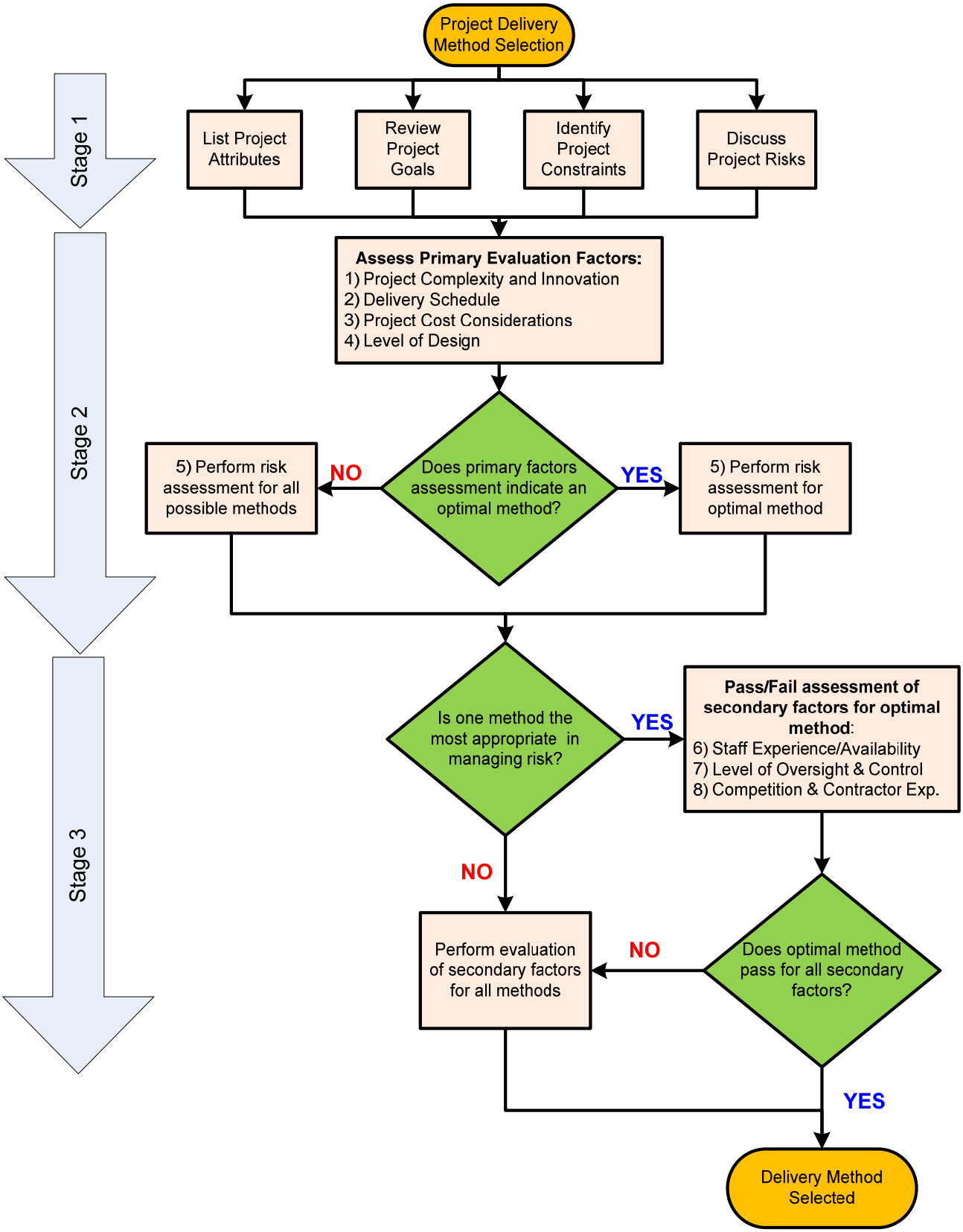
Project Delivery Selection Workshop Summary (SEPTEMBER 2014 VERSION)

