



The 2013 – 2019 Winona Bridge project is MnDOT's first CMGC project

# BENEFITS OF THE CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CMGC) DELIVERY METHOD

## WHAT IS CMGC?

In the **CMGC** process the project owner hires a contractor to provide feedback during the design phase before the start of construction. It's an alternative contracting method to Design-Bid-Build or Design-Build.



DESIGNER

CONTRACTOR

The CMGC method is also called "**CONSTRUCTION MANAGER AT RISK**" (CMR).

CMGC is relatively new to the transportation industry.

**2014: THE WINONA BRIDGE PROJECT WAS MNDOT'S 1ST CMGC PROJECT.**

CMGC is one of **THE FEDERAL HIGHWAY ADMINISTRATION'S EVERY DAY COUNTS** (EDC) initiatives being furthered as an accelerated project delivery method.

**THE EDC INITIATIVE** is designed to identify and deploy innovation aimed at reducing the time it takes to deliver highway projects, enhance safety, and protect the environment.



## 2 PHASES

### HOW DOES IT WORK?

THE CMGC PROCESS IS BROKEN DOWN INTO 2 CONTRACT PHASES:

In the **1ST** contract phase, **THE DESIGN PHASE**, the contractor works with the designer and the project owner to identify risks, provide cost projections, and refine the project schedule. Then, the contractor and project owner negotiate on the price for the construction contract. If all parties are in agreement with costs, then the **2ND** contract phase, **THE CONSTRUCTION PHASE**, is kicked off and construction begins.

## WHY CMGC INSTEAD OF A TRADITIONAL DELIVERY METHOD?

CMGC HELPS SAVE TIME IN 4 PRIMARY AREAS:

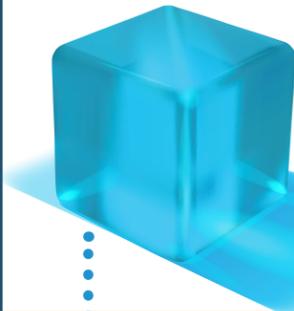
Can begin the project earlier

Design takes less time

Construction takes less time

Overlapping design and construction reduces project time

## INDEPENDENT COST ESTIMATOR (ICE)

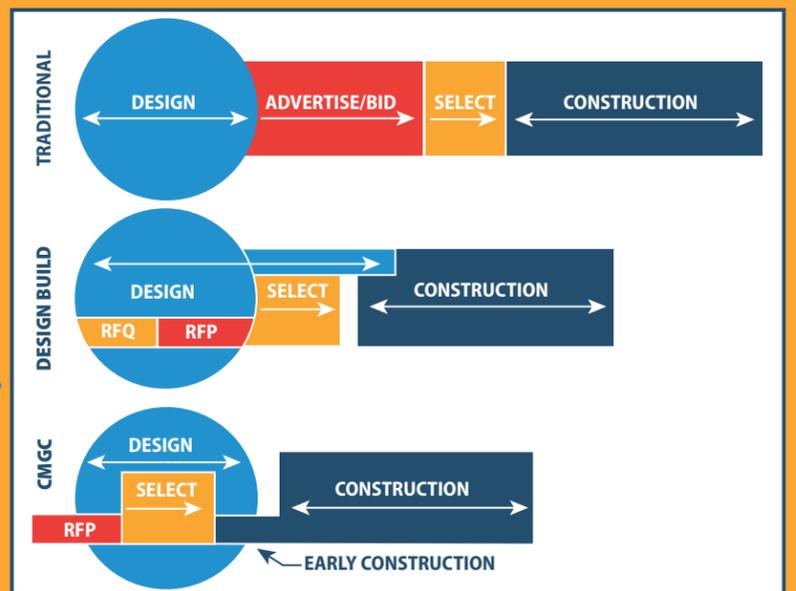


In the CMGC bid process, an **INDEPENDENT COST ESTIMATOR (ICE)** separately estimates the costs for different parts of the construction, to compare with the bid the CMGC submits. The CMGC's bid must be within 10% of the independent cost estimator in order to be accepted.

# BENEFITS

## WHAT ARE THE BENEFITS OF CMGC?

- FOSTERS INNOVATION
- ALLOWS FLEXIBILITY
- IMPROVES COST CONTROL AND COST CERTAINTY
- FEWER CHANGE ORDERS AND OVERRUNS
- HIGHER DESIGN QUALITY
- REDUCES RISK
- OPTIMIZES SCHEDULES
- ENHANCES COLLABORATION
- UPFRONT VALUE ENGINEERING
- IMPROVES CONSTRUCTABILITY  
(The design only includes features that can be built.)



