

## Project Delivery Selection Workshop Summary (Volume 24 Issue1)

Workshop Summary	
<b>Project Name:</b>	Federal Boulevard BRT
<b>Workshop Date:</b>	November 18, 2024, 1p-5p; November 21, 2024, 1p-5p; September 2, 2025, 3p-4:30p
<b>Workshop Location:</b>	CDOT HQ, Room 263 and Virtual
<b>Facilitator:</b>	Matthew Pacheco and Casey Valentinelli
<b>Delivery Method Selected:</b>	CMGC

Workshop Participants	
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## Project Description

Project Attributes
<b>Project Name:</b> Federal Boulevard BRT
<b>Location:</b> Along Federal Blvd from Dartmouth to 120 <sup>th</sup>
<b>Estimated Budget:</b> \$318M
<b>Estimated Project Delivery Period:</b> Final Design Start Spring 2026 – Construction Start Mid 2027 – Complete Construction Late 2029
<b>Required Delivery Date (if applicable):</b> BRT Service by January 2030 is the goal.
<b>Source(s) of Project Funding:</b> FTA Small Starts (Application in progress), CDOT match, local match
<b>Project Corridor:</b> Federal Blvd (approx. 18 miles)
<b>Major Features of Work – pavement, bridge, sound barriers, etc.:</b> Pavement, BRT Striping, BRT Stations (featuring elevated platforms and transit shelters), sidewalk, curb & gutter, utility relocation/installation, and signals (with TSP)
<b>Major Schedule Milestones:</b> 30% Design (Summer '25), Construction start (Mid '27), Revenue Service (Jan 2030)
<b>Major Project Stakeholders:</b> RTD, Denver, Federal Heights, Westminster, Adams County, DRCOG
<b>Major General Obstacles:</b> ROW impacts/Access Impacts, managing additional requests from stakeholders and local agencies, budget, schedule, public engagement
<b>Major Obstacles with Right of Way, Utilities, and/or Environmental Approvals:</b> SHPO Coordination, Right of Way acquisitions where stations are to be built in narrow sections of the roadway, utility relocation
<b>Major Obstacles during Construction Phase:</b> Phasing, high traffic volumes, maintaining business access, Multiple Jurisdictions
<b>Safety Issues:</b> Federal Blvd is on the High Injury Network, defined by total number of KSI crashes
<b>Sustainable Design and Construction Requirements:</b> NA

## Project Goals

Project-Specific Goals
<b>Goal #1:</b> Schedule – BRT revenue service by 2030.
<b>Goal #2:</b> Functional – Prioritize safety and connectivity of all mode users along the corridor before, during, and after construction.
<b>Goal #3:</b> Functional – Coordinate with local businesses to mitigate construction impacts.
<b>Goal #4:</b> Functional – Maximize safety of workers and public road users during construction.
<b>Goal #5:</b> Cost – Maximize the project scope and improvements within the project budget.

## Project Constraints

General Constraints
<b>Source of Funding:</b> FTA Small Starts (Application in progress), CDOT match, local match
<b>Schedule constraints:</b> BRT Service by 2030
<b>Federal, state, and local laws:</b> State highway (on NHS) within jurisdiction of multiple cities (Denver, Federal Heights, and Westminster)
<b>Third party agreements with railroads, ROW, etc.:</b> IGA's and Maintenance IGA's with local agencies and RTD, right-of-way impacts anticipated

## Project Financing

<b>Does your project have any funding gaps that would require Financing*? TBD – details on multiple funding sources in progress (NAAPME, local support, and FTA Small Starts)</b>
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## Project Delivery Specific Constraints

<b>Project delivery constraint #1:</b> Schedule – Estimated construction will take 2+ years which will span over at least two winter seasons depending on start date.
<b>Project delivery constraint #2:</b> Cost – Project must not exceed \$318M unless other sources of funding are identified.
<b>Project delivery constraint #3:</b> Schedule – Right-of-way acquisition timelines
<b>Project delivery constraint #4:</b> Quality – Station amenities and enhancements will vary along the corridor. Station tie-in with private property
<b>Project delivery constraint #5:</b> Functional - Coordination with future and ongoing local agency and developer permit projects

