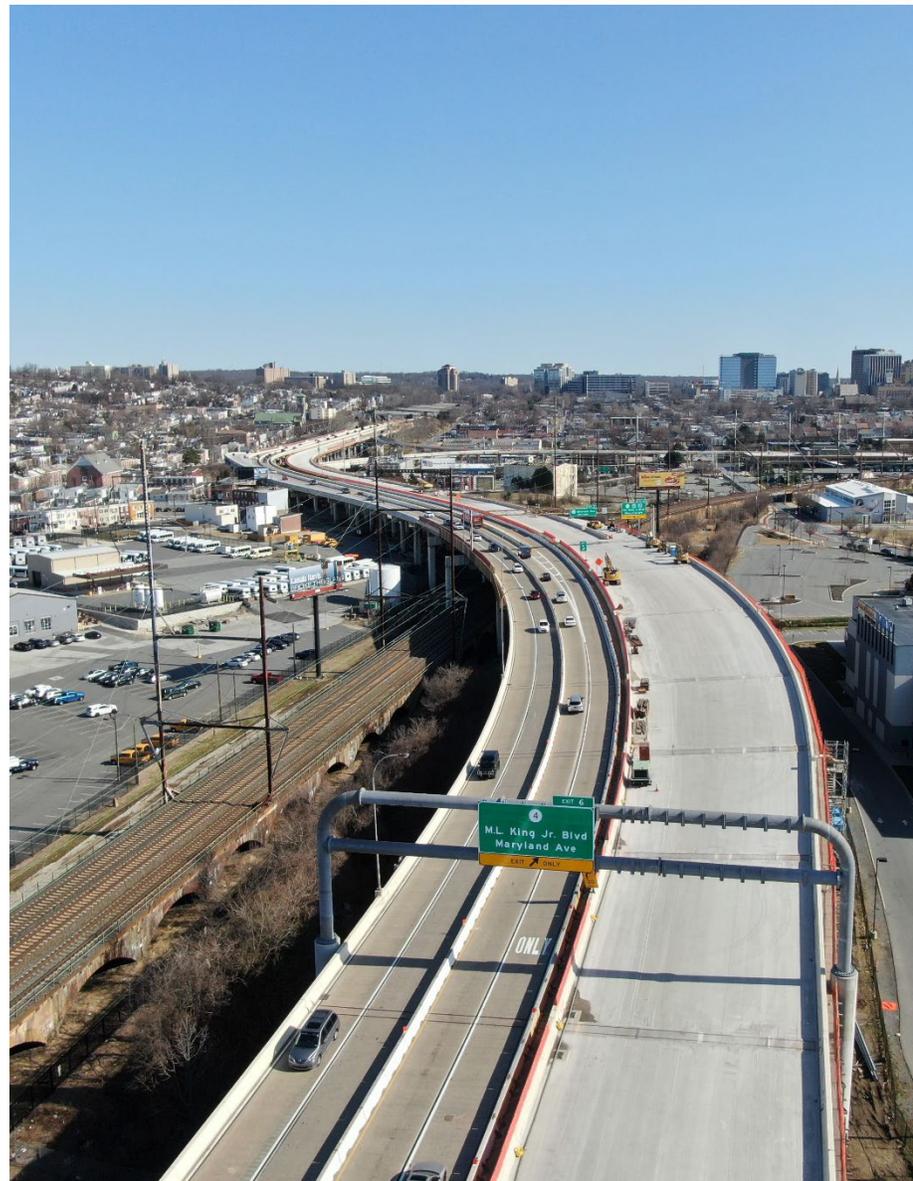




CONSTRUCTION MANAGER/GENERAL CONTRACTOR (CM/GC) PROCEDURES



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1. Introduction

Construction Manager/General Contractor (CM/GC) is a project delivery method that allows the Delaware Department of Transportation (DelDOT) to select a contractor during the project development process to act in an advisory role. The CM/GC Contractor provides constructability reviews, value engineering suggestions, construction estimates, and other construction-related recommendations. When design is completed to about 90 to 95 percent design, the CM/GC Contractor will provide a price to construct the project. If the price is acceptable, the CM/GC Contractor will become the general contractor and will construct the project. If a price cannot be agreed upon, the project will be advertised using traditional design-bid-build construction procurement procedures, and the CM/GC Contractor will be able to submit a bid for the contract.

