The Construction Management Delivery System An Architect's Point of View

**Daniel Davis, AIA
University of Hartford**

Abstract

There are at least three different building project delivery systems in use today. This paper will support the premise that the Construction Management method is the preferred approach for many projects. Construction Management is a building project delivery system that uses the services of a professional manager, who in essence becomes the third member of the traditional Owner/Architect team. The Construction Manager works with the Owner and the Architect in coordinating the entire project, utilizing specialized skills and knowledge to bring a project in on time and on budget, all while maintaining the highest quality. This happens by adding construction expertise and by enhancing services in the pre-construction phases of the project: budgeting, value engineering, constructability reviews, scheduling, and phasing. This process will ensure that the project (1) meets the approved schedule, (2) meets all construction deadlines, and (3) is feasible concerning phased occupancy. When it comes time to build, the Construction Manager is totally familiar with the project and will manage the bidding, awarding and construction phases of the project. I have worked on more than ten (10) different projects that have used the Construction Management method and this can endorse this approach.

What are the three different building project delivery systems?

There are at least three different building project delivery systems in use today: (1) the General Construction model, (2) Design/Build model, and (3) the Construction Management model.

General Construction (GC)

- Architect provides all pre-construction services alone.
- Builder often determined by low bid.
- Owner hires a Clerk or Construction Administrator to observe construction.
- Owner has little control over the builder.
- My experience with GC includes:
 - Southwest Elementary School, Torrington, CT
 - 20,000 SF addition and 30,000 SF renovation, to be completed Fall 2000.

Frank T. Wheeler School, Plainville, CT

10,000 SF addition and 40,000 SF renovation, completed Fall 1994.

HSR Cancer Care Center, New Haven, CT

62,000 SF new cancer care center, completed Fall 1994.

Manchester High School, Manchester, CT

30,000 SF library and technology wing addition, completed Fall 1992.

With the General Contractor approach, the Architect and the Contractor are not working together; in fact, they are often working against each other. The Architect often has a difficult time telling the Contractor to put more money into the project after the contract is awarded or during the construction. The Architect dominates the design phases while the Contractor dominates the construction phase of this delivery method.

Design/Build (DB)

- Architect works for the builder.
- Builder determined by price, qualifications, and concept.
- Single source responsibility for design and construction work.
- Owner often hires a Clerk-of-the-Works to observe construction work.
- My experience with DB includes:

Living Word Ministries, West Haven, CT

68,000 SF new church and school facility, to be completed Fall 2000.

State Mental Hospital, Norwich, CT

55,000 SF new mental health hospital facility, completed Spring 1997.

Western CT State University Dormitory, Danbury, CT

Proposed 12 story 170,150 SF college dormitory, not executed.

With the Design Build approach, the Architect and the Contractor are working together in a business relationship, but realistically, the Architect is going to have a very hard time telling the Contractor to put more money into the project. The Contractor dominates this delivery method.

Construction Management (CM)

- Architect and Construction Manager provide pre-construction services, as a team.
- Builder selected based on qualifications and fee if desired.
- No additional Owner on-site representation required.
- Choice and control of the sub-contractors.
- My experience with CM includes:

East Lyme Middle School, East Lyme, CT

190,000 SF new school for 1200 students, to be completed Fall 2002.

Redding Senior and Community Center, Redding, CT

20,000 SF new community facility, to be completed Fall 2001

Black Rock Elementary School, Thomaston, CT

20,000 SF addition and 40,000 SF renovation, completed Fall 1999.

Bushnell Memorial Hall Annex, Hartford, CT

5 story addition and renovation to a historic theater, completed Fall 1994.

Hop Brook School, Naugatuck, CT
30,000 SF addition and 30,000 SF renovation, completed Fall 1993.

With the Construction Management approach, the Architect and the Contractor are working together as a true team. Moreover, neither the Architect nor the Construction Manager will dominate this delivery method, as the Architect / Construction Manager team shares control and responsibility.

What exactly is Construction Management?

Construction Management is a building project delivery system that uses the services of a professional construction expert as a manager. They become the third member of the traditional Owner/Architect team. The Construction Manager works with the Owner and the Architect in coordinating the entire project, utilizing specialized skills and knowledge to bring a project in on time, on budget, and with minimum claims, all while maintaining the highest quality. This happens by adding construction expertise and by enhancing services in the pre-construction phases of the project: budgeting, value engineering, constructability reviews, scheduling, and phasing are all addressed. This process will ensure that the project (1) meets the approved schedule, (2) meets all construction deadlines, and (3) is feasible concerning phased occupancy. When it comes time to build, the Construction Manager will manage the bidding, awarding and construction phases of the project to ensure the highest quality work, in a timely fashion, within the budget. This allows the Architect to focus on what they do best, the programming and designing of the building.

How much more does it cost to use the Construction Management method?

It should not cost the Owner anything more. In fact, the Construction Management method will often save the Owner money. When a construction contract is awarded to a General Contractor, it is based on a lump sum bid. How much the General Contractor earns depends on how much money is left in the coffers after construction is complete. To make more money, the General Contractor may skim on materials, labor, and staff or accelerate the schedule. In addition, change orders can become a daily routine. The Owner and Architect certainly do not want that and can find themselves in a hostile and adversarial situation.

Similar to an Architect or other professional service firms, a Construction Manager works for a fee which is built into the construction cost of the project. This alleviates the adversarial relationship that can develop and everyone works together as a design/construction team. With the Construction Manager on board early, operating in the design/construction team environment, an Owner is assured of not having the project exceed the schedule or budget, which saves money for everyone: the Owner, the Architect, and the Construction Manager.

