

CALTRANS PROCEDURES FOR CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CMGC) PROJECTS

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CALTRANS PROCEDURES FOR CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CMGC) PROJECTS

1. Introduction

Construction Manager/General Contractor (CMGC) is a project contracting method that allows the California Department of Transportation (Caltrans) to select a contractor early in the project development process to act in an advisory role. The CMGC Contractor provides constructability reviews, value engineering suggestions, construction estimates, and other construction-related recommendations. When design is completed to about 95 percent design, the CMGC Contractor will provide a Final Estimate to construct the project. If the Final Estimate is acceptable, the CMGC Contractor will become the general contractor and will construct the project.

This document, the Caltrans Procedures for Construction Manager/General Contractor (CMGC) Projects, provides approved Federal Highway Administration (FHWA) procedures and is a compilation of efforts and lessons learned from CMGC projects delivered by Caltrans. Federally funded CMGC projects will follow the procedures described in this document. These procedures will be reviewed and updated periodically to address additional lessons learned, evolving approaches, and updates to federal and state laws, regulations, and policies. The Caltrans CMGC Program under Office of Innovative Design and Delivery is responsible for maintaining these procedures in collaboration with the FHWA California Division.

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 CMGC contracting method for delivering Federal-aid projects. Section 1303 of MAP-21 required the FHWA to promulgate regulations as are necessary to implement the statutory provisions. FHWA issued a Final Rule for CMGC 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. Approval of these procedures are required per 23 CFR 635.504 (c).

In 2012, the California Legislature passed, and the Governor signed, Assembly Bill 2498 authorizing Caltrans to use the CMGC contracting. The 2012 law authorized Caltrans to use CMGC contracting for up to six projects as a pilot program. Subsequent legislation: Assembly Bill 2126 signed in 2016 and Assembly Bill 115 signed in 2017 provided authority for six and ten additional projects respectively. In 2018, The California Legislature passed, and the Governor signed, Senate Bill 1262 providing general authority for use of the CMGC contracting on projects over $10 million construction capital cost and adopted in the California Public Contract Code 6700.

These procedures were originally approved in April 2018 by the California Division of FHWA for use by Caltrans on Federal-aid projects as required by the Code of Federal Regulations (CFR) and revised in July 2021 and March 2026. Any future modifications to these procedures will require FHWA approval.

3. Project Selection

The availability of alternative contracting methods, such as design-build and CMGC, has made it important to evaluate projects early in their development to determine the most beneficial method of contracting, Caltrans uses a variety of methods to help in making this assessment. Methods include the Caltrans project delivery selection tool developed in 2008, the Project Delivery

Selection Matrix (PDSM) originally developed by the Colorado DOT and the University of Colorado, and experience to help assess the most appropriate contract method. Design-bid-build, design-build, progressive design-build, and CMGC contracting methods are considered in the assessment.

CMGC contracting is appropriate for projects with a combination of the following attributes: a high level of technical and environmental complexity, the need for a high level of risk management, complex phasing, the need for overall schedule acceleration, the need for Caltrans to retain control over some or all of the design, phased funding, the need for collaboration with external partners, a new non-standard type of design, and/or budget constraints requiring construction cost certainty.

Potential CMGC projects are identified and nominated by the districts. The nominations are submitted to the CMGC Program for review. The CMGC Program distributes the nomination packages to the Alternative Delivery Project Review Panel for review and approval. Once CMGC contracting is deemed as the appropriate project contracting method by the Alternative Delivery Project Review Panel, the project is presented to Caltrans' Alternative Contracting Steering Committee (Steering Committee) made up of Caltrans executive management and FHWA (non-voting member) for their approval. If the project is approved by the Steering Committee, the project is recommended to Caltrans' Chief Engineer for CMGC contracting. The Chief Engineer has the final approval authority for CMGC contracting.

When the Chief Engineer approves the use of CMGC contracting for a federally funded project, the Caltrans Project Manager shall notify the FHWA Transportation Engineer assigned to their District to discuss FHWA's role and level of involvement in the project.

4. Procuring the CMGC Contractor

The CMGC Contractor should be procured early in the design process. Ideally this occurs shortly after the start of the Project Approval/Environmental Document milestone. 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., risk, costs, schedule, and innovative construction methods) into important design decisions that shape the project and direct design development such as the project footprint.

The project team should consult with the CMGC Program to determine the optimal time to procure the CMGC Contractor. If the procurement is anticipated prior to the completion of the NEPA approval process, see Section 6, Pre-NEPA Approval Activities and Requirements below.

Procurement of a CMGC Preconstruction Services Contract is based on a qualifications-based selection process. Some of the benefits of qualifications-based selection are:

a) Higher confidence that the most qualified and experienced firm is being selected.
b) Higher quality of service.
c) Promotes technical innovation and creativity.
d) Encourages competition based on merit.
e) Allows for clear definition of scope before agreeing to costs.

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A qualifications-based selection includes the evaluation of Statements of Qualifications (SOQ) and typically interviews with short-listed Proposers. The solicitation process utilizes a Request for Qualifications (RFQ) that provides the following:

a) Scope of services being requested.
b) Evaluation factors and subfactors including their relative importance in evaluating SOQs.
c) Pass/fail factors.
d) SOQ submittal requirements.
e) Required referenced contract provisions.
f) Evaluation rating guidelines.
g) Method of payment for preconstruction services.
h) Information on interviews, if applicable.
i) Protest process.
j) Sample contract form(s) or references to the contract forms.
k) Dedicated subcontractors/subconsultants requirements, if applicable.

