



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

California Division

March 13, 2019

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Ms. Laurie Berman, Director
California Department of Transportation
1120 N Street
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Subject: Approval of the *Local Assistance Procedures for Construction Manager and General Contractor*

Attention: Rihui Zhang, Chief, Division of Local Assistance

Dear Ms. Berman:

We have received your January 31, 2019 letter requesting approval of the *Local Assistance Procedures for Construction Manager and General Contractor* (enclosed). We have provided technical assistance to your staff while developing these procedures, and based on our review and per 23 CFR 635.504 (c), we approve them for use on Federal-aid locally administered projects. Please note that any deviations from these procedures will require prior approval by Caltrans and FHWA.

Federally funded CMGC projects are considered Projects of Division Interest (PoDIs) requiring oversight by the FHWA California Division. Thus, we request to be notified when a Local Agency decides to use CMGC to deliver a Federal-aid project(s). Please contact the appropriate FHWA Project Oversight Manager.

We appreciate the partnership and continuous cooperation of your staff while developing these procedures and look forward to continuing improving the implementation of CMGC projects. If you have any questions please contact Miguel Ramos at (916) 498-5007 or Miguel.Ramos@dot.gov.

Sincerely,

Aimee Kratovil
Director, Program Analysis

Enclosure: *Local Assistance Procedures for CMGC*



**LOCAL ASSISTANCE PROCEDURES
FOR
CONSTRUCTION MANAGER AND
GENERAL CONTRACTOR**

Approved by FHWA in February,
2019

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LOCAL ASSISTANCE PROCEDURES FOR CONSTRUCTION MANAGER AND GENERAL CONTRACTOR

1. Introduction

Construction Manager/General Contractor (CM/GC) is a project delivery method that allows certain regional transportation agencies (RTAs) to select a construction contractor early in the project development process to act in an advisory role. Even if the CM/GC delivery method is applicable to both federally and non-federally funded projects, the Procedures are only intended for federally funded projects. The CM/GC contractor provides constructability reviews, value engineering suggestions, construction estimates, construction scheduling, and other construction-related recommendations. When design is completed to about 90 to 95 percent, the RTA requests the CM/GC contractor to provide a price to construct the project. If the RTA finds the price reasonable, the CM/GC contractor will become the general contractor and will construct the project.

2. Background

The federal surface transportation act “Moving Ahead for Progress in the 21st Century” (MAP-21) was signed into law July 6, 2012. MAP-21 authorized the use of the CM/GC contracting method for delivering Federal-aid projects. Section 1303 of MAP-21 required the Federal Highway Administration (FHWA) to promulgate regulations as are necessary to implement the statutory provisions. FHWA issued a Final Rule for CM/GC that became effective on January 3, 2017. The provisions of the Final Rule have been incorporated into these procedures, for use on federally-funded projects on local highway systems that have been specified in State law as being eligible to use the CM/GC method of procurement.

The California Legislature passed and the Governor signed the following Bills: Senate Bill (SB) 848 (June 27, 2018), Assembly Bill (AB) 115 (June 27, 2017), AB 2374 (September 28, 2016), and AB 1171 (October 01, 2015). These bills authorized certain RTAs to use the CM/GC method of procurement to design and construct certain expressway projects not on the State Highway System (SHS) under specified circumstances.

Those legislative bills also authorized the use of the CM/GC method for the construction of several structures that are not on SHS (see Section 4).

SB 848, AB’s 115, 2374 and 1171 have been codified under Public Contract Codes (PCC) 6970 through 6974.

These procedures were approved by the California Division of FHWA in February, 2019, for use by RTAs on their CM/GC Federal-aid local highway system projects as required by the Code of Federal Regulations (CFRs). RTAs shall follow the Division of Local Assistance (DLA) Procedures when using the CM/GC delivery method for their projects.

3. Eligible Regional Transportation Agencies

The California Legislature has authorized certain RTAs to use the CM/GC project delivery method to design and construct certain projects not on the SHS. Eligible RTAs are listed in Caltrans DLA website: <http://www.dot.ca.gov/hq/LocalPrograms/CMGC/>.

4. Eligible Projects

Projects that can be delivered by the CM/GC method of procurement on local highway system are documented in SB 848, AB 115, AB2374 and AB1171, and are codified in PCC 6971.

The optimal CM/GC project has one or more of the following attributes: a high level of technical complexity, the need for a high level of risk management, complex phasing, and/or the need for overall schedule acceleration.

Those eligible projects where the CM/GC delivery method can be employed are listed in the Caltrans DLA website: <http://www.dot.ca.gov/hq/LocalPrograms/CMGC/>.

5. Procuring the CM/GC Contractor

Part 635 in Title 23 of the Code of Federal Regulations (23CFR635), Construction and Maintenance, Subpart A – Contract Procedures; and Subpart E – Construction Manager/General Contractor (CM/GC) Contracting prescribes policies, requirements, and procedures from FHWA’s standpoint relating to the use of the CM/GC method of contracting. The regional transportation agency (a sub-recipient) should be thoroughly familiar with Subpart A & E prior to engaging in any CM/GC procurement activity on a local highway system project that will use federal funds.

PCC 6973 states that CM/GC method projects authorized pursuant to PCC 6972 shall be governed by the same process, procedures, and requirements as set forth in PCC 6703, subdivision (a) of PCC 6704, and PCCs 6705 to 6708, inclusive, except that any reference to “department” shall mean the regional transportation agency. The RTA should be thoroughly familiar with these PCCs prior to engaging in any CM/GC procurement activity on a local highway system project to be funded with federal funds. If there is a conflict between the PCCs and Subpart A & E, Subpart A & E will govern.

A CM/GC contract is a two-phase contract with the first phase of the contract being the preconstruction services phase and the second phase being the construction services phase. The second phase will be executed if the price for the construction services is found to be reasonable by the RTA. The construction services phase may occur under one contract or multiple contracts covering portions of the project, including early work packages (e.g., utility relocation, procurement of long lead items, etc.).

The CM/GC contractor should be procured early in the design process. CM/GC contractor procurement should typically occur around the time the final design begins, preferably no later than the 30% design milestone, but in some instances, it may be beneficial to do so even earlier such as prior to completing the NEPA approval process, i.e., during the preliminary design process. The goal in selecting the right timing is to maximize the value of the contractor’s participation in the preconstruction phase by allowing them to provide input (e.g., constructability, risk

identification, costs, schedule, and innovative construction methods) into important design decisions that shape the project and direct design development.

The RTA is responsible for determining the optimal time to procure the CM/GC contractor. See Section 7, Pre-NEPA Approval Activities and Requirements, if the procurement is anticipated prior to the completion of the NEPA approval process.