## CMGC IMPACTS ON THE WINONA BRIDGE PROJECT

- REDUCED THE COMPLEXITY OF DEALING WITH MULTIPLE CONTRACTORS
- AIDED IN WINONA COMMUNITY INVOLVEMENT
- MAKES RENOVATION OF THE ADJACENT HISTORIC BRIDGE MORE PREDICTABLE
- ALLOWED EARLIER ENGAGEMENT OF THE HISTORICAL TEAM
- REDUCED RISKS



## AMES CONSTRUCTION IS THE WINONA BRIDGE CMGC CONTRACTOR

Also the **GENERAL CONTRACTOR** on the nearby Dresbach Interchange project (shown). **OUTSTANDING SAFETY RECORD.** History of **QUALITY BRIDGE PROJECTS, ON-TIME DELIVERY, AND PROFESSIONALISM.**



Ames Construction, Inc.®



# Construction Manager/ General Contractor



For transportation projects with sensitive schedules and potential constructability challenges that require special qualifications and extraordinary contractor cooperation, such as those in busy urban areas, the Construction Manager/General Contractor (CM/GC) delivery method provides many benefits.



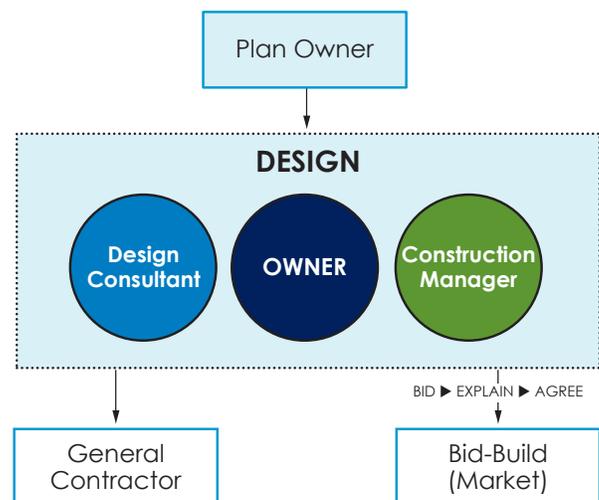
Other projects that are a good fit for the CM/GC method are those that have public involvement or include right-of-way or utility issues that could affect the overall schedule.

By getting the contractor involved early in the planning and design processes, project owners have the opportunity to incorporate a contractor's perspective into planning and design decisions, introduce innovations, improve the design quality and resolve potential third party issues. This allows them to deliver projects that reduce costly change orders, decrease risk, optimize the construction schedule and minimize impact to the traveling public.

## INNOVATION DESCRIPTION

The CM/GC project delivery method consists of two phases—design and construction.

When the owner considers the design to be complete, the construction manager then has an opportunity to bid on the project based on the completed design and schedule. If the owner, designer and independent cost estimator agree that the contractor has submitted a fair price, the owner issues a construction contract and the construction manager then becomes the general contractor. The contractor acts as the consultant during the design process and can offer constructability and pricing feedback on design options and can identify risks based on the contractor's established means and



methods. As noted earlier, this process also allows the owner to be an active participant during the design process and make informed decisions on design options based on the contractor's expertise.

## BENEFITS

- ▶ **Foster innovation.** The collaborative process encourages both contractor and project owner to look at all options including using innovative techniques or approaches that reduce time and cost — for example, use of Self-Propelled Modular Transporter (SPMT) for bridge moves and slide-in bridge technologies.
- ▶ **Reduce risk.** Contractor feedback during the design phase can reduce project costs because the owner is able to understand and mitigate risks identified early in project development. Any risk mitigation savings identified during the design phase accrue to the owner in a CM/GC arrangement.

# Construction Manager/ General Contractor

- ▶ **Improve design quality.** The contractor is able to review the designs and provide feedback, answer designer questions and provide changes. By including the contractor review, the designer can produce better designs that reduce issues in construction and prevent change orders that can lead to project overruns.
- ▶ **Improve cost control.** Value Engineering is a natural part of CM/GC during the design process. This allows for the contractor's input during design so the owner can obtain reliable cost data for any design alternative being considered. This allows the owner to consider the budget and make more informed decisions about which alternatives offer the greatest cost-benefit.
- ▶ **Optimize construction schedules.** The CM/GC process allows the contractor to begin planning the construction schedule during the design phase. This way, the team can view how construction will impact traffic and adjust the construction schedule accordingly. CM/GC also enables the team to determine right-of-way and utilities issues on the critical path during design and give greater focus to those that affect the overall schedule.