On projects where Caltrans determines specialized expertise is key for the successful delivery of the project, Caltrans may require dedicated subcontractors/subconsultants as part of the CMGC Contractor's team. The dedicated subcontractors/consultants will be procured as part of the CMGC Contractor's team. Expertise and experience requirements of the subcontractor/subconsultants must be addressed in the RFQ.

Upon selection of the project, the entire procurement process is managed by the CMGC Program. All communication between Caltrans and the prospective proposers, such as responses to questions, will be through the designated contact identified in the RFQ. All responses to questions and any addenda required will be posted at Cal eProcure (https://caleprocure.ca.gov) by the designated contact once approved.

SOQs will be submitted to Caltrans by a specified date and time. The CMGC Program oversees the opening and completes the initial review of the SOQs for completeness and conducts the pass/fail evaluations.

The SOQs are then distributed to the evaluation team members to be independently evaluated against the evaluation criteria. The evaluation team consists of project members and/or subject matter experts appointed by the District Director. The evaluation team includes three committees: the Qualifications Review Committee (QRC), the Project Scoring Committee (PSC), and the Executive Review Committee (ERC). The QRC develops a consensus report on the strengths and weaknesses of each proposer against the SOQ evaluation criteria and conducts project and key personnel reference checks. The PSC reviews the SOQs and QRC consensus strength and weakness reports; reviews the project and key personnel reference checks; assigns consensus qualitative ratings to each of the SOQ evaluation criteria for each proposer; establishes the interview format and questions; and attends and scores the interviews of the short listed proposers. The ERC reviews the consensus reports and ratings, and provides concurrence on the short listed proposers, interview format and questions, and the final ranking.

During the evaluation process, communications are conducted through the designated contact to the proposers to clarify minor ambiguities, errors, omissions, or other information which would not necessitate a change of the SOQ.

All evaluations are performed in accordance with the RFQ and the evaluation procedures approved by the CMGC Program. Once all evaluations are complete, the qualitative ratings are converted to points and a score is assigned to each proposer. After confirmation by the ERC the Preconstruction Services Contract will be awarded to the most qualified 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 contract.

The CMGC Contractor is to certify that all costs are allowable in accordance with the federal cost principle under 2 CFR part 200 subpart E.

5. Preconstruction Services

After award of the Preconstruction Services Contract, the CMGC Contractor becomes a member of the project development team and can perform a variety of preconstruction services at the direction of Caltrans. The CMGC Contractor's input during the design process is used to supplement, but not replace or duplicate the engineering or design services performed by Caltrans.

Caltrans will also procure an Independent Cost Estimator (ICE) to provide independent cost estimates and to advise Caltrans on cost related issues. The ICE will be a consultant not affiliated with the CMGC Contractor and must have experience performing contractor style or production based estimating in order to assist Caltrans in reconciling cost estimates with the CMGC Contractor. The ICE consultant will be procured using Caltrans A&E procurement process. The ICE consultant will be involved in many of the preconstruction services (e.g. partnering, design reviews, and innovation and risk workshops) as directed by Caltrans so that they will have a good understanding of the project in order to develop informed cost estimates.

If CMGC Contractor determines and Caltrans agrees that additional expertise would be beneficial to the project (better constructability, reduced risks, etc.), CMGC Contractor can be authorized to procure those services through a competitive process. The competitive process must include a cost element, but can include other factors such as qualifications, schedule, and approach to project. The proposed selection process must be approved by Caltrans.

In addition to the activities described below, the CMGC Contractor may provide other potential preconstruction services to assist Caltrans in developing the project. Table 1 provides a list of these potential preconstruction services. A description of these services can be found in Appendix A. A list of potential preconstruction related field work is listed in Table 2. The services requested by Caltrans will vary from project to project.

The following is a brief overview of the typical activities involved in the CMGC preconstruction phase and included in the preconstruction services contract.

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5.1 Project Kickoff Meeting and Partnering Workshop

The CMGC preconstruction phase usually begins with a Project Kickoff Meeting and Partnering Workshop. These can be conducted separately, or they may be combined into the same 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 and responsibilities, preliminary schedule, scope of work and project goals.

5.2 Prepare Risk Management Plan/Risk Register

Following, or in conjunction with, the Project Kickoff Meeting, the project team meets, typically for a half-day or full-day workshop, 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; results of the risk mitigation; and when necessary, where these risk mitigations are addressed in the special provisions. 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.

5.3 Prepare Cost Model

The CMGC Contractor prepares a project cost model with input from the project team. The cost model is an open and transparent document that defines the CMGC Contractor's pricing assumptions and is reviewed by the ICE and the Caltrans estimator who develops the Engineer's Estimate. The cost model defines the CMGC Contractor's costs related to labor, materials, equipment, subcontractor and supplier quotes, means and methods, production rates, risk, small tools and consumables, direct costs, mobilization, overhead, and profit. Beginning with typically a half-day workshop, the cost model is continually reviewed and discussed by the project team and updated by the CMGC Contractor prior to submitting the CMGC Contractor's Estimate at each pricing milestone and prior to submitting their Final Estimate. This assists all estimating parties in developing their estimates and ensuring item costs can be reviewed and compared among the estimates. Although the CMGC Contractor is responsible for developing the cost model, the intent is to have the ICE and Caltrans estimates align with the CMGC Contractor's cost model.

