Department of Transportation

Alternative Delivery Contracting Methods

Performance Audit
March 2023
2251P



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March 27, 2023

Members of the Legislative Audit Committee:

This report contains the results of a performance audit of the Colorado Department of Transportation's use of Alternative Delivery Contracting Methods. The audit was conducted pursuant to Section 2-3-103, C.R.S., which authorizes the State Auditor to conduct audits of all departments, institutions, and agencies of state government, and Section 2-7-204(5), C.R.S., which requires the State Auditor to annually conduct performance audits of one or more specific programs or services in at least two departments for purposes of the SMART Government Act. The report presents our findings, conclusions, and recommendations, and the responses of the Colorado Department of Transportation.

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Alternative Delivery Contracting Methods

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Key Concern

The Department of Transportation (Department) lacks sound, consistent, and transparent processes for deciding when to use alternative delivery methods; awarding and determining the parameters of alternative delivery contracts; managing alternative delivery contracts; ensuring alternative delivery contracts provide expected benefits; and adhering to accountability and transparency expectations.

Key Findings

- The Department did not always follow its own policies for alternative delivery projects.
  - For 8 of 16 projects auditors reviewed, the Department did not fully use its project delivery selection process when deciding whether to use an alternative delivery method, increasing the risk of choosing an unsuitable delivery method that could lead to cost and schedule overruns.
  - For 1 of 5 Construction Manager/General Contractor (CM/GC) projects auditors reviewed, the Department scored an incomplete proposal rather than rejecting it, as required.
  - The Department inconsistently set and managed CM/GC contract parameters related to cost controls, amendments, and contractor fees.
- For 5 of the 12 CM/GC projects active in Fiscal Years 2021 and 2022, the Department paid contractors about $700,000 to continue work after the preconstruction contracts had expired, in violation of statute, and awarded about $158 million for construction work related to the expired contracts.
- The Department paid $18 million more than independent cost estimates across all 27 CM/GC construction contracts for projects active in Fiscal Years 2021 and 2022. In negotiating construction contracts, the Department uses independent cost estimators to question CM/GC contractors' prices in order to ensure a fair and open price.
- The Department lacks a method to assess whether alternative delivery methods meet statutory expectations to provide a timely or cost effective alternative to its default delivery method. Our analysis found that Design-Build projects are more likely to have schedule and cost overruns and CM/GC performs similarly as the default delivery method, Design-Bid-Build.
- The Department does not always provide clear, consistent information on alternative delivery projects on its website, and is not always consistent with accountability and transparency expectations under the Colorado Open Records Act.

Background

- The Department is responsible for constructing and maintaining the state highway system and uses various contracting methods to deliver construction projects, including its default, Design-Bid-Build delivery method, as well as alternatives such as CM/GC or Design-Build.
- CM/GC and Design-Build alternative delivery methods are used by the Department for high-cost or complex projects to provide greater certainty about their schedules or costs. For CM/GC projects, the Department contracts with a construction firm to provide input on the design of a project and then awards separate construction contracts to that firm to build the project; for Design-Build, it contracts with a single firm for design and construction of a project.
- In Fiscal Years 2021 and 2022, the Department managed 19 alternative delivery projects totaling $3.5 billion, ranging from $8.3 million to $1.17 billion per project.

Recommendations Made

20

Responses

Agree: **20**

Partially Agree: **0**

Disagree: **0**

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Chapter 1

Overview

The Colorado Department of Transportation (Department) is responsible for constructing and maintaining all roads comprising the state highway system (e.g., interstate highways, U.S. highways, and state highways), among other responsibilities, such as overseeing transit, aviation, and bicycle and pedestrian routes [Sections 43-2-101 and 102, and 43-1-104, C.R.S.]. At present, the state highway system covers more than 23,000 lane miles, 3,400 bridges, and 35 mountain passes. To construct and maintain the state highway system, the Department performs planning activities to identify necessary highway construction work, and then the Department divides this work into projects and makes decisions on how to deliver those projects. The Department can decide to deliver highway construction projects by using its default, low-bid delivery contracting method or through best value, alternative delivery contracting methods.

Project Delivery Methods

In the context of highway construction, project delivery method refers to the process of designing, procuring, and constructing a project. Across delivery methods, there are differences in the contractual relationship and allocation of project risk between the Department and the project contractors, and differences in the timeline for design, procurement, and construction. The Department currently uses three main project delivery methods:

- **Design-Bid-Build.** This is the traditional, default project delivery method, where Department staff design the project and then the Department solicits bids from the highway construction industry to build the project according to the Department's design. Under this process, the Department selects the lowest cost bidder that the Department deems qualified for the project through a separate, prequalification process [2 CCR 601-10(2)]. According to the Department, designing the project results in the Department taking on most of the project risk, such as cost increases due to design flaws. From Calendar Year 2012 through 2021, the Department completed 1,122 Design-Bid-Build projects, ranging from about $38,000 to $51 million in total contract costs per project. A total of 261 of these projects (23 percent) each cost more than $5 million.

- **Design-Build.** Under the Design-Build alternative delivery method, the Department develops early project designs and project performance requirements and then solicits proposals to award a single contract to complete the project design and construction. The Department assesses the "best overall value" of each proposal for a Design-Build contract based on items such as the

proposers' qualifications, proposed "alternative technical concepts" for the project's design and construction, and bids on the "guaranteed maximum price" the contractor requests to be paid for the design and construction of the project. In the Design-Build delivery method, the Department should be able to shift design and cost risks to the contractor, because the contractor is responsible for the design and any flaws in the design and for completing the project within the contracted price, regardless of cost increases. Since Calendar Year 2012, the Department has used the Design-Build delivery method to deliver 24 projects totaling $2.1 billion in original contract costs, ranging from $180,000 to $1.17 billion for individual projects.

The Design-Build delivery method can incorporate additional aspects of project delivery, such as having a contractor finance the project, operate a project's toll lanes, and/or maintain a project over a set time period. In addition, Design-Build can incorporate an additional project delivery process of Integrated Construction Contracting, whereby the Design-Build contractor designs construction packages and then solicits bids and awards construction contracts to construction companies to build small portions of the project. Over the past 5 years, the Department has entered into Design-Build contracts that incorporate some of these additional aspects of project delivery for the following two projects:

- The Department is currently using a Design-Build-Finance-Operate-Maintain project delivery method for its $1.17 billion Central 70 project, wherein the Design-Build contractor will help finance the project through a Public-Private Partnership—alongside the High-Performance Transportation Enterprise (known as the Colorado Transportation Investment Office) and Statewide Bridge and Tunnel Enterprise, both established within the Department—and the contractor will operate and maintain the roadway over a 30-year term. A Public-Private Partnership is a contractual agreement between a public sector agency and a private entity that allows for greater private sector participation in the delivery and financing of a government-owned project.

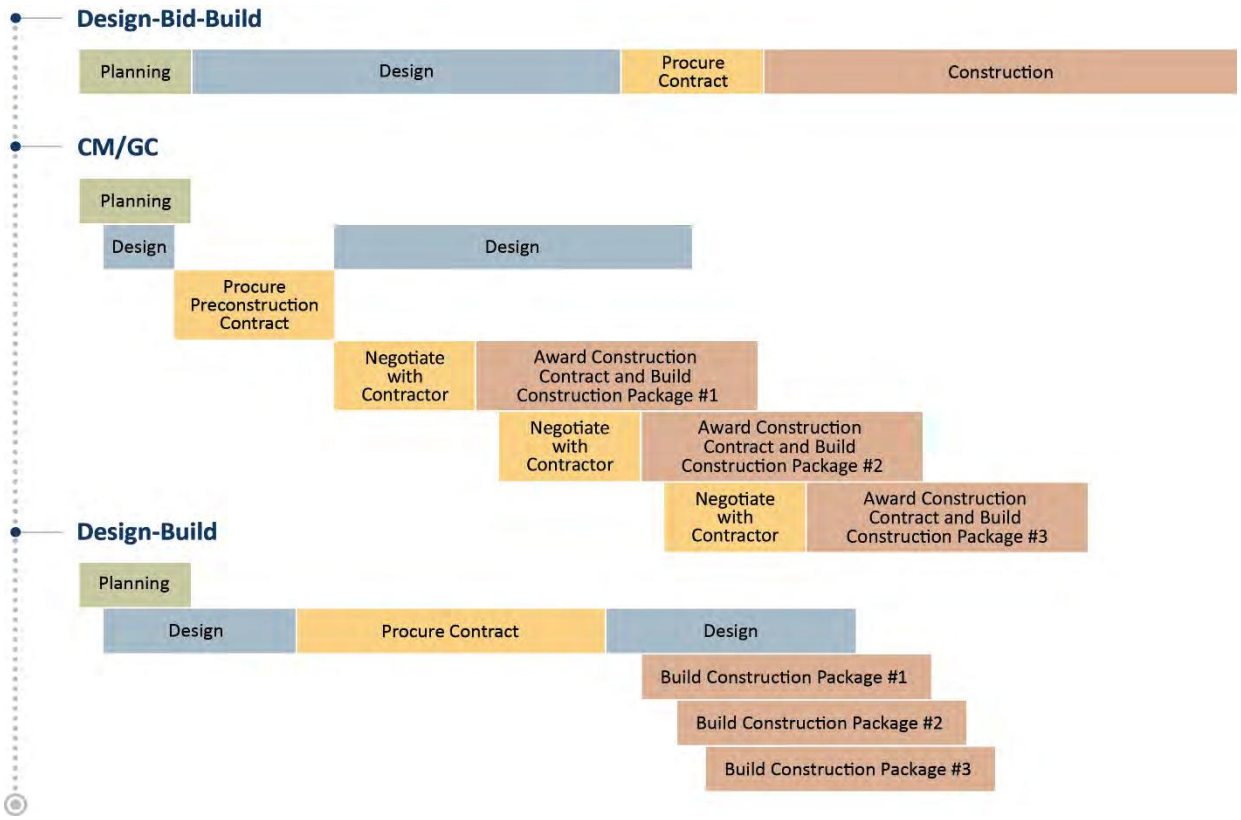
- In 2019, the Department amended the Design-Build contract for the I-25N Johnstown to Fort Collins project to incorporate the Integrated Construction Contracting method. The Design-Build contractor for the project has since designed and awarded eight construction contracts to six different construction companies.

- **Construction Manager/General Contractor (CM/GC)**. Under the CM/GC alternative delivery method, the Department develops the early project scope and hires a design consultant to complete the project's design. The Department solicits proposals to award a preconstruction contract to a CM/GC contractor to work with the Department and a design consultant to provide constructability input on the project design. In selecting the CM/GC contractor, the Department assesses the "best overall value" of each proposal based on items such as the proposers' qualifications, strategic approach, and approach to risk, schedule and pricing. After awarding a preconstruction contract to a CM/GC contractor, the Department then negotiates with and awards separate construction contracts to the CM/GC contractor to build the project

and serve as the general contractor during the construction phase. In the CM/GC delivery method, the Department should be able to reduce its risk, such as cost increases due to design flaws, since the Department has hired the CM/GC contractor to consult on designing the project to assist in identifying cost-effective, feasible designs. Since Calendar Year 2012, the Department has used the CM/GC delivery method to deliver 24 projects totaling about $2 billion in original contract costs, ranging from $1.4 million to $528.2 million for individual projects.

Exhibit 1.1. is based on information provided by the Department that shows how the three delivery methods would sequence the design, procurement, and construction of the same project. In this diagram, it shows that design work for Design-Bid-Build is completed prior to procuring a contractor to build the project. In contrast, for Design-Build and CM/GC, design and construction can occur at the same time by designing construction packages and then building those packages while the rest of the project is being designed. Effectively, the three delivery methods have the same duration of planning and design phases; however, time savings should occur with Design-Build and CM/GC projects due to the concurrence of building different construction packages of the project.