## Project Risks

Identified Project Risks	
<b>Project Risk:</b>	Installation and relocation of utilities near station locations will impact schedule and budget.
<b>Project Risk:</b>	Right-of-way impacts will vary along the corridor. While design will attempt to minimize, they cannot be avoided. Impacts to budget and potentially project schedule due to coordination with property owners.
<b>Project Risk:</b>	Construction phasing for this 18-mile corridor will impact traffic and project schedule.
<b>Project Risk:</b>	Widening may lead to increased impervious area, which may impact design schedule, design budget, and right-of-way.
<b>Project Risk:</b>	FTA Small Starts Grant approval is the main source of funding for the delivery of this project and is capped at 50% (\$150M).
<b>Project Risk:</b>	Maintenance IGA has not been developed. Due to the complexity of the project, various elements will be owned and maintained by different agencies, which affects the design decisions for those elements (ie. station amenities). Impacts schedule.
<b>Project Risk:</b>	Obtaining necessary access and other permits could impact the project schedule.
<b>Project Risk:</b>	The project will likely gain more local support with additional enhancements, including multimodal improvements. Impacts budget.
<b>Project Risk:</b>	Coordination with business owners regarding driveway access impacts could impact the project schedule.
<b>Project Risk:</b>	Obtaining a no-rise certification or a CLOMR/LOMR will impact schedule and budget.
<b>Project Risk:</b>	Relocation of utilities in conflict with proposed storm drain will impact schedule and budget.
<b>Project Risk:</b>	Incorporating other projects that had previously been standalone (water quality, HSIP signals, etc.) into Federal BRT will require significant coordination both internal to CDOT and with Denver. Impacts schedule and budget.
<b>Project Risk:</b>	Funding for BRT operations has not yet been finalized. Requires coordination and development of agreements with RTD. Impacts project schedule.
<b>Project Risk:</b>	Some funding sources will require flexing FHWA sourced federal funding to FTA. Impacts schedule.
<b>Project Risk:</b>	May need permit from the railroad if desired to close the sidewalk gap under the railroad bridge. Adjacent bridge for the G Line on the north side would likely require separate coordination with RTD and another permit. Impacts schedule.
<b>Project Risk:</b>	Environmental impacts including Historic and Hazmat which cause redesign will impact project budget and schedule. Design changes may result in adjustments to APE for historic resources, requiring additional coordination with SHPO. Impacts schedule.
<b>Project Risk:</b>	Coordinating parking loss with business owners will impact project budget and schedule. Potential full ROW takes for severely impacted businesses
<b>Project Risk:</b>	Currently classified as a categorical exclusion (cat-ex). Change to an environmental assessment would require additional environmental work

## Project Delivery Selection Summary

PROJECT DELIVERY METHOD OPPORTUNITY/OBSTACLE SUMMARY			
	DBB	CM/GC	DB
<b>Primary Selection Factors</b>			
1. Project Complexity & Innovation	++	++	+
2. Project Delivery Schedule	+	+++	++
3. Project Cost Considerations	++	++	+
4. Level of Design	++	++	++
5. Risk Assessment	++	++	+
<b>Secondary Selection Factors</b>			
6. Staff Experience/Availability (Agency)	P	P	NA
7. Level of Oversight and Control	P	P	NA
8. Competition and Contractor Experience	P	P	NA
Rating Key			
<p><b>+++</b> Most appropriate delivery method</p> <p><b>++</b> Appropriate delivery method</p> <p><b>+</b> Least appropriate delivery method</p> <p><b>X</b> Fatal Flaw (discontinue evaluation of this method)</p> <p><b>NA</b> Factor not applicable or not relevant to the selection</p> <p><b>P</b> Pass</p> <p><b>F</b> Fail</p>			

## Project Delivery Selection Summary Conclusions and Comments

**Overview of project:** The project has completed 30% design with anticipated Final Design to begin in Spring of 2026. The expected NEPA designation from FTA is CatEx.

**Funding:** Currently the project has committed funds to complete full design and NEPA (10year plan funds, local agency funding and TIP funding). Projected award from FTA application for construction funding will likely be known by end of 2025. NAPME funds application is also in process to request approximately \$30M. Project scope will range between \$100M - \$300M, depending on funding sources realized.

**Final Design RFP:** The RFP development will depend on the size (scope and dollar value) of the project. The contract value will also impact Contractor interest and competition.

**PDSM Process:** Following this initial workshop, an industry review meeting and public meeting will be held. This meeting will solicit public and industry comments on the selected delivery method. Then, the selected method will be brought to the Transportation Commission for review and approval. Finally, this justification document will be sent to the Chief Engineer for signature and approval.