5.4 Design Development

Caltrans develops a plan package for each pricing milestone (generally 30%, 60%, 95% and 100%) with input provided by the CMGC Contractor on key design decisions. During the design development stage, the CMGC Contractor provides both formal and informal input on constructability, construction phasing and potential early work packages, innovative design alternatives, and potential schedule and cost savings opportunities. Once each milestone plan package is complete, Caltrans submits the plan package, including the bid list, to the CMGC Contractor and ICE for review.

5.5 Design Review Workshop

A Design Review Workshop is held after each milestone plan set is issued. This workshop is typically a half-day to a full-day in duration and includes the CMGC Contractor, ICE, and Caltrans.

The purposes of the workshop 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 detail for that stage of design to ensure complete pricing of work; (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; and (6) identify any errors, omissions, ambiguities, or other items that need to be corrected.

5.6 Innovation Management

The CMGC 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 CMGC Contractor prepares, modifies, and maintains an innovation log 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 contract documents. Ideas which were not incorporated and the reasons why should also be documented. The CMGC Contractor submits written documentation of all suggested innovations at each design milestone at a minimum. While Caltrans will entertain Value Engineering Change Proposals during the construction phase, especially from subcontractors, the expectation is that these proposals are developed and incorporated into the project during the design development phase.

5.7 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 project team to update the risk register. The CMGC Contractor, ICE and Caltrans will review the project risk, discuss mitigation and associated costs, and identify the party responsible for managing the risk. Risk Workshops are to be held, at a minimum, prior to each Cost Reconciliation meeting.

5.8 Quantity Reconciliation

Caltrans develops an initial bid item list based on the draft set of plans and specifications. Refinement of the bid item list occurs throughout the preconstruction phase.

Before estimates are prepared, the CMGC Contractor, ICE, and Caltrans conduct independent quantity take-offs from the current plan package. The quantities are discussed at Quantity Reconciliation Meetings, and an agreed quantity is reached in preparation for the submittal of the individual cost estimates.

5.9 Develop and Submit Cost Estimates and Construction Schedule

The CMGC Contractor and ICE each independently prepare a contractor-style, production-based, cost estimate and schedule that is based on the pricing milestone plan sets and bid item list. Caltrans will prepare an independent estimate using its typical historical bid-based estimating process. All three estimates are submitted to the CMGC Program. The CMGC Program then develops variance reports for use by Caltrans, ICE, and CMGC Contractor. The CMGC Contractor's variance report notes whether the CMGC Contractor's Estimate is within 10% or, alternately, within a fixed dollar

amount of the ICE's estimate for each bid item. The CMGC Contractor's estimating assumptions and construction schedule are provided to ICE and Caltrans for their review and comment. This occurs at, or slightly before, the submission of the CMGC Contractor's Estimate.

5.10 Cost Reconciliation Meeting

Following the submission of the estimates for the pricing milestone design, Caltrans, CMGC Contractor, ICE, and CMGC Program will attend a Cost Reconciliation Meeting that typically ranges from one to two days, depending on the size and complexity of the project and the extent of the cost differences. The purpose of the meeting is to review cost assumptions and attempt to reconcile cost differences between the CMGC Contractor's Estimate and the ICE's estimate. The meeting gives each party an opportunity to understand each other's perspective about cost assumptions and pricing differences. This meeting also helps Caltrans develop a greater confidence level regarding the cost of the project and the reasonableness of the CMGC Contractor's Estimate. Neither the Engineer's Estimate nor the ICE estimate is disclosed to the CMGC Contractor. The Engineer's Estimate is not disclosed to the ICE.

Caltrans staff from functional units such as structures, construction, and design participate in these meetings to support the ICE consultant in reconciling the estimates as well as to help validate assumptions. Participation by construction staff will also help improve the transition to construction.

5.11 Adjust Cost Model, Schedule, and Pricing

Caltrans and CMGC Contractor agree upon changes to the pricing assumptions. The CMGC Contractor makes adjustments to the cost model and the schedule to reflect these changes and resubmits them to Caltrans. This information is then documented in the project file. Any pricing changes will be carried forth to the next estimating milestone or the Final Estimate. During the reconciliation process, the ICE and/or Caltrans may also adjust their pricing assumptions and estimates.

5.12 Opinion of Probable Construction Cost (OPCC)

As the design progresses, the previous activities are repeated to coincide with each remaining design milestones. This process is referred to as the Opinion of Probable Construction Cost (OPCC). Additional OPCCs may be necessary if significant design changes occur or significant pricing variances remain. One of the goals through this iterative OPCC process is to reconcile pricing differences throughout the preconstruction phase, thereby helping ensure that the CMGC Contractor's Final Estimate is acceptable to Caltrans.

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TABLE 1 – POTENTIAL PRECONSTRUCTION SERVICES

DESIGN RELATED	SCHEDULE RELATED
Validate Caltrans/Consultant design	Validate Caltrans/consultant schedules
Assist/input to Caltrans/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	3rd party impact avoidance and reduction strategies
Market surveys for design decisions	Prepare document control
Verify/take-off quantities	Coordinate contract documents
Assistance in shaping the scope of work	Coordinate with 3rd party stakeholders
Feasibility studies	Attend public meetings
Risk identification and mitigation	Biddability reviews
Maintenance of traffic	Subcontractor bid packaging
Staging needs	Assist in right-of-way acquisition/validation
COST RELATED	Assist in permitting actions
Validate Caltrans/consultant estimates	Study labor availability/conditions
Prepare project estimates	Prepare sustainability certification application
Cost/benefit engineering reviews	Analyze environmental commitments/permits
Early award of critical bid packages	Coordinate site visits for subcontractors
Life cycle cost analysis	Project Meetings
Value analysis/engineering	
Material selection and cost forecasting	
Cost risk analysis	
Cash flow projections/Cost control	

