM compare to traditional DBB public works contracting, and how do GC/CM procedures applied in Washington State compare to best practices in public works contracting from a national perspective?
- What quantitative and qualitative measures are available to gauge the results of these projects?
- What are key performance indicators the Legislature might use in weighing the benefits and costs of GC/CM?
- What project characteristics have been found by prior industry studies to contribute to successful GC/CM projects (e.g., project team experience, project type, and project budget), and to what extent are these evidenced by projects in Washington?

STUDY APPROACH

Each major capital project is unique, and authorized agencies use a variety of design, construction, management, and oversight approaches to carry out their projects. JLARC staff will use a combination of interviews, document reviews, and surveys to assess the critical factors associated with GC/CM that effect project outcomes (e.g., schedule, scope, and cost).

A series of case studies are being developed to provide a comparative analysis of the use of GC/CM and DBB. In addition, JLARC will work with consultants to update the 2000 study of GC/CM contracting practices, originally commissioned by the Alternative Public Works Methods Oversight Committee. This update is expected to yield a comprehensive inventory of GC/CM projects, from its initial authorization to the present.

Timeframe for the Study

Staff will present its preliminary and final reports at the JLARC meetings in May and June 2005.

JLARC Staff Contact for the Study

Jill Satran	(360) 786-5177	satran_ji@leg.wa.gov
Isabel Muñoz-Colón	(360) 786-5179	muñoz_is@leg.wa.gov

JLARC Study Process

Criteria for Establishing JLARC Work Program Priorities

- Is study consistent with JLARC mission? Is it mandated?
- Is this an area of significant fiscal or program impact, a major policy issue facing the state, or otherwise of compelling public interest?
- Will there likely be substantive findings and recommendations?
- Is this the best use of JLARC resources: For example:
  - Is the JLARC the most appropriate agency to perform the work?
  - Would the study be nonduplicating?
  - Would this study be cost-effective compared to other projects (e.g., larger, more substantive studies take longer and cost more, but might also yield more useful results)?
- Is funding available to carry out the project?

APPENDIX 2 – AGENCY RESPONSES

- Office of Financial Management

JLARC's comments on agency responses follow as Appendix 2A

STATE OF WASHINGTON
OFFICE OF FINANCIAL MANAGEMENT
Insurance Building, PO Box 43113 • Olympia, Washington 98504-3113 • (360) 902-0555

June 1, 2005

TO: Ann Daley, Interim Legislative Auditor
Joint Legislative Audit and Review Committee

FROM: Victor A. Moore, Director

SUBJECT: **GENERAL CONTRACTOR/CONSTRUCTION MANAGER PROCEDURES STUDY – PRELIMINARY REPORT**

Thank you for seeking input from the Office of Financial Management on the Joint Legislative Audit and Review Committee's preliminary report on General Contractor/Construction Manager Procedures Study. We appreciate the opportunity to provide the following response.

Recommendation	Agency Position	Comments
Recommendation 1	Concur	
Recommendation 2A	Concur	
Recommendation 2B	Concur	
Recommendation 3A	Concur	OFM is developing standardized performance measures in response to JLARC's Performance Audit of Capital Budget Processes Report. This now will be done in conjunction with the Capital Process Review Board.
Recommendation 3B	Partially concur	Collecting project performance metrics should be possible for state-funded projects, but may be difficult for "all" capital construction projects throughout the state.

We commend your staff for their hard work on this report. If you have any questions, please contact Mike Roberts at (360) 902-0529.

cc: Mike Roberts, OFM

APPENDIX 2A – JLARC'S COMMENTS ON AGENCY RESPONSES

We are pleased that OFM concurs or partially concurs with the study's five recommendations. We offer the following clarification on Recommendation 3B in order to address the concerns discussed in OFM's response.

Recommendation 3B

We are suggesting with this recommendation that the Capital Projects Review Board and OFM collect performance data only on major state and local capital projects. However, we believe that the local impact of alternative public works contracting will be largely unknown without local level project information. As the Legislature continues to consider expanding the use of GC/CM at the local level, the need for additional local level project information becomes more important due to the diversity of projects at the local level. For this reason, JLARC recommended that OFM and the Capital Projects Review Board explore ways to collect data from major capital projects at the local and state level.

APPENDIX 3 – LEGISLATION AUTHORIZING GC/CM

RCW 39.10		
State		
Author. / Year	Public Entity	Comments
Chapter 130 / 1991	GA / DOC	To fast-track the construction of prisons Authorization expires 6/96
Chapter 132 / 1994	GA, generally UW, WSU	Available for projects over $10 million Authorization expires 6/97
Local		
Author. / Year	Public Entity	Comments
Chapter 132 / 1994	Counties > 450,000 population Cities > 150,000 population Ports > 500,000 population Baseball stadium Co. development authority	Authorization expires 6/97
Chapter 80 / 1994	DOC	Authorizes two demonstration projects under $10 million; Expires 6/97
Chapter 376 / 1997	Authorized entities allowed one demonstration project under $10 million (GA allowed three demonstration projects)	Expiration of GC/CM authority extended to 6/2001
Chapter 220 / 1997	Public Stadium Authorities	Authorized in Ch 36.102 RCW
Chapter 165 / 1999	City and County Public Facility Districts	Authorized in Ch 35.57 and 36.100 RCW
Chapter 209 / 2000	School Districts	Four demonstration projects authorized
Chapter 328 / 2001	PUDs > $23 million annual energy revenue Public authorities chartered by eligible city Cities > 70,000 population Ports > $15 million in annual revenue	Expiration of GC/CM authority extended to 6/2007
Chapter 46 / 2002	School Districts	Number of demonstration projects authorized increased to 10
Chapter 300 / 2003	Public Hospital Districts > $15 million in annual revenues	
Chapter 301 / 2003	School Districts	Demonstration projects increased to 18, including 2 under $10 million
Chapter 352 / 2003	Washington State Ferry System	May use on ferry terminals and other land-based related facilities
Chapter 83 / 2003	Public Transportation Benefit Areas offering Passenger-only Ferry Service	Authorized in Chapter 36.57A

* Public housing authorities are using GC/CM methods under the statutory contracting authority granted public housing authorities in RCW 35.82.070(10).

