I-270 Project Delivery Selection Workshop Summary

Workshop Summary	
Project Name:	24947/24527 I-270 Critical Bridges Replacement Project
Workshop Dates:	February 9, 11, and 15, 2022
Workshop Location:	Virtual via Google Meet
Facilitator:	Matthew Pacheco
Delivery Method Selected:	CM/GC

Workshop Participants	
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Project Delivery Description

Project Attributes
Project Name: I-270 Critical Bridges Replacement Project
Location: I-270 in Adams County (Commerce City)
Estimate: Scoping level estimate: $175M (includes Preconstruction costs, Construction Engineering (CE) costs, CDOT Indirect costs and projected inflation
Estimated Project Delivery Period: Design starting in Fall 2022, Construction starting in Summer 2023, completion in early 2026
Required Delivery Date (if applicable): The deteriorating bridges were built over 50 years ago and have reached the end of their service life. The need to eliminate safety concerns related to frequent emergency bridge repairs which impact the traveling public, railroad operations, and maintenance staff makes this project an urgent priority.
Source(s) of Project Funding: Colorado Bridge & Tunnel Enterprise funds for 6 eligible structures, SB267 funds for remainder of scope
Project Corridor: I-270
Major Features of Work: -Remove and replace eight (8) aging, deteriorated bridges and roadway approaches as required. -ROW: partial acquisitions and/or temporary/permanent easements will most likely be required in locations TBD (no relocations anticipated). Roadside retaining walls may be used to reduce ROW impacts. -Standard shoulder widths and acceleration/deceleration lanes to/from the adjacent interchange ramps at York Street and Vasquez Blvd. -No additional through-lane capacity
Major Schedule Milestones: Public/industry alternative delivery meeting, Transportation Commission delivery method recommendation meeting, RFP for design services, NEPA clearance
Major Project Stakeholders: FHWA, Adams County, Commerce City, BNSF Railroad, UPRR, RTD, Farmers Reservoir and Irrigation Co.
Major General Obstacles: Class 1 railroads (BNSF and UPRR) require lengthy approval process for highway overpass bridge designs (initial design concept review has been initiated with the railroads)
Major Obstacles with Right of Way, Utilities, and/or Environmental Approvals: -ROW acquisition and or easements may be required to facilitate access and start of certain construction activities. -Utility Engineering (SUE) is complete and shows various perpendicular underground utilities in the vicinity of the bridges.
Major Obstacles during Construction Phase: Four (4) bridges over active railroads will require flagging for construction activities. Known landfill material at roadway approaches will require ground stabilization methods.
Safety Issues: Bridge construction involves numerous safety critical work items. Bridge construction over railroads involves additional safety critical work submittals and construction techniques approved by a stakeholder/third party.
Sustainable Design and Construction Requirements: Environmental Management documentation and potential low-emission equipment requirements for contractor

Project Delivery Goals

Project-Specific Goals
Goal #1: Remove and replace eight (8) aging, deteriorated bridges as soon as reasonably possible to eliminate frequent emergency repairs which cause lengthy and costly travel delays and detours for the traveling public and freight industry.
Goal #2: Anticipate and meet environmental requirements before, during and after construction.
Goal #3: Limit impacts to the traveling public during construction and minimize the number of required full-freeway closures
Goal #4: Portion of the project may utilize SB-267 funds which have a drawdown goal of 80% by June 30, 2025

Project Delivery Constraints

Constraints
Class 1 Railroads (BNSF Railway, Union Pacific Railroad) require lengthy approval processes for highway overpass bridge designs before construction can begin
Farmers Reservoir and Irrigation Company approval prior to construction
Project Financing
Does your project have any funding gaps that would require Financing*? **NO**

Project Risks

Identified Project Risks
3rd party (Railroad, Ditch Company) reviews and approvals.
Utilities present in the area may require Utility Relocation Agreements (Adams County Fiber/Storm, AT&T, CenturyLink, CCD, Comcast, Denver Water, Magellan, Metro Wastewater Reclamation District, Sprint, Suncor, Verizon, Xcel, Zayo)
Underground geotechnical conditions, especially at the existing landfill (cir.1960) near Suncor, were investigated for the I-270 NEPA Environmental (EA). Further geotechnical investigation may be warranted to reduce risk of unforeseen conditions.
Inflation of preconstruction and construction costs due to labor and material market conditions.