How do you hire a Construction Manager?

Owners do not bid for Construction Management firms. Like an Architect, a Construction Manager is a professional that you select based on qualifications and experience. Owners can interview and review the services provided by Construction Management firms to identify the firm with which they feel the most comfortable. While it should not be the determining factor, Construction Management fees can and frequently do influence the selection process.

How do you compare Construction Management fees?

The cost of hiring a Construction Manager can be broken down into three distinct categories:

- Pre-Construction Phase Services
- Construction Phase Services
- Construction Manager Reimbursable General Conditions

In an effort to avoid having to compare apples to oranges, an Owner's Request for Proposals (RFP) should carefully define project parameters, even if these assumptions prove inaccurate later.

Pre-Construction Phase Services

This fee is usually either a lump sum amount or a percentage of the Total Construction Cost and should include all pre-construction reimbursable items such as travel, copying and postage. This fee represents the total of all Construction Management costs through the bidding and awarding stages of the project. With many Construction Management firms this initial phase fee is not invoiced until construction actually starts.

Construction Phase Services

This fee is usually either a not-to-exceed dollar amount or a percentage of the Total Construction Costs. The lump sum dollar amount approach is less frequently used. This fee represents the salaries of the office staff, home office overhead, and the Construction Manager's profit.

Construction Manager Reimbursable General Conditions

This expense is the largest part of a Construction Manager's cost and typically the least understood. Basically, this represents the Construction Manager's expenses for manpower (Project Manager, Superintendent, and other field personnel as required) and equipment (office trailer, pick-up trucks, copy machines, and other equipment as required) used for the duration of the construction phase.

When should you hire a Construction Manager?

Typically, the sooner the better. To take full advantage of all the services a Construction Manager can provide, they should be brought on-board at the same time as the Architect and the other consultants. One of the biggest mistakes made by a Building Committee that uses a Construction Manager is to wait too long to commit to the process. This can cause critical time to be lost completing pre-construction services after the fact or not be completed at all.

How do you enter into a contract with a Construction Manager?

There are at least four different contracting methods available to Owners for Construction Management agreements:

- AIA Form B801/Cma – CM Advisor
Using this form of agreement, the Owner contracts directly with each trade contractor.
A bond is not required from the Construction Manager.
Each trade contractor furnishes a bond directly to the Owner.
The Owner makes payment to the trade contractors directly.
The Construction Manager does not provide a Guaranteed Maximum Price (GMP).
- AIA Form B801/Cma – CM Advisor with GMP Option
Using this form of agreement, the Owner contracts directly with each trade contractor.
A bond is not required from the Construction Manager.
Each trade contractor furnishes a bond directly to the Owner.
The Owner makes payment to the trade contractors directly.
The Construction Manager provides a Guaranteed Maximum Price (GMP).
- AIA Form A121/CMc – CM Constructor
The Construction Manager contracts directly with each trade contractor.
Each trade contractor furnishes a bond directly to the Construction Manager.
The Construction Manager is required to furnish a bond to the Owner.
The Owner makes payment to the Construction Manager monthly.
The Construction Manager provides a Guaranteed Maximum Price (GMP).
- AIA Form A131/CMc – CM Constructor
The Construction Manager contracts directly with each trade contractor.
Each trade contractor furnishes a bond directly to the Construction Manager.
The Construction Manager is required to furnish a bond to the Owner.
The Owner makes payment to the Construction Manager monthly.
The Construction Manager does not provide a Guaranteed Maximum Price (GMP).

All of the above mentioned contract forms are compatible with other American Institute of Architects contracts and General Conditions documents. The Architect, Owner (with legal council), and Construction Manager should discuss the options available and should collectively determine which is most appropriate for the project.

What projects require the use of Construction Management Services?

The services of a Construction Manager can benefit almost any project. However, typically it is the larger and/or more complicated projects that benefit the most from the Construction Manager process. In today's construction dollars, larger may mean anything over \$8,000,000. In terms of complexity, this can mean many things, such as working with an historic structure or working around a building that is still occupied during the construction.

Conclusion

The tension between Architects and Contractors probably began around 2360 BC, with the construction of the first structure credited to an Architect; the burial pyramid of King Zoser near Saqqara designed by Imhotep. Yet, the thesis of this paper is that Architects and Contractors can work together if the relationship is organized and balanced. The General Contractor approach is dominated by the Architect and the Design Build approach is dominated by the Contractor. However, the Construction Management approach successfully balances the roles of Architect and Contractor with the best interest of the Owner in mind.

Construction Management as a delivery method for most large and/or complex projects can help improve communication, ensure that deadlines are met, and keep costs under control. It can also provide the Architect and Owner with a greater level of control over the product than the General Contractor or Design/Build methods. With experience in all the construction delivery methods, I can highly recommend the Construction Management method as the preferred approach for most building projects.

References

Dean, Andrea Oppenheimer, "Listening to Contractors", *Architectural Record* (February 1998), pp. 54-57.
O & G Industries, "School Construction Delivery Methods", 1999.

DANIEL DAVIS, AIA

Daniel Davis is an Associate Professor and Chair of Architectural Engineering Technology Program at the University of Hartford's Ward College of Technology. He has more than 19 years of experience as a Design Architect and many of his projects have been published in professional journals and/or won design awards. Davis holds baccalaureate degrees from Catholic University and Pratt Institute and a second professional degree Master of Architecture, from Pratt Institute. He is also a Senior Design Architect with Fletcher Thompson Architects and Engineers and is the Director of Design of their Hartford, CT office.