APPENDIX 4 – PERSPECTIVES ON GC/CM

In this section, we summarize various perspectives we heard from owners, GC/CMs, mid- and large-sized contractors who have not performed GC/CM work, subcontractors, and other key participants in public works construction industry. **The following comments do not necessarily represent the views of JLARC.**

Selecting the GC/CM Delivery Method

Some large- and mid-sized **contractors** not performing GC/CM work believe that GC/CM is being overused. They cited examples of projects that they felt could have easily been constructed using the traditional DBB delivery method because the projects were not particularly complex. Projects like the Seattle Library are good candidates for GC/CM because the design and construction was very complex. However, a school project for $7 million with little complication should have been constructed DBB. These contractors believe that even complicated projects could be done well using DBB. Some in fact had completed very complicated historical restorations. These contractors felt that owners like GC/CM because they can select their contractor based on qualifications and experience rather than simply their low price.

Setting the Guaranteed Construction Cost (GCC)[19]

Some GC/CM **contractors** are concerned that the GCC is being signed too early in the design process. It puts the GC/CM at higher risk, particularly if the price of goods increases. For example, the City of Bellevue signed the GCC early in the design phase, and now they are struggling to overcome the consequences of hyper-inflation. GC/CM contractors believe this is why the GCC is often so high on GC/CM projects—the GC/CM contractors are trying to cover their risks related to inflation, design changes, and other project conditions that are unknown early in the design phase. Compounding this issue is the fact that the GC/CM's fee is a percentage, based on the negotiated maximum allowable construction cost (MACC). So even if the project bids come in less than the negotiated MACC (any "buyout savings"—the difference between the negotiated MACC and what the contracted bids actually come in at—reverts to the owner), the GC/CM's actual fee will still be based on the higher negotiated MACC. Therefore, given their risk potential early in the design process, the contractors have little incentive to negotiate a lower GCC.

[19] The Guaranteed Contract Cost includes:

- MACC (a fixed amount, representing the cost estimates for the site work, related project costs and facility construction)
- GC/CM's fee (a percentage of the MACC);
- Specified general conditions (a fixed amount); and
- Sales tax.

The GC/Cm's contract will also include a fixed amount for pre-construction services such as value engineering and constructability reviews.

Prequalification of Subcontractors

Unlike DBB, subcontractors can be pre-qualified in a GC/CM project. **Contractors** (those not working on GC/CM projects) and **subcontractors** are concerned that prequalification may be shrinking the subcontractor market by distorting the subcontractor's lump sum bid process. The floor should be whether the subcontractor can be bonded. In practice, however, there is concern that GC/CMs are using prequalification criteria that go beyond the criteria established by the statute. Some subcontractors feel the prequalification process on some projects has been overwhelming (e.g., excessive documentation required). As a result, the GC/CM may only get one or two bidders on a package after prequalification. Subcontractors believe that the state is losing good subcontractors and contractors believe that requiring bonding is a more effective way to make sure a subcontractor is qualified and allows for more people to be in the pool of bidders.

Bid Packages

An area of concern discussed by the **subcontractors** centered on the creation of bid packages by the GC/CM. Some bid packages have included items not typically in the scope of work provided by the subcontractors. For example, one subcontractor said that though their specialty is drywall, a GC/CM drywall bid package also required some metal work as well, which is not typically work done by a dry wall specialist. Some noted that the language in the bid contract, at times, is vague and can contain catch all phrases. Subcontractors stated that at times it can be hard to make sense of the bid forms.

Subcontractors also stated that packages can also break up work inappropriately. Some GC/CMs will put together packages for individual sections of a building rather than by division. As a result, for example, the mechanical work may be broken up and put into plumbing and HVAC packages. The inappropriate packaging of construction activities can especially affect Division 15 and 16 subcontractors (Mechanical & Electrical). The subcontractors also mentioned that the practice of some GC/CM firms of consolidating all the construction work into only a few bid packages is a bad practice as well. Generally, the subcontractors feel this practice means that the subcontractors are potentially taking on a lot more site supervision—work that should be the responsibility of the GC/CM.

The subcontractors indicated that once the bid packages are created, they cannot be modified to include changes in scope. To off set this extra risk, subcontractors have begun to add additional mark-up to their prices on GC/CM projects. For example, one subcontractor marks up his work about an additional 1 ½ - 2 percent.

Specified General Conditions

Midsized **contractors** and **subcontractors** believe that some owners have not done a good job of clearly identifying the specified general conditions required of the GC/CM. Or, in some cases, the owners have not monitored sufficiently to ensure that the GC/CM is satisfying the specified general conditions. As a result, the GC/CM may be shifting its responsibilities to the subcontractors as a means of saving the GC/CM firm money. Subcontractors are concerned that they end up doing work performed by the general contractor on traditional DBB jobs, such as providing portable toilets, snow removal, and clean-up for the site. In addition, the subcontractors are being required to provide onsite management and coordination between other subcontractors on the project. The subcontractors mentioned instances where mechanical and

electrical have been required by the GC/CM to complete the design documents for their work and coordinate between each other. Since subcontractors don't have contracts with each other, this practice poses a problem because one subcontractor cannot hold another subcontractor accountable for their work. In short, there is a sense that the GC/CMs are not adequately performing their role as a general contractor; so many responsibilities get pushed onto the subcontractors.