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

TABLE 2 – POTENTIAL PRECONSTRUCTION RELATED FIELD WORK

Utility Relocation	Other design-related activities
Preliminary soil and geotechnical studies	Preconstruction environmental surveys
Preliminary surveying	Hazardous waste remediation
Installation of Best Management Practices	Monument preservation, location, and record of
Public outreach	

6. Pre-NEPA Approval Procurement and Requirements

If the CMGC Contractor is procured prior to completing the NEPA approval process, Caltrans must abide by and include the following provisions in the CMGC RFQ and the CMGC Preconstruction Services Contract:

a) A provision allowing unilateral termination by Caltrans if the environmental review process does not result in selecting 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 CMGC Contractor must not prepare NEPA documentation or have any decision-making responsibility with respect to the NEPA approval process. However, the CMGC 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.

If the CMGC Contractor is procured prior to completing the NEPA approval process, the following requirements apply:

a) Caltrans will not proceed, or permit any consultant or contractor to proceed, with the development of shop drawings and fabrication plans before completion of the NEPA approval process for the project.

b) Caltrans will not proceed with 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.

c) Caltrans may proceed, solely at the risk and expense of Department, with design activities at any level of detail (including final design and preconstruction services associated with final design) for a CMGC project before completion of the NEPA approval process without affecting subsequent approvals required for the project.

d) The FHWA will not authorize final design activities and preconstruction services associated with final design, and such activities will not be eligible for federal funding until after the completion of the NEPA approval process.

e) Caltrans may use a CMGC Contractor for preconstruction services associated with at-risk final design provided the costs of the CMGC Contractor's at-risk work are segregated from preconstruction services eligible for reimbursement during the NEPA approval process.

f) If Caltrans decides to perform at-risk final design, it must notify FHWA of its decision to do so before undertaking such activities. It should be noted that contracting for construction activities such as the acquisition or fabrication of materials (including shop

drawings and fabrication plans) is not allowed, even on an at-risk basis, before the conclusion of the NEPA approval process.

7. Early Work Packages

An advantage of CMGC contracting is that it allows the flexibility to perform construction work in phases with multiple work packages. Multiple early work packages may be used to construct a segment, or portion of, a project at a time due to multiple funding schedules.

An early work package must be a severable construction package, such that Caltrans is not obligated to have the CMGC Contractor construct any other portions of the work. Each early work package must obtain all required clearances, including federal authorization for construction (E-76) approval, be evaluated and awarded through the OPCC process, and obtain funding allocation. For this reason, a single package may be more efficient as the OPCC and contracting processes are only performed once.

An early work package is 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 approval is complete but before all design work for the project is complete. Early work packages may be used to procure long-lead time construction materials in advance of construction, thus optimizing the overall project schedule and avoid price escalations for volatile construction materials.

Per the FHWA's Final Rule for CMGC (https://www.govinfo.gov/content/pkg/FR-2016-12-02/html/2016-28977.htm) and 23 CFR 635.501-50, early work packages are intended for minor elements or stages of project construction that can be accomplished during the period after NEPA is complete and before design of the project is sufficient to permit Caltrans and the CMGC Contractor to reach an agreed price for construction of the entire project. Early work packages are not to be used to piecemeal construction. Therefore, when considering an early work package for any federally funded project, it is important that the project team is familiar with its requirements, and if necessary, consult with the FHWA.

If an early work package is being issued, the construction cost estimate for the entire project is required from the CMGC Contractor prior to awarding a contract for the early work package. The construction cost estimate for the entire project is used by Caltrans to confirm that the overall construction scope can be completed within the available project budget. Exact timing for requesting a construction cost estimate for the entire project from the CMGC Contractor is evaluated on a project-by-project basis.

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.

8. Final Estimate Process

Once design has been completed to a level where a final estimate may be submitted (typically at 95 percent design), Caltrans will prepare the final plan package. The construction contract must include appropriate provisions ensuring that all environmental and mitigation measures identified in the NEPA documentation and committed to in the NEPA determination will be implemented.

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Upon delivery of the final plan package to the CMGC Contractor, Caltrans will request a Final Estimate from the CMGC Contractor by an agreed upon date. The CMGC Contractor will develop the Final Estimate which will include the direct cost of performing the work (equipment, labor, materials, etc.), overhead, and profit. Depending on the project schedule, the Final Estimate may be submitted with subcontractor prices included or with subcontractor plug values as placeholders pending solicitation of subcontractor bids. If subcontractor plugs are used, then adequate time to solicit the necessary subcontractors and to meet the DBE goals will need to be provided prior to awarding the contract. Note, however, that subcontractor procurement must be scheduled so that the construction contract can be awarded while the subcontractor prices remain valid. The CMGC Contractor signature on the construction contract confirms validity of the subcontractor prices for that construction contract.

DBE goals are set for and included in each construction contract to ensure that the goal is reflective of the bid items available in that construction contract and facilitate DBE participation as the project progresses. On or after the 60% design, the project team will coordinate with the Office of Civil Rights to determine the appropriate DBE Goal percentage for the construction contract. If the CMGC Contractor is unable to meet the DBE contract goal, a Good Faith Effort must be submitted by the CMGC Contractor and evaluated by the Office of Civil Rights. Subcontractors and suppliers must be procured using a competitive and transparent bid process in accordance with a subcontracting plan approved by Caltrans. The competitive bid process may include consideration of cost, best value, cost-plus-time, etc. as described in the approved subcontracting plan. The subcontracting plan must demonstrate how the CMGC Contractor will ensure adequate competition, how the minimum 30 percent self-performance requirement will be met, and that there will be adequate subcontracted work available to meet the DBE goal. The Final Estimate will be received and safeguarded by the CMGC Program.