Project Delivery Selection Summary

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

I-270 CRITICAL BRIDGES REPLACEMENT PROJECT DELIVERY METHOD OPPORTUNITY/OBSTACLE SUMMARY			
	DBB	**CM/GC**	**DB**
Primary Selection Factors			
1. Project Complexity & Innovation	+	++	+
2. Project Delivery Schedule	+	++	+
3. Project Cost Considerations	-	+	+
4. Level of Design	+	++	-
5. Risk Assessment	-	+	+

Secondary Selection Factors			
6. Staff Experience/Availability (Agency)	n/a	**Pass**	n/a
7.Level of Oversight and Control	n/a	**Pass**	n/a
8. Competition and Contractor Experience	n/a	**Pass**	n/a

Project Delivery Selection Summary Conclusions and Comments

BACKGROUND:

The I-270 corridor provides a vital connection from I-70 to I-25. Approximately 100,000 vehicles per day utilize this corridor to bypass the friction of downtown Denver to move goods, services, information, and people from the eastern edge of the city to north of the city. Within the I-270 corridor there are eight (8) structures within a one mile stretch between York St. and Vasquez Blvd. that have been the source of many challenges to the mission of this corridor. These structures have been in service for over 50 years and have been requiring frequent emergency repairs. Over 300 emergency repairs have been performed to the bridges along this corridor since 2006. These deck repairs always require significant lane closures affecting travel times in this corridor. This corridor lacks redundancy, and any detours during these emergency repairs require use of local roads or significant out-of-direction movements.

Bridge inspections rated 6 of the 8 bridges in this one-mile segment as 'poor', which made them eligible for Bridge & Tunnel Enterprise (BTE) funding for full replacement. CDOT Region 1 North Engineering and BTE recognize that any further investment into keeping these 8 bridges in service will have diminishing return, therefore the next step should be full replacement. CDOT Region 1 North Engineering has begun to advance the design phase to pursue replacement of these bridges as soon as possible. Full funding for the Critical Bridge Replacements project is available from sources including BTE and SB-267. A subsequent future project will complete the I-270 EA proposed action (to be determined) throughout the I-270 corridor.

CDOT Region 1 North Engineering convened a team of agency subject matter experts, and project team members for an interactive workshop to discuss and evaluate various delivery methods for the "I-270 Critical Bridges Replacement Project" using CDOT's Project Delivery Selection Matrix (PDSM). The workshop was held over the course of three days (February 9, 11, and 15, 2022), and approximately 9 hours total was spent in discussing the opportunities and obstacles each delivery method brought to the table, and how those characteristics can be leveraged to pursue the goals of the I-270 Critical Bridges Scope.

ANALYSIS:

The Project Team first discussed the project attributes, goals, constraints, and risks. Design-Bid-Build (DBB), Design-Build (DB), and Construction Manager/General Contractor (CM/GC) methods were then discussed. Each participant provided input as the opportunities and obstacles of each delivery method were discussed. It should be noted that the Progressive Design Build (PDB) delivery method was not evaluated in the workshop but was discussed separately by members of the Project Team. This delivery method would be a new type of contracting at CDOT requiring coordination and approval from the office of the Attorney General and the State Controller. The resulting schedule uncertainty and risk would not meet project delivery goals. After all comments were recorded, the Project Team collectively assigned a rating to each method for the primary factors listed in the Project Delivery Selection Matrix. The summary table was then populated with the ratings for the sake of comparison and selection of the most appropriate delivery method for this project. Please refer to the I-270 Project Delivery Selection Matrix (PDSM) for the summary table and detailed matrix evaluations.

The project faces scope and schedule risks due to the features underneath bridges requiring "third-party" agreements. Four of the eight bridges to be replaced span over Class 1 Railroads (BNSF Railway and Union Pacific Railroad) which will require complicated, lengthy design approval processes and negotiated clearances. Two bridges spanning over the historic Farmers Reservoir and Irrigation Company (FRICO) Burlington Ditch will also require similar design approvals and clearance. Two bridges span over the S. Platte River and adjacent Greenway Trail which must remain open to users throughout construction using its existing alignment, a temporary detour, or the future trail alignment. Maintenance of traffic must be optimized during all phases of bridge replacement with a goal of reducing the number of full freeway closures required.

The Project Team recognized several advantages offered by alternative delivery methods when compared to traditional Design-Bid-Build (DBB). An alternative delivery method with an accelerated design schedule can accommodate an earlier construction start date reducing the number of emergency repairs required over the remaining service life of the existing bridges. Alternative contracting also results in contractor input and consultation during the design phase reducing the risk of post-design scope changes and schedule delays stemming from contractor site access, phasing considerations and general constructability issues.