Workshop Summary	
Project Name:	19944 – I-70G Edwards Spur Road Phase 2
Workshop Date:	April 27, 9 am-12 pm
Workshop Location:	CDOT Eagle Residency
Facilitator:	Jacob Rivera, Project Manager
Delivery Method Selected:	Construction Manager/General Contractor (CM/GC)

Workshop Participants	
Name	**Email**
Jacob Rivera, CDOT Project Manager	jacob.rivera@state.co.us
Karen Berdoulay, CDOT Resident Engineer	karen.berdoulay@state.co.us
Catherine Ventling, CDOT Environmental	catherine.ventling@state.co.us
Chris Williams, CDOT Utilities	chris.williams@state.co.us
Tim Woodmansee, CDOT ROW	tim.woodmansee@state.co.us
Matt Figgs, CDOT Eagle Residency (Construction)	matthew.figgs@state.co.us
Ricky Davies, Eagle County	richard.davies@eaglecounty.us
Nabil Haddad, CDOT Innovative Contracting	nabil.haddad@state.co.us
Joel Barnett, FHWA	joel.barnett@dot.gov
Jeremy Colip, HDR Project Manager	jeremy.colip@hdrinc.com



Flowchart of the Project Delivery Selection Process

Project Delivery Selection Matrix Worksheets and Forms

The following forms and appendices are included to facilitate this process.

Project delivery description worksheet

Provide information on the project. This includes size, type, funding, risks, complexities, etc. All information should be developed for the specific project.

Project delivery goals worksheet – including example project goals

A careful determination of the project goals is an instrumental first step of the process that will guide both the selection of the appropriate method of delivery for the project.

Project delivery constraints worksheet - including example project constraints

Carefully review all possible constraints to the project. These constraints can potentially eliminate a project delivery method before the evaluation process begins.

Project risks worksheet

In addition to project goals and constraints, a detailed discussion of project risks is a critical step that helps with evaluation of the selection factors.

Project delivery selection summary form

The Project Delivery Selection Summary summarizes the assessment of the eight selection factors for the three delivery methods. The form is qualitatively scored using the rating provided in the table below. The form also includes a section for comments and conclusions. The completed Project Delivery Selection Summary should provide an executive summary of the key reasons for the selection of the method of delivery**.**

Rating Key	
++	Most appropriate delivery method
+	Appropriate delivery method
–	Least appropriate delivery method
X	Fatal Flaw (discontinue evaluation of this method)
NA	Factor not applicable or not relevant to the selection

Workshop blank form

This form can be used by the project team for additional documentation of the process. In particular, it can be used to elaborate the evaluation of the *Assessment of Risk* factor.

Project delivery methods selection factor opportunities / obstacles form

These forms are used to summarize the assessments by the project team of the opportunities and obstacles associated with each delivery method relative to each of the eight Selection Factors. The bottom of each form allows for a qualitative

conclusion using the same notation as described above. Those conclusions then are transferred to the *Project Delivery Selection Summary Form***.**

Project delivery methods opportunities / obstacles checklists

These forms provide the project team with direction concerning typical delivery method opportunities and obstacles associated with each of the eight Selection Factors. However, these checklists include general information and are not an all-inclusive checklist. Use the checklists as a supplement to developing project specific opportunities and obstacles.

Risk assessment guidance form

Because of the unique nature of Selection Factor 5, *Assessment of Risk*, this guidance section provides the project team with additional assistance for evaluation of the risk factor including: Typical Transportation Project Risks; a General Project Risks Checklist; and a Risk Opportunities/Obstacles Checklist.

Project Delivery Description

The following items should be considered in describing the specific project. Other items can be added to the bottom of the form if they influence the project delivery decision. Relevant documents can be added as appendices to the final summary report.