Consistency of Documents

One of the **subcontractors'** primary concerns is that each GC/CM project has a different set of terms and conditions and documents. The subcontractors never know what to expect, unless the owner is an agency that has done a great deal of GC/CM projects and has developed some standardized documents or processes. It does not appear that owners new to the use of GC/CM are learning from their more experienced counterparts in this area, and subcontractors are particularly concerned with the quality and thoroughness of their contracts.

This lack of consistency creates a tremendous amount of confusion and miscommunication. The subcontractors stated they would like to see public owners using a common set of general conditions for all public projects.

Risk Sharing

Subcontractors are concerned that by taking on preconstruction services, the GC/CM is exposed to greater risk/responsibility for inaccuracies or missing elements in construction documents. To mitigate this additional risk, GC/CMs are requiring that the subcontractors cover costs associated with insufficient documents. (For example, some contracts between GC/CM and subcontractor state that anything not specifically identified in the document is the responsibility of the subcontractor.)

In DBB, the general contractor has a relationship with its subcontractors and essentially acts in their behalf when dealing with the owner. So, for example, if a problem was found in the design document and required extra work of a subcontractor, he would put together a change order to request additional funds and the contractor would pass on the change order to the owner. In GC/CM, that relationship is changed, and the GC/CM is aligned with the owner rather than the subcontractors. Therefore, when a subcontractor runs into a problem, the GC/CM is not as likely to forward the change order to the owner, but handles the problem himself. (See also "Construction Contingency" below.) Often, GC/CMs are forcing the subcontractors to absorb the cost of design elements that were missed by the architect and GC/CM during design. In addition, subcontractors have been forced to bear the responsibility for covering the costs associated with hyper-inflation for materials.

GC/CM Self-Performed Work

Subcontractors prefer that the GC/CMs self-perform at least 30 percent of the construction work on a project. In the subcontractors' view, self-performance provides an increased probability that the GC/CM has a greater stake in making sure work is coordinated properly, as it is on a DBB project. The general contractor in DBB is more concerned about schedule conflicts and conflicts between subcontractors because it affects his own work on the site.

Like the subcontractors, some **contractors** believe that a project will suffer if the GC/CM does not self-perform some of the work.

Construction Contingency

Contractors that have been awarded GC/CM contracts believe that the construction contingencies established by firms are too low (~2 percent). This is not sufficient to overcome the concerns of GC/CM firms surrounding project risks and feel that to be secure the owner should be allowing a 5 percent construction contingency. In addition, any buyout savings should be incorporated into the contingency until the end of the project (at which time the remaining contingency is returned to the owner).

Subcontractors feel that the GC/CM often forces the subcontractors to cover costs of errors or problems, rather than passing along contingency funds to cover the additional cost. Further, the GC/CM process pits the general contractor and the subcontractors against each other, rather than the general and subcontractors working together. In DBB, there is no identified construction contingency so the general contractor and the subcontractors must work together to complete the project on budget. (Although there is typically an owner's contingency to cover items like design errors and omissions and unforeseen site conditions.) In a GC/CM project, the general contractor is typically responsible for managing a contingency fund to cover certain errors and problems during construction. Where the owner does not participate in the decisions about how and when that contingency will be used, the GC/CM tends to over-protect those funds to ensure that it will be available to address future problems. As a result, the subcontractor ends up bearing the cost of errors or problems during construction that may be the fault of other parties.

Dispute Resolution

Subcontractors would like a dispute resolution process established between GC/CM and subcontractors. Subcontractors are concerned that their project claims are not being communicated beyond the general contractor. The subcontractors mentioned the STEP (SeaTac) project as a good example of a dispute review board (DRB) because the owner, general contractor, and project subcontractors met regularly to negotiate costs.

Subcontractors would like the Legislature to require more uniformity of dispute resolution language in GC/CM contracts. In addition, subcontractors want public owners to be more proactive in the process and note that "informal" DRBs are a waste of time and money.

Design Fee

Both **contractors** and **subcontractors** noted that designers are not given enough time or money to create quality documents. Specifically, there is a need for better construction documents. However, the fee schedule for design is far too low. To compensate, designers may for example use cut-and-paste programs to create design and construction documents. Under GC/CM, the contractor is now taking on some of the design risk when instead they should be managing coordination issues. Another result is that subcontractors are being asked to take on more responsibility for designing their own work.