Exhibit 1.1
Associated Timelines of Project Delivery Methods



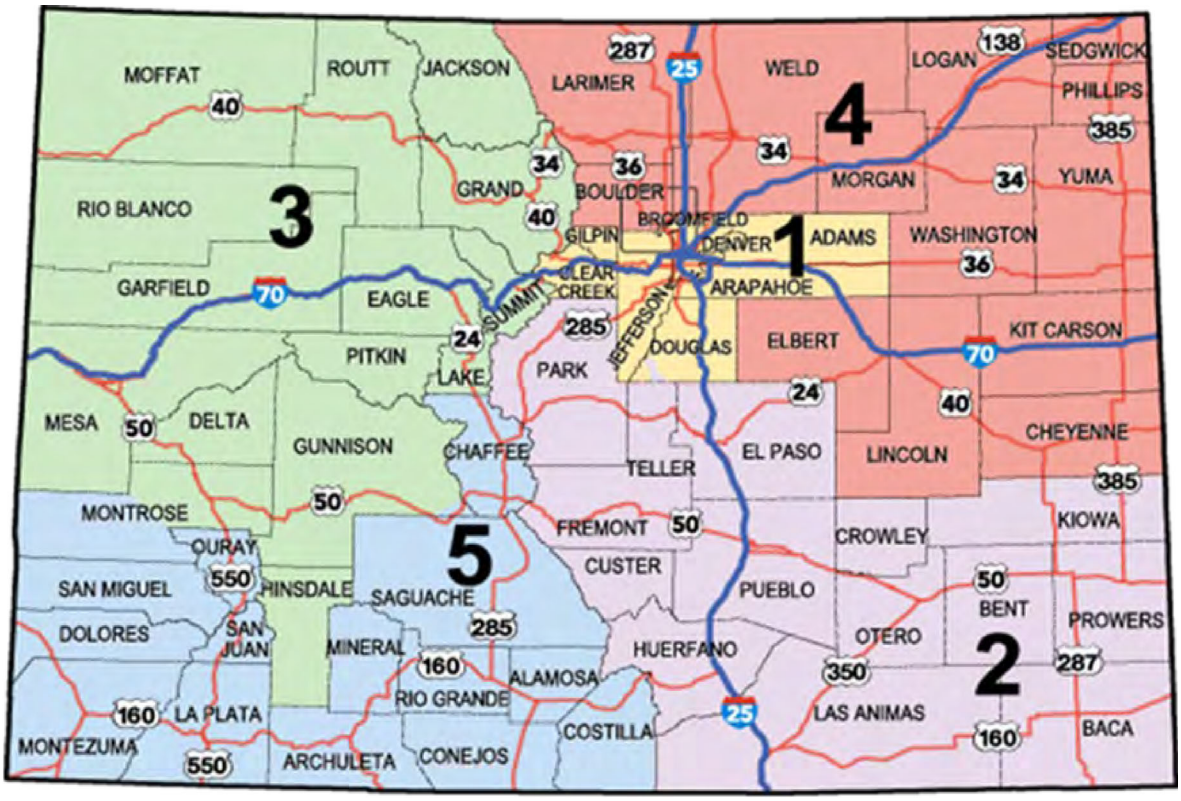
Source: Office of the State Auditor rendering of Department of Transportation diagram on project delivery methods.

Alternative Delivery Method Projects

Design-Build and CM/GC projects follow state statutory requirements for "integrated project delivery" methods [Section 24-93-101 et seq., C.R.S.]. As such, the Department is authorized to award CM/GC and Design-Build contracts to entities "whose proposal is most advantageous and represents the best overall value to the state" [Section 24-93-106(2), C.R.S.]. The Federal Highway Administration (FHWA) encourages states to use alternative delivery methods; since 2008, the FHWA's Center for Innovative Finance Support (formerly Innovative Program Delivery) has provided resources to and worked closely with state transportation agencies to expand and encourage the use of alternative delivery methods "to expedite project implementation, streamline costs, and improve outcomes."

Each alternative delivery project is managed by staff within one of the Department's five regional offices in the state, as shown in Exhibit 1.2. For one project—the Central 70 project within the boundaries of Region 1—the Department's headquarters staff manage the project.

Exhibit 1.2
Transportation regions in Colorado



Source: Department of Transportation website.

Exhibit 1.3 provides information on the Department's 19 alternative delivery projects that had contracts in place at any point during Fiscal Years 2021 and 2022—referred to in this report as active alternative delivery projects—including the project name, region, delivery method, and original contracted amount.

Exhibit 1.3
Active Alternative Delivery Method Projects, Fiscal Years 2021 and 2022

Project Name	Key Project Elements	Delivery Method	Original Contract Duration	Original Contract Cost[1]
Region 1				
Floyd Hill to Veterans Memorial Tunnels (Floyd Hill)[2]	Improve 8 miles of I-70 west of Evergreen to eastern Idaho Springs by adding a third westbound travel lane as a tolled express lane.	CM/GC	2022–2027	$528.2 Million
I-25 South Gap	Add tolled express lane each way on I-25 between Monument and Castle Rock; widen shoulders; replace twin bridges at Upper Lack Gulch; install wildlife crossings, lighting, drainage structures and culverts, retaining walls.	CM/GC	2018–2021	$325.8 Million
C-470 Express Lanes	Add 4 tolled express lanes on C-470; make safety and operational improvements; add auxiliary lanes; replace bridges over South Platte River.	Design-Build	2016–2018	$204.3 Million
Eisenhower-Johnson Memorial Tunnel Drainage, Plumbing, Heat Trace (Eisenhower-Johnson Tunnel)	Replace and repair critical tunnel elements.	Design-Build	2022–2024	$27.2 Million
US 36 Emergency Repair [3] [Emergency Project]	Repair damages to US 36.	CM/GC	2019–2020	$14.2 Million
Americans with Disabilities Act (ADA) Curb Ramp Replacement	Make ADA-compliant improvements to curb ramps across Region 1.	CM/GC	2020–2022	$8.3 Million
Region 2				
Military Access, Mobility and Safety Improvement Project (Military Access)	Improve safety and efficiency of military access roads around Colorado Springs, along I-25, CO 94, South Academy Boulevard, and Charter Oak Ranch Road.	CM/GC	2020–2022	$82.6 Million
I-25 Ilex	Replace/rehabilitate bridges on I-25 between Ilex Street and City Center Drive in Pueblo.	Design-Build	2015–2017	$68 Million
Region 2 Bridge Bundle	Replace 17 bridges along key highway corridors (CO 9, US 24, US 350) in southeastern Colorado.	Design-Build	2022–2026	$42.6 Million

Region 3				
I-70 West Vail Pass Auxiliary Lane (I-70 West Vail Pass)	Improve safety and traffic operations on eastbound and westbound I-70 from East Vail Exit to Vail Pass Rest Area Exit.	CM/GC	2020–2024	$111.5 Million
I-70 Mile Post 211 F-13-S Minor Structure Replacement (I-70 Mile Post 211)	Replace a concrete box culvert used by emergency vehicles.	CM/GC	2020–2021	$15.1 Million
Region 4				
I-25N State Highway 66 to State Highway 402, Segments 5&6 (I-25N Mead to Johnstown)	Reconfigure I-25N to have 3 general purpose lanes and 1 tolled express lane in each direction; replacing and widening 20 bridges; add a new Park-n-Ride facility; reconstruct Great Western Railway crossing.	CM/GC	2018–2025	$422.1 Million
1-25N Johnstown to Fort Collins, Segments 7&8 (I-25N Johnstown to Fort Collins)	Add tolled express lanes both directions on I-25 between SH 402 and SH 14; replace and widen bridges; build new interchanges at SH 402 and Prospect Road; build new underpass and parking lot and add bus transit slip ramps to new parking lot.	Design-Build	2018–2022	$248.3 Million
US 34 Big Thompson Canyon [Emergency Project]	Reconstruct flood damaged segments of the corridor between Estes Park and Loveland.	CM/GC	2015–2017	$91 Million
State Highway 7 Permanent Repair (SH 7 Permanent Repair)	Rebuild portions of the lower, southern section of SH 7—from Lyons to Raymond—and rehabilitate parts of the Middle St. Vrain Creek that were damaged in a 2013 flood.	CM/GC	2019–2023	$40.6 Million
Eastern Timber Bridge Replacement Program in Eastern Colorado (Eastern Timber Bridge Replacement)	Replace 10 timber bridges with concrete bridges or box culverts.	CM/GC	2020–2022	$24.2 Million
US 287 / State Highway 40 Passing Lanes (US 287/SH 40 Passing Lanes)	Add passing lanes to improve safety and mobility.	CM/GC	2020–2021	$8.5 Million
Region 5				
US 550/US 160 Connection South	Build new 1.1 mile, 4-lane section of US 550 to connect with US 160 interchange; widen 3.3 mile section of US 550 and tie into CR 302 intersection.	Design-Build	2020–2022	$77.8 Million

Department Headquarters				
Central 70 [Financed as a Public-Private Partnership]	Reconstruct 10-mile stretch between Brighton Boulevard and Chambers Road; add a new express lane in each direction; remove viaduct; lower interstate between Brighton and Colorado Boulevards; place a 4-acre park over a portion of the lowered interstate.	Design-Build-Finance-Operate-Maintain	2017–2022	$1,170 Million
Total				**$3,510.3 Million**

Source: Office of the State Auditor analysis of Department of Transportation data and project documentation.

[1] Original contract cost amounts consist of the awarded guaranteed maximum price for Design-Build projects and the sum of the awarded CM/GC preconstruction fee and the contractually stated construction budget stated within the CM/GC preconstruction contract.

[2] The Floyd Hill CM/GC project did not have any executed construction contracts at the end of Fiscal Year 2022. The other CM/GC projects had at least one construction contract executed within this timeframe.

[3] The Department set the US 36 Emergency Repair CM/GC project preconstruction fee to be a maximum of $36,000 but did not set a construction budget for the project, due to its emergency nature. The $14.2 million shown is the actual, completed contract cost.

As of March 2023, the Department was in the solicitation process for delivering three more projects using the CM/GC delivery method.

Administration

Transportation Commission of Colorado

The Transportation Commission of Colorado (Commission) is responsible for overseeing the Department. The Commission is composed of 11 commissioners who are appointed by the Governor to 4-year terms and confirmed by the Senate [Sections 43-1-106(1) and (4), C.R.S.]. Commissioners represent geographic districts defined in statute [Sections 43-1-106(2) and (3), C.R.S.]. The Commission is charged with setting transportation policy, promulgating and adopting the Department's budgets and construction priorities, and prescribing administrative practices to be followed by the Department, among other duties [Section 43-1-106(8), C.R.S.]. The Commission's oversight of alternative delivery methods and projects is conducted in the following key ways:

- Approving the Department's annual budget, which includes a list of ongoing and upcoming highway construction projects that require funding in the upcoming fiscal year [Section 43-1-106(8)(h), C.R.S.].

- Approving the use of alternative delivery methods for projects started after June 2021 that are expected to cost more than $75 million, as required by Senate Bill 21-260 [Section 24-93-110(2)(a)(II), C.R.S.].

The Commission is not required to individually approve the initial contract costs for each alternative delivery project, but rather approves the overall funding amounts to dedicate to highway construction projects, through short- and long-range planning documents and the Department's annual budget process. The Department is not required to provide updates to the Commission on alternative delivery projects, other than seeking initial approval to use alternative delivery methods for certain projects required under Senate Bill 21-260, or if the Department seeks contract change orders to increase contract funding by certain thresholds. However, the Department does provide updates to the Commission on certain alternative delivery method projects, often based on the projects' size or if changes to project funding and scope are necessary.

Department Management

The Department's Executive Director is responsible for general supervision and coordination of the Department's activities and functions [Section 43-1-105(1)(c), C.R.S.]. The Executive Director "sets the strategic direction for CDOT, makes recommendations to the Transportation Commission, ensures consistent communication, sets internal policy, establishes short and long-term strategic goals, and provides leadership for CDOT through execution of the Transportation Commission's policies and adopted annual budgets." [Fiscal Year 2023 Performance Plan]. The Executive Director leads the Department's executive management team, which includes the Chief Engineer, Deputy Executive Director, division directors, and the directors of each of the Department's five transportation regions. In Fiscal Year 2023, the Department reported having about 3,400 full-time equivalent (FTE) staff.