Key advantages typically offered by the Design-Build (D-B) delivery method were diminished by the prevalence of 3rd party agreement requirements controlling most of the project scope (Railroads and the FRICO Ditch Company). The project schedule critical path includes railroad and ditch review and approval at 30% design, final design, and construction. If final bridge designs for approvals are advanced in parallel to a lengthy Design-Build procurement process, the innovation advantages typically offered by D-B competition would be eliminated for all but a small remaining portion of the project scope. If overpass design changes are then proposed by the selected Design-Build team after procurement, the lengthy overpass design and approval processes may need to restart with significant delays to the schedule.

The CM/GC delivery method provides CDOT the earliest opportunity to secure a qualified Designer and a Contractor with the needed expertise for the Project and provides early and continuous collaboration between the Owner, Designer, General Contractor, and stakeholders throughout all Project phases. In addition, the Construction Manager's early and continuous input into design may identify additional or previously unknown risks while providing further consideration of opportunities for innovation, feasible mitigation strategies and collaborative scope development.

RECOMMENDATION:

The Project Team recommends a CM/GC Project Delivery Method. The expected opportunities offered by the CM/GC method can be leveraged to meet the unique challenges of this project. CM/GC allows CDOT to manage and mitigate risk using shared risk pools and the influence of an integrated project team that includes participation from CDOT, the Designer and the Contractor. CDOT can negotiate and coordinate risk elements by assigning risk to the party best suited to manage the risk during design and construction.

Justification includes:

- Advantage of early contractor input on complex project challenges:
    - Railroads and Ditch Company approvals for overpass designs and construction
    - Constructability and site access planning
    - Maintenance of Traffic planning for each bridge construction phase
    - Accelerated Bridge Construction (ABC) opportunities
- Acceleration of pre-construction schedule
- Project Team collaboration can result in early cost certainty
- Collaborative design process, guided by CDOT, can pursue a quality and practical project
- Through strong CDOT management and project team collaboration, risks can be identified, quantified, and mitigated

Project Delivery Selection Matrix *Primary* Evaluation 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
Railroad agreements must be obtained prior to overpass reconstruction	Project construction advertisement could be delayed by lack of Railroad Agreements	+
Owner has most control over design prior to advertisement	CDOT responsible for all change management cost impacts (e.g. errors & omissions)	
Value Engineering (VE) process as required by FHWA for large projects ($50M+)	Constructability reviews by independent parties rather than active contractor (lower incentive to provide innovation)	
Owner designed traffic control (MOT) plans	MOT redesigns may be required via change order due to contractor input during construction	
Owner controlled defined scope of existing landfill under highway and proposed mitigation plan	Low bid selection does not consider necessary and beneficial experience for high-risk projects	
CDOT inspection and Quality Assurance (QA) during construction	Contractor input limited to post construction advertisement	

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
Early and continuous input of contractor expertise throughout design process. Specific project scope includes landfill material west of Brighton Blvd, Accelerated Bridge Construction input.	Potential for scope creep due to contractor and designer influence. Requires owner input and focus on key project goals.	++
With Railroad approval being a critical path item for the project schedule, early Contractor input on overpass phasing constructability and design helps streamline the Railroad approval process.		
Shared risk pool reduces the burden of risk traditionally held by the owner (CDOT)		
Early identification of errors & omissions is motivated by the shared risk pool		
Qualification-based selection for contractors that demonstrate understanding of project context	Contractor innovation may be limited by lack of competition when compared to Design-Build	
Early construction packages can be issued prior to entire project being 100% designed.	Construction Package scopes will need to remain independent and severable, but proximity of several bridges close together may pose a risk	
Collaboration between Owner/Designer/Contractor encourages “Project First” culture	Developing Skills to effectively negotiate the CAP.	
Less project management process adjustment when compared with Design-Build		
Moderate project management process adjustment from traditional DBB, including the CAP negotiation 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**
Qualifications based contractor short list based on innovation and experience	Less Owner control over Design.	+
Design is pushed towards Lean solutions for cost savings (added value)	Poorly defined technical requirements can be exploited	
Lowered risk for Owner (e.g. errors & omissions)	Least control over design process and construction product but this can be mitigated by quality Technical Requirements	
CDOT goals and values are met with competitive/innovative proposals	Owner shift from inspection focus to oversight and audit focus with reliance on Contractor IQC program	
More collaborative construction team structure than traditional DBB (Requires a more intensive level of Project Partnering and change in perspective)	Non-traditional CDOT project management process with less staff experience (100% project-focused staff required across several disciplines)	
ATCs (Alternative Technical Concepts) encourages competitive innovation and a menu of improvement options	Intense pace of project requires a large dedicated full-time project staff on Owner side.	
AREs (Additional Requested Elements), when appropriate, can provide opportunity to maximize investment in the corridor	Third Party review times can be challenging to coordinate and manage according to contract requirements.	
Procurement process provides best value as defined by the Owner.		
Constructability and Value Engineering are inherent to the DB process. Separate VE study not required.		