**Contractor Input:** DBB doesn't get construction input until constructability review, after full set of plans are completed. CMGC has one contractor selected based on qualifications and provides input during design. DB is a design competition, typically with 3 short listed proposers.

**Procurement:** DBB takes approximately 4-6 weeks (after final design is completed) and selection is based on low bid. CMGC takes approximately 16-20 weeks (around 10-30% design completed) and selection is based on qualifications. DBB takes approximately 8-12 months (around 10-20% design completed). If more funding is realized after procurement, anything more than 30% increase to contract should be a second procurement rather than a change order. This project can benefit from CMGC delivery due to the earlier start of construction to implement smaller packages along the corridor.

**Complexity and Innovation:** The project's civil-focused nature, with no major structures, means DBB is appropriate, while CMGC's collaborative approach still allows for innovation in phasing and traffic management. In contrast, Design-Build's typical benefits for complex, highly innovative designs are less relevant, as the project's core elements are well-defined, and the cost of the DB method would outweigh its benefits.

**Delivery Schedule:** DBB is the least appropriate method for meeting the 2030 revenue service goal. CMGC is the most appropriate method for meeting the 2030 revenue service since packages can be separated to mitigate the effects of right-of-way acquisitions on the delivery schedule. If CMGC is selected, packages will be determined with the contractor on-board and when right-of-way needs are clearly defined. While right-of-way impacts can be mitigated with CMGC packages, they cannot be eliminated. DB is also an appropriate method for meeting the 2030 revenue service goal. The phased approach of CMGC provides the best strategy for meeting the project goal, which is a primary driver for selecting an alternative delivery.

**Level of Design:** The current 30% design level is a good starting point for either CMGC or DB, as it is sufficient to allow for qualifications-based procurement while still providing opportunity for contractor input on constructability, value engineering, and phasing during the final design. None of the delivery methods provide major opportunities or obstacles based on this criterion. All delivery methods are appropriate.

**Cost Considerations:** DBB and CMGC are both appropriate methods due to the certainty of the cost of what is to be constructed in the plan set or packages. CMGC's packaging approach allows for adjusted scope implementation based on funding sources realized through the design phase. DB is the least appropriate due to the increase of cost based on Contractor taking more of the risk, which will impact the scope/quality of what can be delivered within the limited budget.

**Risks:** DBB is an appropriate delivery method as it benefits from having a better understanding of the risks and mitigation prior to advertisement. CMGC is an appropriate method, since the packages allow for separated risk mitigation and allocated risk sharing via the risk register. DB is the least appropriate method since risks will be less understood at the time of procurement and uncertainty will increase cost. Due to the simplicity of the construction line items in this project, it is likely that risks will be better understood in DBB and CMGC, rather than paying for unknown risks in DB that can be determined in design.

**Secondary Selection Factors:** DB was noticeably the least appropriate method after Primary Factor ratings. DBB and CMGC were discussed at a high level regarding the three secondary factors. No specific notes were tracked for the secondary factors. However, the discussion led to consensus for pass/fail ratings provided on the summary table (page 12). Both DBB and CMGC are appropriate methods regarding the secondary factors. While the secondary factors did not provide a clear distinction, the primary factors, particularly the project schedule and risk assessment, favor CMGC as the most suitable delivery method.

CMGC is the most appropriate delivery method for this project. While DBB is equally appropriate in several factors, it falls short of providing the necessary opportunities to meet the project's primary goal of achieving revenue service by 2030. The ability to deliver this project with severable packages under CMGC allows for construction to begin earlier, mitigating schedule risks associated with right-of-way acquisitions and other third-party agreements along this 18-mile corridor. The project's risks are better understood, and allocated, in CMGC compared to DB. CMGC's financial flexibility allows the scope to align with the final realized budget, ensuring the maximum possible improvements are delivered within the project's financial constraints.