Procurement of a CM/GC contract can be based on qualifications or on a best value based selection process. This competitive selection process is left to the discretion of the RTA provided that its procedures do not serve as a barrier to free and open communication or conflict with 23 CFR Part 635, Subpart A & E. PCC 6703, which the RTA is required to follow per PCC 6973, requires the RTA to establish a procedure for the evaluation and selection of a CM/GC contractor through a request for qualification (RFQ). A qualifications based selection is based simply on the qualifications of the proposer as described in the proposer's Statement of Qualifications (SOQ). A best value selection is based on both qualifications of the proposer as well as pricing information such as preconstruction services cost or the proposed markups on construction costs. Both processes use a one-step solicitation process utilizing a RFQ that shall be publicly advertised by the RTA. The RFQ must, at a minimum, provide the following:

- a. Clearly define the scope of services being requested.
- b. List the evaluation factors and sub-factors including their relative importance that the RTA will use to evaluate the SOQs.
- c. List pass/fail factors.
- d. List all the required deliverables.
- e. List required referenced contract provisions.
- f. List the method(s) of payment for preconstruction services.
- g. Indicate if interviews will be conducted before establishing the final rank (the RTA may reserve the right to make a final determination whether interviews are needed based on responses to the RFQ).
- h. If interviews will be used, indicate its relative importance to all evaluation factors.
- i. Indicate the protest process.
- j. Include sample contract form(s) or reference the sample contract forms.
- k. Evaluation rating guidelines.
- l. Identify if a short list will be used.
- m. Indicate that the DBE requirements will not apply to pre-construction services, but it will apply to the construction services portion of the CM/GC project.
- n. Indicate the minimum percentage of work during the construction services phase that the CM/GC contractor must perform (must be at least 30%, excluding specialty work).
- o. The RTA's adopted subcontracting procedures that the CM/GC contractor must comply with. Regarding subcontracting, the RTA must comply with PCC 6705, 23 CFR 635.504 (d) and the DBE regulations in 49 CFR 26.
- p. The condition under which the second phase of the two-phase CM/GC contract, the construction services contract, may or may not be awarded.
- q. Indicate the CM/GC contractor must be excluded from bidding on the advertised contract.

Upon issuance of the RFQ, all communication between the RTA and the prospective proposers, such as responses to questions, will be through the designated RTA contact identified in the RFQ.

All responses to questions and any addenda required will be posted publicly by the designated RTA contact.

SOQs will be submitted to the RTA by a specified date and time. The RTA oversees the opening and completes the initial review of the SOQs for completeness.

The SOQs are then distributed to the RTA's evaluation team members to be evaluated. The evaluation team consists of project members and/or subject matter experts appointed by the RTA who perform independent evaluations of the SOQs against the evaluation factors. The RTA may request FHWA and Caltrans DLA Construction (COE) staff to participate on the evaluation team as a non-voting member.

During the evaluations, communications may be used through the designated contact to the proposers to clarify minor ambiguities, errors, omissions, or other information that would not necessitate a change of the SOQ.

Once all evaluations are complete, the qualitative ratings are converted to points and a score is assigned to each proposer. If the RTA establishes a short list based on SOQ scores and the selection process includes interviews, the RTA must invite all proposers on the short list to interview. If a short list is not used and the selection process includes interviews, the RTA must invite all responsive proposers to interview. All evaluations are performed in accordance with the RFQ and the evaluation procedures approved by the RTA. A Preconstruction Services Contract will be awarded to the highest ranked proposer.

Allowable methods of payment for preconstruction services are lump sum, cost plus fixed fee, cost per unit of work, or specific rates of compensation. Method of payment for construction services will be defined in the construction services contract.

6. Preconstruction Services

Preconstruction services means a CM/GC contractor will provide a RTA and its designer (in house or A&E consultant) with information regarding the impacts of design elements on the physical construction of a project, including but not limited to: scheduling, work sequencing, cost estimating, constructability, and risk identification/analysis. Under a preconstruction services contract, the CM/GC contractor may, depending on when procured, provide consulting services during both preliminary design and/or final design. Preconstruction services may include on-site material sampling and data collection to assist the RTA's design team in its design work, but do not include engineering and design related services as defined in 23CFR172.3. Pre-NEPA preconstruction services may include preliminary staging or preliminary falsework plans when needed for the NEPA process. However, services involving plans or submittals that are for the final design and not needed for the NEPA process (such as shop drawings and fabrication plans) is not permitted, even on an at-risk basis, prior to a NEPA environmental document approval.

After award of the preconstruction services contract, the CM/GC contractor becomes a member of the project development team and can perform a variety of preconstruction services at the direction of the RTA. The RTA's designer provides the Engineer's Estimate (EE) and advises the RTA on cost related issues. In addition, the RTA shall procure an Independent Cost Estimator (ICE) to

provide independent cost estimates for the purposes of evaluating the acceptability of the EE and the CM/GC contractor's price proposals and to advise the RTA on cost related issues. The ICE must be a consultant not affiliated with the CM/GC contractor and not affiliated with the RTA's designer. The RTA must procure the ICE consultant using the DLA procurement procedures in Chapter 10 of Local Assistance Procedures Manual (LAPM).

The following is a brief overview of the typical activities required in the CM/GC preconstruction phase and included in the preconstruction services contract.

A. Project Kickoff Meeting and Partnering Workshop

The CM/GC Preconstruction Phase usually begins with a Project Kickoff Meeting and Partnering Workshop. These can be conducted separately or they may be combined into a multiday workshop. The Partnering Workshop is often facilitated by a third party experienced in Partnering, with the goal to develop trust, respect, and cooperation among all key players. The Project Kickoff Meeting is used to review the team's roles, responsibilities, preliminary schedule, scope of work and project goals.

B. Prepare Risk Management Plan/Risk Register

Following, or in conjunction with, the Project Kickoff Meeting, the project team meets to develop a risk register for the project as part of the Risk Management Plan. The Risk Register is a tool used to identify, assess, mitigate, and monitor project risks. The Risk Register includes a matrix that identifies each risk; its risk level, cost impact, schedule impact, and responsible party; approaches to minimize risk and results of the risk mitigation. The Risk Register is continually reviewed and updated by the project team throughout the preconstruction phase to assist with key decisions on design development, risk, and project costs.

C. Prepare Cost Model

The CM/GC contractor prepares a project cost model with input from the project team. The cost model is an open and transparent document that defines the CM/GC contractor's pricing assumptions for use by the ICE consultant and the RTA's designer. The cost model defines the CM/GC contractor's costs related to labor, materials, equipment, subcontractor and supplier quotes, means and methods, production rates, risk, direct costs, mobilization, overhead and profit. The cost model is continually reviewed and discussed by the project team and updated by the CM/GC contractor prior to submitting its Opinion of Probable Construction Cost (OPCC) at each pricing milestone and prior to submitting its Price Proposal. This assists all estimating parties in developing their estimates and ensuring item costs can be reviewed and compared among the estimates. Although the CM/GC contractor is responsible for developing the cost model, the intent is to have the RTA's designer and the ICE consultant concur with the CM/GC contractor's cost model.

D. Design Development

The RTA's designer is responsible for developing the design plans (PS&E). The CM/GC contractor's input during the design developing process is used to supplement and enhance the design. The RTA's designer develops final design plans, collaborating with the CM/GC contractor on key design issues. Early (for example, 30% PS&E) and continuously through the design

development, the CM/GC contractor provides both formal and informal input on constructability, construction phasing, innovative design alternatives, and potential schedule and cost savings opportunities. Because no guarantee exists that the CM/GC contractor and the RTA will come to final agreement, it is important that the design plans aren't configured in a way that make them only useful for the CM/GC contractor.

E. Design Reviews

The RTA, its designer and the CM/GC contractor participate in design reviews throughout the Design Process. The purpose of the design reviews are to (1) ensure a constructible and cost-effective design that is consistent with the design intent; (2) ensure that the design complies with standards; (3) endeavor to confirm that all work has been included and described in sufficient details for each stage of design; (4) allow all parties to provide feedback on the constructability of the plans; (5) discuss assumptions on means and methods, and construction staging or sequencing of work that affects cost; (6) reconcile quantity differences between the estimators; and (7) identify any errors, omissions, ambiguities, or other items that need to be corrected.