The Executive Director appoints the Chief Engineer, who is required to be a licensed professional engineer with at least a decade of experience in highway engineering management [Section 43-1-109(1), C.R.S.]. The Chief Engineer is the director of the Division of Engineering, which is the largest division within the Department in terms of budget and staff. This division is responsible for integrated transportation program development functions including planning, engineering, design, and construction of all highway construction projects. The Chief Engineer, under the Executive Director's supervision, is responsible for awarding all contracts "for the construction or maintenance of state highways and mass transportation projects" [Section 43-1-110(1), C.R.S.]. The Division of Engineering provides specialized services (e.g., expertise related to bridges and tunnels), as well as general guidance and consultation to the regions in carrying out design and procurement of projects. Within this division is the Alternative Delivery Program, whose Alternative Delivery Program Manager provides guidance and trainings to Division of Engineering staff, as well as the Engineering Contracts Services Office, which drafts highway construction contracts.

The Department has established five transportation regions in the state, as shown previously in Exhibit 1.2, with a Regional Transportation Director for each region to oversee transportation projects within their region. According to the Department, the Regional Transportation Directors and staff cover "all aspects of CDOT operations for that geographic area" such as engineering, planning, maintenance, environmental management, and traffic operations, and maintain contact with local stakeholders, such as local governments and the construction industry.

Funding

The Department receives funding for highway construction projects from both federal and state sources. These sources include federal grants paid with revenue from federal gas taxes [26 USC 4081 and 26 USC 9503], as well as state funding sources from state gas taxes [Colorado Const., Art. X, Sec. 18], motor vehicle fees and fines [Colorado Const., Art. X, Sec. 18], interest earnings [Section 43-4-205(5.5)(g), C.R.S.], and proceeds from lease-purchase agreements for state-owned facilities [Section 24-82-1303(4)(b)]. In addition, the General Assembly has made recent investments in transportation infrastructure through legislation passed in 2017 to 2021 to provide additional general funds to transportation projects.

The General Assembly has delegated nearly all of the Department's budgeting authority to the Commission under Sections 43-1-113(2) and (9)(c)(I), C.R.S. For Fiscal Year 2023, the Commission approved a $3.757 billion departmental budget, a little less than half of which comes from new funding allocations and the rest is composed of "roll forward" funds from previous fiscal years that have been designated to specific projects, but not yet expended or encumbered. Within the Fiscal Year 2023 budget, the Commission allocated about $1.7 billion (45 percent) to capital construction, which includes funding for new and ongoing alternative delivery projects, among other items.

Audit Purpose, Scope, and Methodology

We conducted this performance audit pursuant to Section 2-3-103, C.R.S., which authorizes the State Auditor to conduct audits of all departments, institutions, and agencies of the state government, and Section 2-7-204(5), C.R.S., the State Measurement for Accountable, Responsive, and Transparent (SMART) Government Act. The audit was conducted in response to a legislative request that expressed concerns regarding the Department's use of alternative delivery contracting for highway construction projects. Audit work was performed from December 2021 through March 2023, and we appreciate the cooperation and assistance provided by the Department's management and staff and the Commission.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

The key objectives of this audit were to determine whether the Department (1) has sound and consistent processes for deciding when to use alternative delivery methods, (2) has consistent and transparent processes to ensure that it awards alternative delivery projects to contractors that provide the best overall value to the State, (3) has sound and consistent processes for determining the parameters of alternative delivery projects, (4) has consistent and transparent processes to

manage alternative delivery projects to ensure the best overall value to the State, and (5) adheres to accountability and transparency expectations.

To accomplish our audit objectives, we performed the following audit work:

- Reviewed project delivery method selection documentation for the 16 alternative delivery projects active in Fiscal Years 2021 and 2022 that were not delivered in response to an emergency or developed as a Public-Private Partnership.

- Reviewed the procurement-related documents for a targeted selection of 8 of the 16 alternative delivery projects active in Fiscal Years 2021 and 2022 that were not delivered in response to an emergency or developed as a Public-Private Partnership.

- Reviewed the CM/GC preconstruction contracts and contract amendments for the 12 CM/GC projects active in Fiscal Years 2021 and 2022.

- Reviewed documentation related to the negotiation of the 27 CM/GC construction contracts for the 9 non-emergency CM/GC projects active in Fiscal Years 2021 and 2022 that had at least one executed construction contract as of June 2022. One CM/GC project active in Fiscal Years 2021 and 2022 did not yet have any construction contracts executed as of June 2022 when our testing was completed.

- Compared key project metrics for the 16 non-emergency alternative delivery projects with original awarded bid amounts of $5 million or more that the Department completed during Calendar Years 2012 through 2021 to the 261 non-emergency Design-Bid-Build projects with original awarded bid amounts of $5 million or more that the Department completed during the same time period.

- Compiled information on key project metrics for a targeted selection of 4 of the 19 alternative delivery method projects that were active in Fiscal Years 2021 and 2022.

- Reviewed information on the Department's website as of January 2023 about the three projects that were selected for alternative delivery methods after June 2021 and were therefore subject to transparency requirements enacted by Senate Bill 21-260 and for the targeted selection of four alternative delivery projects active in Fiscal Years 2021 and 2022, mentioned in the previous bullet.

- Reviewed documents provided by the Department pursuant to two Colorado Open Records Act (CORA) requests—one that was made in June 2018 and one that was made in February 2022, and compared the original, unredacted documents to those provided pursuant to the CORA request.

- Interviewed Department staff, including project managers, resident engineers, staff responsible for handling public records requests, staff who handle alternative delivery contracts, and communications staff; four members of the Commission; four FHWA staff regarding the Department's use of alternative delivery methods; and nine highway construction industry stakeholders.

- Reviewed statutes related to the Department's use of alternative delivery methods, transparency, and public records requests; the Department's CM/GC and Design-Build Manuals, as well as guidance provided to staff on project delivery selection, public records requests, and specifications for its website; and the Department's performance plans for Fiscal Years 2019 through 2023 for goals and strategies about transparency.

We relied on the following targeted selections based on risk and other criteria to support our audit work as follows:

- Review of proposal evaluation documents for 8 of the 16 alternative delivery projects active in Fiscal Years 2021 and 2022 that were not delivered in response to an emergency or developed as a Public-Private Partnership to determine the extent to which the Department consistently followed its procurement requirements when evaluating and shortlisting CM/GC and Design-Build proposals and awarding contracts. The documents selected were based on delivery method, number of proposals received by the Department and evaluated in Calendar Year 2017 or later, and included the two most recent project contract procurements that concluded in Calendar Year 2022.

- Review of 4 of the 19 alternative delivery projects that were active in Fiscal Years 2021 and 2022 to provide information about whether the projects are on track to achieve the expected benefits of alternative delivery projects. The selected projects were the highest cost and highest profile alternative delivery projects actively under construction in Fiscal Years 2021 and 2022, and the management of these projects' cost and schedule is significant to safeguarding taxpayer funds.

- Interviews with Department staff from 6 of the 9 non-emergency CM/GC projects active in Fiscal Years 2021 and 2022 that had at least one executed construction contract as of June 2022. These projects were selected to help understand the circumstances related to the issues that we identified with these projects in our audit work.

Targeted selections are valid for assessing the effectiveness of the Department's processes for managing alternative delivery projects, stated within our key objectives, and, along with the other audit work performed, provide sufficient, reliable evidence as the basis for our findings, conclusions, and recommendations.

As required by auditing standards, we planned our audit work to assess the effectiveness of those internal controls that were significant to our audit objectives. Details about the audit work

supporting our findings and conclusions, including any deficiencies in internal control that were significant to our audit objectives, are described in the remainder of this report.

A draft of this report was reviewed by the Department. Obtaining the views of responsible officials is an important part of the OSA's commitment to ensuring that the report is accurate, complete, and objective. The OSA was solely responsible for determining whether and how to revise the report, if appropriate, based on the Department's comments. The written responses to the recommendations and the related implementation dates were the sole responsibility of the Department.

Interstate 70 through Glenwood Canyon
Photo Credit: Shutterstock

Chapter 2

Alternative Delivery Method Contracts

For a project to be completed using an alternative delivery contracting method, the Department of Transportation (Department) has processes that are intended to standardize delivery method selection and approval; solicitation of contractors for the design, general contracting, and construction work required for the project; negotiation of contract terms; and award of the contracts. These steps are outlined below.

First, the Department has steps in place to determine the most appropriate delivery method for the project, which is important to help ensure that it is timely and cost effective. The Department began using the Design-Build alternative delivery method in the late 1990s and the Construction Manager/General Contractor (CM/GC) alternative delivery method in 2009. Initially, CM/GC was used under special permission from the Federal Highway Administration (FHWA) because it was an experimental delivery method; in 2012, the FHWA authorized the general use of CM/GC.

In 2011, the Department developed a Project Delivery Selection Matrix (Matrix) as a "formal, documented, and standardized approach that analyzed and justified a project delivery decision" in an objective and transparent manner, according to the Department. The Department developed the Matrix with the help of a professor from the University of Colorado who had expertise on alternative delivery methods in highway construction, along with the FHWA, American Council of Engineering Companies of Colorado, and the Colorado Contractors Association.

Second, once the alternative delivery method is selected, the Department advertises for and chooses contractors as summarized below:

- The Department issues a Request for Qualifications (RFQ) for Design-Build projects and interested firms submit statements of qualifications. The Department issues a Request for Proposals (RFP) for CM/GC projects and interested firms submit proposals.

- The Department conducts initial reviews of the submitted statements of qualifications for Design-Build projects and proposals for CM/GC projects. It scores them using established criteria and "shortlists" those with the highest scores for further consideration. Typically, the Department shortlists three statements of qualifications or three proposals but this has varied based on the number of submissions and how closely submissions score from one another.

- For CM/GC projects, the firms with proposals on the shortlist undergo an interview with the Department, which the Department scores.

- For Design-Build projects, firms with statements of qualifications on the shortlist receive an RFP and the Department scores the resulting proposals.

- The Department combines all of the individual scores for each firm (i.e., the proposal score, the interview score, and price proposal score for CM/GC; the qualifications score and the proposal score, which includes the financial proposal, for Design-Build) and awards the contract to the firm with the highest combined score.

The CM/GC delivery method is unique because there is a single, competitive bidding process to award a contract (known as a preconstruction contract) that requires the contractor to (1) advise on the design of the project in terms of best construction methods, pricing, and resource availability, (2) develop one or more construction packages to complete the project, and (3) submit proposals known as Construction Agreed Price (CAP) proposals and negotiate with the Department to be awarded contracts for each construction package on the project, without the construction work being advertised on the open market for competition. A preconstruction contract with a CM/GC contractor, therefore, provides an exclusive opportunity for that CM/GC contractor to win the subsequent construction work. If construction contract negotiations fail between the Department and the CM/GC contractor, the Department can publicly advertise for proposals on the construction work, but such public solicitation has not occurred for any of the Department's CM/GC projects.

This chapter contains the results of our audit work related to the Department's processes for selecting the delivery method, evaluating proposals for alternative delivery projects, and negotiating and awarding CM/GC contracts.