These procedures are a compilation of efforts and lessons learned from CM/GC projects delivered by DelDOT and other state Departments of Transportation (DOTs). CM/GC is an evolving contracting process. 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.

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 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 and is generally contained within 23 CFR §635.501-507. The provisions of the Final Rule and associated regulations have been incorporated into these procedures, for use on federally-funded projects.

In 2015, Delaware's 148th General Assembly authorized a Construction Manager/General Contractor pilot program within 80 Del. Laws, c.78, §130, allowing this procurement mechanism for up to six projects. Subsequent legislation has increased the total number of pilot projects to ten.

These procedures have been approved by the Delaware Division of FHWA for use by DelDOT on Federal-aid projects as required by the Code of Federal Regulations (CFR) 23 CFR 635.506(a)(2). With this approval by FHWA, DelDOT is assuming responsibilities as included in 23 CFR 635 Subpart E—Construction Manager/General Contractor (CM/GC) Contracting and general responsibilities to manage the CM/GC program.

3. Project Selection

The availability of alternative contracting methods, such as design-build and CM/GC, has made it important to evaluate projects early in their development to determine the most beneficial method of delivery. DelDOT uses a variety of methods to help assess the most appropriate delivery method for projects that are being considered for alternative delivery. DelDOT uses the *Project Delivery Selection Process*, formally adopted in 2020 and based in part on the Project Delivery Selection Matrix (PDSM) developed by the Colorado DOT and the University of Colorado, as well as similar processes developed by other DOTs. The procedures outlined in the PDSM help the

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project team to assess the most appropriate delivery method among the three main options – design-bid-build, design-build, and CM/GC.

Potential projects are identified and evaluated by the design section according to the *Project Delivery Selection Process*. Once the delivery method has been selected, the Section Head of the design section requests approval from the Chief Engineer to use the selected delivery method if the chosen method is not design-bid-build. The Chief Engineer will obtain approvals from the Director of the Office of Management and Budget and the co-chairs of the Bond Bill Committee, as required by Delaware Code, prior to providing the formal approval to the project team.

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 construction and/or maintenance of traffic phasing; the need for overall schedule acceleration; the need for DelDOT to retain control over some or all of the design and construction; phased funding; a new non-standard type of design; and/or budget constraints requiring construction cost certainty.

4. Procuring the CM/GC Contractor

The CM/GC Contractor should be procured early in the design process, with 30-50% of design being the optimal timeframe. The goal in selecting the right timing is to maximize the value of the contractors' participation in the preconstruction phase by allowing them to provide input (e.g., risk, costs, schedule, and innovative construction or maintenance of traffic methods) into important design decisions that shape the project and direct design development. See Section 6, 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 Contractor can be based on qualifications or on a best value-based selection process. A qualifications-based selection is based simply on the qualifications of the proposer as described in the proposers 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. DelDOT prefers to use the qualifications-based selection process for procuring the CM/GC Contractor. Both processes use a one-step solicitation process utilizing a Request for Proposals (RFP). The RFP provides the following:

- the scope of services being requested,
- the evaluation factors and subfactors including their relative importance in evaluating SOQs,
- the pass/fail factors,
- what is required to be submitted in the SOQ,
- required referenced contract provisions,
- the evaluation rating guidelines,
- the method of payment for preconstruction services,
- whether interviews will be conducted before establishing the final rank,
- protest process, and
- sample contract form(s) or references the contract forms.

Upon issuance of an RFP, the entire procurement process is managed by DelDOT Contract

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Administration, with input and participation from the project team. All communication between DelDOT and the prospective proposers, such as responses to questions, will be through the designated contact identified in the RFP. All responses to proposers' questions and any addenda required will be posted to <http://Bids.Delaware.Gov> by Contract Administration once approved.

At a point early in the advertisement period, the project team may choose to provide a pre-proposal meeting for prospective proposers. This meeting will include a presentation that includes a project overview highlighting project goals and objectives, as well as challenges and risks. The meeting should also allow an opportunity for prospective proposers to ask questions about the project.