F. Innovation Management

The CM/GC contractor develops, proposes, and tracks challenges and quantifies benefits of innovations throughout the preconstruction phase, including proposing criteria to evaluate suggestions and select improvements that will offer the most value in terms of cost, schedule, and quality. The CM/GC contractor prepares, modifies, and maintains an innovation register, which identifies the person and entity that proposed the idea, the value of the idea (in terms of cost, savings, risk reduction/mitigation, and schedule impact), and which ideas were incorporated by the project team into the final design and construction documents. Ideas which were not incorporated and the reasons why should also be documented. The CM/GC contractor submits written documentation of all suggested innovations at each design milestone at a minimum. While the RTA will entertain Value Engineering Change Proposals during the construction phase, the expectation is that these proposals are developed and incorporated into the project during the design development phase.

G. Risk Workshop

A Risk Workshop is typically a half-day to full-day workshop that occurs in conjunction with, or shortly after, the Design Review Workshop. The Risk Workshop allows the RTA, its designer and the CM/GC contractor to update the Risk Register regularly.

H. Develop and Submit Cost Estimates and Schedule

The CM/GC contractor and the ICE consultant each independently prepare a contractor-style, production-based, cost estimate and schedule that is based on the early design stage (for example, 30% design plan and specification). The RTA's designer prepares an EE using its typical historical bid-based estimating process. With the three estimates, the RTA's designer then develops a variance report for use by the project team. The variance report shows the CM/GC contractor's OPCC. In addition, the variance report notes whether the CM/GC contractor's OPCC is within 10% or alternately within a fixed dollar figure of the ICE for each Price Proposal item. The CM/GC contractor's schedule is provided to the RTA and ICE consultant for their review and comment. This occurs at, or slightly before, the submission of the CM/GC contractor's OPCC.

I. Price Reconciliation Meeting

Following the submission of the estimates at an early design stage (for example 30% design milestone), the RTA, the RTA's designer, the CM/GC contractor, and the ICE attend a Price Reconciliation Meeting that typically ranges from one to three days, depending on the size and complexity of the project and the extent of the price differences. The purpose of the meeting is to review pricing assumptions and attempt to reconcile price differences between the CM/GC contractor's OPCC and the ICE. The meeting gives each party an opportunity to understand each other's perspective about pricing assumptions and risk assignment. This meeting also helps the RTA develop a greater confidence level regarding the cost of the project and the reasonableness of the CM/GC contractor's OPCC. The RTA and its designer participate in these meetings, but does not disclose the EE.

J. Adjust Cost Model, Schedule, and Pricing

The RTA and CM/GC contractor agree upon changes to the pricing assumptions. The CM/GC contractor adjusts the cost model and the schedule to reflect these changes and resubmits them to the RTA. This information is then documented in the project file. Any pricing changes will be carried forth to the next estimating milestone or the Price Proposal. During the reconciliation process, the RTA's designer and the ICE consultant may believe it is necessary to adjust their pricing assumptions and estimates.

K. Subsequent OPCCs

As the design progresses, the previous activities are repeated to coincide with each remaining design milestone, as determined by the RTA (subsequent milestones typically occur at the 60% and 90% final design). Additional OPCCs may be necessary if significant design changes occur or significant pricing variances remain. One of the goals through this iterative process is to reconcile pricing differences throughout the preconstruction phase, thereby helping ensure that the CM/GC contractor's Price Proposal is determined to be reasonable by the RTA, i.e., becomes the agreed price, subject to substituted changes upon receipt of the lowest responsible & responsive bids on all the sub-contracted work.

In addition to the activities described above, the CM/GC contractor may provide other potential preconstruction services to assist the RTA in developing the project, such as those listed in table 1. Appendix B provide some descriptions of these services. The preconstruction services requested by the RTA will vary from project to project and is to be determined by the RTA following 23 CFR 635 Subpart A & E.

TABLE 1 – POTENTIAL PRECONSTRUCTION SERVICES

| DESIGN RELATED | SCHEDULE RELATED |
|--|--|
| Validate RTA/Consultant design | Validate RTA/consultant schedules |
| Assist/input to RTA /Consultant design | Prepare and manage project schedules |
| Design reviews | Develop sequence of design work |
| Design charrettes | Construction phasing |
| Constructability reviews | Schedule risk analysis/control |
| Operability reviews | ADMINISTRATION RELATED |
| Regulatory reviews | Coordinate with 3rd party stakeholders |
| Market surveys for design decisions | Attend public meetings |
| Verify/take-off quantities | Bidability reviews |
| Assistance shaping scope of work | Subcontractor bid packaging |
| Feasibility studies | Prequalifying Subcontractors |
| COST RELATED | Assist in right-of-way acquisition |
| Validate RTA/consultant estimates | Assist in permitting actions |
| Prepare project estimates | Study labor availability/conditions |
| Cost engineering reviews | Prepare sustainability certification application |
| Early award of critical bid packages | Coordinate site visits for subcontractors |
| Life cycle cost analysis | PRECONSTRUCTION RELATED FIELD WORK |
| Value analysis/engineering | Utility Relocation |
| Material cost forecasting | Potholing |
| Cost risk analysis | Preliminary soil and geotech studies |
| Cash flow projections/Cost control | Right of Way Demolition |
| Shape the project scope to meet the budget | Preliminary Surveying |

Note: This list adapted from National Cooperative Highway Research Program Project 10-85 "A Guidebook for Construction Manager-at-Risk Contracting for Highway Projects"

7. Pre-NEPA Approval Procurement and Requirements

If the CM/GC contractor is procured prior to completing the NEPA approval process, the RTA must abide by and include the following provisions in the CM/GC RFQ and the CM/GC Preconstruction Services Contract:

- a. A provision allowing unilateral termination by the RTA if the approved NEPA environmental document does not result in selection of a build alternative.
- b. A provision that the scope of services in the preconstruction phase includes all alternatives identified and considered in the NEPA process.
- c. A provision ensuring that no commitments are made to any alternative during the NEPA approval process and that the comparative merits of all alternatives identified and considered during the NEPA approval process, including the no-build alternative, will be evaluated and fairly considered.
- d. A provision that the CM/GC contractor must not prepare NEPA documentation or have any decision-making responsibility with respect to the NEPA environmental document approval process. However, the CM/GC Contractor may be requested to provide information about the project and possible mitigation actions, including constructability

information, and its work product may be considered in the NEPA analysis and included in the record.

- e. A provision that the RTA will not proceed, or permit any consultant or contractor to proceed, with the development of shop drawings and fabrication plans before the completion of the NEPA approval process for the project.
- f. A provision that the RTA will not proceed with the award of a construction contract (including early work packages such as advanced material acquisition or site work) and will not proceed, or permit any consultant or contractor to proceed, with construction until the completion of the NEPA approval process for the project.

The RTA is required to follow Chapter 6 in the LAPM regarding the NEPA environmental process. Final design work done prior to NEPA environmental document approval is called at-risk design. Chapter 6 does not allow at-risk final design. While 23 CFR 635.505 (c) conditionally allows use of at-risk final design, the DLA will not allow the RTA to proceed with at-risk final design.

8. Work Packages

An advantage of CM/GC project delivery method is that it allows the flexibility to perform construction in phases with multiple work packages as project phases are identified and approved for construction. Reasons for using multiple work packages may include project phasing to match funding schedules, being able to construct a phase of the project while right of way is secured for additional phases, or releasing a utility package in advance of roadway construction to advance the project schedule. If a RTA proposes to utilize multiple work packages for the main portion of Construction, it must at the time of requesting authorization of the initial work package: (1) Provide written documentation on the availability of the amount and type of funds for each of the multiple work packages and that these funds are committed for construction of the entire project. An authorization request requires that the required funds for the phase be committed prior to any authorization of said phase, (2) Provide a detailed explanation of why the main portion of the project needs to be delivered using multiple work packages and the proposed construction schedule for each of the work packages, (3) Provide a schedule for beginning construction on each of the multiple work packages which must be consistent with committed funds for each of the multiple work packages.