Finding 1
Project Delivery Method Decisions

The Department's Project Delivery Selection Matrix (Matrix) is a roughly 35-page document containing guidance on how to determine whether traditional Design-Bid-Build, alternative delivery Design-Build, or alternative delivery CM/GC is most appropriate for a project based on project constraints and risks and the comparative advantages and disadvantages of the various delivery methods. The Matrix provides eight evaluation factors—such as project cost, delivery schedule, and the experience and availability of Department staff who can manage the project—intended to facilitate a comprehensive, collaborative evaluation of the suitability of each delivery method to the project. According to Department guidance, for each highway project that staff believe may benefit from alternative delivery, a team of Department staff and, in some cases, external experts, hold a workshop to discuss and complete the Matrix. In our review, we found workshops have historically

varied in length from 3 hours to multiple days, depending on the complexity of the project. Department guidance documents also emphasize that the Matrix "***should not be used to justify a predetermined decision of delivery method***" (emphasis from original document) and that "it is vital that the team is committed to use the [Matrix] to aid in an objective assessment of delivery methods for the project" [Design-Build Manual, Section 2.3.1]. If the workshop team concludes that CM/GC or Design-Build should be used, it prepares a memo for the Chief Engineer, who must approve the method before the project can move forward. Senate Bill 21-260 put into place a requirement that the Transportation Commission of Colorado (Commission) must also approve the use of alternative delivery for projects expected to cost more than $75 million [Section 24-93-110(2)(a)(II), C.R.S.]; this requirement applied to projects starting in June 2021 and later. Because Design-Bid-Build is the Department's default delivery method, Chief Engineer and Commission approval are not required to use that method for highway construction projects.

What audit work was performed and what was its purpose?

We reviewed project delivery method selection documentation for the 16 alternative delivery projects active in Fiscal Years 2021 and 2022 that were not delivered in response to an emergency or developed as a Public-Private Partnership. One of these projects (Floyd Hill) was subject to the new requirement requiring Commission approval to use alternative delivery; the Commission approved the use of alternative delivery for this project in June 2021. For nine projects that we had additional questions about after reviewing the project delivery method selection documentation, we also reviewed the memos written by project staff requesting Chief Engineer approval of the use of alternative delivery. We interviewed Department staff on the use of the Matrix and researched national best practices for the selection of transportation project delivery methods. We reviewed the Department's instructions provided within the Matrix and guidance provided in the Department's CM/GC and Design-Build Manuals on using the Matrix and selecting project delivery methods more broadly. We also reviewed relevant statutes related to the Department's use of alternative delivery methods. In addition, we requested documentation from the Department relating to any Design-Bid-Build projects active in Fiscal Years 2021 and 2022 for which a Matrix workshop had been conducted.

The purpose of our work was to determine the extent to which the Department consistently used the Matrix or other standard processes when deciding to use an alternative delivery method for projects.

How were the results of the audit work measured?

The Department should have a consistent process for determining which delivery method to use for each project. Statute requires that, in order to use alternative delivery methods, the Department must determine that the alternative delivery method selected for the project "represents a timely or cost-effective alternative" to the Department's default Design-Bid-Build delivery method

[Section 24-93-104(1), C.R.S.]. For new alternative delivery projects since June 2021, statute requires the Department to disclose to the public on its website the Department's rationale for deciding to use alternative delivery methods [Section 24-93-110(2)(b)(I), C.R.S.].

Given these requirements, the Department should have a consistent process for determining whether an alternative delivery method would represent a timely or cost-effective alternative to the traditional Design-Bid-Build delivery method and have clear and consistent rationale for selecting each project's delivery method. The *Standards for Internal Control in the Federal Government*, which the Office of the State Controller requires the Department to follow, expect management to design "control activities to fulfill defined responsibilities and address identified risk responses" [Principle 10.02, U.S. Governmental Accountability Office *Standards for Internal Control in the Federal Government*].

Although the Department's manuals for Design-Build and CM/GC do not specifically require staff to use the Matrix, they provide that the Matrix is "a best practice" and "the best available tool" to evaluate and select the most appropriate delivery method for individual projects. According to Department guidance, to complete the Matrix, Department staff must:

- **Conduct a workshop to consider and complete the Matrix.** The Department should create and convene a Matrix panel consisting of Department staff and external transportation consultants, if the Department lacks technical advisors necessary for the design of a specific project, to conduct a workshop where they discuss the project, as guided by the Matrix document, and select what they believe is the most appropriate delivery method for the project.

- **Include a neutral facilitator to guide the Matrix panel during the workshop.** The Department's Design-Build and CM/GC manuals state that, "A facilitator that is neutral toward the delivery method" should be included on the Matrix workshop panel [Design-Build Manual, Section 2.3.1 and CM/GC Manual, Section 2.3.1]. For some of the alternative delivery projects active in Fiscal Years 2021 and 2022, Matrix facilitators have included Department staff experienced in alternative delivery methods and an external party from academia. The Department has emphasized that it is "vital" that Matrix panel members approach the workshop with an open mind and without a predetermined idea of the best delivery method for the project. Project staff emphasized to us in interviews that a neutral facilitator who does not have a stake in the delivery method is key to a successful deliberation.

- **Complete the consideration of factors to determine suitability of delivery methods for the specific project.** According to the Matrix document, the Matrix panel should consider and score the strengths and weaknesses of each delivery method—Design-Bid-Build, CM/GC, and Design-Build—within the context of five primary factors, which cover (1) project complexity and innovation, (2) expectations and needs of the project delivery schedule, (3) project costs and funding considerations, (4) the level of design already completed for the project, and (5) opportunities for fair risk allocation between the Department and contractor.

If the Matrix panel identifies "a clear choice" for the project's delivery method through their assessment of the five primary factors, the panel must then apply three secondary factors and score that delivery method on a pass/fail basis. If the Matrix panel does not identify a clear choice for the project's delivery method through their assessment of the five primary factors, the panel must then consider and score the strengths and weaknesses of each delivery method within the context of the three secondary factors. The Matrix includes prompts on how to consider each secondary factor and an area to record the opportunities and obstacles for each factor and an overall pass/fail score. These secondary factors are (1) Department staff experience and availability in relation to the delivery method, (2) desired level of Department oversight and control over the project, and (3) the level of contractor competition, experience, and capacity for the project. For example, CM/GC or Design-Build could "fail" for a project if the Department lacks sufficient available staff with adequate experience to manage alternative delivery method projects. The Department said that it uses the secondary factors to serve as "a reassurance check to ensure there are no fatal flaws that are beyond the project's control…."

What problems did the audit work identify and why did these problems occur?

Overall, we found that the Department did not consistently use the Matrix workshop process or other standard selection processes when deciding which delivery method to use for projects. Specifically, we found that the Department did not use the Matrix workshop process when deciding to use alternative delivery methods for 8 of the 16 (50 percent) Fiscal Years 2021 and 2022 alternative delivery projects we reviewed. We also found that the Department does not provide guidance to staff on when to embark on the Matrix process, resulting in the Department effectively using the Matrix process as a tool to decide which of the two alternative delivery methods to use, instead of a tool to decide whether to use the default Design-Bid-Build delivery method or an alternative delivery method. In general, these issues occurred because the Department lacks written policies on how to determine if a Matrix workshop should be conducted, what other methods can be used to assess and select a project's delivery method, and when it is allowable to deviate from these policies and methods.

We found the following specific issues:

- **5 of the 16 (31 percent) alternative delivery projects did not undergo a Matrix workshop.** Instead, Department staff wrote memos to the Chief Engineer requesting the use of alternative delivery methods based on different types of assessment methods, as follows:
    - For three projects (Eisenhower-Johnson Tunnel, US 287/SH 40 Passing Lanes, and ADA Curb Ramp Replacement), the Department stated that project staff had discussions with the Alternative Delivery Program manager to consider certain elements of the Matrix, but they did not hold a Matrix workshop or complete the Matrix document in its entirety. After these discussions, project staff wrote memos to the Chief Engineer describing their reasoning for

recommending and requesting approval for using alternative delivery methods for these projects, but these reasons did not cover all of the Matrix's evaluation factors. According to the Department, it did not complete the Matrix workshop process for these projects because these discussions had occurred and due to the project budgets being "smaller"—these projects' budgets ranged from $8.3 million to $27.2 million. For the Eisenhower-Johnson Tunnel project, which started after June 2021, the Department posted on its website the memo to the Chief Engineer describing the rationale to use Design-Build—as required by statute—however, the memo did not cover all of the Matrix evaluation factors that should be considered when deciding to use alternative delivery. The Department has not developed written guidance for staff on what should be included in memos seeking approval from the Chief Engineer to use alternative delivery or the contents of the public posting of rationale for using alternative delivery.

- For two projects (Eastern Timber Bridge Replacement and I-70 Mile Post 211), the Department based its decision to use CM/GC on summarized delivery method evaluations that had already been written as part of studies conducted for these two projects. These summarized evaluations did not include comprehensive assessments of the projects' goals, attributes, risks, and constraints or in-depth evaluations of the primary and secondary factors, as would be discussed and documented during a Matrix workshop. For the Eastern Timber Bridge Replacement project, project staff based their recommendation to use CM/GC on a "summarized" assessment of each delivery method's suitability to the project that the Department had written as part of the project's federal grant application, which the FHWA approved. For the I-70 Mile Post 211 project, the project tea m based their recommendation to use CM/GC on an "initial project delivery method screening" included in a technical study that the Department had hired a private consulting firm to write. However, in its evaluation, the private consulting firm specified that, "It must be emphasized that CDOT will conduct an internal Project Delivery Selection [Matrix] Process to determine the project delivery method" and that "Additional team discussions and completion of CDOT's Alternative Delivery Matrix …are warranted to confirm a preferred approach." When we asked the Department why it had not held Matrix workshops to decide the delivery method for these two projects, it responded that the project teams had reviewed the summarized evaluations and "concluded that the results…would not change" if the Department were to conduct a Matrix workshop.

Interstate 70 at Eisenhower-Johnson Memorial Tunnel
Photo Credit: Shutterstock

- **3 of the 16 (19 percent) alternative delivery projects were selected using the Matrix workshop process, but the Department did not consistently follow the Matrix workshop guidelines for the projects.**

    - For two projects (I-25N Johnstown to Fort Collins and Military Access), the Matrix workshop process did not include neutral facilitators. The Matrix panels for both projects were composed of the Alternative Delivery Program manager and the staff for each project, but they did not include any additional individuals who acted specifically as a neutral facilitator. For example, in other Matrix workshops, the Department had brought in a staff member not involved in the project or in the Department's alternative delivery program, or an external party from academia to serve as the neutral facilitator; this did not occur for either of these projects.

      When we asked the Department why a neutral facilitator was not included in these Matrix panels, it stated that Department guidance to have a neutral facilitator only applies when a project team is using the Matrix for the first time, and that for these two projects, the "Team shared the role of Facilitator" since the participants had participated in several Matrix workshops. Upon further review, we found that there are conflicting requirements in the Department's CM/GC and Design-Build manuals and the Matrix template instruction. The Matrix template instructions state that a neutral facilitator is only necessary when a project team is using the Matrix for the first time, whereas the CM/GC and Design-Build manuals require a neutral facilitator be involved in all Matrix workshops. This conflicting language makes it unclear as to whether the Department expects a neutral facilitator to be involved with all Matrix workshops to fulfill their role to "assist with working through the tool and provide guidance for discussing the project and selection of a delivery method... [and] helps to answer questions and make sure the process stays on track and the team moves towards a formal selection" [Matrix template].

    - For the Region 2 Bridge Bundle project, the Matrix panel did not consider the secondary factors, which are designed to serve as a check that the delivery method selected through the evaluation of the primary factors does not have "fatal flaws that are beyond the project's control." Department staff told us that the Matrix panel was able to select a delivery method based on the primary factors and "may have overlooked the secondary factors," and that this project was awarded a federal grant, suggesting the FHWA agreed with the selection of the Design-Build delivery method. However, the selection panel did not consider the availability and experience of contractors and Department staff to deliver this project as a Design-Build project or the level of oversight the Department would need to have over this Design-Build project. While there may be a reason to forego formal consideration of secondary factors, the Department has not made clear within its written policies or guidance when this is appropriate or if there is a consistent, alternative way to ensure a project delivery method does not have fatal flaws beyond the project's control, and how such consideration should be documented.