Also during the advertisement period, the project team may choose to allow confidential one-on-one meetings with prospective proposers. The intent of the meeting is to allow questions by the prospective proposers in a confidential setting so that competing proposers cannot see their ideas for the proposal. This offering would not be mandatory and should occur at some point during the advertisement after the pre-proposal meeting. Information should be provided in the RFP to give prospective proposers an idea of what to expect during the one-on-one meetings, such as a draft agenda or instructions on how the meeting should proceed. Although the meeting is confidential, any questions that arise that may impact the RFP or NEPA document must be disclosed to all prospective proposers.

SOQs will be submitted to DelDOT by a specified date and time. DelDOT Contract Administration oversees the receipt and opening of the proposals and completes the initial review of the SOQs for completeness. The pass/fail evaluation factors are also verified by DelDOT Contract Administration.

The SOQs are then distributed to the selection committee members to be evaluated. The selection committee consists of project members and/or subject matter experts who perform independent evaluations of the SOQs against the evaluation factors. The selection committee members are recommended by the project manager and appointed by the Division Director. The selection committee should consist of project team members from design and construction, as well as staff from support sections associated with key elements of the project, such as structures, traffic, environmental, etc. The selection committee typically consists of 5 voting members but can consist of more voting members with justification and approval from Contract Administration.

FHWA staff and select subject matter experts may participate on the selection committee as non-voting members. The selection committee members independently score the SOQs, and the scores and pros/cons for each team are submitted to Contract Administration to compile and rank. The selection committee meets to review the rankings and to determine if interviews are needed. If interviews are needed, Contract Administration will schedule the interviews with the proposers and selection committee.

After the interviews, the selection committee members independently score each proposer, and the scores and additional pros/cons for each team are submitted to Contract Administration for a final compilation and ranking. A recommendation will be forwarded to the Chief Engineer to award the Preconstruction Services Contract to the highest ranked proposer.

Allowable methods of payment for preconstruction services are lump sum, cost plus fixed fee, cost

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per unit of work, or specific rates of compensation; however, the preferred method of payment is lump sum paid in intervals (monthly or quarterly) and will be defined in the RFP. The value of the preconstruction services will be determined by the design project manager but will typically be between 0.75% and 1% of the estimated construction cost for the project. Method of payment for construction services will be defined in the construction contract. Management of the preconstruction services contract will be by the design group.

5. Preconstruction Services

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 DelDOT. The CM/GC Contractor's input during the design process is used to supplement but not replace or duplicate the engineering or design services performed by DelDOT or the design consultant.

DelDOT will also procure an Independent Cost Estimator (ICE) to provide independent cost estimates and schedules and to advise DelDOT on cost and schedule related issues. The ICE will be a consultant not affiliated with the CM/GC Contractor and should have experience performing contractor-style or production-based estimating to assist DelDOT in reconciling cost estimates with the CM/GC Contractor. The ICE will be procured using DelDOT's normal professional services procurement process. The ICE will be involved in most of the preconstruction services (i.e., partnering, design reviews, innovation and risk workshops, etc.) as directed by DelDOT so that they may have a good understanding of the project to be able to develop informed cost and schedule estimates.

If the CM/GC Contractor determines and DelDOT agrees that additional expertise would be beneficial to the project, the CM/GC 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 DelDOT.

In addition to the activities described below, the CM/GC Contractor may provide other potential preconstruction services to assist DelDOT 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. The services required by DelDOT will vary from project to project.

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

A. Project Kickoff and Partnering Workshop

The CM/GC Preconstruction Phase usually begins with a two-day Project Kickoff and Partnering Workshop. The goal is to develop trust, respect, and cooperation among all key players, which will better facilitate the building of a team atmosphere. The Project Kickoff and Partnering Workshop will also be used to review the team's roles and responsibilities, preliminary schedule, scope of work, project goals, and potential challenges and opportunities.

B. Prepare Risk Management Plan/Risk Register

Contingency is accounted for in every contractor's bid or cost proposal for every project, regardless

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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 DeIDOT 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.

Following, or in conjunction with, the Project Kickoff Workshop, 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.

Establishing a dollar amount for assigned risks is done through mutual collaboration among the CM/GC Contractor, the ICE, the design consultant, and DeIDOT. DeIDOT and CM/GC Contractor must agree on risk assignment so that both parties understand the approach and methods used in the risk analysis.