## 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
Can complete negotiation with local agencies regarding 4f/6f properties	Meeting the 2030 revenue service date, due to complexity and size of the project	++
More certainty and local agency consensus prior to construction start	Lowest bidder isn't always the best performer, no opportunity for qualification-based selection for this high profile project	
Private utility relocation negotiation during the design phase		
Phase synchronization with well-defined scope		
Coordination with local agencies in the development of their assets		
Right-of-way acquisitions is lower risk with DBB		
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
Qualification based selection for this high-profile project	Potential for need of innovative design is lower on this project due to the simplicity of the construction line items (civil items, no major structures)	++
Opportunity to innovate along the process, in the packages	Private utility relocation can impact the schedule, potentially lowering the schedule benefits provided	
Lean process for procurement and construction	Right-of-way acquisition mid-level risk	
Contractor involvement for public utility relocation negotiations		
Construction phasing synchronization on this 18-mile corridor can benefit from severable packages		
Coordination with local agencies in the development of their assets		
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
Qualification based selection for this high-profile project	Potential for need of innovative design is lower on this project due to the simplicity of the construction line items (civil items, no major structures)	+
Lean process for procurement is the responsibility of the contractor	Private utility relocation can impact the schedule	
Contractor involvement for public utility relocation negotiations	Defining synchronicity of future phases at RFP becomes difficult	
	Individual stakeholder assets will need to be pre-developed and approved prior to RFP	
	Right-of-way acquisitions is highest risk in 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
	All right-of-way acquisition must be completed prior to ROW clearance	+
	Revenue service goal of 2030 is unrealistic, due to length of design and construction	
	Cannot procure long-lead time items until contractor is on board.	
	Cost and schedule certainty at the end of construction (latest)	
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
Right-of-way acquisitions can happen as needed for the packages	Contractor leverage during negotiation of final package, if not one single package	+++
Much earlier construction start potential, this benefits the project goal of 2030 revenue service	Does not provide strong leverage for the project completion of 2030	
The ability to procure long-lead items before final design is completed		
Contractor input on manufactured elements can assist with decision making, (continued value engineering)		
Cost certainty at final CAP agreement		
Scope items not critical to revenue service can be pushed to later packages to focus on meeting 2030 goal		
Schedule impacts from 3 <sup>rd</sup> party agreements can be mitigated with multi-package delivery		
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
Contractor responsibility to meet project scope at a set time within budget, they procure items to meet those goals	3 <sup>rd</sup> party agreements at highest risk with DB	++
Cost and schedule certainty at procurement (earliest)		
The risk of project completion is transferred to the Contractor		

### 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
Complete control of design	Lack of contractor input during final design	++
Resolves most design-related and third-party risks (i.e. utilities, right-of-way, and environmental approvals) before advertisement	Agency design errors that lead to change orders could impact the limited construction budget	
CMGC - Can utilize a lower level of design prior to procurement of the CMGC and then 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
Contractor input during final design for phasing and station design		++
Allocation of design risks determined during design with all parties involved		
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 input during final design for phasing and station design	Currently this project has many decisions to be worked through via stakeholder engagement and agency coordination, which creates a challenge for developing an adequately detailed RFP at procurement	++

### 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.

<b>DESIGN-BID-BUILD</b> - 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
Timing of funding certainty and budget certainty, allows for better scope alignment with the available funds	Hard to estimate effects of inflation on a multi-year construction project, market volatility has greatest impact on DBB	++
<b>CMGC</b> - 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
Package cost integrity at CAP agreement regardless of market volatility	The more packages implemented decreases leverage in negotiation impacting final costs	++
Allows delivery of project packages to be tied to the availability and certainty of the various funding sources		
<b>DESIGN-BUILD</b> - 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
Contractor carries risk of market volatility	Due to uncertainty in funding available at time of procurement, limited project scope can be delivered, limiting the impact this project intends to have on transit reliability and pedestrian safety	+
Cost integrity at the soonest compared to other methods	Uncertainty of design risks increases risk contingency cost	

## 5) Risk Assessment of Delivery Methods

Risk is an uncertain event or condition that, if it occurs, influences 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 is best 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
Most risks are understood and mitigated with force accounts, etc.	Right-of-way acquisitions must be completed prior to advertisement, impacts schedule and meeting 2030	++
DBB provides more opportunity to incorporate public/stakeholder comments	Multiple contractors from multiple DBB packages can create risk in quality and consistency	
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
Mitigate right-of-way acquisitions impact to schedule	The element of competition in contractor pricing is lost as unforeseen risks arise in the project	++
Separate 3 <sup>rd</sup> party negotiation/coordination for packages		
Risk Register allows for more detailed allocation of project risks to the party best suited to manage each 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
	Need a good understanding of the risks for RFP development	+
	Intense nature of construction and development of the project is not conducive to negotiation leverage	
	Managing risks due to 3 <sup>rd</sup> party negotiations is more challenging	

## 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. **Rating:** Pass

**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. **Rating:** Pass

### 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. **Rating:** Pass

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

### 8) Competition and Contractor Experience

Competition and availability refer to the level of competition, experience and availability in the marketplace 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. **Rating:** Pass

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