In addition, the Department does not have policies or guidance on when project staff should use the Matrix process to select delivery methods for projects. The Department's default delivery method for highway construction projects is its Design-Bid-Build delivery method, and neither statute nor the Department requires staff to document their reasoning to use this default method. However, the Department lacks processes to help guide staff on how and when to assess whether certain project characteristics (e.g., complexity, risks) indicate that a project could benefit from considering all delivery methods through a Matrix workshop. Without processes or guidance, it appears that staff make informal decisions to use alternative delivery methods and then only use the Matrix process to decide *which* alternative delivery method to use. The Department could not provide any examples or documentation of a Matrix workshop being conducted for any of the 163 Design-Bid-Build projects that were completed from July 2020 through December 2021—in fact, the most recent Matrix workshop that resulted in the decision to use Design-Bid-Build, for which there is documentation, occurred in 2013. This indicates that Department staff are not using the Matrix process to decide *if* an alternative delivery method should be used. The Department could ensure the Matrix process is working as a true assessment of whether to use Design-Bid-Build or alternative delivery methods by establishing guidance on project characteristics that staff should consider when determining project delivery methods and whether to undergo the Matrix process or another, standard project delivery selection process.

Why do these problems matter?

The Department risks not selecting the best delivery method for a given project. Each delivery method has its own risks and benefits; aligning the delivery method to the needs and risks of each project is essential to delivering the project successfully. The Department provides in internal guidance that, "Not all projects can and should be delivered with" CM/GC or Design-Build given the time and resources they require the Department to invest [Design-Build and CM/GC Manuals, Chapter 2]. When the Department does not follow its deliberative Matrix process as intended, or have policies or guidance on when a project should use the Matrix, it increases the likelihood of the Department choosing a delivery method that is not the best suited for a project and encountering the following risks:

- **Scope Creep and Schedule Delays.** Both CM/GC and Design-Build alternative delivery methods create the risk of schedule delays if there is uncertainty related to scope and schedule. For one project we reviewed (I-25N Mead to Johnstown), Department staff noted this risk as, "Schedule delays if you can't come to terms on scope" and that the CM/GC delivery method, "Can create scope creep and increased time on design" compared to other methods. According to the Department, adding scope elements to projects is not always bad, because it can result in cost and schedule efficiencies, such as when additional funds are identified and added to a project to complete work that otherwise may have taken years to construct. However, it is important for the Department to select the delivery method that will decrease the likelihood of unwanted cost and schedule growth. Our analysis of CM/GC and Design-Build project costs

from 2012 to 2021 in Finding 5 showed that Design-Build was more likely to grow in cost and schedule, and CM/GC was likely to perform similarly, when compared to Design-Bid-Build projects.

- **Loss of Control of Project Design and Complexity in Managing the Project.** Both CM/GC and Design-Build projects may have risks related to project outcomes and complexity. For one project we reviewed (I-25 South Gap), Department staff noted that with Design-Build, there could be a, "Loss of control of project outcomes in terms of innovation for maintenance, operations, and permitting" and with CM/GC, "Increased size and complexity of project teams create potential for inefficiency, increased complexity of decision making, and/or loss of innovation."

- **Difficulty Negotiating Price.** CM/GC projects have a higher risk associated with complex negotiations and coming to price agreements. For one of the projects we reviewed (I-25 South Gap), Department staff noted that CM/GC projects can have "Uncertainty of [construction contract] negotiation and agreement on price." Finding 4 has more information about risks related to negotiation of CM/GC projects.

- **Predetermination to Use Alternative Delivery Methods.** Without a facilitator, who is neutral toward the delivery method, guiding the Matrix panel discussions, or without processes to guide project staff on when to use the Matrix, Department staff risk using the Matrix to validate a predetermination to use alternative delivery methods, instead of approaching the Matrix process with an open mind to consider which delivery method would be the timeliest and most cost effective method to deliver a project.

The deliberative Matrix workshop process offers a structured method, guided by a neutral facilitator, for the Department to carefully consider and weigh the risks and benefits associated with each project delivery method, and the FHWA and other organizations have encouraged other state transportation agencies to use it to determine whether alternative delivery methods may be appropriate for individual projects. For example, two publications from transportation research branches of the National Academies of Sciences, Engineering, and Medicine published in 2018 and 2020 promoted the Matrix workshop process as a valuable tool, while the FHWA provided a link to download the Matrix in a report on alternative delivery methods in the 2018 publication.

When the Department decides on delivery methods without going through this deliberative process in its entirety and with a neutral facilitator, it risks choosing a delivery method that is less than ideal for the project.

The Department risks being unable to provide full information to decision-makers and the public about the full rationale for using alternative delivery methods. Senate Bill 21-260 enacted new transparency and accountability requirements for selecting the use of alternative delivery methods. In addition to posting justification of using alternative delivery for all projects, the

Department is required to receive Commission approval for the use of alternative delivery methods for projects expected to cost more than $75 million. When the Department does not use its Matrix process, or use it fully, the Department may not be well positioned to provide full disclosure of its justification to use alternative delivery methods or be able to provide complete information to the Commission as part of approving the use of alternative delivery methods.

In addition, nine stakeholders with whom we met, including the member of the General Assembly who requested the audit, raised concerns about whether the Department has sound reasons for selecting projects to be delivered with alternative delivery methods. For example, they are concerned that projects that are "simple" are delivered using alternative delivery rather than the traditional Design-Bid-Build method. Stakeholders also expressed concern that the Department is under political or executive management pressure to use alternative delivery methods. Through our audit work—to assess how these types of pressures contributed to decisions to use alternative delivery methods—we identified a memo for one project (US 287/SH 40 Passing Lanes), which did not undergo a Matrix workshop – that justified the Department's decision to use CM/GC by referencing the fact that there had been a head-on collision in one of the passing lanes on the highway that killed eight people and stated that, "Due to the high profile political nature of this project the accelerated timeline would go a long way toward showing our elected officials the importance of the project…." According to academic and FHWA studies, when compared to Design-Bid-Build, CM/GC can accelerate the timeline for selecting a construction contractor (during the design phase instead of after design completion) and some phases of construction can start while other design work is being completed instead of waiting until the design phase is complete to select a contractor and start construction.

In another example, for the Region 2 Bridge Bundle project for which the Department conducted a Matrix workshop but did not consider secondary factors that serve as a check to ensure that there are no fatal flaws with the selected delivery method, the Department reported to us that the $42.6 million project met the Chief Engineer's goal of having "more projects of this size on the market" and that it "was a size that would be attractive to many of our mid-size contractors and consultants…." However, this rationale was not indicated in the Matrix process documentation. When the Department's rationale for selecting alternative delivery is not well documented or understood, the Department risks undermining trust with stakeholders in the construction industry.

If the Department plans to continue foregoing Matrix workshops for Design-Bid-Build projects and when selecting alternative delivery methods for projects with smaller budgets or projects for which summarized delivery method evaluations have already been written, then setting written policies to guide staff on how to consistently deliberate and document project delivery method decisions will help ensure that sufficient information is provided to the Chief Engineer and the Commission to make approval decisions, and to the public to help explain the Department's use of alternative delivery methods. These new written policies could include documenting when the Matrix is used and the Design-Bid-Build delivery method is selected for a project in order to track historical information on the reasoning and justification for these types of decisions.

Recommendation 1

The Department of Transportation (Department) should ensure that it has a consistent process for determining the most appropriate delivery method for construction projects and documenting the basis for its decisions. The Department's process should include developing and implementing written policies and procedures to:

A. Clarify how to determine when a Project Delivery Selection Matrix (Matrix) workshop should be conducted and describe what other method(s) can be used, and when to use these method(s), to determine the most appropriate delivery methods for projects.

B. Clarify when a Matrix workshop can be conducted without a neutral facilitator or when the secondary factors included in the Matrix do not need to be considered, and how to document a decision to forego these aspects of the Matrix workshop.

C. Provide guidance on the information project staff should include in the memos requesting Chief Engineer approval to use alternative delivery methods.

Response

Department of Transportation

A. Agree
Implementation Date: January 2024

The Department will provide clarification on how to determine whether a Project Delivery Selection Matrix (Matrix) workshop should be conducted by identifying initial project criteria and opportunities that a project must meet prior to commencing the workshop. The Department will also review past method(s) that were used to support the information within the memorandum to the Chief Engineer which seeks concurrence to utilize an alternative delivery method for a project and eliminate or develop clear guidance on these method(s). The Department will update the existing CDOT CM/GC Approach and Management training session to emphasize the actions within this recommendation.

B. Agree
Implementation Date: July 2024

The Department will update the Project Delivery Selection Matrix (Matrix), the CDOT CM/GC Manual and the CDOT Design-Build Manual to clarify when a neutral facilitator is required during the Matrix workshop. The updates will encourage project teams to utilize CDOT Alternative Delivery Program staff as a neutral facilitator to help provide consistent processes

and discussion moving forward and will also clarify that secondary factors are required and must be completed.

C. Agree
Implementation Date: January 2024

The Department will develop guidance for drafting the memorandum to the Chief Engineer which seeks concurrence to utilize an alternative delivery method for a project. The guidance will be provided in a template for the memorandum to the Chief Engineer and will be accessible to project staff. The template will provide direction to project teams to ensure that each memorandum provides consistent, adequate, and relevant information to the Chief Engineer in consideration for approval of the proposed alternative delivery method.

Finding 2
Evaluation and Shortlisting of a Non-Responsive Proposal

The first review of any procurement document submitted in response to a Request for Qualifications (RFQ) or Request for Proposal (RFP) is conducted by a contracting officer within the Department's Engineering Contracts Services Office. This review is intended to ensure that proposals or statements of qualifications (statements) submitted adhere to the minimum requirements of the RFP or RFQ and are, therefore, qualified for further evaluation. According to Department procurement documents, the contracting officer is expected to reject non-responsive proposals and statements (i.e., those that do not meet the specified requirements), and forward responsive proposals and statements to the project's evaluation panel. The evaluation panel, which is composed of Department staff, reviews and scores the forwarded proposals and statements using scoring guidelines contained in the RFQ or RFP.

Both RFQs for Design-Build projects and RFPs for Design-Build and CM/GC projects include requirements for the proposals and statements with which responding firms must comply. These include descriptions of the qualifications and capabilities of the firm and key personnel to be assigned to the project; the firm's approach to project safety; and the firm's approach to estimating the costs reflected in the proposal. For CM/GC preconstruction proposals up until October 2021, the RFP also required submission of a separate proposal on the firm's management price percentage that will be paid if the CM/GC contractor is awarded construction contracts to build any part of the project. The management price percentage is intended to cover the proposing firm's profit and overhead. The Department's approach to establishing the management price percentage changed as of October 2021, and the Department now sets the percentage for a project, as described in Finding 4.

What audit work was performed and what was the purpose?

We reviewed the procurement-related documents for a targeted selection of 8 of the 16 alternative delivery projects active in Fiscal Years 2021 and 2022 that were not delivered in response to an emergency or developed as a Public-Private Partnership. The selection included five CM/GC projects (I-25 South Gap, Military Access, I-25N Mead to Johnstown, Eastern Timber Bridge Replacement, and Floyd Hill) and three Design-Build projects (I-25N Johnstown to Fort Collins, US 550/US 160 Connection South, and Eisenhower-Johnson Tunnel). The procurement process for these projects started between November 2016 and October 2021. Our work included reviewing documents such as RFQs; RFPs; scoring forms; shortlisting decision memos; responsiveness checklists, where available; and contractor proposals. We specifically reviewed materials related to 18 statements of qualifications and 7 proposals across the 3 Design-Build projects and 32 proposals across the 5 CM/GC projects. We also interviewed eight Department staff, including project managers and resident engineers, who worked on the procurement and contractor selection of CM/GC projects. The purpose of our work was to determine the extent to which the Department consistently followed its procurement requirements when evaluating and shortlisting CM/GC and Design-Build proposals and awarding contracts.

How were the results of the audit work measured?