At the end of the Preconstruction Services Phase, the Risk Register will be included in the total price for the project. The risks identified as being owned by the Contractor will be included in the construction contract by being distributed as appropriate among the pay items. The risks identified as being owned by DeIDOT will be compiled in the risk register with associated costs, triggers, and payment scenarios and incorporated into the construction contract as part of a special provision. The risks will only be paid out to the Contractor during construction if the triggers are met. It is important to document the decisions related to risks, specifically the triggers and payment scenarios, during the preconstruction phase to help clarify intent once construction starts.

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 and the estimator who develops the Engineer's Estimate (EE). 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 overhead and profit rate should be submitted by the CM/GC Contractor as part of the SOQ and will remain unchanged throughout the project. It should be noted that DeIDOT will not pay for relocation expenses for the CM/GC Contractor's employees or equipment.

The cost model is continually reviewed and discussed by the project team and updated by the CM/GC Contractor prior to submitting their Opinion of Probable Construction Cost (OPCC) at each milestone submission and prior to submitting their 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 ICE and EE concur with the CM/GC Contractor's cost model.

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D. Design Development

The Designer develops design plans for various milestones (Preliminary, Semi-Final, Final), collaborating with the CM/GC Contractor on key design decisions. During the development of each milestone submission, the CM/GC Contractor provides both formal and informal input on constructability, construction and maintenance of traffic phasing, potential early work packages, innovative design alternatives, and potential schedule and cost savings opportunities. This collaboration is made through impromptu reviews and intermittent task force meetings. Once the milestone submission is complete, DelDOT submits the plans and specifications to the CM/GC Contractor and ICE for review, along with the normal distribution to the DelDOT support sections.

E. Design Review Workshop

A Design Review Workshop is held after each milestone submission is issued. This workshop is typically a half-day to a full-day in duration and includes the CM/GC Contractor, ICE, design consultant, and DelDOT staff. 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) 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; (6) reconcile quantity differences between the estimators; and (7) identify any errors, omissions, ambiguities, or other items that need to be corrected. The Risk Register will also be reviewed and updated at each milestone submission.

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 DelDOT will entertain Value Engineering Change Proposals (VECP) during the construction phase, the expectation is that these proposals are developed and incorporated into the project during the design development phase. Therefore, the VECP cost sharing model described in the Standard Specifications will not be allowed on CM/GC projects. The Designer will have to add a note to the Plans to address this.

G. Develop and Submit Cost Estimates and Schedule

The CM/GC Contractor's estimate is referred to as an Opinion of Probable Construction Cost or OPCC. The CM/GC Contractor and ICE each independently prepare a contractor-style, production-based cost estimate and schedule that are based on the milestone submission plans and specifications (i.e., Preliminary OPCC Package, Semi-Final OPCC Package, Final OPCC Package). DelDOT will

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prepare an independent estimate using its typical historical bid-based estimating process. All three estimates are submitted to the ICE. The ICE then develops a variance report for use by the project team. The variance report shows the CM/GC Contractor's OPCC and if the Contractor's OPCC for each pay item is within the specified range of the ICE estimate. The CM/GC Contractor's schedule is also provided to the ICE and DelDOT for their review and comment. This occurs at, or slightly before, the submission of the CM/GC Contractor's OPCC.

Prior to submitting the first OPCC, the designer, CM/GC Contractor, and ICE will meet to agree on quantities and how items are paid to ensure the OPCC's are based on the same assumptions.

H. Price Reconciliation Meeting

Following the submission of the estimates for each milestone, DelDOT staff, the CM/GC Contractor, the ICE, and design consultant 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 and scheduling assumptions and attempt to reconcile price differences between the CM/GC Contractor's OPCC and schedule and the ICE OPCC and schedule where the prices differ by more than the range outlined in the RFP. The meeting gives each party an opportunity to understand each other's perspective about pricing and scheduling assumptions and risk assignment. This meeting also helps DelDOT develop a greater confidence level regarding the cost of the project and the reasonableness of the CM/GC Contractor's OPCC and schedule. DelDOT staff participate in these meetings but do not disclose the Engineer's Estimate or the ICE estimate.