The Final Estimate will then be compared to the ICE estimate to determine its reasonableness. A price reconciliation meeting will be held to discuss differences in the CMGC Contractor's Final Estimate and the ICE estimate. Neither the ICE estimate nor the Engineer's Estimate will be provided to the CMGC Contractor. After the reconciliation meeting is held, a revised Final Estimate may be requested from the CMGC Contractor and the ICE. 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 CMGC contracting is that it allows Caltrans and the CMGC Contractor to collaboratively work together during the preconstruction phase to better understand, allocate, manage, and reduce risks on the project, thereby lowering contingency costs.

For CMGC projects, risk is accounted for by two separate means: (1) in the CMGC Contractor's Final Estimate for risk that the CMGC Contractor has accepted, and (2) in the Caltrans contingency (contingency and/or supplemental work) for risk that Caltrans has accepted. Risks accepted by the CMGC Contractor are included in the Final Estimate, so there will be no change order when those risks arise during construction. Risks accepted by Caltrans will generally result in a change order if the risk occurs.

Establishing a dollar amount for assigned risks is done by using a risk register. Caltrans, ICE, and CMGC Contractor must collaborate on risk assignment so that all parties understand the approach and methods used in the risk analysis.

After price reconciliation, Caltrans will make a determination to either award the construction services to the CMGC Contractor through a construction contract or to advertise the project for bid as per the Preconstruction Services Contract. The CMGC Contractor will be excluded from bidding on the advertised contract due to having a conflict of interest and an unfair competitive advantage over other bidders.

If an agreed price is reached, Caltrans finalizes the plans and specifications with all necessary approvals, including, but not limited to NEPA approval, right-of-way certification, railroad certification, utility certifications, and environmental permits. The project team submits a recommendation to award letter to the CMGC Program. The recommendation to award letter will address the following but not limited to:

a) Summary of project scope.
b) Identification of CMGC Contractor.
c) Summary of price reconciliation process.
d) Date of Final Estimate submittal.
e) Agreed Price, ICE and Engineer's Estimate including percentage difference and variances between the Agreed Price and the ICE and between the Agreed Price and the Engineer's Estimate, differences between ICE and Engineer Estimate, determination of materially or mathematically unbalancing of bid, etc.
f) If the Final Estimate is within the available project budget and within 10% of the ICE estimate, no additional justification in the recommendation to award letter is required.
g) If the Final Estimate is more than 10% over or less than 90% of the ICE Estimate, additional justification for awarding the contract to the CMGC Contractor must be included in the recommendation to award letter.

The Final Estimate Validation Process is shown in Figure 1.

9. Federal Highway Administration and Caltrans Responsibilities

FHWA requirements are applicable to all Federal-aid funded CMGC projects located within the public right-of-way. The provisions of 23 CFR 630, 635, and other 23 CFR Parts as required will apply to CMGC contracts. FHWA's Final Rule for CMGC outlines requirements, including FHWA approvals, specific to federally funded CMGC projects. As per Caltrans and FHWA Stewardship and Oversight Agreement (https://www.fhwa.dot.gov/federalaid/stewardship/agreements/ca.pdf) (S&OA 2024), Table 9 references CMGC approval of the FHWA California Division responsibilities and identifies delegations to Caltrans. For purposes of this document, these actions are listed in Table 3 below.

Approval of the solicitation document (i.e. RFQ) and major addenda to the solicitation document is required by FHWA [23 CFR 635.112(j)].

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As discussed in Section 6 of this document, the RFQ may be issued prior to or after approval of the NEPA document. However, preconstruction services eligible for reimbursement may only be related to preliminary design until the NEPA document is approved. Upon approval of the NEPA document and FHWA authorization of final design, final design and preconstruction services related to final design may be eligible for reimbursement. By law, FHWA retains post-NEPA approval review of at-risk final design costs for eligibility. Caltrans must obtain FHWA approval of such costs prior to requesting authorization of at-risk final design activities [23CFR 635.506(c)].

Caltrans is delegated authority to approve indirect cost rate [23 CFR 635.504(e)(3)], approve preconstruction services price and cost/price analysis [23 CFR 635.504(b)(2)], approve price estimate for entire project [23 CFR 635.504(d)(2)], approve construction price analysis for construction contracts [23 CFR 635.504(d)(4)], and approve preconstruction services and construction contract awards [23 CFR 635.504(e)].

FHWA's construction contracting requirements will apply to all CMGC construction contracts if any portion (including an early work package) of the CMGC construction contract is funded with Federal-aid funds [23 CFR 635.504(b)(6)]. The flow chart shown in Figure 2 shows the general approval process for preconstruction services and construction contracts.