Statute requires the Department to assess Design-Build and CM/GC proposals "on the basis" of its own RFQ or RFP requirements, as applicable, and to award Design-Build and CM/GC contracts to the "entity whose proposal is the most advantageous and represents the best overall value to the state" [Section 24-93-106(2), C.R.S.]. The RFQs and RFPs we reviewed included a list of requirements that proposers were required to fulfill when submitting a proposal and a statement that the Department would reject proposals as "non-responsive" if proposals lacked any of these requirements. For example, in a CM/GC RFP, the Department states, "Proposals that do not meet the Minimum Proposal Requirements listed… will be rejected as non-responsive [to the RFP]." The Department assigns a contracting officer within the Engineering Contracts Office to review each proposal against the RFP requirements, and expects the contracting officer to reject non-responsive proposals and pass on only responsive proposals to the project's evaluation panel. Department RFPs and RFQs also contain scoring guidelines that instruct evaluators to score each section on either a 1- to 5-point scale or as a percentage rating from 1 to 100 percent. The Department then applies a weight to each score—specified in the RFQ or RFP—and calculates the average weighted score to identify the highest scoring statements of qualifications or proposals.

What problem did the audit work identify?

Overall, we found that, for the projects we reviewed, the Department followed its established processes related to reviewing proposals, assessing their responsiveness, shortlisting proposals, and selecting the highest scoring proposer, with one exception. Specifically, for one of the five CM/GC

projects that we reviewed (I-25 South Gap), we found that the Department allowed a proposal to proceed through the entire review process even though it did not include all of the information required by the project's RFP. This proposal was one of six proposals received for the CM/GC project, and did not include the required Approach to Cost section, which was one of the RFP's minimum proposal requirements. The Approach to Cost section required proposers to outline 12 items related to their pavement price estimation process. The Department identified pavement price estimation to be an important element to successfully complete this project within the project budget; for example, the Department's Project Delivery Selection Matrix, completed prior to the RFP process, stated that, "Pavement unknowns are the most complex aspect of the job with the highest potential to create issues in design and construction due to the significant costs in pavement…."

Department staff did not reject the proposal, as required by the RFP, and instead passed the proposal on to the evaluation team to be scored. In addition, we found that all five members of the evaluation team scored the proposal even though it did not include all of the required information and should have been rejected as a non-responsive proposal. Specifically, four evaluators gave the proposer the lowest score allowable by the RFP for the missing section—a score of one point—and one gave the proposer a score of two for the missing section. The evaluation panel's final scores ranked the non-responsive proposal to be 0.3 points higher than the fourth ranked proposal—out of a total possible score of 55 points—and shortlisted the non-responsive proposal among the top three ranked proposals, out of six total proposal submissions for the project, despite the missing section. Although the proposer was not awarded the contract, it did receive the second highest overall score out of the three shortlisted proposals.

Why did this problem occur?

The Department does not require CM/GC projects to have proposal evaluation plans, which should provide clear guidance to contracting office staff on how to screen proposals for responsiveness. For the I-25 South Gap project, the Department did not provide guidance to contracting staff and the evaluation panel staff on how to assess projects for responsiveness or how to handle potentially non-responsive proposals. For some alternative delivery procurements, the Department develops an evaluation plan document that includes guidance for contracting office staff on who the project staff contact is for questions about a proposal's responsiveness, and provides a responsiveness checklist that contracting office staff screening the proposals are required to complete for each proposal. However, these plans are not consistently created for CM/GC projects because the CM/GC manual does not require plans to be created. Specifically, only one out of five CM/GC projects we reviewed (Floyd Hill) included an evaluation plan with a responsiveness checklist and guidance for contracting staff on how to handle non-responsive proposals, though it did not address how *evaluators* should handle proposals that are missing required sections. Conversely, the Department's Design-Build manual [Section 5.3.3.6] requires evaluation plans for Design-Build procurement, and, in all three Design-Build evaluation manuals that we reviewed, the

Department instructed proposal evaluators to review proposals for "overall responsiveness" along with an initial responsiveness review and checklist.

When we asked contracting and project staff why this non-responsive proposal was evaluated and shortlisted, staff said the contracting staff may have been confused by the RFP requirements, indicating a checklist could have been helpful, and that project and contracting staff discussed the missing section and were concerned of "arbitrarily" rejecting the proposal, indicating that guidance could have helped the staff reach a fair, reasoned decision on the responsiveness of the proposal. When we asked other CM/GC project staff what they would do if they were on an evaluation panel and received a non-responsive proposal from the contracting office, only three out of eight said that they would reach out to the contracting office for further guidance, such as whether the proposal should be withdrawn from the evaluation, for example. Four other staff indicated that they would score the non-responsive proposal low for the sections that were non-responsive, but still score the proposal.

The different approaches illustrate that evaluation staff are unsure of what to do in this situation because the Department does not provide directions to evaluation panel members on what to do when they receive a non-responsive CM/GC proposal. An evaluation plan and responsiveness checklist that clearly stated which proposal requirements must have been met for the proposal to be considered responsive may have helped the contracting office staff conducting the responsiveness screening for this project to interpret whether the proposer had provided a responsive proposal given that the Approach to Cost section was missing. It may have also helped evaluators understand what steps to take when they encountered the proposal with the missing section. For example, the evaluation plan developed in 2021 for the Floyd Hill CM/GC project required concurrence between the responsiveness facilitator within the contracting office, a project staff person, and the executive oversight committee—a project-specific group responsible for overseeing and providing guidance to the evaluation team during the procurement process—for a proposal to be deemed non-responsive. If the responsiveness facilitator and the project staff person did not agree, then the executive oversight committee made the final determination on whether a proposal was responsive or not and the determination was documented in a memo approved by the project's executive committee. Such a process may have helped for the project in which the evaluation team scored and shortlisted the non-responsive proposal.

Why does this problem matter?

The Department may not be assessing proposals for best overall value. Before procurement, the Department identifies key areas of a project that are then reflected in the minimum requirements of the RFQ for Design-Build projects and the RFP for Design-Build and CM/GC projects. The Department said that it chose CM/GC for the project that shortlisted a non-responsive proposal, in part, because it wanted to receive innovative ideas for pavement design, which was noted as a high-risk aspect of the project in planning documents. Information about this high-risk area was,

according to four out of five evaluators, missing from the non-responsive proposal. When the Department evaluates proposals that do not address the minimum requirements of the RFP, it is not able to adequately assess proposals for best overall value.

The Department risks treating proposers unfairly. When the Department allows a non-responsive proposal to be evaluated and shortlisted, it is not fairly applying criteria to all proposers. The firm that submitted the non-responsive proposal for the project had been awarded multiple CM/GC contracts in the past, whereas the fourth-place firm that missed out on the shortlist by just 0.3 points in the first phase of procurement had only been awarded one alternative delivery project with the Department previously. Not only was this fourth-place firm denied the opportunity to continue competing for the $325.8 million contract, but they also may have benefited from the experience of interviewing, even if they did not ultimately win the project. Department staff told us that contractors can benefit from going through a CM/GC interview, even if their proposal is not ultimately chosen for the project, because the contractor can gain valuable experience that can help them for future CM/GC solicitations. The experience gained from interviewing for CM/GC projects can be especially valuable for less experienced firms that have not yet won big Department projects.

Recommendation 2

The Department of Transportation should ensure that it consistently follows its procurement requirements when evaluating and shortlisting Construction Manager/General Contractor (CM/GC) proposals. This should include revising the CM/GC manual to require creation of evaluation plans that include a proposal responsiveness checklist and guidance on how to handle proposals that do not appear responsive.

Response

Department of Transportation

Agree
Implementation Date: July 2024

The Department initiated the use of project specific evaluation manuals for the advertisement and evaluation of the I-70 Floyd Hill to Veterans Memorial Tunnel project (CM/GC) in November 2021 and continued the use of a project specific evaluation manual for two subsequent CM/GC project advertisements and evaluations. The project specific evaluation manuals included both a responsiveness checklist and guidance on how to handle proposals that do not appear to be responsive. The Department will update the CDOT CM/GC Manual to incorporate and require the use of a project specific evaluation manual as a best practice.

Finding 3
Statutory Violations and Contracting Errors

Since 2009, the Department has used CM/GC for the delivery of 28 projects, including three projects that were under solicitation as of March 2023. The Department's Engineering Contracts Services Office, which reports to the Chief Engineer, is responsible for drafting CM/GC preconstruction contracts and ensuring that each contract accurately conveys project terms and conditions and is compliant with applicable laws and regulations. The contracts are reviewed and signed by the Chief Engineer, a representative of the Office of the Attorney General, and a Department employee who is authorized by the Office of the State Controller to review and sign contracts on behalf of the State.

CM/GC preconstruction contracts include the following key requirements that must be completed prior to the termination date of the contract:

- **Work with the Department and contracted design consultant to design the project.** The design of the project results in the CM/GC contractor developing one or more construction packages necessary to complete the construction of the project.

- **Prepare and submit Construction Agreed Price (CAP) proposals for each construction package.** Each CAP proposal details the CM/GC contractor's itemized costs and quantities of construction labor and materials, and includes the contractor's margin for profit and overhead granted under a management price percentage set within the preconstruction contract. If the Department accepts the CAP proposal, it enters into a separate contract for the construction package.

- **Ensure that the sum total of all CAP proposals are within the construction budget.** The Department sets a fixed limit of construction costs—also known as the construction budget—for each project. This budget represents the "dollar amount available for the total cost" of construction and serves as a cost control for the construction phase of the project. The construction budget is stated in the project's RFP and in each CM/GC preconstruction contract. Preconstruction contractors are responsible for ensuring their CAP proposals, in aggregate, do not exceed this budget.

Each CM/GC preconstruction contract also contains the following compensation mechanisms:

- **Preconstruction fee,** which is paid to the CM/GC contractor throughout the preconstruction contract for providing constructability input on the design and developing construction packages for the project.

- **Management price percentage,** which is applied to the construction of any construction contract awarded to the CM/GC contractor for the project. It is paid during the construction phases as a margin for profit and overhead. Appendix A provides information about the construction budget, preconstruction fees, and management price percentage awarded under each of the CM/GC preconstruction contract for projects active in Fiscal Years 2021 and 2022.

What audit work was performed and what was the purpose?

We reviewed the CM/GC preconstruction contracts and contract amendments for all 12 CM/GC projects active in Fiscal Years 2021 and 2022, including two emergency projects. We reviewed all of these projects' RFP documents, except for the one emergency project that did not develop an RFP due to its emergency nature. For projects where we identified issues with terminated preconstruction contracts, we reviewed project expenditure data from SAP, the Department's accounting system, as of June 30, 2022; memos showing the Chief Engineer's approval of construction CAP proposals; and, where applicable, the documents showing the reinstatement of terminated contracts and ratification of payments made for services rendered without an active contract. We interviewed 12 staff from the Department's Engineering Division, including staff from six CM/GC projects and the Engineering Contracts Services Office on their methods of reviewing and managing the terms of CM/GC preconstruction contracts.

The purpose of this work was to determine whether the Department has effective processes for ensuring that Department staff manage CM/GC preconstruction contracts in accordance with the terms of each contract and that CM/GC preconstruction contracts accurately reflect project terms related to the contractor's scope of work and compensation, as advertised in project solicitations.

What problems did the audit work identify and how were the results of the audit work measured?

Overall, we found that the Department does not have effective processes to ensure that staff manage CM/GC preconstruction contracts in accordance with contract terms or that these contracts reflect the terms advertised in project solicitations. We identified the following areas where the Department either did not adhere to the terms of CM/GC preconstruction contracts or did not write contracts that reflected contractor payment information contained in CM/GC projects' RFPs.