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**
Procurement method (Advertisement for competitive bids) is reliable and usually efficient	Design phase has a lower sense of urgency without proper Project Management	+
Agreements and clearances before construction advertisement can reduce risk of delays after award	Sequential design followed by construction advertisement	
Familiar standard process with more predictable schedule for project team	Construction duration difficult to accelerate	
	Unable to validate low-bid contractor schedule and approach during construction advertisement period	
	Least flexible for management of change conditions in construction as the contractor is not motivated to minimize change condition impact	
	Least opportunity to compress schedule as the design and construction phases do not overlap	
	Design and construction schedules can be unrealistic due to lack construction industry input	
	Unable to procure long-lead-time items before start of construction phase.	

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
Relatively moderate procurement period (10-16 weeks)		++
Quickest from NEPA to construction. CM input can begin in NEPA phase	Less control over completion date when compared with a typical Design-Build.	
Procurement of long-lead-time items before construction phase		
Design and construction packages can occur in parallel for schedule compression	Fixed or promised 'road opening' dates can create conflicts within the CM/GC negotiation process and should be set with caution.	
Some construction activities can commence prior to execution of Railroad Agreements	A contractor change in a later phase of work would result in re-design and coordination challenges	
Contractor input/innovations for schedule efficiencies		
Lower learning curve (than Design-Build) for Owner Project Managers	Owner Project Manager must plan and manage multiple parallel packages for overall schedule savings to be realized	
Schedule development is collaborative between Owner, Designer and Contractor, resulting in a more reliable schedule, based on actual contractor production rates rather than a forecast of historical data.	Failed Construction Agreed Price (CAP) negotiations can add significant time (3-6 mo.)	
Qualification-based selection can evaluate based on scheduling plan and approach		

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
Completion Date contract can specify construction end date, resulting in high motivation for rapid completion	The fast-paced nature of the contract encourages minimal schedule contingencies and higher potential for conflicts over schedule	+
Schedule certainty comes earlier in the project development process	Completion date contract schedules are not immune to risk, as Owner input or Third-Party agreements can impact critical path	
Schedule risk is owned by the contractor	Additional approximate 5 months for procurement phase vs.CM/GC	
Owner-assigned value on schedule creates competition amongst proposers and results in aggressive schedules	Need for advanced design for Railroad overpass approvals minimizes innovation opportunity	
Fastest average delivery method from planning to completion of construction.	Highest level of project workload intensity, can overwhelm an Owner	
Construction RFC packages can be flexible to improve overall schedule		
Quicker from NEPA to construction than DBB. Procurement process can occur prior to NEPA. Design Notice-to-Proceed (NTP 1) can be issued upon completion of NEPA.		

3) 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
Lowest initial cost and market pricing (low-bid) on scope per the Advertisement Package.	CDOT at risk for all errors & omissions change management cost impacts.	-
Value Engineering mandatory for large projects – gain value prior to Advertisement.	Limited Contractor input results in less opportunities for cost reduction through innovation.	
	Cost Estimate is based on Historical Data, not current market pricing.	
	Cost certainty is not achieved until construction is completed.	
	Value Engineering Change Proposals savings – only 50% to the owner	

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
Collaboration helps manage project risk resulting in more accurate project scope and project cost.	Negotiated bid rather than market low bid. May not lead to lowest possible project cost.	+
Owner achieves 100% of Value Engineering (VE). VE is inherent to the process and contributes to a more reliable project cost.	Construction Manager (CM) cost for the pre-construction phase is an additional project cost	
Contractor input results in more opportunities than DBB for cost reduction through innovation.	Negotiation experience of the Owner can be different than the Contractor and could potentially put the owner at a disadvantage in Construction Agreed Price (CAP) negotiations	
Quantified risk contingency is carried in a risk pool. This incentivizes mitigation of risk.	Cost certainty not known until the last package.	
Achieve cost certainty sooner than DBB.	Cost of Independent Cost Estimating consultant adds to project cost.	