Work packages must be a severable phase of the construction, such that the RTA is not obligated to have the CM/GC Contractor construct any other portions of the work. Each work package must obtain all required clearances, including applicable FHWA approvals, and be evaluated and awarded through the Price Proposal process. For this reason, a single package may be more efficient as the Price Proposal and contracting processes are only performed once. Furthermore, a single package helps ensure that the cost of the entire project is within budget and that the project has cleared all constraints before proceeding with Construction.

An early work package is a type of work package for a portion of physical construction work (including but not limited to site preparation, structure demolition, hazardous material abatement/treatment/removal, or early material acquisition/fabrication) that is procured after NEPA environmental document approval but before all final design work for the project is complete. Early work packages may be used to procure long-lead time construction materials and equipment in advance of Construction, thus optimizing the overall project schedule. Materials

may also be procured with early work packages to avoid price escalations for volatile construction materials.

Per the FHWA's Final Rule for CM/GC, early work packages are intended for minor elements of project construction that can be accomplished during the period after NEPA environmental document approval is complete and before final design of the project is sufficient to permit the RTA and the CM/GC contractor to reach price agreement for construction of the entire project. Early work packages are not to be used to piecemeal construction. Therefore, when considering use of an early work package for any federally funded project, the RTA must provide written notification stating reasons for using early work package and consult with the DLAE/DLA Office of Implementation and FHWA to verify the early work package scope of work constitutes minor elements, and not a main portion of project construction. FHWA approval of the use of early work package(s) may be required and will be established in the Project Oversight Agreement.

If a work package is being issued, an OPCC for the entire project should be requested from the CM/GC Contractor prior to awarding a contract for the work package, including an early work package. The OPCC for the entire project is used by the RTA to confirm that the overall construction scope can be completed within the available project budget. Exact timing for requesting an OPCC for the entire project from the CM/GC Contractor is evaluated on a project-by-project basis; however, it is typically requested in conjunction with an OPCC for a work package.

For federally funded projects, the RTA is required to provide the FHWA with a total construction project cost estimate prior to the FHWA's authorization of construction services (including authorization of an early work package). No construction activities (including early work packages, even on an at-risk basis) shall be performed or contracted prior to the completion of the NEPA approval process.

9. Price Analysis Process

Once design has been completed to a level where a price may be submitted (typically at 90 to 95 percent of design), the RTA's designer will prepare a plans, specifications and quantities package. The construction services contract must include appropriate provisions ensuring that all environmental and mitigation measures identified in NEPA environmental document, permit conditions, and other agreements will be implemented.

Upon 90 to 95% completion of the plans, specifications, and quantities the RTA will request a Price Proposal from the CM/GC contractor at an agreed upon date. The CM/GC contractor will develop the Price Proposal that will include the direct cost of performing the work (equipment, labor, materials, etc.), overhead and profit. Depending on the project schedule, the Price Proposal may be submitted with subcontractor plug values as placeholders pending solicitation of subcontractor bids. With subcontractor plugs being used, adequate time to solicit the necessary subcontractors and to meet the Disadvantaged Business Enterprise (DBE) contract goal will need to be provided prior to awarding the contract. However, subcontractor procurement must be scheduled so that the construction contract can be awarded while the subcontractor prices remain valid. The CM/GC Contractor signature on the construction contract confirms validity of the subcontractor prices for that construction contract. DBE contract goals are set by the RTA and

included in each construction contract. If a construction services contract is larger than \$2 million, the DBE goal set by the RTA must be approved by Caltrans DLA. Subcontractors and suppliers must be procured using a competitive and transparent bid process in accordance with a subcontracting plan approved by the RTA. The subcontracting plan must demonstrate how the CM/GC contractor will ensure adequate competition, how the RTA's indicated minimum 30% percentage self-performance requirement will be met, and that there will be adequate subcontracted work available to meet the RTA's proposed DBE contract goal. The subcontracting plan shall be sent to and concurred by Caltrans DLAE.

The Price Proposal will then be compared to the ICE estimate and the EE to determine its reasonableness. A price reconciliation meeting will be held to discuss differences in the CM/GC Contractor's Price Proposal and other estimate(s) obtained by the RTA. Neither the ICE estimate nor the EE will be provided to the CM/GC contractor. After the reconciliation meeting is held, a revised Price Proposal may be requested by the RTA from the CM/GC contractor and the ICE consultant. This will then be reviewed and reconciled as necessary.

Contingency is accounted for in every contractor's bid or cost proposal for every project, regardless of contracting method, and is reflective of the risks present at the time the bid/cost proposal is submitted. Typically, higher risk means higher contingency and lower risk means lower contingency. One of the major benefits of CM/GC contracting is that it allows the RTA and the CM/GC contractor to collaboratively work together during the preconstruction phase to better understand, manage, and reduce risks on the project, thereby lowering contingency costs.

For CM/GC projects, risk is accounted for by two separate means: (1) in the CM/GC contractor's Price Proposal for risk that the CM/GC contractor has accepted, and (2) in the RTA's contingency (contingency and/or supplemental work) for risk that the RTA has accepted.

A dollar amount shall be established for assigned risks by using a risk simulation such as Monte Carlo method. The RTA and CM/GC Contractor must collaborate on risk assignment so that both parties understand the approach and methods used in the risk analysis.

After several submittals or if the price reconciliation is not progressing, the RTA will decide to either award the construction services to the CM/GC Contractor through a construction contract or to advertise the project for bids. The CM/GC contractor must be excluded from bidding on the advertised contract.

FHWA considers all Federal-aid projects procured by the CM/GC method to be Project of Division Interest (PoDI) projects, the FHWA will review the Price Proposal analysis and provide the RTA with any comments they may have.

If an agreed price is reached, the RTA finalizes the plans and specifications with all necessary approvals, including, but not limited to right-of-way certification, and utility certifications and submits a Request for Authorization (Construction Services Contract) to the DLAE.

- If the Price Proposal is within the available project budget and within 10% of the ICE estimate, no justification to award the project is required.

- If the Price Proposal is more than 10% over or less than 90% of the ICE estimate, the project team must include in their recommendation to award memorandum justification for awarding the contract to the CM/GC Contractor. The Request for Authorization, the Price Proposal and the recommendation memo shall be provided to DLA and FHWA through the DLAE for review and concurrence.

The Price Analysis Process is shown in Figure 1.

10. Federal Highway Administration (FHWA)

FHWA involvement is required on projects with federal funding. FHWA's Final Rule for CM/GC outlines requirements, including FHWA approvals, specific to federally funded CM/GC projects. When it is determined that a CM/GC contract will use federal-aid funding for preconstruction services or may use federal-aid funding for construction services, the RFQ and associated cost analysis (for preconstruction services) will require FHWA approval. The DLAE should review and approve the RFQ before it is sent to FHWA. The RFQ shall be sent to FHWA for approval through DLAE and the DLA Office of Implementation. FHWA's approval of the RFQ Document will constitute FHWA's approval to use the CM/GC contracting method and release the RFQ Document. The DLA Office of Implementation will transmit FHWA's authorization & RFQ Document approval or disapproval of the RFQ Document to the DLAE for transmittal to the RTA. The RTA must, through the DLAE & the DLA Office of Implementation, request FHWA's authorization of preliminary engineering (PE), including any additional costs for preconstruction services, prior to incurring such costs. If PE has already been authorized and the work of preconstruction services was not included, the RTA must request a modification to the PE authorization to add the preconstruction services work. FHWA must also approve Major Addenda to the RFQ. A Major Addendum includes, but is not limited to, changes to the selection method, evaluation criteria, or significant changes to the scope of services. CM/GC projects are PoDI by default, therefore, requiring a Project Oversight Agreement (POA). As soon as the RTA determines that it will deliver a project using the CM/GC method of procurement, it should request FHWA to provide it with a tri-party (FHWA, DLA and the RTA) POA template, and this request needs to be made through the DLAE/DLA Office of Implementation. Table 2 is an overview of FHWA involvement on federally funded CM/GC projects. This list can be modified and tailored to each individual CM/GC project through the POA. The flow chart shown in Figure 2 shows the general CM/GC approval process for preconstruction and construction services for one scenario. This scenario involves a post-NEPA preconstruction services contract, no early work package and one construction contract for the main portion of Construction.