Project Attributes
Project Name: **I-70G Edwards Spur Road Phase 2**
Location: **I-70 G MM 0.0-0.576, US 6 MM 165.7-166.3**
Estimated Budget: **$1.8 M Design, $11 M Construction**
Estimated Project Delivery Period: **December 2014 to December 2018. Construction 2019-2020.**
Required Delivery Date (if applicable): **11/15/2018**
Source(s) of Project Funding: **FASTER, RPP, Eagle County and Edwards Metro District**
Project Corridor: **I-70 Mountain Corridor, Edwards Access Road, US 6, Eagle Valley Trail**
Major Features of Work – pavement, bridge, sound barriers, etc.: **Roundabout, Bridge Widening, Walls, Roadway Widening, Embankment, Utilities, Pedestrian Bridge**
Major Schedule Milestones: **FIR: 9/4/2017, FOR: 1/15/2018, AD: 11/15/2018 Construction: 2019-2020, ROWPR: Late Sept-Early Oct 2017**
Major Project Stakeholders: **Eagle County, CDOT, Edwards Metro District, Edwards Public/Businesses, Bike/Ped users,**
Major General Obstacles: **Project construction not fully funded. Need additional CDOT and Eagle County funding to complete project.**
Major Obstacles with Right of Way, Utilities, and/or Environmental Approvals: **Env: Advance plans to level needed for clearance. Historic review may be critical path to top 128 clearance. 404 Permitting and 4(f) trail impacts during construction. ROW: New acquisition process. Potential for stakeholder resistance. Community Ownerships on several properties can create complications with acquisitions. Must follow CCIOA at these locations. Project impacts to encroachments in existing ROW. Utilities: Overhead Electric relocation, ERWSD may want to add in additional water line work, utilities on proposed bridges, private easements may add costs, Railroad approval process and coordination.**
Major Obstacles during Construction Phase: **Construction phasing to minimize delays to public. Work in the creek restrictions and timing. Public communications. Roundabout construction under live traffic. Potential for utility work during CDOT construction.**
Safety Issues: **Work adjacent to live traffic lanes. Overhead work on structures. Deep trenching. Overhead powerlines and underground utilities.**
Sustainable Design and Construction Requirements: **Include water quality measures – vault type. Possible Full Depth Reclamation**

Project Delivery Goals

An understanding of project goals is essential to selecting an appropriate project delivery method. Therefore, project goals should be set prior to using the project delivery selection matrix. Typically, the project goals can be defined in three to five items and need to be reviewed here. Example goals are provided below, but the report should include project-specific goals. These goals should remain consistent over the life of the project.

Project-Specific Goals
Goal #1: Safety – Managing bicyclist, pedestrian, and vehicle interactions to prevent crashes.
Goal #2: Mobility – Addressing capacity and operational deficiencies to reduce queues, decrease congestion, and improve travel times for all modes.
Goal #3: Community Character – Maintaining and enhancing town character.
Goal #4: Collaborative Decisions – Partnering with the community throughout project development
Goal #5: Healthy Environment – Preserving the natural environment.
Goal #6: Constructability – Feasible project that minimizes disruption and property/right-of-way impacts to local property owners and businesses. Overall high quality construction. Meeting project cost goals.
Goal #7: Connectivity – Optimizing the movements of vehicles, bicyclists, pedestrians and transit users through the project area.
Goal #8: Sustainability – Designing a project that addresses future needs, can be easily and cost-effectively maintained and supports economic vitality.

Project Delivery Constraints

There are potential aspects of a project that can eliminate the need to evaluate one or more of the possible delivery methods. A list of general constraints can be found below the table and should be referred to after completing this worksheet. The first section below is for general constraints and the second section is for constraints specifically tied to project delivery selection.

General Constraints
Source of Funding: CDOT and Eagle County partnership. Eagle County 30%: Edwards Metro and Eagle County Government, CDOT 70%: Regional Priority Pool (RPP), FASTER, etc.
Schedule constraints: Construction planned for 2019. AD November 2018. Start ROW Acquisition – November 2017. Railroad approval process
Federal, state, and local laws: Federal, State and Eagle county laws and regulations. NEPA, etc.
Third party agreements with railroads, ROW, etc: Railroad, Utility, FHWA, PUC, and ROW agreements.

Project Delivery Specific Constraints
Project delivery constraint #1: Complete project on schedule that is cost effective.
Project delivery constraint #2: Preserve the natural environment.
Project delivery constraint #3: Minimize disruption and impacts to property, traveling public and local businesses.
Project delivery constraint #4: Utilize collaborative decision making with community
Project delivery constraint #5: Project budget is $11 M. Estimate is larger than budget.