APPENDIX 5 – SUMMARY OF GC/CM PROJECTS

Agency	Project Name	GCCM Selected	Overall project planned Start	Finish	Building Type	Total Project Cost Budget
STATE AGENCIES						
Washington State Ferries	Anacortes Terminal Relocation	TBD	7/1/2003	6/30/2008	Operational Support	$19,200,000
GA	WA Sate Legislative Building Rehabilitation	M.A. Mortenson Company	10/1/1997	6/30/2005	Office	$101,000,000
GA / Cascadia CC	UW-CCC Bothell Branch Campus Phase I & II	M.A. Mortenson Company	7/15/1997	12/30/2002	Multipurpose	$197,140,000
GA / Dept of Veterans Affairs	WA State Veterans Home	M.A. Mortenson Company	2/1/2002	12/31/2004	Residential	$47,335,399
GA / Dept of Corrections	WCC 97-99 Correctional Industries & Mast	Absher Construction	9/1/1997	6/30/1999	Multipurpose	$4,161,184
GA / Dept of Corrections	Larch & Cedar Creek Corrections Centers	Absher Construction	7/1/1995	.	Prison	$22,000,000
GA / Dept of Corrections	Monroe Close Custody Conversion & Repair	Hoffman Construction Company	8/1/1997	2/2/1999	Prison	$4,375,588
GA / Dept of Corrections	Special Offender Unit--Expand to 400 bed	Hoffman Construction Company	10/1/1995	1/1/2001	Prison	$42,942,628
GA / Dept of Corrections	Stafford Creek Corrections Center, Phase 1	Fluor Daniel	9/19/1996	2/1/2001	Prison	$197,573,938
GA / Dept of Corrections	WCCW Replace G Units with 256 Bed Housing	M.A. Mortenson Company	7/1/1995	6/30/1997	Prison	$9,929,026
GA / Dept of Corrections	Washington State Reformatory - 400 Bed	Absher Construction	4/1/1994	7/1/1997	Prison	$18,733,120
GA / Dept of Corrections	WCCW Mental Health & Reception.	M.A. Mortenson Company	9/1/1998	2/1/2001	Prison	$24,800,000
GA / Dept of Corrections	Airway Heights Corrections Center	Kitchell Contractors	7/1/1989	6/1/1995	Prison	$113,000,000
GA / Dept of Corrections	Washington Corrections Center for Women	Kitchell Contractors	.	.	Prison	$32,000,000
GA / Everett CC	Glacier/Pilchuck & Monte Cristo	M.A. Mortenson Company	1/1/2001	9/1/2006	Multipurpose	$26,297,300
GA / Everett CC	Undergraduate Education Center	TBD	9/1/2003	8/30/2008	Multipurpose	$34,897,240
GA / Highline CC	HCC/CWU Higher Education Center	M.A. Mortenson Company	6/6/2001	4/1/2005	Multipurpose	$30,828,000
GA / South Puget Sound CC	Science Complex Addition	TBD	7/1/2003	.	Teaching Lab	.
GA / Bellevue CC	Robinswood School Replacement (Bldg R)	M.A. Mortenson Company	.	.	General classroom	$24,000,000
GA / Dept of Social & Health Services	Special Commitment Center Construction	Absher Kitchell JV	10/11/1999	9/1/2003	Unclassified	$61,665,000
University of Washington	Architecture Hall Renovation	M.A. Mortenson Company	11/12/2003	9/27/2007	General classroom	$25,484,000
University of Washington	Bioengineering-Genome Sciences Building	Hoffman Construction Company	12/4/2000	2/7/2006	Research	$150,000,000
University of Washington	Cascade Tower Renovation	Hoffman Construction Company	10/1/1997	6/3/2000	Hospital	$14,369,991
University of Washington	Conibear Shellhouse	Sellen Construction	1/1/2001	6/15/2005	Athletic	$16,700,000
University of Washington	Dempsey Indoor Practice Facility	Baugh Construction	1/15/1998	7/15/2002	Athletic	$31,299,000
University of Washington	EE/CSE Phase 2 Expansion	M.A. Mortenson Company	1/15/1999	6/30/2003	General	$71,700,000

Agency	Project Name	GCCM Selected	Overall project planned Start	Finish	Building Type	Total Project Cost Budget
					classroom	
University of Washington	Guggenheim Hall Renovation	Skanska USA Building Inc.	11/12/2003	6/10/2008	General classroom	$28,323,000
University of Washington	Harborview Bond Program	Turner Construction Company	2/1/2002	5/1/2008	Hospital	$292,800,000
University of Washington	Harborview Research & Training Facility	Sellen Construction	7/10/1994	12/31/1998	Research	$78,761,000
University of Washington	Hec-Ed Pavilion Renovation	Sellen Construction	1/1/1994	7/30/2002	Athletic	$44,508,000
University of Washington	IMA Expansion	Hoffman Construction Company	9/15/1995	12/31/2003	Athletic	$43,300,000
University of Washington	Johnson Hall Renovation	Skanska USA Building Inc.	7/1/2002	12/19/2005	Multipurpose	$55,290,000
University of Washington	Law School Building	Lease Crutcher Lewis	5/1/1996	8/11/2003	General classroom	$74,386,500
University of Washington	Oceanography Research & Training	Turner Construction Company	7/1/1995	7/1/1999	Teaching Lab	$80,780,000
University of Washington	Pacific Tower	Baugh Skanska	1/15/1998	9/30/2001	Hospital	$34,954,000
University of Washington	Surgery Pavilion	Hoffman Construction Company	2/15/2000	12/12/2003	Hospital	$87,500,000
University of Washington	Suzzallo Library Renovation	Turner Construction Company	9/15/1994	12/27/2002	Student Services	$47,257,000
University of Washington	Tacoma Branch Campus Phase 1A	McCarthy (SDL)	.	.	General classroom	$33,887,012
University of Washington	Tacoma Branch Campus Phase 2B	Lease Crutcher Lewis	3/15/1998	4/30/2004	Operational Support	$44,349,000
Washington State University	Biotechnology/ Life Sciences Facility	Lydig Construction	5/1/2002	3/15/2008	Research	$61,930,388
Washington State University	ELSB Vancouver	Baugh Construction	1/1/1996	7/1/2001	Research	$29,900,000
Washington State University	Energy Plan (Steam Plant Redevelopment)	Hoffman Construction Company	11/1/2002	6/1/2004	Operational Support	$41,000,000
Washington State University	Johnson Hall - Plant Biosciences Complex	Baugh Construction, Oregon	10/1/1999	8/15/2005	Research	$39,000,000
Washington State University	School of Communication Addition	Baugh Construction, Oregon	9/1/2000	1/1/2004	Teaching Lab	$12,665,000
Washington State University	Scholars Hall	Baugh Construction, Oregon	11/1/1997	4/30/1998	Multipurpose	$15,300,000
Washington State University	Spokane Academic Center	Shea Graham Construction	10/1/1999	8/1/2006	General classroom	$33,850,000
Washington State University	Spokane Health Sciences Building	Shea Graham Construction	7/1/1997	6/1/2002	Teaching Lab	$39,061,222
Washington State University	Spokane Nursing Center	Shea Graham Construction	10/1/2003	12/1/2007	Teaching Lab	$34,600,000
Washington State University	Teaching and Learning Center	Lydig Construction	7/1/1995	10/1/2001	Multipurpose	$41,572,435
Washington State University	Vancouver Multi-media Classroom Building	Baugh Construction	1/1/1996	1/1/2003	Teaching Lab	$17,500,000
Washington State University	Vancouver Student Services	Hoffman Construction Company	7/3/2003	11/30/2004	Student Services	$12,350,000
Washington State University	Tri-Cities Bio-Products Facility	Bouten Construction Company	10/1/2003	3/5/2004	Teaching Lab	.
Washington State University	Student Recreation Center	Gilbane Building Company	.	.	Athletic	.
CITIES						