I. Adjust Cost Model, Schedule, and Pricing

DelDOT, ICE, and the CM/GC Contractor agree upon changes to the pricing assumptions. The CM/GC Contractor makes adjustments to the cost model and the schedule to reflect these changes and resubmits them to DelDOT. 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 ICE and/or EE may believe it is necessary to adjust their pricing assumptions and estimate.

J. Subsequent OPCCs

Additional OPCCs may be necessary if significant design changes occur, if significant pricing variances remain, or for early work packages. 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 acceptable to DelDOT.

In addition to the activities described above, the CM/GC Contractor may provide other potential preconstruction services to assist DelDOT 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. The services requested by DelDOT will vary from project to project.

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TABLE 1 - POTENTIAL PRECONSTRUCTION SERVICES

DESIGN RELATED	SCHEDULE RELATED
Validate Department/Consultant design	Validate agency/consultant schedules
Assist/input to Department/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	Bid-ability reviews
Assistance shaping scope of work	Subcontractor bid packaging
Feasibility studies	Prequalifying subcontractors
COST RELATED	Assist in right-of-way acquisition
Validate agency/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	Test holes
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

6. Pre-NEPA Approval Procurement and Requirements

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

- A provision allowing unilateral termination by DelDOT if the environmental review process does not result in selecting a build alternative.
- A provision that the scope of services in the preconstruction phase includes all alternatives identified and considered in the NEPA process.
- 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.

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- A provision that the CM/GC Contractor must not prepare NEPA documentation or have any decision-making responsibility with respect to the NEPA 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.
- A provision that DeIDOT 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.
- A provision that DeIDOT 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.

Prior to completing the NEPA approval process, DeIDOT may proceed, solely at the risk and expense of the Department, with design activities at any level of detail (including final design and preconstruction services associated with final design) for a CM/GC project before completion of the NEPA approval process without affecting subsequent approvals required for the project. FHWA, however, 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. DeIDOT may use a CM/GC Contractor for preconstruction services associated with at-risk final design provided the costs of the CM/GC Contractor's at-risk work are segregated from preconstruction services eligible for reimbursement during the NEPA approval process. If DeIDOT 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. Work Packages

An advantage of CM/GC project delivery 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.

Work packages must be a severable phase of the construction, such that DeIDOT 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 before proceeding with construction.

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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 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 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 or stages of project construction that can be accomplished during the period after NEPA approval is complete and before design of the project is sufficient to permit DelDOT 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.

If an early work package is being issued, an OPCC for the entire project must 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 DelDOT 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. The OPCC for the overall project must be within the acceptable range specified in the RFP prior to awarding any early work packages. Generally, the RFP will specify that the CM/GC Contractor's price must be within 5-10% of the ICE estimate as the acceptable range. The Project Manager will choose the range based on project size and include it in the RFP. It should be noted that any work performed as an early work package will come from the overall CM/GC project budget.

For federally funded projects, DelDOT will approve the total construction project cost prior to requesting FHWA's approval of FMIS Construction phase funds (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.

8. Price Proposal Process

Once design has been completed to a level where a price may be submitted (typically at 90 to 95 percent design), DelDOT will prepare a plans and specifications 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.

Upon delivery of the plans and specifications, DelDOT will request a Price Proposal from the CM/GC Contractor at an agreed upon date. The CM/GC Contractor will develop the Price Proposal which will include the direct cost of performing the work (equipment, labor, materials, etc.), overhead and profit. Depending on the project schedule, the Price

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Proposal 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 CM/GC 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 pay items available in that construction contract and facilitate DBE participation as the project progresses. Subcontractors and suppliers must be procured using a competitive and transparent bid process in accordance with a subcontracting plan approved by DelDOT. 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 CM/GC Contractor will ensure adequate competition, how the minimum 50 percent self-performance requirement will be met, and that there will be adequate subcontracted work available to meet the DBE goal.

The Price Proposal will then be compared to the ICE estimate to determine its reasonableness. A price reconciliation meeting will be held to discuss differences in the CM/GC Contractor's Price Proposal and the ICE estimate. The ICE estimate will only be provided to DelDOT's Project Manager and will not be provided to anyone else, including the CM/GC Contractor, during the Preconstruction services phase of the project. After the reconciliation meeting is held, a revised Price Proposal may be requested from the CM/GC Contractor and the ICE. This will then be reviewed and reconciled as necessary.