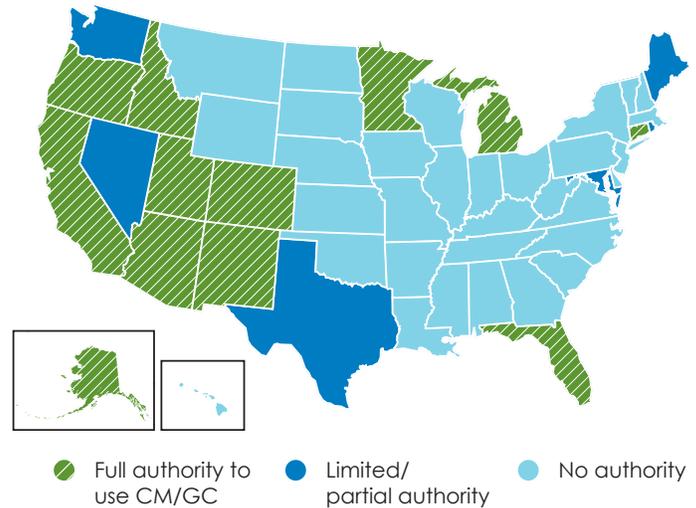
## CURRENT STATE OF THE PRACTICE

With the passage of MAP-21, SEP-14 approval is no longer required for State DOTs to use CM/GC so long as their state statutes allow for it. The FHWA does not presently have regulations concerning the CM/GC project delivery method.

## SUPPORT AND AVAILABLE TOOLS

If you're interested in getting started with CM/GC in your state and need to better understand the CM/GC technical issues and implementation process, here are some resources to help you get started:

- ▶ FHWA CM/GC Project Delivery Program Guide, <http://www.fhwa.dot.gov/construction/cqjt/cm.cfm>



**Figure 1:** Use of Construction Manager/General Contractor (or Construction Manager At-Risk); State Authority, Number of Completed Projects; FHWA Division Office Survey 2012

- ▶ NCHRP SYNTHESIS 402 - Construction Manager-at-Risk Project Delivery for Highway Programs, [http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp\\_syn\\_402.pdf](http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_402.pdf)
- ▶ Boston CM/GC Peer Exchange Presentation Materials – May 2012, [https://www.t2events.ce.ufl.edu/events/CMGC\\_Peer\\_Exchange\\_-\\_Boston%2C\\_MA.asp](https://www.t2events.ce.ufl.edu/events/CMGC_Peer_Exchange_-_Boston%2C_MA.asp)
- ▶ Utah DOT Annual CM/GC Reports, <http://www.udot.utah.gov/main/f?p=100;pg:0::1:T,V:3053>
- ▶ Sample Utah DOT CM/GC Documents, <http://www.udot.utah.gov/main/f?p=100;pg:0::1:T,V:1871>
- ▶ Sample Oregon DOT CM/GC Documents, [http://www.oregon.gov/ODOT/HWY/MPB/WRB.shtml#CM\\_GC\\_Procurement\\_Documents](http://www.oregon.gov/ODOT/HWY/MPB/WRB.shtml#CM_GC_Procurement_Documents)
- ▶ Sample CM/GC State Legislation (Arizona, Utah, Oregon, & State of Washington), [http://www.fhwa.dot.gov/construction/contracts/cmgc\\_statutes.cfm](http://www.fhwa.dot.gov/construction/contracts/cmgc_statutes.cfm)

For additional information, please contact:

**John Haynes**  
CM/GC Lead  
EDC Coordinator, Utah Division  
[john.haynes@dot.gov](mailto:john.haynes@dot.gov)

**Kenneth Atkins**  
CM/GC Lead Support  
[kenneth.atkins@dot.gov](mailto:kenneth.atkins@dot.gov)

**Jeff Lewis**  
CM/GC Lead Support  
[jeff.lewis@dot.gov](mailto:jeff.lewis@dot.gov)



Every Day Counts (EDC), a State-based initiative of FHWA's Center for Accelerating Innovation, works with State, local and private sector partners to encourage the adoption of proven technologies and innovations aimed at shortening and enhancing project delivery

 U.S. Department of Transportation  
**Federal Highway Administration**