Project Risks

Identified Project Risks
Project Risk: Accelerated Project Schedule Need to start ROW process this year to deliver project construction starting in 2019. ROW/Environmental process starting sooner than typical.
Project Risk: Railroad Railroad variance. Railroad review of future plans can be a risk.
Project Risk: ROW It is possible that ROW acquisitions run longer than expected and begin to impact AD date or construction. Condemnation proceedings possible. Existing encroachments into public ROW could complicate ROW proceedings. Community ownership of properties could complicate ROW proceedings.
Project Risk: ERWSD Utilities ERWSD would like to include water line upgrades in the project. Potential complications with additional stakeholder during construction.
Project Risk: Overhead Electric Line Impacts Overhead electric line is impacted. Overhead electric will need to move. Multiple utility owners on power poles.
Project Risk: Funding Construction not fully funded at this time. CDOT/Eagle County to find additional commitments or project may need to be scaled back.
Project Risk: Construction Phasing High volume road (16,500 ADT/ US 6 ADT). Phasing for current and future traffic that doesn't adversely impact traveling public.
Project Risk: Additional local development Potential impacts to CDOT project from additional local developments.
Project Risk: Safety Construction in a tight corridor with high vehicle and pedestrian volumes.
Project Risk:

Project Delivery Selection Summary

Determine the factors that should be considered in the project delivery selection, discuss the opportunities and obstacles related to each factor, and document the discussion on the following pages. Then complete the summary below.

PROJECT DELIVERY METHOD OPPORTUNITY/OBSTACLE SUMMARY			
	DBB	**DB**	**CMGC**
Primary Selection Factors			
1. Project Complexity & Innovation	+	+	++
2. Project Delivery Schedule	+	-	++
3. Project Cost Considerations	+	-	+
4. Level of Design	+	-	++
5. Risk Assessment	NA	NA	Pass
Secondary Selection Factors			
6. Staff Experience/Availability (Agency)	NA	NA	Pass
7.Level of Oversight and Control	NA	NA	Pass
8. Competition and Contractor Experience	NA	NA	Pass

Rating Key	
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Project Delivery Selection Summary Conclusions and Comments

Construction Manager/General Contractor was selected as the preferred Project Delivery Selection method following the results of discussion during the meeting. The Project Delivery Selection Meeting (PDSM) participants felt that CM/GC was the appropriate balance of including contractor innovation, and providing owners with the control needed to best balance scope and budget.

After assessment of the Primary Evaluation Factors, it was determined that CM/GC was the optimal method. It was then determined that risk associated with the CM/GC method could be properly allocated or mitigated. Finally, it was determined that CM/GC passed the assessment of Secondary Evaluation Factors.

CM/GC was selected as the optimal delivery selection method based on the opportunity to include the CM/GC in the design process and the ability to include the CM/GC input on design issues and overall constructability and cost. Additionally, the ability to properly allocate risk to the correct party is a major benefit to this project. Better overall knowledge of construction costs based on OPCC pricing gives the project a better overall handle on total project costs to better keep stakeholders informed. Additionally, CMGC allows for some larger schedule flexibility with the use of Long Lead Time Procurement and multiple CAP packages if needed.

A major flaw with the Design-Build process that was discussed during the meeting is that the estimated construction costs are not fully covered by the current available budget. It was discussed that this would make it difficult to define what work to include in an RFP for design-build. It was agreed that this was not a fatal flaw in the selection and therefore it was fully included in the analysis matrix. Another major concern with Design-Build was the ability to completely define the scope of the project for the RFP is difficult to do. There were also concerns with the level of control CDOT has over the design and construction process.

It was agreed that Design-Bid-Build is an appropriate delivery method but would not allow for contractor innovation and input in the design process. Additionally, low bid selection does not include a contractor qualifications selection. Qualification based selection was preferred for this project.

The CDOT Eagle Residency has successfully delivered several CM/GC projects and is very experienced with the delivery process. Staff is also available to handle any additional coordination needed for the CMGC process.