CALTRANS PROCEDURES FOR CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CMGC) PROJECTS

TABLE 3 – FHWA's APPROVAL ACTIONS ON CMGC PROJECTS

23CFR	2024 S&OA Table 9 Reference #	Actions	Responsible Agency NHS	Responsible Agency Non-NHS
635.506(a)(2) 635.504(c)	N/A	Approval of CMGC Procurement Procedures and Revisions	FHWA[1]	FHWA[1]
CMGC Approval Actions Preconstruction Services Phase (CM Contract/Phase 1)				
635.112(j)	N/A	Approval of solicitation document (i.e. RFQ)[4]	FHWA[2]	FHWA[2]
635.112(j)	N/A	Approval of major Addenda to RFQ[3,4]	FHWA[2]	FHWA[2]
635.506(a)(2) 635.506(c)	N/A	FHWA post-NEPA review of at-risk final design costs for eligibility[5]	FHWA[1]	FHWA[1]
635.506(a)(3) 635.504(e)(2)	61	Approval of indirect cost rate[6]	STATE	STATE
635.506(a)(3) 635.506(b)(2)	62	Approval of preconstruction price and cost/price analysis for preconstruction services	STATE	STATE
635.506(a)(3) 635.506(e)	65	Approval of preconstruction services contract award	STATE	STATE
635.506(b)(1)		Federal Authorization of Preconstruction Services (preliminary engineering)	FHWA[1]	FHWA[1]
CMGC Approval Actions Construction Services Phase (Construction Contract(s)/Phase 2, including early work packages)				
635.506(a)(3) 635.506(d)(2)	63	Approval of price estimate for construction cost for entire project	STATE	STATE
635.506(a)(3) 635.506(d)(4)	64	Approval of construction price analysis and agreed price for each construction contract	STATE	STATE
635.506(a)(3) 635.506(e)	65	Approval construction contract award(s)	STATE	STATE
635.506(d)(5)		Federal Authorization of Construction Services	FHWA[1]	FHWA[1]
635.506(a)(3) 635.504(b)(6)	60	Concurrence to initiate new procurement [2,7]	FHWA[2]	STATE

Footnotes:

1 These actions cannot be delegated to Caltrans. 23 U.S.C. 106 (c) does not allows for delegation of these activities.

2 These actions are responsibility of FHWA since they have not been delegated through the FHWA/Caltrans Stewardship and Oversight Agreement(S&OA). CFR allows for delegation which may occur in the future through the S&OA.

3 Major Addendum includes, but is not limited to, changes to the selection method, evaluation criteria, or significant changes to the scope of services.

4 The Caltrans Project Manager will submit the CMGC RFQ to FHWA for approval prior to advertising the document. Major RFQ Addenda are submitted to FHWA for approval prior to posting.

5 Caltrans must notify FHWA of decision to perform at-risk final design prior to undertaking such activities. Caltrans may use at-risk final design only if Caltrans has a procedure for segregating the cost of the CMGC Contractor's at-risk work from preconstruction services eligible for reimbursement during the NEPA process.

6 Indirect cost rate only applies to the CM when the method of payment for preconstruction services is based on actual costs (cost-reimbursement contracts).