Agency	Project Name	GCCM Selected	Overall project planned Start	Finish	Building Type	Total Project Cost Budget
Bellevue	New City Building Redevelopment	Lease Crutcher Lewis	3/25/2002	12/11/2005	Office	$101,550,000
Everett	Water Pollution Control Facility Phase A	Hoffman Construction Company	9/1/2003	.	Infrastructure	$25,000,000
Seattle	Landsburg Fish Passage & Diversion Facility	Natt McDougall Company	1/3/2000	3/1/2004	Unclassified	$14,650,000
Seattle	Seattle City Hall	Hoffman Construction Company	8/1/1999	4/1/2003	Multipurpose	$72,000,000
Seattle	City Justice Center	Hoffman Construction Company	5/1/1999	8/1/2002	Multipurpose	$92,000,000
Seattle	Seattle Central Library	Hoffman Construction Company	6/15/1999	7/1/2003	Unclassified	$155,651,000
Seattle	City Fire Station #10	Hoffman Construction Company	4/1/2004	9/1/2007	Multipurpose	$39,600,000
Seattle	McCaw Hall	Baugh Skanska	11/1/1999	3/1/2004	Performing Arts	$127,780,000
Seattle	Aquarium, Pier 59 Renovations	Turner Construction Company	10/23/2003	3/30/2004	Multipurpose	$24,041,000
Seattle	Police West Precinct Station and Community	M.A. Mortenson Company	.	9/1/1999	Unclassified	$19,680,000
Seattle	Park 90-5	Turner Construction Company	.	.	Unclassified	.
Seattle Public Utilities	Cedar River Sockeye Hatchery Project	CH2M Hill Construction	6/1/2002	10/1/2005	Unclassified	.
Seattle-Chinatown International District	International District Village Square Phase 2	Marpac Construction LLC	10/1/1999	9/30/2004	Multipurpose	$26,324,000
COUNTIES						
King County	King County Courthouse	Baugh Skanska	.	.	Teaching Lab	.
King County	King County Jail	Turner Construction Company	.	.	Prison	.
King County, DNR	Brightwater Treatment Facility	Hoffman Construction Company	1/1/1999	7/30/2010	Infrastructure	$639,610,404
Pierce County	Adult Detention Facility Construction	Absher Kitchell JV	5/15/1997	9/17/2002	Prison	$53,700,000
Snohomish County	Denney Juvenile Justice Center	M.A. Mortenson Company	.	.	Prison	$24,000,000
Snohomish County	Snohomish County City Redevelopment	M.A. Mortenson Company	.	.	Unclassified	.
PORT DISTRICTS						
Port of Seattle	SeaTac Parking Garage	M.A. Mortenson Company	.	.	Unclassified	$60,000,000
Port of Seattle	C1 Baggage Facility	Turner Construction Company	6/1/2003	3/27/2007	Operational Support	$142,203,300
Port of Seattle	Shilshole Marina Redevelopment	Hoffman Construction Company	.	12/31/2008	Infrastructure	$78,500,000
Port of Seattle	World Trade Center	Turner Construction Company	.	.	Office	$19,210,747
SCHOOL DISTRICTS						
Aberdeen School District	Aberdeen High School	Absher Construction	12/1/2003	8/2/2007	General classroom	$53,863,000
Eastmont School District	Eastmont Middle School	Lydig Construction	4/9/2001	8/25/2003	General classroom	$12,455,338

Agency	Project Name	GCCM Selected	Overall project planned Start	Finish	Building Type	Total Project Cost Budget
Evergreen School District	Evergreen High School	Robinson Construction	.	.	General classroom	.
Griffin School District	Elementary/Middle School	John Korsmo Construction	.	3/28/2005	General classroom	$12,800,000
Lake Washington School District	Mann Elementary School	Kirtley Cole Construction	5/1/2002	9/1/2003	General classroom	$11,683,439
Northshore School District	Bothell High School, Phase 2	Lease Crutcher Lewis	10/1/2002	9/30/2005	Teaching Lab	$20,500,000
Northshore School District	Northshore Junior High School	Baugh Skanska	3/6/2000	2/28/2004	Teaching Lab	$25,800,000
Olympia School District	New Capital High School	Robinson Construction	.	.	General classroom	.
Seattle School District	Garfield High School	Lease Crutcher Lewis	2/3/2003	11/21/2008	General classroom	$78,780,000
Seattle School District	Nathan Hale High School	Sellen Construction	9/1/2002	7/1/2005	Performing Arts	.
Seattle School District	Cleveland High School	Absher Construction	10/24/2002	8/22/2007	Multipurpose	$60,386,000
Seattle School District	Roosevelt High School	Hoffman Construction Company	5/29/2001	1/17/2007	General classroom	$84,522,000
Spokane School District	Shadle Park High School	TBD	3/12/2003	12/31/2010	General classroom	.
Spokane School District	Rogers High School	TBD	3/12/2003	6/1/2009	General classroom	.
Tacoma School District	Lincoln High School	Lease Crutcher Lewis	4/22/2003	9/21/2007	General classroom	$51,700,418
Tacoma School District	Stadium High School Modernization and Addition	Skanska USA Building Inc.	4/2/2001	7/26/2006	General classroom	$88,085,987
Wahluke School District	Wahluke High School	Walker Construction, Inc.	5/20/2003	1/1/2007	Teaching Lab	$20,407,512
PUBLIC HOSPITAL DISTRICTS						
Skagit Valley PHD	Island Hospital	TBD	.	9/1/2008	Hospital	$40,000,000
Skagit Valley PHD	Skagit Valley Hospital	Hoffman Construction Company	1/3/2002	6/12/2006	Hospital	$87,887,000
PUBLIC FACILITIES DISTRICTS						
Clark County PFD	Exhibition Center	Hoffman Construction Company	6/1/2004	2/28/2005	Unclassified	$12,540,500
Edmonds PFD	Center for the Arts	Sellen Construction	.	.	Performing Arts	.
OT Spokane PFD	Spokane Convention Center Expansion	Hoffman-Bouten JV	5/1/2002	.	Unclassified	$79,400,000
Greater Tacoma PFD	Convention Center	M.A. Mortenson Company	.	.	Unclassified	.
Seattle PFD	WA Baseball Stadium SAFECO Field	Hunt/Kiewit	.	.	Stadium	$498,350,000
Skagit Regional PFD	McIntyre Hall, Performing Arts and Conference Center	Skanska USA Building Inc.	.	.	Performing Arts	$17,000,000
OTHER						
Seattle Public Housing Authority	NewHolly Hope VI Redevelopment Phase 1	Absher-Pacific	6/15/1995	9/30/2001	Residential	$85,846,349
Seattle Public Housing Authority	NewHolly Phase 2	Walsh Construction Company	2/11/1999	6/30/2003	Residential	$44,195,338