After three submittals or if the price reconciliation is not progressing, the Department will make a determination 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 will be allowed to bid on the advertised contract.

If an agreed price is reached, DelDOT finalizes the plans and specifications with all necessary approvals, including, but not limited to NEPA approval, right-of-way certification, railroad certification, and utility certifications. The project team submits a recommendation to award the contract to DelDOT's Division of Finance.

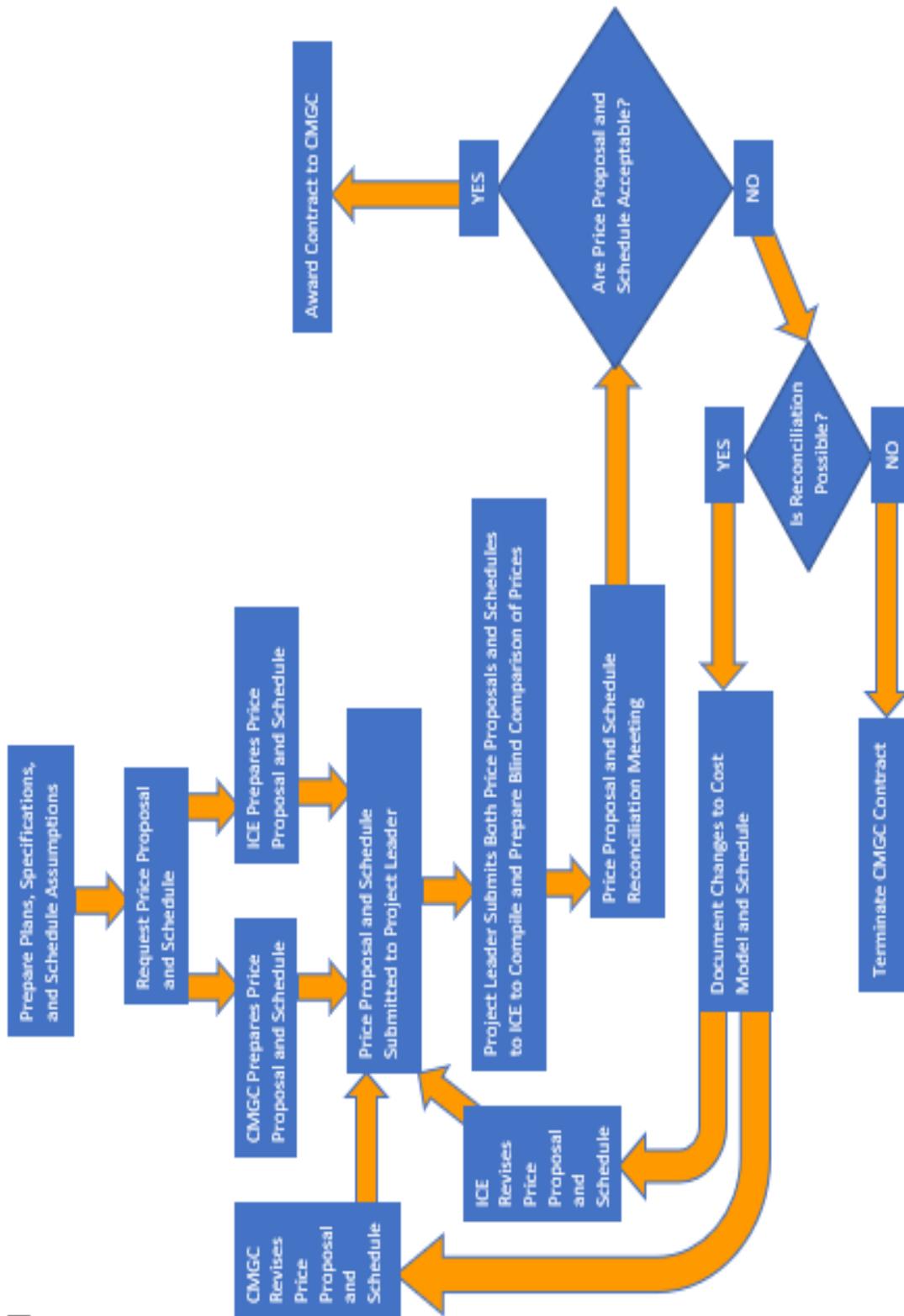
The Price Proposal Validation Process is shown in Figure 1.