CM/GC preconstruction work, payments for that work, and amendments to the scope of work continued after the termination dates of preconstruction contracts. For 5 of the 12 (42 percent) CM/GC projects active in Fiscal Years 2021 and 2022, the Department continued to allow the CM/GC contractors to conduct preconstruction work after the termination dates for these contracts had passed, and in some cases, made amendments to the scope of work after the contract had expired. In total, the Department paid about $700,000 to contractors for preconstruction work conducted after the contracts' termination dates and awarded almost $158 million in construction

contracts to the contractors for these five CM/GC projects after the associated preconstruction contracts that allow for awarding unadvertised construction work had expired. This violated Section 24-30-202(1), C.R.S., which requires that commitment vouchers—including CM/GC preconstruction contracts—approved by the State Controller must be in place in order for the State to receive and pay for services, stating that, "No disbursements shall be made in payment of any liability incurred on behalf of the state…unless there is previously filed with the office of the state controller a commitment voucher." Within each CM/GC preconstruction contract—which are approved by the State Controller—the Department establishes a contract termination date. Under these contracts, all preconstruction work—including design of the project and reaching agreement on all CAP proposals for a project's construction packages—must be completed prior to the termination date set by the Department within the terms of the preconstruction contract.

In order to extend a CM/GC preconstruction contract termination date and to continue paying the CM/GC contractor for preconstruction work completed after the termination date, the Department must execute a contract amendment to change the preconstruction contract's termination date *before* the contract terminates [Procedural Directive 400.1 Section V(B)], which the Department did not do. Specifically, we found:

- For two projects (I-25N Mead to Johnstown and ADA Curb Ramp Replacement), the Department paid a total of $707,660 in preconstruction services without a valid preconstruction contract in place. This included $687,475 for the I-25N Mead to Johnstown project between July 2021 and June 2022 after the preconstruction contract expired in June 2021; and $20,185 for the ADA Curb Ramp Replacement project between January 2022 and June 2022 after the preconstruction contract expired in December 2021.

- For two projects (US 34 Big Thompson Canyon and I-25N Mead to Johnstown), the Department executed a total of eight preconstruction contract amendments *after* the preconstruction contracts terminated, none of which amended the contract termination date. These preconstruction contract amendments added funds to the contracts and/or changed the scope of the preconstruction work, even though the contracts were no longer in place at the time of the amendments. For example, 8 months after the I-25N Mead to Johnstown preconstruction contract terminated, the Department executed a contract amendment to increase contractor fees by $900,000. This violated State Controller policy on modifications of state contracts and grants, which specifies that State agencies "may never execute any modification tool for a State Contract or Grant after that State Contract or Grant has terminated or expired."

  The Department explained to us that since these preconstruction contract amendments were made *after* the contracts terminated, it demonstrates that the Department, the State Controller's authorized signatories, and the contractors "all assumed the original contract was valid," and continued to honor the terms of the expired contract, so it could therefore be amended. However, these amendments went against State Controller policy and were executed without a

valid contract in place. By not following State Controller policy, the Department created legal risk to the State.

- For five projects (US 34 Big Thompson Canyon, I-25N Mead to Johnstown, I-25 South Gap, SH 7 Permanent Repair, and ADA Curb Ramp Replacement), the CM/GC contractors submitted and the Department accepted CAP proposals for construction costs after the preconstruction contract termination dates. Specifically, we found that the Department accepted 10 construction cost proposals, totaling nearly $158 million, without a valid preconstruction contract in place. For example, the Department awarded five contracts for the US 34 Big Thompson Canyon project, ranging from about $1 million to $108 million, and two contracts for the I-25N Mead to Johnstown project, each for about $7 million. According to state regulations, if there was not a valid CM/GC preconstruction contract in place, the Department would have been required to publicly advertise any construction work over $150,000 and go through a competitive bidding process before awarding the contracts. [2 CCR 601-10 1.45, 4.01 and 6.01].

The Department was unaware that these five preconstruction contracts had expired until we brought it to their attention. Once we notified the Department of this issue, Department management worked with the Office of the State Controller and the Office of the Attorney General to ratify the preconstruction payments made after two of these project's preconstruction contracts terminated and to reinstate the preconstruction contracts for all five of these projects.

For the five projects identified, Exhibit 2.1 shows the amount of preconstruction payments made, the number of amendments executed, and the cost of construction CAP proposals made by the contractors and accepted by the Department after the termination date for each of the contracts.

Exhibit 2.1
Contract Activity After Termination of CM/GC Preconstruction Contracts

CM/GC Project	Payments for Preconstruction Work Done After Contract Termination Date	Number of Preconstruction Contract Amendments After Contract Termination Date	Number of Construction CAP Proposals Accepted After Contract Termination Date	Total Cost of Construction CAP Proposals Accepted After Contract Termination Date
US 34 Big Thompson Canyon	-	6	5	$124,230,168
I-25N Mead to Johnstown	$687,475	2	2	$13,555,906
I-25 South Gap	-	-	1	$9,815,944
SH 7 Permanent Repair	-	-	1	$5,520,589
ADA Curb Ramp Replacement	$20,185	-	1	$4,844,427
Total	**$707,660**	**8**	**10**	**$157,967,034**

Source: Office of the State Auditor analysis of the Department's CM/GC preconstruction and construction contracts, expenditure data as of June 30, 2022, from the Department of Transportation's accounting system, CM/GC construction package cost proposal acceptance letters, and applicable CM/GC preconstruction reinstatement documents, for all CM/GC projects active in Fiscal Years 2021 and 2022.

Construction budget amounts included in CM/GC preconstruction contracts were not always consistent with the construction budget amounts included in RFPs or the funding available for the project. For 4 of the 12 (33 percent) CM/GC projects active in Fiscal Years 2021 and 2022 (US 34 Big Thompson Canyon, I-25N Mead to Johnstown, Military Access, and I-25 South Gap), we found problems with how the Department established the construction budget in the preconstruction contract. The Department's CM/GC preconstruction contracts define the construction budget to be "the dollar amount available for the total cost for performance" of all construction work. The construction budget serves as a cost control for the CM/GC project, since it represents the maximum amount of construction work that could be awarded to the contractor under the preconstruction contract. According to the Department, its standard process is to set the CM/GC preconstruction contract construction budget to match the construction budget advertised in the project's RFP; this amount reflects the CM/GC project staff's best estimate of the funding available for the project. As additional funds become available later in the project, the Department's standard practice is to execute contract amendments to increase a project's construction budget based on the additional, available funding. We found the following issues related to construction budget amounts in CM/GC preconstruction contracts:

- For the US 34 Big Thompson Canyon project, the preconstruction contract stated that the construction budget was $800 million to $900 million, when the Department stated in the project's RFP that the construction budget amount available for the project was $80 million to $90 million. The Department amended the preconstruction contract 9 months after the contract was initially executed to revise the project's construction budget to be $150 million based on an increase of $60 million in available funding.

  While the Department's management of emergency projects may not reflect the Department's standard practice for controlling project cost and schedule, the Department should ensure its contracts for emergency projects accurately reflect the contractor payment information contained in the projects' RFPs.

- For the I-25N Mead to Johnstown project, the RFP stated that the construction budget amount was $420 million; however, the RFP also stated that only $142 million of funding was the "available Construction Cost" and that $225 million to $250 million in funding was "reasonably expected" to be available at a later date. The Department also set the CM/GC contractor's preconstruction fee to be "1.5% of the available Construction Cost of $142 [million]." This suggests that the Department should have set the construction budget at $142 million in the CM/GC preconstruction contract, and then amended this amount as additional funding was made available for the project. The Department disagrees with our conclusion that the contract should have reflected a construction budget of $142 million, stating that the $420 million construction budget included in the contract ensured the CM/GC contractor had sufficient bonding capacity and that the construction budget serves only as an estimate of what funding will be available during the term of the project, and not the funding actually available. However, this process was inconsistent with how the Department has handled other CM/GC contracts where additional funding was made available at a later date, and it did not adhere to the contract definition of "construction budget," which represents the amount available for construction costs. Setting this project's construction budget at the $142 million available at the time of awarding the contract would have ensured that the Department applied consistent contracting procedures across CM/GC projects, adhered to the contract's definition for the construction budget, and that the construction budget amount could serve as an effective cost control for the project.

- For two projects (I-25 South Gap and Military Access), the construction budget amount included in the contract was lower than the amount advertised in the RFP. For the Military Access project, the RFP advertised a $101 million construction budget but the preconstruction contract set an $82 million construction budget, a $19 million difference. For the I-25 South Gap project, the project's RFP advertised a $325.5 million construction budget but the preconstruction contract set a $325 million construction budget, a $500,000 difference.

CM/GC preconstruction contracts did not always include required or relevant terms. State Controller policy on mandatory contract provisions requires that the terms of all contracts must include the entire scope or statement of work for a project (e.g., descriptions of the goods to be delivered, services to be performed, and any other obligations of the contractor and the Department). This policy allows for procurement documents (e.g., RFPs) to be included as attachments to the contract; however, if there is a conflict between the contract terms and contract documents, the policy states that contract terms prevail.

For 1 of the 12 CM/GC preconstruction contracts we reviewed (Floyd Hill), we found the Department did not accurately include a provision from the project's RFP within the terms of the contract. For the Floyd Hill project's preconstruction contract, executed in May 2022, the Department did not specify the contractor's management price percentage, which should have been 10.5 percent of all construction costs agreed upon in future construction contracts, based on the project's RFP. Instead, the contract section for the management price percentage restated the preconstruction fee amount of $3.2 million. The Department stated that because the project's RFP was attached as a contract document to the preconstruction contract, the 10.5 management price percentage was, in fact, included in the terms of the contract. However, State Controller policy states that the amount listed in the preconstruction contract would prevail over the amount listed in the RFP. This could mean —based on a plain reading of the contract—that the contractor would receive $3.2 million as its management price percentage, or margin for profit and overhead, rather than up to $50 million, which is the amount the contractor could earn with a management price percentage set at 10.5 percent based on the $525 million construction budget. The Department executed a contract amendment to revise the management price percentage to equal 10.5 percent in March 2023.

U.S. Highway 34 through Big Thompson Canyon
Photo Credit: Shutterstock

A CM/GC preconstruction contract was not amended to approve preliminary construction work. Each CM/GC preconstruction contract requires the CM/GC contractor, as part of the preconstruction phase of the project, to (1) provide constructability input on the project design, (2) submit CAP proposals for construction packages, and (3) identify and develop, as necessary, any "long-lead time procurements" that need to occur. A long-lead time procurement could be needed, for example, to place an advanced order for steel girders for a bridge or iron pipe needed for upcoming highway construction work. This long-lead procurement would take place prior to the contractor submitting CAP proposals and entering into separate construction contracts to build the project. According to the preconstruction contract, once the CM/GC contractor develops a proposal for the long-lead time procurement, the Department must assess whether the costs are "within a percentage acceptable" of the Department's own estimates for the work, and then the

proposal "shall be made a part of this [contract] by Amendment" since developing and performing long-lead time procurements is within the preconstruction contract's scope of work. As part of this amendment, the CM/GC preconstruction fee should be increased to reflect the agreed upon price for the long-lead time procurement, and this helps ensure that the Department's accounting system, SAP, captures long-lead time procurements as preconstruction expenditures, separate from construction phase expenditures. However, for 1 of the 12 CM/GC preconstruction contracts (I-25N Mead to Johnstown), the Department approved a $2.3 million long-lead time procurement without amending the CM/GC preconstruction contract, as required. The Department, instead, executed a separate construction contract to procure the construction items, similar to the CAP proposal review and construction contract awarding process, which was approved by the Chief Engineer and the State Controller.

Why did these problems occur?

Through interviews with the Engineering Contracts Services Office and CM/GC project staff, along with discussions with Department management, we identified the following reasons for these problems:

Lack of structured coordination when drafting and setting CM/GC preconstruction contract terms. The Engineering Contracts Services Office staff that we interviewed stated that it is standard practice to share draft preconstruction contracts with CM/GC project staff for review before a contract is executed. However, the CM/GC project staff that we interviewed said that they had no input on setting or reviewing the terms of preconstruction contracts prior to contract execution, but were simply provided signed copies of the preconstruction contracts, after the contracts were executed. The difference between these two statements indicates that there is a lack of structured coordination between contract and project staff that likely contributed to the errors we found. A more structured review process between contract and project staff could help mitigate errors in the CM/GC preconstruction contracts. This could include creating a checklist of key contract terms that change for each project that CM/GC project staff should review for accuracy against the project's RFP. In addition, the Department has recently revised its draft template used for CM/GC preconstruction contracts—this revision process contributed to the error of the missing management price percentage for the 2022 Floyd Hill contract. Creating a checklist in relation to the newly revised preconstruction contract template would help ensure the accuracy of CM/GC preconstruction contracts and that CM/GC project staff are aware of preconstruction termination dates.