Agency	Project Name	GCCM Selected	Overall project planned Start	Finish	Building Type	Total Project Cost Budget
Seattle Public Housing Authority	NewHolly Phase 3	Walsh Construction Company	3/15/2000	6/26/2005	Residential	$65,561,484
Seattle Public Housing Authority	High Point Hope VI Redevelopment. Phase 1	Absher Construction	4/28/2003	12/9/2005	Residential	.
Seattle Public Housing Authority	Rainer Vista Hope VI Redevelopment Phase 1	Walsh Construction Company	8/15/1999	11/30/2005	Residential	$46,750,000
Pierce Transit	Maintenance Facility Upgrade	Absher Construction	.	.	Operational Support	.
Pierce Transit	Tacoma Dome Station Parking	Absher Construction	.	.	Infrastructure	.

APPENDIX 6 – OWNER'S SURVEY

Washington State Joint Legislative Audit and Review Committee
GC/CM Project Evaluation - 2005 Study

Please complete the following survey with appropriate data for this project.

1.0 Project

Survey Project Code: Survey Code

Agency: Type in Agency Name

Project Name: Type in Project Name

Agency Project Number: Enter Agency #

OFM Number (State projects only): Enter OFM #

Date of Alternative Delivery Approval (Month/Year): xx/xx/xx

Is project completed? ☐ YES ☐ NO

If not complete what phase is the project currently in? ☐ Planning ☐ Design ☐ Construction

Building Type: 1. Athletic

XX % New Construction XX % Renovation

Construction Type : 1. Heavy – cast in place concrete

Building Size: Gross Area - New sq. ft. xx,xxx Gross Area - Renovated sq. ft. xx,xxx

Was a third party retained for project management service, other than the AE or GC/CM? ☐ YES ☐ NO

Name of third party consultant: Type in name of third party consultant

2.0 Schedule

	Planned		Actual	
	Start Date	Finish Date	Start Date	Finish Date
Overall Project	xx/xx/xx	xx/xx/xx	xx/xx/xx	xx/xx/xx
Design*	xx/xx/xx	xx/xx/xx	xx/xx/xx	xx/xx/xx
Construction	xx/xx/xx	xx/xx/xx	xx/xx/xx	xx/xx/xx
Substantial Completion		xx/xx/xx		xx/xx/xx
Final Acceptance		xx/xx/xx		xx/xx/xx

* Note: Design Start Date is when the architect of record is hired, Design Finish Date is completion of construction documents

Was the project completed on time? ☐ YES ☐ NO

If no, please summarize below:

Stage design was in at GC/CM selection: ☐ Project Feasibility ☐ Schematic Design ☐ Construction Docs ☐ Programming ☐ Design Development % Complete XX%

Stage design was in at final (MACC) contract agreement: ☐ 50% ☐ 70% ☐ 90% ☐ 60% ☐ 80% ☐ 100%

3.0 Cost (Note: Construction costs not to include sales tax, acquisition, fixtures, furniture, or equipment)

	Project Budgeted	Actual
Total Project	$ xxx,xxx,xxx	$ xxx,xxx,xxx
Total Management Costs	$ xxx,xxx,xxx	$ xxx,xxx,xxx
Total Design Costs	$ xxx,xxx,xxx	$ xxx,xxx,xxx
Total Construction Costs	$ xxx,xxx,xxx	$ xxx,xxx,xxx

Cost, continued (Note: Construction costs not to include sales tax, acquisition, fixtures, furniture, or equipment)

	Negotiated	Actual
MACC	$ xxx,xxx,xxx	$ xxx,xxx,xxx
Fee Percentage of MACC	XX %	XX %
Fee	$ xxx,xxx,xxx	$ xxx,xxx,xxx
Preconst.Services	$ xxx,xxx,xxx	$ xxx,xxx,xxx
General Conditions	$ xxx,xxx,xxx	$ xxx,xxx,xxx

Was the project completed within budget? ☐ YES ☐ NO

If no, please explain:

Were there any contingency funds set aside on this project? ☐ YES ☐ NO

	Contingency	
	Project/Owner	GC/CM Contingency
Amount budgeted	$ xxx,xxx,xxx	$ xxx,xxx,xxx
Actual Amount Used	$ xxx,xxx,xxx	$ xxx,xxx,xxx
Who controlled the contingency?	1. Owner	1. Owner
Allocation % to Owner	XX %	XX %

Were cost incentives utilized on this project (excluding buyout)? ☐ YES ☐ NO

If yes, please describe and include how incentives were managed?