The provisions of 23CFR630 and 23CFR635 apply to CM/GC contracts. As discussed in Section 7, the RFQ may be issued prior to or after approval of the NEPA environmental document. However, preconstruction services eligible for reimbursement may only be related to preliminary design until the NEPA environmental document is approved. Upon approval of the NEPA environmental document and FHWA authorization, preconstruction services related to final design may be eligible for reimbursement. Once design has reached a level where a Final Price Proposal can be solicited, and agreed to move through the Price Analysis Process, the RTA may submit a Request for Authorization of the Construction Services. FHWA will review and approve the price analysis and agreed price prior to authorization of construction services.

After FHWA authorization of the construction services contract, the RTA will direct the CM/GC contractor to obtain subcontractor bids utilizing the RTA subcontracting procedures and the RTA's proposed DBE contract goal. The RTA then replaces the subcontractor plug in values with the responsive & responsible bids on the subcontracts and requests FHWA concurrence through DLA to award the construction services contract. The RTA will provide FHWA a copy of the final executed construction services contract through the DLAE & DLA Office of Implementation.

Federally funded CM/GC projects on local highway systems shall use these procedures and guidance described in this document. The RTA is responsible for complying with CM/GC PCCs.

For RTA's reference, Appendix A lists several scenarios and documents that should be submitted to DLA and FHWA through the DLAE for CM/GC procedures for federally funded local projects.

TABLE 2 – CM/GC Projects Action Responsibility Matrix

| ACTIVITY | LOCAL AGENCY ACTION | CALTRANS ACTION | FHWA ACTION |
|---|----------------------|--------------------|---------------------------------|
| Project Delivery Selection | Determine and Notify | Notify | None |
| Potential Conflict of Interest | Determine and Notify | Notify | None |
| Cost or Price Analysis for Preconstruction Services Procurement (including contract modifications) ¹⁰ | Prepare | Review & Recommend | Approve |
| Preliminary Engineering Authorization (including cost of Preconstruction Services) | Prepare | Review & Recommend | Authorize ⁵ (5 Days) |
| RFQ | Prepare | Review & Recommend | Approve ³ (14 Days) |
| RFQ Clarifications | Prepare ² | None | None |
| RFQ Addenda | Prepare | Review & Concur | Review ¹ |
| Major RFQ Addenda | Prepare | Review & Recommend | Approve ³ (5 Days) |
| Re-issuing Procurement | Determine | Notify | None |
| Use Another Procurement Process | Prepare | Review & Recommend | Concur |
| Cancelling Procurement | Determine & Notify | Notify | None |
| SOQ Evaluations | Prepare | Observe | Observe |
| Short-List | Prepare ² | None | None |
| Debriefing | Conduct | Participate | Participate ⁷ |
| 30%/60%/90% Plans | Prepare | Review & Comment | Review ¹ |
| Price Variance Report | Prepare ² | Review | Review |
| Price Reconciliation Meeting | Prepare ² | Observe | Observe ⁷ |
| Proceed with at-risk final design | N/A | N/A | N/A |
| Plans and Specifications | Prepare | Review & Recommend | Approve (14 Days) |
| Plans and Specifications Addenda | Prepare | Review & Recommend | Approve (3 Days) |
| Use of Early Work Package | Prepare | Review & Recommend | Approve (3 Day) |
| Price Estimate for Entire Project ^{8,10} (including early work package) | Prepare | Review & Recommend | Approve (5 days) |
| Indirect Cost Rate ¹⁰ | Submit | Approve | None |
| Price Proposal Analysis ¹⁰ | Prepare ⁶ | Review & Recommend | Approve (5 days) |
| Reject Price Proposal | Notify | Review & Concur | None |
| Terminate CM Contract | Notify | Review & Concur | None |
| Request for Construction Authorization | Prepare ⁴ | Review & Recommend | Authorize (7 Days) |
| Request for Concurrence in Award ⁹ | Prepare | Review & Recommend | Concur in Award (5 Days) |
| Post-NEPA approval review of at-risk final design costs for eligibility (Note: this action cannot be assumed by State) | Prepare | Review & Recommend | Review and Approve |

Footnotes:

¹ FHWA is provided an opportunity to review and submit comments to RTA within the specified time-frame.

² RTA will provide FHWA and Caltrans with a courtesy copy.

³ The Project Manager will submit the CM/GC RFQ to FHWA for approval prior to advertising the CM/GC RFQ. Major RFQ Addenda are submitted to FHWA for approval prior to posting. Early and continuous coordination is encouraged by providing a draft RFQ for FHWA review.

⁴ RTA will submit the Request for Construction Authorization to Caltrans, for the project or a work package, after Caltrans deems the CM/GC Contractor's Price Proposal to be acceptable - per the CM/GC Price Proposal proces, Caltrans request for authorization.

⁵ FHWA must authorize preliminary engineering (including the costs of preconstruction services) before incurring such costs. If preconstruction services were not included in original authorization, request a modification to include those costs if necessary.

⁶ The estimate submitted to the FHWA for Price Proposal Analysis will be the ICE estimate.

⁷ Participation by FHWA will be based on time availability.

⁸ RTA to provide price estimate for entire project prior to any construction authorizations, including early work packages.

⁹ FHWA concurrence constitutes approval of the Agreed Price, scope, and schedule for the work.

¹⁰ As per 23 CFR 635.506(a)(1)&(3), if responsibility/action is assumed by Caltrans it cannot be further delegated to the RTA.

11. Progress Report

Within 60 days after a project is completed using the CM/GC method, the RTA shall prepare a progress report to its governing body. The progress report shall include, but not be limited to, all the following information:

- a. A description of the project.
- b. The name of the entity that was awarded the project.
- c. The estimated and actual costs of the project.
- d. The estimated and actual schedule for project completion.
- e. A description of any written protests concerning any aspect of the solicitation, bid, proposal, or award of the project, including, but not limited to, the resolution of the protests.
- f. An assessment of the prequalification process and criteria required by the Chapter 6.7 of Public Contract Code.
- g. A description of the method used to evaluate the bid or proposal, including the weighting of each factor and an assessment of the impact of this requirement on a project.
- h. A description of any challenges or unexpected problems that arose during the construction of the project and a description of the solutions that were considered and ultimately implemented to address those challenges and problems.
- i. Recommendations to improve the CM/GC method.

The progress report shall be made available on the RTA's Internet Web site. The RTA shall send a copy of the progress report to Caltrans DLA Implementation and FHWA.