9. Federal Highway Administration (FHWA)

FHWA has delegated the actions relating to CM/GC to DelDOT. DelDOT has assumed responsibility for the required actions included in 23 CFR 635 Subpart E—Construction Manager/General Contractor (CM/GC) Contracting. FHWA will continue to monitor the procedures and may request copies of actions for review as part of the general program and project stewardship and oversight. If the FHWA Division Administrator determines that a part of the process will need to have specific FHWA involvement or approval, the FHWA Division Administrator will notify the DelDOT Chief Engineer.

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FIGURE 1 - CM/GC PRICE PROPOSAL VALIDATION PROCESS



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APPENDIX A

Glossary of Preconstruction Services Terms

The following definitions are included in 23 CFR 635.502 Definitions and are specifically related to CM/GC:

Agreed price means the price agreed to by the Construction Manager/General Contractor (CM/GC) contractor and the contracting agency to provide construction services for a specific scope and schedule.

CM/GC Contractor means the entity that has been awarded a two-phase contract for a CM/GC project and is responsible for providing preconstruction services under the first phase and, if a price agreement is reached, construction services under the second phase of such contract.

CM/GC project means a project to be delivered using a two-phase contract with a CM/GC contractor for services during the preconstruction and, if there is an agreed price, construction phases of a project.

Construction services means the physical construction work undertaken by a CM/GC contractor to construct a project or a portion of the project (including early work packages). Construction services include all costs to perform, supervise, and administer physical construction work. Construction services may be authorized as a single contract for the project, or through a combination of contracts covering portions of the CM/GC project.

Contracting agency means the State Transportation Agency (STA), and any State or local government agency, public-private partnership, or Indian tribe (as defined in 2 CFR 200.54) that is acting under the supervision of the STA and is awarding and administering a CM/GC contract.

Early work package means a portion or phase of physical construction work (including but not limited to site preparation, structure demolition, hazardous material abatement/treatment/removal, early material acquisition/fabrication contracts, or any action that materially affects the objective consideration of alternatives in the NEPA review process) that is procured after NEPA is complete but before all design work for the project is complete. Contracting agencies may procure an early work package when construction risks have been addressed (both agency and CM/GC contractor risks) and the scope of work is defined sufficiently for the contracting agency and the CM/GC contractor to reasonably determine price. The requirements in §635.506 (including §635.506(d)(2)) and §635.507 apply to procuring an early work package and FHWA authorization for an early work package.

FHWA Division Administrator means the chief FHWA official assigned to conduct business in a particular State.

Final design has the same meaning as defined in §636.103 of this chapter.

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NEPA process means the environmental review required under the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 *et seq.*), applicable portions of the NEPA implementing regulations at 40 CFR parts 1500-1508, and part 771 of this chapter.

Preconstruction services means consulting to provide a contracting agency and its designer with information regarding the impacts of design on the physical construction of the project, including but not limited to: Scheduling, work sequencing, cost engineering, constructability, cost estimating, and risk identification. Under a preconstruction services contract, the CM/GC contractor may provide consulting services during both preliminary and, subject to provisions in this subpart, final design. Such services may include on-site material sampling and data collection to assist the contracting agency's design team in its preliminary design work, but do not include design and engineering-related services as defined in §172.3 of this chapter. The services may include the preparation of plans typically developed by a construction contractor during the construction phase (such as preliminary staging or preliminary falsework plans) when needed for the NEPA process. However, services involving plans or submittals that are considered elements of final design and not needed for the NEPA process (such as shop drawings or fabrication plans) is not allowed, even on an at-risk basis, prior to the completion of the NEPA review process.

Preliminary design has the same meaning as defined in section 636.103 of this title.

Solicitation document means the document used by the contracting agency to advertise the CM/GC project and request expressions of interest, statements of qualifications, proposals, or offers.

State transportation agency (STA) has the same meaning as the term State transportation department (State DOT) under §635.102 of this chapter.

The following definitions are 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

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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 decisions 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 to make decisions regarding material selection and early construction packages.

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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 will attend public meetings to answer questions from the public about the construction of the project. The public outreach effort is led by DelDOT during the preconstruction and construction phases.

Bid-ability 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

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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.

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