7 Applicable in the event Caltrans does not reach an agreed price and advertises the project for bid.

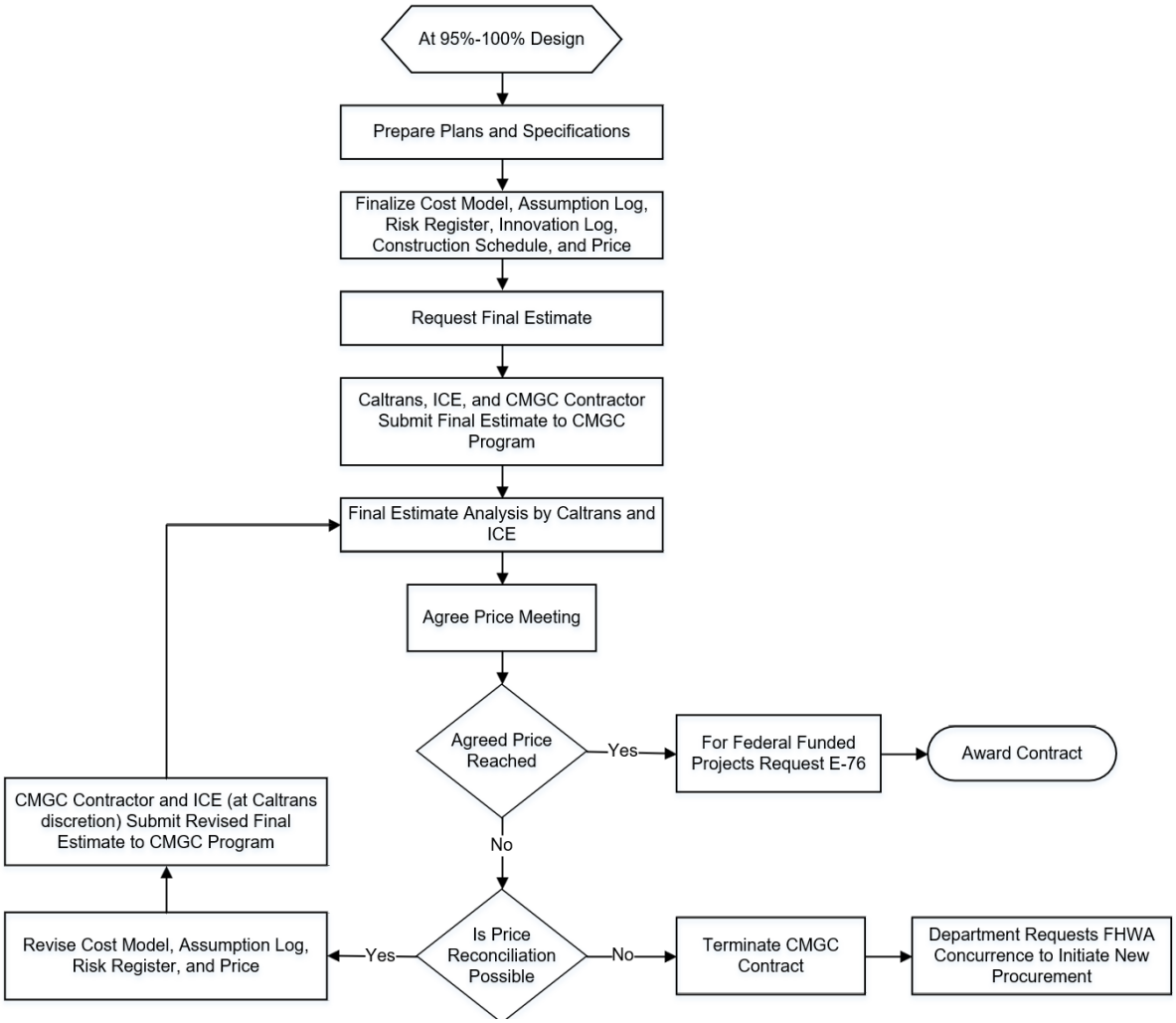
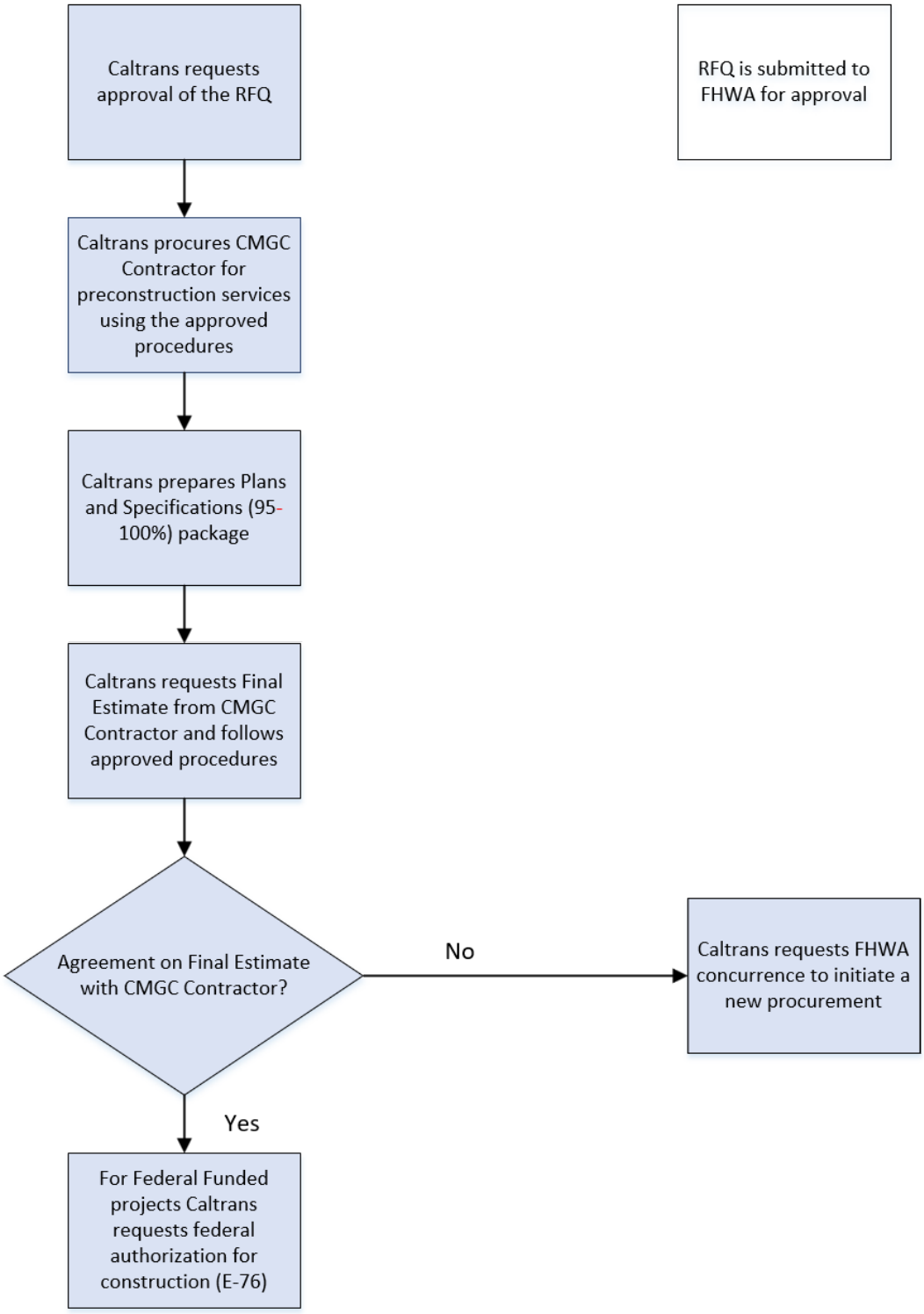

At 95%-100% Design
Prepare Plans and Specifications
Finalize Cost Model, Assumption Log, Risk Register, Innovation Log, Construction Schedule, and Price
Request Final Estimate
Caltrans, ICE, and CMGC Contractor Submit Final Estimate to CMGC Program
Final Estimate Analysis by Caltrans and ICE
Agree Price Meeting
Agreed Price Reached
Yes
For Federal Funded Projects Request E-76
Award Contract
No
Is Price Reconciliation Possible
Yes
Revise Cost Model, Assumption Log, Risk Register, and Price
CMGC Contractor and ICE (at Caltrans discretion) Submit Revised Final Estimate to CMGC Program
No
Terminate CMGC Contract
Department Requests FHWA Concurrence to Initiate New Procurement

FIGURE 2 - FHWA CMGC APPROVAL PROCESS



APPENDIX A

Glossary of Preconstruction Services Terms

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 Caltrans/consultant design – CMGC 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 Caltrans/consultant design – CMGC Contractor offers ideas/cost information to the designer to be evaluated during the design phase. Ultimately, the designer is still responsible for the design.