The largest risk that was determined with the CM/GC process had to do with any potential design changes that result from CM/GC innovations or cost savings ideas, and how this may affect ROW, Utility, and Environmental Clearance schedules and therefore the overall design schedule. Changes that are made later in the process can further delay CAP negotiations or construction. It was agreed that individual ideas presented by the CM/GC should be evaluated on a case by case basis for potential cost and schedule impacts.

Project Delivery Selection Matrix Primary Factors

1) Project Complexity and Innovation

Project complexity and innovation is the potential applicability of new designs or processes to resolve complex technical issues.

DESIGN-BID-BUILD - Allows Agency to fully resolve complex design issues and qualitatively evaluate designs before procurement of the general contractor. Innovation is provided by Agency/Consultant expertise and through traditional agency directed processes such as VE studies and contractor bid alternatives.

Opportunities	Obstacles	Rating
Currently there is time to resolve issues using traditional methods.	Construction phasing risk. No contractor input on phasing.	+
Possible to have VECP during construction.	No opportunity to work with contractor on innovation in design.	
Environmental Clearance process less iterative. Less complicated	Increased change orders during construction over other methods.	
ROW needs identified and linear process. Less complicated		

CMGC - Allows independent selection of designer and contractor based on qualifications and other factors to jointly address complex innovative designs through three party collaboration of Agency, designer and Contractor. Allows for a qualitative (non-price oriented) design but requires agreement on CAP.

Opportunities	Obstacles	Rating
Contractor input during design can lower costs and increase constructability or reduce time.	Potential for additional ROW or Environmental needs identified after clearance or authorization.	++
Independent Cost Estimator can add ideas to cost savings.	Additional design changes can be hard to react to.	
All players involved early on in process.	Additional contracts for ICE and CMGC.	
Contractor input on construction phasing. Ability to increase mobility.		
Increased communication with early public outreach and CMGC input in process.		

DESIGN-BUILD - Incorporates design-builder input into design process through best value selection and contractor proposed Alternate Technical Concepts (ATCs) – which are a cost oriented approach to providing complex and innovative designs. Requires that desired solutions to complex projects be well defined through contract requirements.

Opportunities	Obstacles	Rating
Multiple contractors competing on innovation.	RFP stipulations – Fully defining scope. Especially with current funding limitations.	+
Contractor owns phasing and constructability.	Potential for additional ROW or Environmental needs identified after clearance or authorization.	
DB innovation in design and construction.	Utility impacts and coordination with DB.	
RFP stipulations control project scope.	DB team coordination with CDOT. Additional design changes.	
	Size of project is fairly small. May not lend itself to DB.	

2) Delivery Schedule

Delivery schedule is the overall project schedule from scoping through design, construction and opening to the public. Assess time considerations for starting the project or receiving dedicated funding and assess project completion importance.

DESIGN-BID-BUILD - Requires time to perform sequential design and procurement, but if design time is available has the shortest procurement time after the design is complete.

Opportunities	Obstacles	Rating
Traditional Method. Known process.	Linear process. No ability for overlap of schedules.	
Ability to fully clear ROW, Environmental and Utilities prior to construction.	Errors in design can lead to schedule delays and additional costs.	
Well defined milestones.	Low bid contractor could be less efficient during construction.	
	Long Lead Time Procurement is more difficult.	+

CMGC - Quickly gets contractor under contract and under construction to meet funding obligations before completing design. Parallel process of development of contract requirements, design, procurements, and construction can accelerate project schedule. However, schedule can be slowed down by coordinating design-related issues between the CM and designer and by the process of reaching a reasonable CAP.

Opportunities	Obstacles	Rating
Long Lead Time Procurement opportunity.	Design changes can impact Env., Utility and ROW clearance schedules.	
Multiple CAP packages. Flexibility with schedules.	RFI's could delay design schedule.	
Optimized construction schedule and phasing with CMGC input.	Vetting of innovative ideas and design changes can add time to schedule.	
Contractor collaborates the 859 delivery schedule during design.	Additional meetings and coordination.	++
Can start price negotiations on project before the project is fully designed.		