Final incentive amount paid to GC/CM: $xxx,xxx,xxx

Changes and Claims

Change Order Dollar Volume			
Owner's Scope	$ xxx,xxx,xxx	Other: Type	$ xxx,xxx,xxx
Design Error/Omission	$ xxx,xxx,xxx	Other: Type	$ xxx,xxx,xxx
Unforeseen Conditions	$ xxx,xxx,xxx	Other: Type	$ xxx,xxx,xxx
Contractor	$ xxx,xxx,xxx	Other: Type	$ xxx,xxx,xxx
		Total Change Orders	$ xxx,xxx,xxx

Were there any formal Claims between the Owner/Agency and the GC/CM? ☐ YES ☐ NO

Number of Claims: XX Settlement Amount-Total: $xxx,xxx,xxx

Please summarize Claims below and explain how they were settled and describe your dispute resolution mechanism (DRB, arbitration, litigation):

GC/CM Process Evaluation

Total number of firms competing in the GC/CM selection process? XX

Name of successful firm: Type in name of successful firm

Name of unsuccessful firms:

1 Name of Firm	6 Name of Firm
2 Name of Firm	7 Name of Firm
3 Name of Firm	8 Name of Firm
4 Name of Firm	9 Name of Firm
5 Name of Firm	10 Name of Firm

During the selection process were any protests or complaints filed? ☐ YES ☐ NO

If yes, please describe below:

Was a third party, other than the A/E or GCCM, retained for any of the following preconstruction services? (Please check all that apply)

☐ Value Engineering	☐ Constructability Reviews	☐ Other:	Type in other service
☐ Scheduling	☐ Estimating	☐ Other:	Type in other service

6.0 Subcontract Packages

Number of bid packages utilized on this project? ##

Did the GC/CM prequailify any subcontractors? ☐ YES ☐ NO

If yes:

Was there a public notice for request for prequalifications? ☐ YES ☐ NO

What trades/bid packages were prequalified? Name Trades

Number of bid packages the GC/CM bid on? ##

Number of bid packages the GC/CM performed? ##

Total dollar volume of self-performed work $ xxx,xxx,xxx % of contract value XX %

What trades/bid packages were self performed? Name Trades

During the subcontractor selection process were any protests or complaints filed? ☐ YES ☐ NO

If yes, please describe below:

Were any formal subcontractor Claims filed? ☐ YES ☐ NO

If yes, please describe below:

Total difference between budgeted and actual buyout. $xxx,xxx,xxx

How were buyout savings, if any, allocated? Owner/Agency % XX% GC/CM Firm % XX%

7.0 Quality

Does your agency have established quality standards? ☐ YES ☐ NO

Were they employed on this project? ☐ YES ☐ NO

Evaluate project performance to established quality standards:

☐ Exceeded Standards ☐ Met Standards ☐ Did Not Meet Standards

Describe quality standards:

Do you have any additional comments?

Type in additional comments

Survey completed by: Name Title:

Phone Number: Email Address

If you have any questions on completing the survey please contact J. Isabel Muñoz-Colón at (360) 786-5179

Thank you for taking time to complete this survey.

Please return survey to GCCMSTUDY@aol.com no latter than Feb. 18, 2005

APPENDIX 7 – CASE-STUDY PROJECT SUMMARIES

Bellevue Community College – Parkade

Bellevue Community College Parkade is the first of three such structures planned for the main campus of this college. All of these structures will expand needed parking capacity and consolidate that capacity onto densely used land, freeing up existing parking lots on this hemmed-in site.

Design phase of this project started in October 2001, and construction was substantially completed in May 2004, at a total project cost of approximately $9.4 million.

Bellevue Community College and the Washington State Department of General Administration, Division of Engineering and Architectural Services managed the parkade project using the design-bid-build construction management method.

Grays Harbor College – Library Renovation

The John Spellman Library is on the main campus library for Grays Harbor College. The building renovation project was a combination of 45 percent renovation and 55 percent new construction.

Design on the project started in July 2001, and construction was completed in September 2003, at a total project cost of approximately $5.1 million.

The Grays Harbor College has a very small project management staff and relies almost entirely on third parties to manage its capital projects. Most of the project management and construction management duties for the design and construction on this project were contracted out. Grays Harbor College and Engineering and Architectural Services managed the project using the design-bid-build construction management method.

Highline Community College – Building 30 addition

The Highline Community College Building 30 Addition is a teaching facility on the Highline Community College campus in Des Moines, Washington. The project was a combination of 60 percent renovation and 40 percent new construction.

Design started in March 1998, and construction was completed in September 2002, at a total cost of approximately $7.6 million. Highline Community College and Engineering and Architectural Services managed the Building 30 Addition project using the design-did-build construction management method.

Highline Community College – Higher Education Center

The Higher Education Center is a teaching facility built by Highline Community College on its campus in Des Moines, Washington. The project consists of 100 percent new construction.

Design started in July 2001, and construction is expected to be competed in March 2005, at a total cost of approximately $30.8 million.

Highline Community College and Engineering and Architectural Services are managing this project using the general contractor/construction manager method.

Spokane Community College – Health Sciences Building

The Spokane Community College Health Sciences Building Addition consists of 39,000 square feet of addition and 24,000 square feet of renovation work to the existing Health Sciences Building.

Design phase for this project began in March 1998, and construction was completed in September 2002, at a cost of $7.5 million.

Spokane Community College is a part of a multi-college district that operates as Community Colleges of Spokane. The Community Colleges of Spokane district office provides district-wide support, including capital project construction management services, through its district facilities department. Spokane Community College and Engineering and Architectural Services managed this project using the design-bid-build construction management method.

Department of Social and Health Services – Eastern State Hospital

The Kitchen/Dining Building project was one of six phases of renovation throughout the 70-year old Eastern State Hospital building. This is the principal site from which the Washington State Department of Social and Health Services delivers psychiatric treatment to residents of eastern Washington.