Design reviews – CMGC Contractor reviews the plans and documents to identify errors, omissions, and ambiguities to improve the constructability and economy of the design submittal.

Design charrettes – CMGC Contractor participates in structured brain-storming sessions with Caltrans to generate ideas to solve design problems associated with the project.

Constructability reviews – CMGC Contractor reviews the plans and specifications 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 – CMGC Contractor meets with Caltrans operations and maintenance personnel and provides them with an opportunity to make suggestions that will improve the operations and maintenance of the completed project.

Regulatory reviews – CMGC Contractor verifies that the design complies with current codes and will not have difficulty obtaining the necessary permits.

Market surveys for design decisions – CMGC Contractor furnishes 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 – CMGC Contractor verifies the quantities generated by the designer for the engineer's estimate.

Assistance in shaping the scope of work – CMGC Contractor generates priced alternatives from Caltrans to ensure that the scope of work collates to the constraints dictated by the budget and/or schedule.

Feasibility studies – CMGC Contractor investigates the feasibility of possible solutions to resolve design issues on the project.

Risk identification and mitigation – CMGC Contractor identifies risks associated with the project and proposes response strategies.

Maintenance of traffic – CMGC Contractor reviews, validates, and/or proposes alternative traffic handling concepts for the project.

Staging needs – CMGC Contractor reviews, validates, and/or proposes alternative stage construction concepts for the project.

Cost-Related Preconstruction Services

Validate Caltrans/consultant estimates – CMGC 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 – CMGC 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/benefit engineering reviews – CMGC Contractor reviews cost to include 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 – CMGC Contractor recommends which design packages should be completed first to ensure that pricing can be locked in on the packages.

Life-cycle cost analysis – CMGC Contractor provides input for design decisions that impact the performance of the project over its lifespan.

Value analysis/engineering – CMGC 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.

Material selection and cost forecasting – CMGC Contractor utilizes its contacts within the industry to develop estimates of construction material escalation to assist Caltrans in making decisions regarding material selection and early construction packages.

Cost risk analysis – CMGC Contractor furnishes Caltrans with information regarding cost items that have the greatest probability of being exceeded.

Cash flow projections/Cost control – CMGC Contractor conducts earned value analysis to provide Caltrans 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 Caltrans in determining projected cash flow decisions.

Schedule-Related Preconstruction Services

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

Prepare and manage project schedules – CMGC Contractor prepares and maintains schedules throughout the design phase to ensure that dates will be met and notifies Caltrans when issues arise.

Develop sequence of design work – CMGC Contractor recommends the sequences of the design work to mirror the construction work so early work packages can be developed.

Construction phasing – CMGC Contractor develops a construction phasing plan to facilitate construction progress and ensure maintenance of traffic. This includes identification of critical parcel acquisition and utility relocations.

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

Administrative-Related Preconstruction Services

Third-party impact avoidance and reduction strategies – CMGC Contractor reviews agreements, permits, and work around (commitments) made to third parties (i.e., irrigation and flood control districts, adjacent cities, adjacent counties, adjacent construction contracts, railroad, utilities, property owners, and regulatory agencies) and determine and/or identify feasibility of commitment. Advises Caltrans of impacts and alternative solutions to comply.

Prepare document control – CMGC Contractor implements a document control process and software solution, as agreed upon by Caltrans, that will allow for the efficient transmittal, sharing, tracking, approval, and filing of all project related documents.

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

Coordinate with third-party stakeholders – CMGC Contractor communicates with third parties involved in the project including, utilities, railroads, and the general public.

Attend public meetings – CMGC Contractor assists Caltrans in organizing and/or attends public meetings to answer questions from the public about the construction of the project.

Biddability reviews – CMGC 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 – CMGC Contractor coordinates the design work packaging to directly correlate with subcontractor work packages so that early packages can be easily bid out and awarded.

Assist in right-of-way acquisition/validation – CMGC 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 and to assist in prioritizing individual parcel acquisition.

Assist in permitting actions – CMGC Contractor is empowered to meet with resource agencies and develop permit applications with assistance from Caltrans.

Study labor availability/conditions – CMGC Contractor furnishes advice during design regarding the availability of specialty trade subcontractors and the impact of that availability on the project budget and schedule constraints.

Prepare sustainability certification application – CMGC Contractor prepares the necessary paperwork to submit for certification when certification for sustainability is desired.

Analyze Environmental Commitments/Permits – CMGC Contractor reviews environmental commitments/permits attached to the project and identifies feasibility issues of commitments/permits. Advises Caltrans of impacts and alternative solutions to comply.

Coordinate site visits for subcontractors – CMGC Contractor coordinates site visits for subcontractors to facilitate the subcontractor procurement process.

Project Meetings – CMGC Contractor attends scheduled Project meetings and contributes with comments, provides solutions, and carries needed action items.