12. References

- 1) FHWA Construction Program Guide for Construction Manager/General Contractor Project Delivery – <https://www.fhwa.dot.gov/construction/cqit/cm.cfm>
- 2) FHWA CM/GC Final Rule – <https://www.gpo.gov/fdsys/pkg/FR-2016-12-02/html/2016-28977.htm>

Figure 1- CM/GC Price Analysis Process

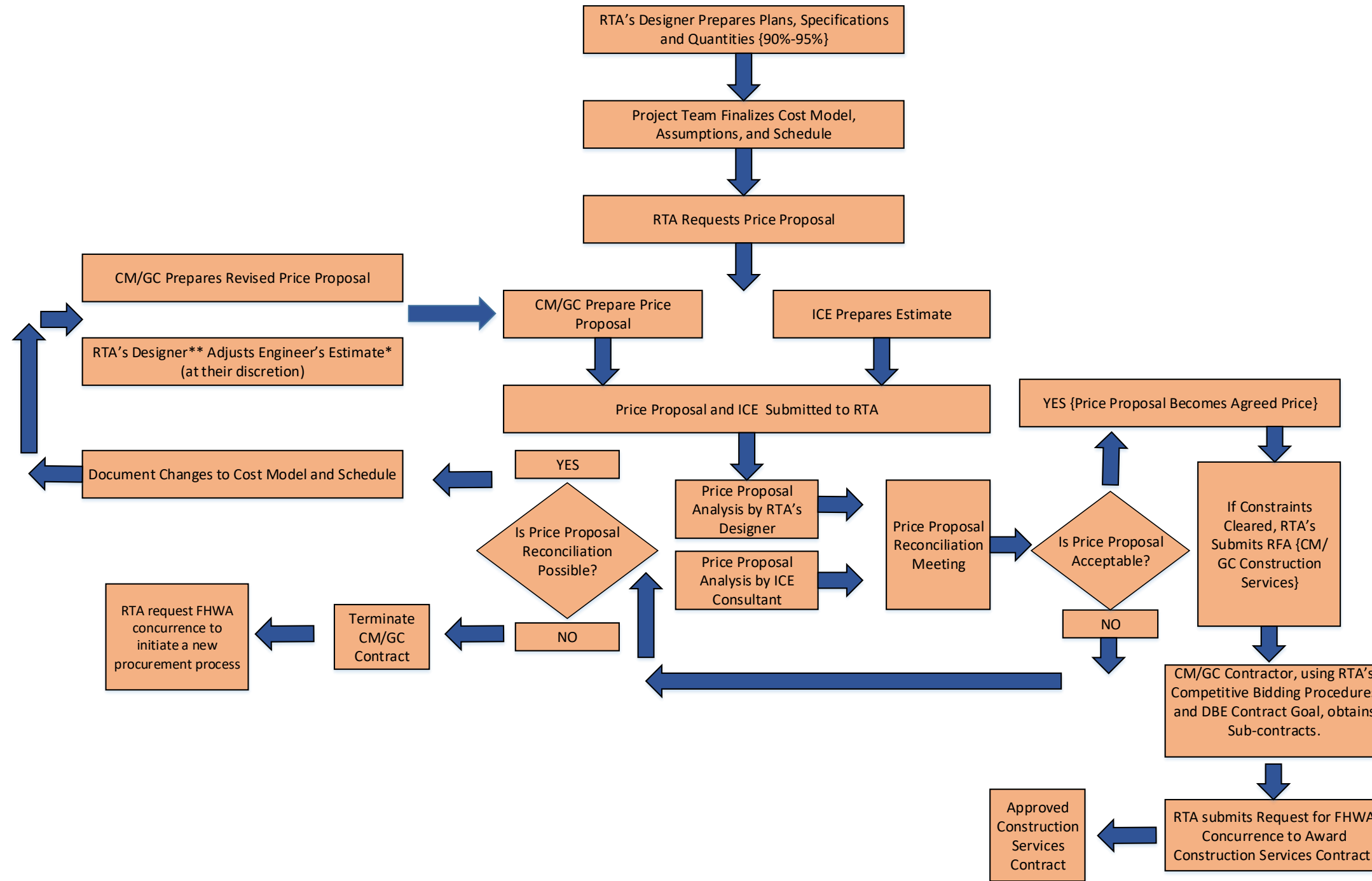
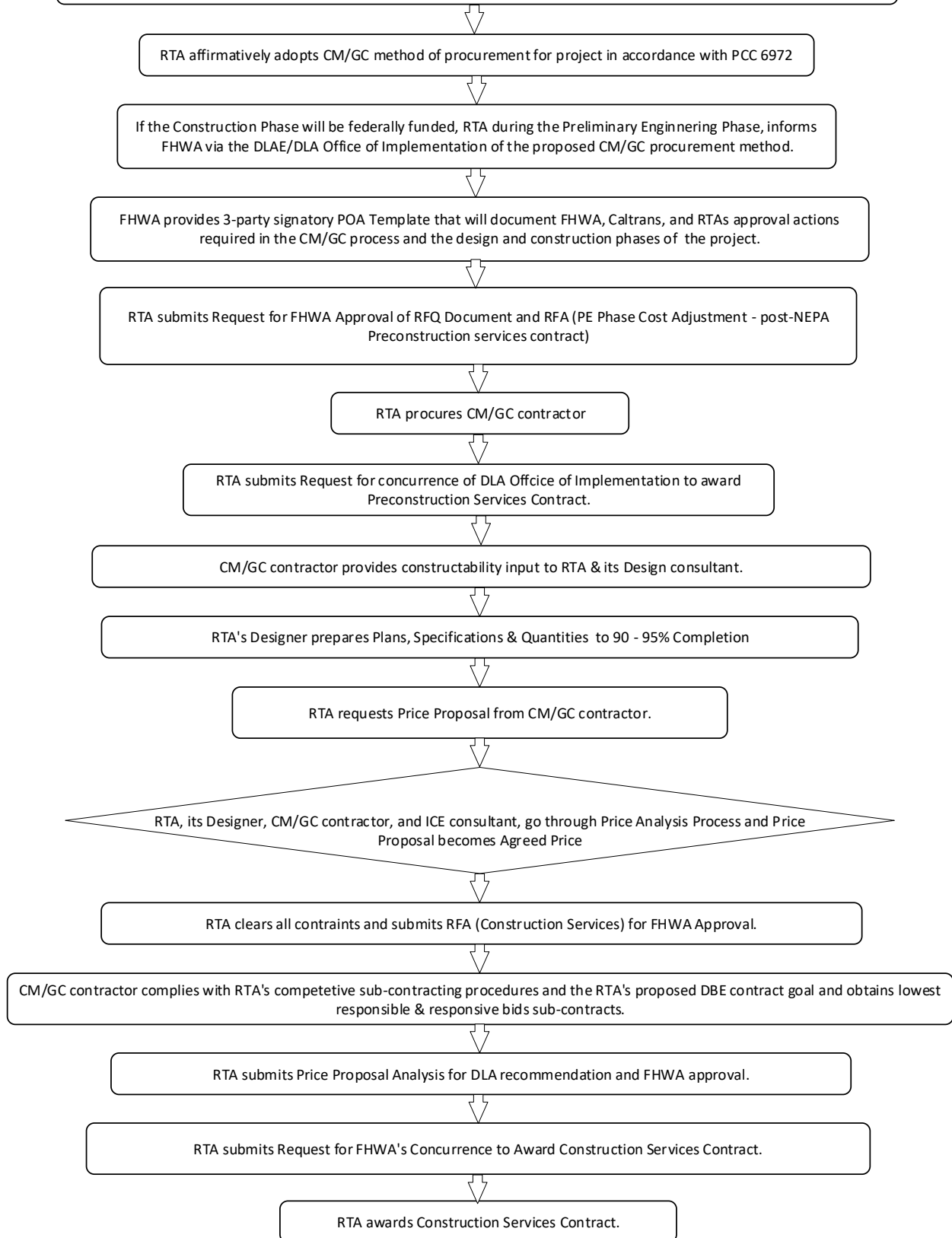


Figure 2 - CM/GC Process



Appendix A: Local Assistance CM/GC Procedures for Selected Scenarios

All the following requests assume the presence of Federal funds on the proposed CM/GC project. Do not use if no Federal funds.