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
Guaranteed Maximum Price (GMP) puts the risk of cost escalation with the contractor over the life of the project	Reliance on performance specs and technical requirements can introduce cost risk.	+
Provides earliest cost certainty of all methods	Proposers will include larger contingencies to compensate for market volatility, eroding potential savings (less value for the investment).	
Alternative Technical Concept (ATC) among proposers promotes cost efficiency and maximized scope under the GMP	Cost of preparing the RFP is time and resource intensive.	
Contractor is the most capable party to mitigate volatility of cost due to market conditions.	Contractor or designer capabilities or limitations may affect cost	
DB team must warrant against error and omissions – shifts risk from the Owner to the DB team.	Owner will pay a stipend for ATCs of unsuccessful proposers	

4) 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
Agency has control over the entire design phase	Misinterpretation of the Work, as well as errors and omissions in the plans and specifications, can result in disputes and claims.	+
Completion of the design phase includes management of RR coordination and approvals before advertisement	Changes to the design due to contractor inputs on constructability and access after award can restart the design and RR approval processes.	

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
Procurement of contractor for input and expertise can occur at the current level of design (conceptual) vs. a higher level of design required before DB procurement can occur.		++
Contractor provides constructability means and methods input starting at the current level of design, reducing risk of future design changes		
Packaging can allow for construction start for certain project elements during final design of other project scope items		

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
	If final designs for railroad and ditch overpass approvals proceed in parallel to the lengthy DB procurement process, the innovation advantages typically offered by DESIGN-BUILD competition would be eliminated for all but a small portion of the remaining project scope.	-
	If design changes are proposed after procurement, the lengthy railroad overpass design and approval process may need to restart.	

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
Risk allocation is well understood by industry	Owner holds greatest share of the risk	-
Most-defined scope going into construction	Design changes from errors/omissions	
Utility agreements and relocations pre-construction	Design changes from differing site conditions	
Railroad agreements/approvals before construction	Ad date is subject to RR agreements	
Owner control over design phase protects owner intent	Low-bid winner may not be the best-suited to perform the specific work based on the project risk profile	
	Low-bid winner may misinterpret the "WORK"	
	Least opportunity for contractor input before award	
	Change order risks (schedule, cost)	
	Public input responsiveness depends upon specs and change orders rather than proposals	

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
Early input from a well-qualified contractor during design phase can reduce risk of future design changes and revisions to 3rd party agreements	Non-essential scope can be introduced in the absence of thorough oversight from the Owner project management team	+
Early identification of construction risks, e.g. retaining walls, ground stabilization, etc.	Construction finish date is less certain vs. DB	
Shared risk pool reduces the burden of risk traditionally held by the owner (CDOT)	CAP negotiation introduces cost and schedule risk	

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
Performance-based specifications transfer risk to D-B team	3rd party agreements are high-pressure and have the potential to delay the project if they are on the critical path	+
Provides the owner with the opportunity to allocate risks to the party best-suited to manage the risk	Designer is not selected or managed individually by the Owner	
Qualifications-based selection to find the best suited team to mitigate the project risk profile	QA team is not selected by owner	
Lowest risk of cost escalation	Poorly defined risks add cost	
Early risk identification by proposers promotes effective mitigation		

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
		n/a

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
The CDOT North Program has administered several CM/GC contracts over the past several years.	Additional training will be required, and new positions filled with experienced and dedicated staff	PASS
CDOT is one of States in the US with the most fully developed program and experience with CM/GC.		
CDOT Region 1 North Program has created project-specific positions to manage this project through its lifecycle		

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
		n/a

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**
		n/a
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 control over design and construction packaging continues after procurement	Higher level of cost oversight required (ICE, scope creep)	PASS
Owner control to assist with negotiating 3rd party agreements, phasing, constructability, and stakeholder concerns.		
Owner maintains opportunity to influence design and construction throughout project development		
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**
		n/a

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
		n/a

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
The size and scope of this bridge replacement project offers a competitive entry point for contractors to gain experience with this delivery method.	low bid has largest pool of candidates.	PASS
Industry has responded with strong interest surrounding the release of this project, generating competition.		

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

Opportunities	Obstacles	Rating
		n/a