Design for this project started in July 1999, and construction was substantially completed in March 2003, at a total cost of approximately $10.2 million.

The Department of Social and Health Services and the Engineering and Architectural Services have formed an integral project management team that jointly manages the Department of Social and Health Services projects. This project was managed using the design-bid-build method.

Department of Corrections – Special Offender Unit: 400-Bed Expansion

The Department of Corrections Special Offender Unit expansion project added 256 medium custody beds to the existing 144 beds at the Special Offender Unit in Monroe, Washington.

Design for this expansion began in March 1998, and construction was completed in November 2001, at a total design and construction cost of $38.9 million.

The Department of Corrections and Engineering and Architectural Services TEAM managed this project using the general contractor/construction manager method of construction management.

Department of Corrections – Washington Corrections Center for Women Expansion

The Department of Corrections, Washington Corrections Center for Women, is the primary correctional facility in Washington for all female inmates. This expansion project replaced the pre-existing 30-bed segregation unit and 32-bed special needs unit with a new 150-bed special needs unit.

The design process for this addition began in August 1999, and the construction phase was completed in March 2002, at a total project cost of $19.8 million.

The TEAM managed this project using the general contractor/construction manager method.

Washington State Department of General Administration – Office Building 2 Preservation

Office Building Two is a facility built in 1972 on the Washington State Capitol Campus in Olympia and managed by the Department of General Administration. The Office Building Two renovation project is a combination of 93 percent renovation and seven percent new construction.

Design started in 1996, and the construction in late 2008. The total cost of the project is estimated to be approximately $22 million.

The General Administration's Division of Facilities Planning and Management is managing the Office Building Two project using the design-bid-build construction management method.

Washington State Military Department – Bremerton Readiness Center

The Army National Guard Bremerton Readiness Center is the training and mustering facility of the National Guard stationed in the Kitsap County area. The building is also used by the Kitsap County fire departments for training and for emergency responses.

Design for this new construction started in July 1999, and construction was substantially completed in August 2003, at a total project cost of approximately $11.4 million.

The Washington State Military Department and Engineering and Architectural Services managed the Bremerton Readiness Center project using the design-bid-build construction management method.

University of Washington – Medical Center Surgery Pavilion

The University of Washington Surgery Pavilion is located on the University of Washington's main campus in Seattle, and was constructed on the site of pre-existing parking spaces. This three-story building houses short-stay surgery and treatment areas, as well as diagnostic and supplementary services.

Design phase for this project began in May 2000, and construction was completed in August 2003. The design, construction, and management costs on this project totaled approximately $71.5 million.

The University of Washington Capital Projects Office manages construction projects on the University of Washington Seattle and Tacoma campuses independent of any other agencies such as the Engineering and Architectural Services, and managed this project using the general contractor/construction manager construction method.

University of Washington – Johnson Hall Renovation

The University of Washington Johnson Hall primarily houses the Department of Earth and Space Sciences and the Department of Biology. The building was constructed in 1930 with an addition in 1948. Changes in the fields of research and the effect of time had rendered this building inefficient in its intended purposes. The renovation project will not only improve the research facilities, but will also address modern seismic, health, safety, and code requirements to ensure long-term preservation of this architecturally significant building.

Design work for this project began in February 2003, and construction is expected to be completed in October 2005. Total design and construction cost on this project is expected to be around $44.7 million upon completion.

The University of Washington Capital Projects Office is managing this project using the general contractor/construction manager method of construction management.

University of Washington, Tacoma – Phase 2A Central

The University of Washington Tacoma Phase 2A central project was part of the ongoing new construction/renovation at University of Washington, Tacoma campus, and added the new Science Building and Keystone Building to the University of Washington, Tacoma campus, along with some renovation work to the existing site work.

Design work on this project began around January 1999, and construction was completed in December 2001, at a total construction cost of $17.5 million.

The University of Washington Capital Projects Office managed this project using the design-bid-build construction management approach.

Washington State University – Vancouver Branch Campus – Engineering/ Life Sciences Building

The Engineering/Life Sciences Building is a new building on the Vancouver, Washington campus of Washington State University, built to provide classroom and teaching laboratory space to service the expanding enrollment there.

Design on the project started in July 1997, and construction was substantially completed in November 2000, at a total cost of approximately $17.4 million.

Washington State University manages its projects independent of Engineering and Architectural Services, and managed this project using the general contractor/construction manager construction management method.

Washington State University – Shock Physics Building

The Shock Physics Building is a research and teaching facility built by the Washington State University on its main campus in Pullman. More than 80 percent of the space was new construction, and the balance was the renovation of classroom space in the adjacent Webster Hall.

Design for this project began in September 1999, and construction was substantially completed in January 2003, at a total project cost of approximately $12.6 million.

The Washington State University managed this project using the design-bid-build construction management method.

Washington State University – Johnson Hall/Plant Biosciences Building

The Plant Biosciences Building is a new building on the Pullman campus of the Washington State University that is designed to replace and expand upon the obsolete laboratory space in the 40-year old Johnson Hall. The new building is the first of six development phases that will, by 2015, replace Johnson Hall and some adjacent outdoor tennis courts with six new buildings to house the College of Agriculture and Home Economics, and some research programs of United States Department of Agriculture.

Design for this project started in July 2001, and construction is currently underway with substantial completion scheduled for December 2005. The project is forecast to be completed for about $2 million less that its $38.6 million budget.

The Washington State University is managing the Plant Biosciences Building using the general contractor/construction manager construction management method.

Western Washington University – Communications Facility

The Communications Facility is a teaching facility built by Western Washington University (WWU) on its main campus in Bellingham. The project was 100 percent new construction.

Design started in April 2000, and construction was substantially completed in February 2004, at a total project cost of $30 million.

WWU managed the Communications Facility as a design-bid-build project.