DESIGN-BUILD - Ability to get project under construction before completing design. Parallel process of design and construction can accelerate project delivery schedule; however, procurement time can be lengthy due to the time necessary to develop an adequate RFP, evaluate proposals and provide for a fair, transparent selection process.

Opportunities	Obstacles	Rating
Start construction earlier than other methods.	Design changes can impact Env., Utility and ROW clearance schedules.	
More efficient use of Long Lead Time Procurement.	Construction funding not fully defined.	
Shifts schedule risk to DB.	Long procurement time. 6-8 mo process.	
	Puts more strain on specialty units to react to changes. Experience of specialty units in region.	-
	Unknowns with schedule risks.	

3) Level of Design

Level of design is the percentage of design completion at the time of the project delivery procurement.

DESIGN-BID-BUILD - 100% design by Agency or contracted design team, with Agency having complete control over the design.

Opportunities	Obstacles	Rating
Traditional method of delivery. Less iterations.	Limited constructability input during design. No contractor buy-in until construction.	
	Potential for more Change Orders or disputes.	
	Minimizes competitive innovation opportunities.	
		+

CMGC - Can utilize a lower level of design prior to procurement of the CMGC and then joint collaboration of Agency, designer, and CMGC in the further development of the design. Iterative nature of design process risks extending the project schedule.

Opportunities	Obstacles	Rating
Constructability input during design and contractor buy-in on phasing and schedule.	Redesign needed for potential changes and innovations.	
CDOT/Eagle County control design	Flexibility in current design and meeting current commitments.	
Ability to allocate risk appropriately between CDOT and CMGC.		
Strong design team relationship and partnering going in to construction.		++
Selection of CMGC partially based on innovations.		

DESIGN-BUILD - Design advanced by Agency to the level necessary to precisely define contract requirements and properly allocate risk (typically 30% or less).

Opportunities	Obstacles	Rating
Contractor owns risk and delivery schedule.	Fully defining scope in RFP to cover work.	
Level of plans are appropriate to move forward.	Less control of design.	
Constructability innovation from DB.	Potential for errors with faster pace of design/construction.	
Contractor designed phasing.		-
Partial selection of DB based on innovation.		

4) Project Cost Considerations

Project cost is the financial process related to meeting budget restrictions, early and precise cost estimation, and control of project costs.

DESIGN-BID-BUILD - Competitive bidding provides a low cost construction for a fully defined scope of work. Costs accuracy limited until design is completed. More likelihood of cost change orders due to contractor having no design responsibility.

Opportunities	Obstacles	Rating
Low bid construction. Lowest cost at bid.	Potential for more change orders than other methods.	
Fully funded prior to AD.	Bid risk. Bids come in higher than engineer's estimate or budgeted amount.	
Owner can control scope to meet budget.	Costs for utility agreements are more difficult to define.	
	Reliance on historical cost data rather than true quotes and market conditions.	+

CMGC - Agency/designer/contractor collaboration to reduce risk pricing can provide a low cost project however non-competitive negotiated CAP introduces price risk. Good flexibility to design to a budget.

Opportunities	Obstacles	Rating
Typically less change orders during construction.	Additional costs for ICE and CMGC contracts. Potential for additional design costs.	
Team collaboration. CMGC direct pricing.	No competitive bidding.	
Real costs from CMGC based on market conditions and subcontractor quotes.	Potential to not reach CAP and need to go to bid.	
Innovation during design to cut costs.		+
Owner can control scope to meet budget.		

DESIGN-BUILD - Designer-builder collaboration and ATCs can provide a cost-efficient response to project goals. Costs are determined with design-build proposal, early in design process. Allows a variable scope bid to match a fixed budget. Poor risk allocation can result in high contingencies.