1. Request for FHWA Authorization for post-NEPA Preconstruction Services and Approval for CM/GC project

The Request must include the following RTA certifications and information:

- a. Verification that the project is listed in PCC 6971.
- b. A copy of evaluation of the traditional design-bid-build method versus the CM/GC method of procurement for the project, and a copy of document that the RTA board has adopted the CM/GC method of procurement for the project in a public meeting.
- c. A copy of FHWA approved RFQ. RTA shall submit a RFQ to FHWA for approval through DLAE/DLA Office of Implementation prior to request authorization to proceed.
- d. A copy of approved NEPA document.
- f. Indicate if the design is being done in-house or through an A&E Consultant firm and the percentage completion of design (PS&E).
- g. Estimated substantial PS&E completion date by the RTA or its A&E Consultant.
- h. Copy of approved FSTIP/FTIP documentation.
- i. RTA's estimated costs of the post-NEPA preconstruction services. RTA must submit cost or price analysis for the preconstruction services procurement (including contract modifications) prior to request authorization to proceed with preconstruction services by the CM/GC contractor to FHWA for approval.
- j. Copy of approved Request for Authorization to Proceed with Preliminary Engineering (Exhibit 3-A).
- k. Acknowledge that the regional transportation agency will need to obtain concurrence of DLA Office of Implementation prior to awarding the preconstruction services contract to the CM/GC contractor.

2. Request for FHWA Authorization for pre-NEPA Preconstruction Services for CM/GC project

The Request must include the following RTA certifications and information:

- a. Verification that the project is listed in PCC 6971.
- b. A copy of evaluation of the traditional design-bid-build method versus the CM/GC method of procurement for the project, and a copy of document that the RTA board has adopted the CM/GC method of procurement for the project in a public meeting.
- c. Indicate the type of NEPA environmental document being considered, the percentage completion of the NEPA environmental process, the anticipated date of NEPA approval, and if applicable, the estimated date of release of the NEPA draft environmental document to the public.
- d. Indicate if the preliminary design & environmental studies are being done in-house or through an A&E Consultant firm.

- e. Acknowledgement that the regional transportation agency will not begin final design until after NEPA approval. After NEPA approval and prior to executing an A&E consultant contract for final design, a modification to the PE Authorization is required. Funding for the final design must be programmed in the FSTIP/FTIP. Post-programming is not allowed.
- f. A copy of FHWA approved RFQ. RTA must submit a RFQ to FHWA for approval through DLAE/DLA Office of Implementation prior to request authorization to proceed. The RFQ must indicate that the RTA will unilaterally terminate the CM/GC contract if the NEPA environmental process does not result in the selection of a build alternative.
- g. The Solicitation Document must indicate that Construction Services will not be awarded until after NEPA approval of the entire Project and substantial PS&E completion of the entire Project or if FHWA approves, a segment of the entire Project. The RTA should provide an approximate timeline for NEPA approval and for substantial PS&E completion in its RFQ.
- h. Copy of approved FSTIP/FTIP documentation.
- i. RTA's estimated cost of the pre-NEPA pre-construction services. RTA must submit cost or price analysis for the preconstruction services procurement (including contract modifications) prior to request authorization to proceed with preconstruction services by the CM/GC Contractor to FHWA for approval.
- j. Copy of approved Request for Authorization to Proceed with Preliminary Engineering (Exhibit 3-A).
- k. Acknowledge that the regional transportation agency will need to obtain concurrence of DLA Office of Implementation prior to awarding the pre-NEPA preconstruction services contract to the CM/GC contractor.

3. Request for Concurrence DLA Office of Implementation to Award for Post – NEPA – Preconstruction Services

The Request must include the following:

- a. Copy of the agreed price on the post NEPA Preconstruction Services work.
- b. A copy of approved NEPA document.
- c. Scope of the preconstruction services.
 - (1) Note that if RTA includes any field work in preconstruction services, federal wage rates will apply to this field work. Applicable federal wage rates would be those in effect 10 days prior to the agreed price.
- d. Copy of approved Request for Authorization to Proceed with Preliminary Engineering (Exhibit 3-A) reflecting the negotiated cost of the post-NEPA preconstruction services.

4. Request for Concurrence of DLA Office of Implementation to Award for Pre – NEPA – Preconstruction Services

The Request must include the following:

- a. Copy of the agreed price on the preconstruction services work related to preliminary design & the environmental process.
- b. Scope of the preconstruction services.

- (1) If RTA includes any field work in preconstruction services, federal wage rates will apply to this field work. Applicable federal wage rates would be those in effect 10 days prior to the agreed price.
- (2) Since this is prior to NEPA approval, the preconstruction services must not include any preconstruction services related to final design/PS&E.
- c. Schedule for the preconstruction services.
 - (1) Note that the schedule cannot go beyond the NEPA approval date.
- d. Copy of approved Request for Authorization to Proceed with Preliminary Engineering (Exhibit 3-A) reflecting the negotiated cost of the pre-NEPA preconstruction services.
- e. Acknowledgement that after NEPA environmental document approval the RTA will send a Request for Authorization of post-NEPA Preconstruction Services to the same CC/GC Contractor.

5. Request for FHWA Authorization (CM/GC Construction Services – Early Work Package)

The Request must include the following:

- a. The CM/GC's price estimate for construction costs for the entire project, including early work package(s)
- b. The agreed price for the early work package.
- c. The scope of the early work package.
- d. The schedule for the early work package.
- e. The RTA's use of early work package notification including reasons for using the early work package.
- f. Proposed DBE contract goal for the early work package.
- g. Early Work Package number, even if RTA assumes that there will be only one early work package.
- h. Federal wage rates from 10 days prior to agreed price date.
- i. The RTA engineer's estimate and ICE estimate for the early work package.
- j. The RTA's price analysis of the agreed price versus the RTA engineer's estimate or an independent cost estimate, concluding that the agreed price is reasonable. A price analysis is encouraged but not required for the procurement less than the simplified acquisition threshold in 2 CFR 200.88 (\$150,000).
- k. FSTIP/FTIP showing the Construction Phase for the entire project programmed.
- l. Copy of approved Request for Authorization to Proceed with Preliminary Engineering (Exhibit 3-A).
- m. NEPA document approval date & type.
 - (1) Attach CE, or FONSI, or ROD.
- n. Estimated substantial PS&E completion date by the RTA or its A&E Consultant.
- o. R/W Clearance Memo on areas where the early work is proposed.
- p. Utility Relocation Memo on areas where the early work is proposed.
- q. Environmental Clearance Memo covering areas where the early work is proposed since any work being done must be in accordance with environmental permits.

6. Request for FHWA Authorization of CM/GC Construction Services

The Request must include the following:

- a. Signed and dated Exhibit 3-D (Request for Authorization to Proceed with Construction) from the LAPM.
- b. Exhibit 3-E (Request for Authorization to Proceed Data Sheet(s)).
- c. Copy of current FSTIP/FTIP Sheet showing the Construction Phase programmed in the year Construction (not including early work package) is to be authorized.
- d. Copy of approved Request for Authorization to Proceed with Preliminary Engineering (Exhibit 3-A).
- e. Type of NEPA document and date of approval.
(1) Attach CE, or FONSI, or ROD.
- f. DBE contract goal.
- g. R/W Certification.
- h. PS&E Certification (Exhibit 12-C) & DLAE accepted PS&E Checklist (Exhibit 12-D) with non-applicable portions struck through and initialed by the RTA's PS&E designer.
- i. CTC Allocation information, if any.
- j. If a value engineering was required, acknowledgement from the RTA that prior to the price estimate for Construction Services from the CM/GC Contractor, the RTA's approved recommendations from the VE analysis were incorporated into the project plans & specifications.
- k. Copy of a Price Analysis for the construction contract showing the scope, schedule or price for the construction of the CM/GC project or a portion of the project (including early work package(s)). The price analysis must compare the agreed price with the ICE and RTA's EE. A price analysis is encouraged but not required for the procurement less than the simplified acquisition threshold in 2 CFR 200.88 (\$150,000).
- l. Federal wage rates from 10 days prior to the price estimate date.
- m. Copy of the RTA engineer's cost estimate, ICE estimate and the RTA's price analysis document showing that the price estimate is reasonable.
- n. Acknowledgement that the regional transportation agency will need to obtain FHWA's concurrence prior to awarding the Construction Services Contract.