Opportunities	Obstacles	Rating
DB innovation to reduce costs.	RFP stipulations – Fully defining scope. Especially with current funding limitations.	
Competition on DB selection includes price component.	Additional limits of disturbance can lead to additional costs for ROW, Env. and utilities.	
	Design and construction occurs together. Potential for additional unforeseen costs.	
		-

5) Risk Assessment of Delivery Methods

Risk is an uncertain event or condition that, if it occurs, has an effect on a project's objectives. Risk allocation is the assignment of unknown events or conditions to the party that can best manage them. An initial assessment of project risks is important to ensure the selection of the delivery method that can properly address them. An approach that focuses on a fair allocation of risk will be most successful.

DESIGN-BID-BUILD - Risk allocation for design-bid-build best is understood by the industry, but requires that most design-related risks and third party risks be resolved prior to procurement to avoid costly contractor contingency pricing, change orders, and potential claims.

Opportunities	Obstacles	Rating
		NA

CMGC - Provides opportunity for Agency, designer, and contractor to collectively identify and minimize project risks, and allocate risk to appropriate party. Has potential to minimize contractor contingency pricing of risk, but can lose the element of competition in pricing.

Opportunities	Obstacles	Rating
Ability to allocate risk appropriately between CDOT and CMGC.	Design changes can impact Env., Utility and ROW clearance schedules and costs.	Pass
Collaboration during design to design out risk if possible.	Potential to not reach CAP and need to go to bid. Keep the possibility of going to AD in the schedule.	
Risk Register during design to further evaluate risks prior to pricing.		

DESIGN-BUILD - Provides opportunity to properly allocate risks to the party best able to manage them, but requires risks allocated to design-builder to be well defined to minimize contractor contingency pricing of risks.

Opportunities	Obstacles	Rating
		NA

Project Delivery Selection Matrix Secondary Factors

6) Staff Experience and Availability

Agency staff experience and availability as it relates to the project delivery methods in question.

DESIGN-BID-BUILD - Technical and management resources necessary to perform the design and plan development. Resource needs can be more spread out.

Opportunities	Obstacles	Rating

CMGC - Strong, committed Agency project management resources are important for success of the CMGC process. Resource needs are similar to DBB except Agency must coordinate CM's input with the project designer and be prepared for CAP negotiations.

Opportunities	Obstacles	Rating
Project team has experience completing CMGC.	Potential for additional strain on specialty units for design changes.	
Project team is available for work.	Reduced ability to react to additional outside projects.	
Additional contractor staff aid in design.		
		Pass

DESIGN-BUILD - Technical and management resources and expertise necessary to develop the RFQ and RFP and administrate the procurement. Concurrent need for both design and construction resources to oversee the implementation.

Opportunities	Obstacles	Rating

7) Level of Oversight and Control

Level of oversight involves the amount of agency staff required to monitor the design or construction, and amount of agency control over the delivery process

DESIGN-BID-BUILD - Full control over a linear design and construction process.

Opportunities	Obstacles	Rating

CMGC - Most control by Agency over both the design, and construction, and control over a collaborative agency/designer/contractor project team

Opportunities	Obstacles	Rating
Owner controlled design with input from CMGC.	Additional contracts for CMGC and ICE.	
		Pass

DESIGN-BUILD - Less control over the design (design desires must be written into the RFP contract requirements). Generally less control over the construction process (design-builder often has QA responsibilities).

Opportunities	Obstacles	Rating

8) Competition and Contractor Experience

Competition and availability refers to the level of competition, experience and availability in the market place and its capacity for the project.

DESIGN-BID-BUILD - High level of competition, but GC selection is based solely on low price. High level of marketplace experience.

Opportunities	Obstacles	Rating

CMGC - Allows for the selection of the single most qualified contractor, but CAP can limit price competition. Low level of marketplace experience.

Opportunities	Obstacles	Rating
Qualifications based selection allows for selection of high quality contractors	Price negotiations with single contractor rather than competition via low bid.	
Increased opportunity for innovation based on diversity of project team.	Not a big pool of contractors that have been awarded or have experience with CDOT CMGC.	
Teamwork and communications among project team.	May not be an attractive project for experienced CMGC contractors.	
		Pass

DESIGN-BUILD - Allows for a balance of price and non-price factors in the selection process. Medium level of marketplace experience.

Opportunities	Obstacles	Rating