7. Request for FHWA's Concurrence to Award Construction Services Contract

The Request must include the following:

- a. Copy of the Price Analysis.
- b. Construction Contract DBE Commitment (similar to Exhibit 15-G).
- c. Good Faith Effort Statement of DBE Participation (similar to Exhibit 15-H) if the DBE Contract Goal is not met.
- d. Federal Wage Rates.
- e. Detail Estimate (Exhibition 15-M).
- f. Finance Letter (Exhibition 3-O) reflecting the agreed price.
- g. Resident Engineer's Construction Contract Administration Checklist (Exhibition 15-B)

- h. Estimated construction completion date.
- i. Acknowledgement that the RTA will provide three copies (or an e-mail attachment) of the executed contract between the CM/GC Contractor and the RTA for construction services. Copies will be sent through the DLAE to FHWA and the DLA Office of Implementation.

Appendix B:

Glossary of Preconstruction Services Term

Adapted from National Cooperative Highway Research Program Project 10-85 “A Guidebook for Construction Manager-at-Risk Contracting for Highway Projects”

Design-Related Preconstruction Services

Validate agency/consultant design – CM/GC Contractor evaluates the design as it is originally intended and compares it to the scope of work with both the required budget and schedule to determine if the scope can be executed within those constraints. A validated design is one that can be constructed within the budget and schedule constraints of the project.

Assist/input to agency/consultant design – CM/GC Contractor will offer ideas/cost information to the designer to be evaluated during the design phase. Ultimately, the designer is still responsible for the design.

Design reviews – done to identify errors, omissions, ambiguities, and with an eye to improving the constructability and economy of the design submittal.

Design charrettes – CM/GC Contractor would participate in structured brain-storming sessions with the designer and owner to generate ideas to solve design problems associated with the project.

Constructability reviews – review of the capability of the industry to determine if the required level of tools, methods, techniques, and technology are available to permit a competent and qualified construction contractor to build the project feature in question to the level of quality required by the contract.

Operability reviews – bringing in the agency’s operations and maintenance personnel and providing them with an opportunity to make suggestions that will improve the operations and maintenance of the completed projects.

Regulatory reviews – a check to verify that the design complies with current codes and will not have difficulty obtaining the necessary permits.

Market surveys for design decisions – furnish designers with alternative materials or equipment along with current pricing data and availability to assist them in making informed design decisions early in the process to reduce the need to change the design late in the process resulting from budget or schedule considerations.

Verify/take-off quantities – CM/GC Contractor verifies the quantities generated by the designer for the engineer’s estimate.

Assistance shaping scope of work – CM/GC Contractor generates priced alternatives from the designer and owner to ensure that the scope of work collates to the constraints dictated by the budget and/or schedule.

Feasibility studies – CM/GC Contractor investigates the feasibility of possible solutions to resolve design issue on the project.

Cost-Related Preconstruction Services

Validate agency/consultant estimates – CM/GC Contractor evaluates the estimate as it is originally intended and determines if the scope can be executed within the constraints of the budget.

Prepare project estimates – CM/GC Contractor provides real-time cost information on the project at different points in the design process to ensure that the project is staying within budget.

Cost engineering reviews – review that includes not only the aspects of pricing but also focuses on the aspect that “time equals money” in construction projects.

Early award of critical bid packages – CM/GC Contractor determines which design packages should be completed first to ensure that pricing can be locked in on the packages.

Life-cycle cost analysis – CM/GC Contractor provides input to design decision that impact the performance of the project over its lifespan.

Value analysis – process that takes place during preconstruction where the CM/GC contractor identifies aspects of the design that either do not add value or whose value may be enhanced by changing them in some form or fashion. The change does not necessarily reduce the cost; it may actually decrease the life-cycle costs.

Value Engineering – systematic review by a qualified agency and/or contractor personnel of a project, product, or process so as to improve performance, quality, safety, and life-cycle costs.

Material cost forecasting – CM/GC Contractor utilizes its contacts within the industry to develop estimates of construction material escalation to assist the owner and designer make decisions regarding material selection and early construction packages.

Cost risk analysis – furnishing the agency with information regarding those cost items that have the greatest probability of being exceeded.

Cash flow projections/Cost control – CM/GC Contractor conducts earned value analysis to provide the owner with information on how project financing must be made available to avoid delaying project progress. This also may include an estimate of construction carrying costs to aid the owner in determining projected cash flow decisions.

Shape the project scope to meet budget – CM/GC Contractor recommends scope modifications to assist in managing the project budget.

Schedule-Related Preconstruction Services

Validate agency/consultant schedules – CM/GC Contractor evaluates if the current scope of work can be executed within the constraints of the schedule.

Prepare and manage project schedules – CM/GC Contractor prepares and manages schedules throughout the design phase to ensure that dates will be met, and notifies the owner when issues arise.

Develop sequence of design work – CM/GC Contractor sequences the design work to mirror the construction work, so that early work packages can be developed.

Construction phasing – CM/GC Contractor develops a construction phasing plan to facilitate construction progress and ensure maintenance of traffic.

Schedule risk analysis/control – CM/GC Contractor evaluates the risks inherent to design decisions with regard to the schedule and offers alternative materials, means and/or methods to mitigate those risks.

Administrative-Related Preconstruction Services

Coordinate contract documents – CM/GC Contractor evaluates each component to the construction contract against all other components and identifies conflicts that can be resolved before award of the construction phase contract.

Coordinate with third-party stakeholders – CM/GC Contractor communicates with third parties involved in the project including but not limited to utilities, railroads, and the general public.

Attend public meetings – CM/GC Contractor can organize and attend public meetings to answer questions from the public about the construction of the project.

Biddability reviews – CM/GC Contractor reviews the design documents to ensure that subcontractor work packages can be bid out and receive competitive pricing. This action reduces the risk to the subcontractors because they are given the specific design product they need for their bids; not just told to find their work inside the full set of construction documents.

Subcontractor bid packaging – CM/GC Contractor coordinates the design work packaging to directly correlate with subcontractor work packages so that early packages can be easily bid out and awarded.

Prequalifying subcontractors – CM/GC Contractor develops a list of qualified subcontractors that are allowed to bid on packages as they are advertised.

Assist in right-of-way acquisition – CM/GC Contractor assists the designer in identifying options for right-of-way acquisitions by providing means and methods input. The primary purpose is to minimize the amount of right-of-way actions that must be undertaken.

Assist in permitting actions – CM/GC Contractor is empowered to meet with resource agencies and develop permit applications with assistance from the designer.

Study labor availability/conditions – CM/GC Contractor furnishes advice during design with regard to the availability of specialty trade subcontractors and the impact of that availability on project budget and schedule constraints.

Prepare sustainability certification application – When certification for sustainability is desired, the CM/GC Contractor is empowered to prepare the necessary paperwork to submit for certification

Coordinate site visits for subcontractors – CM/GC Contractor coordinates site visits for subcontractors to facilitate the subcontractor procurement process.