Lack of tracking preconstruction termination dates. We identified two areas where the Department lacks processes to track CM/GC preconstruction contract termination dates, which contributed to preconstruction work continuing past these termination dates:

- **Lack of tracking by CM/GC project staff.** According to Department management, the Project Manager is responsible for monitoring the termination date of the preconstruction contract and amending the contract when needed to increase the budget and/or extend the termination date. However, some of the CM/GC project staff that we spoke with told us that they did not know that preconstruction contracts even *had* termination dates, which is why they did not track the termination date or initiate contract amendments to extend the dates. Each contract's termination date was specified within the "Definitions" section of the preconstruction contracts.

  During our audit work, we identified one CM/GC project active in Fiscal Years 2021 and 2022 (Eastern Timber Bridge Replacement) where the Department *did* amend and extend the project's preconstruction contract termination date 5 months before it expired. In this instance, project staff said that they knew about the termination date in the contract, tracked that date within the overall project schedule for design and construction, and set a calendar reminder of the date. By tracking the preconstruction termination date alongside the expected completion of design and construction work, the project staff could identify when more time was needed to design the remaining construction work. Implementing a similar process of tracking the preconstruction termination date for all projects could assist CM/GC project staff with ensuring that the preconstruction contract remains active throughout preconstruction work.

- **Lack of tracking by Engineering Contracts Services Office staff.** The Engineering Contracts Services Office staff report that, when drafting construction contracts for CM/GC projects, they do not have a process in place to verify that the CAP proposals related to each CM/GC construction contract were accepted by the Department prior to the CM/GC preconstruction contract termination dates. In addition, contracting staff stated that for two of the preconstruction contracts that we identified that had expired, the termination dates were either entered incorrectly or improperly changed within the Department's accounting and project tracking database, SAP. However, it does not appear that these data errors contributed to the problems we found, since at that time, neither CM/GC project staff nor contracting staff used SAP to track preconstruction contract termination dates.

  After learning of these contract lapses, Engineering Contracts Services Office staff said that they had started a new process to require the contracting staff to verify that CM/GC preconstruction contracts were effective at the time of accepting a CAP proposal before drafting an associated construction contract, and that the Department will create a new report in SAP for Department staff to reference when drafting CM/GC construction contracts. Prior to the audit, neither CM/GC project staff nor contracting staff used SAP to track preconstruction contract termination dates. As part of this process, the Department should include a method to ensure the CM/GC preconstruction termination dates entered into SAP accurately reflect the terms of the preconstruction contracts.

Lack of supervisory review when drafting CM/GC preconstruction contracts. The Engineering Contracts Services Office has only one contracting staff assigned to draft alternative delivery method contracts and there is no supervisory review of CM/GC preconstruction contracts prior to them being routed to the signatories. Typically, multiple contract staff work on a specific type of contract and those staff conduct peer reviews of each other's draft contracts, in lieu of a supervisory review. However, the Department explained that since only one person works on alternative delivery contracts, no peer review *or* supervisory review occurs for CM/GC preconstruction contracts.

Lack of alignment between CM/GC preconstruction contracts and Department practices. According to the Department, in 2018, the FHWA requested the Department to award long-lead time procurement work through the construction phase of the project. This resulted in the Department's shift to approving this type of work through separate construction contracts, rather than through amendments to the preconstruction contract. If the Department intends to continue its current practice of awarding long-lead time procurement work through separate construction contracts instead of amending preconstruction contracts, it should amend any active CM/GC preconstruction contracts that may need to utilize long-lead time procurement, and revise its recently updated preconstruction contract template for use on future CM/GC projects.

Why do these problems matter?

Although the Department's position is that the payments, amendments, and awards of construction contracts after the preconstruction contracts had expired were allowed because both the Department and the contractors thought and acted as if the contracts were still in effect, this practice creates legal risk to the State. Specifically:

The Department risks incurring legal liability to the State. When the Department makes payments to contractors after contract termination dates, the State is no longer subject to the rights and responsibilities established in the contracts. The Department also could be in the position to require contractors to repay the Department for the services rendered without a contract in place or to nullify CM/GC construction contracts with contractors, which could harm the Department's working relationships with the construction industry. Legal risk also arises when the Department awards construction contracts without going through the competitive bidding process when the preconstruction contract has expired. In addition, there's a chance of legal risk posed when the Department deviates from the requirements in a preconstruction contract as Department practices change, such as those relating to approving long-lead time procurement.

There is an additional risk of financial and/or legal disputes arising when the Department misstates the construction budget within the CM/GC preconstruction contract "recitals"—the preamble to the contract—due to the Department overstating the funds available for the project. Best practices in place at the time of drafting and executing the US 34 Big Thompson Canyon preconstruction contract, set by the Colorado Office of the State Controller, stated that if recitals are "improperly

drafted, they can have legal consequences." Legal consequences can occur if there are material mistakes that are so substantial that it indicates the parties of the contract "did not act with Knowledge" and "usually justify reformation or rescission of a Contract." For example, a "recital of 10,000 acres in a Lease when Lessor only owned 1,000" would be a material mistake. Similar to this example, there was a material mistake in the US 34 Big Thompson Canyon preconstruction contract which incorrectly stated that the construction budget was $800 million to $900 million, when it was really $80 million to $90 million.

The Department risks inappropriately limiting competition on construction contracts. By awarding construction contracts to the CM/GC contractors after their preconstruction contracts had terminated, the Department bypassed the required open competition process for construction work and may have limited competition on about $158 million in construction work. The Department stated that if it had been aware that the preconstruction contracts had terminated, it would have reinstated these contracts—as it did after we brought the matter to their attention—and would not have publicly advertised this construction work. However, the preconstruction contract work the Department advertised was that the CM/GC contractors would reach agreement with the Department on all CAP proposals for a project's construction packages by the preconstruction contract termination date; the contract did not allow for preconstruction work to continue beyond these dates. Once those contracts terminated, and prior to any subsequent reinstatement of the contracts, the Department could no longer award construction contracts without publicly advertising the construction work. If the Department continues the practice of extending CM/GC preconstruction contracts beyond the advertised term, it could inappropriately restrict the construction industry from being able to compete for millions of dollars in construction work.

The Department risks misleading CM/GC contractors about potential payments for construction work. Under each preconstruction contract, there is an expectation and requirement that CM/GC contractors will be able to bid on construction contracts that cost up to the construction budget, and to be paid a "management price percentage" within those construction costs to provide a margin for profit and overhead. Therefore, misstating the construction budget can mislead the CM/GC contractors on the value of construction work they could be awarded through construction contracts and how much they could potentially earn in profit and cover overhead costs through the project.

Recommendation 3

The Department of Transportation (Department) should ensure that Construction Manager/General Contractor (CM/GC) preconstruction contracts accurately reflect project terms and that staff manage the contracts in accordance with their termination dates. This should include:

A. Developing and implementing a structured process for Engineering Contracts Services Office staff and CM/GC project staff to coordinate on preconstruction contract terms, including ensuring that termination dates are in line with existing project timelines, contract construction budgets accurately reflect the funding available for the project at the time of contract execution,

and any key terms within a project's Request for Proposal are stated within the terms of the contract.

B. Developing and implementing guidance for CM/GC project staff on how to identify and track the preconstruction contract termination date throughout the preconstruction phase of a project.

C. Developing and implementing guidance for Engineering Contracts Services Office staff to confirm that, when drafting CM/GC construction contracts, a CM/GC preconstruction contract was effective when the Department approved the Construction Agreed Price (CAP) proposal related to the construction contract. This should include monitoring the creation and accuracy of reports from the Department's accounting system showing alternative delivery contract start and end dates.

D. Developing and implementing additional supervisory review practices related to the drafting of CM/GC preconstruction contracts.

E. Determining whether to amend existing CM/GC preconstruction contracts and the current CM/GC contract template to reflect current practices of approving long-lead time procurement proposals through separate construction contracts, or develop and implement processes to ensure long-lead time procurement proposals are approved through CM/GC preconstruction contract amendments.

Response

Department of Transportation

A. Agree
Implementation Date: January 2024

The Department will develop and provide written procedures to detail the process that Engineering Contracts Services staff will perform quality checks on CM/GC preconstruction services contracts prior to execution. The written procedures will cover items including, but not limited to, termination dates, funding, and relevant key terms in alignment with the terminology of the associated Request for Proposals (RFP). The written procedures will also include guidance to ensure coordination of the above items between CDOT staff. Established termination dates will be verified to ensure that contract end dates are sufficient to allow for the completion of preconstruction services and award of successfully negotiated construction packages.

B. Agree
Implementation Date: January 2024

The Department will develop and implement guidance for both Engineering Contracts Services staff and CM/GC project staff to track termination dates associated with CM/GC preconstruction services contracts. Engineering Contracts Services staff will coordinate directly with the CM/GC project staff at defined intervals in advance of the original or amended termination date. The Department will also explore other tracking methods through available project management software.

C. Agree
Implementation Date: July 2023

The Department will develop and implement guidance for Engineering Contracts Services staff to validate that the applicable CM/GC preconstruction services contract is effective prior to the award of any CM/GC construction package. The guidance will also include aspects to assist staff in monitoring the creation and accuracy of reports showing alternative delivery contract start and end dates.

D. Agree
Implementation Date: January 2024

The Department will develop and implement guidance for Engineering Contracts Services staff to facilitate additional supervisory reviews of CM/GC preconstruction services contracts with CDOT Alternative Delivery Program staff and CM/GC project supervisory staff.

E. Agree
Implementation Date: January 2024

The Department will coordinate with the Office of State Controller, CDOT Controller, Engineering Contracts Services and the CDOT Alternative Delivery Program to revise the current CM/GC preconstruction services contract template to reflect the current practice of approving long lead-time procurement proposals through individual construction contracts. This will ensure compliance with Federal Highway Administration (FHWA) construction budgeting phase guidance and national best practice.

Finding 4
CM/GC Construction Contract Negotiations

Under the CM/GC project delivery method, the Department first competitively solicits and then awards a preconstruction contract to the selected CM/GC contractor. Under these preconstruction contracts, the CM/GC contractor is required to submit price proposals on any subsequent construction contracts necessary to build the project and then negotiate directly with the Department to be awarded these construction contracts. If any of the subsequent construction contract negotiations fail, the Department has the option to competitively advertise the construction contract to the open market.

CM/GC Preconstruction Contract

Each CM/GC preconstruction contract includes the following key requirements for the CM/GC contractor, and governs the fees to be paid for preconstruction work, as well as potential compensation to the CM/GC contractor for any subsequent construction contracts, as follows:

- **Work with the Department and contracted design consultant to design the project, and then develop construction packages.** The preconstruction contract requires the CM/GC contractor to work with the Department and the Department's design consultant—procured under a separate contract—to provide constructability input on the design and develop one or more construction packages of work to complete the construction of the project. Part of this work includes breaking the project into construction packages to allow some construction work to begin while other aspects of the project are still being designed and finalized.

  For example, the first construction package for the I-25N Mead to Johnstown project was developed in July 2019, allowing the CM/GC contractor to begin construction on the first package while the Department, the Department's design consultant, and the CM/GC contractor continued to finalize design for subsequent aspects of the project. As of June 2022, the Department had developed an additional five packages for the I-25N Mead to Johnstown project—and awarded construction contracts to the CM/GC contractor to build these packages—with more packages expected before the project is complete (e.g., the Department was negotiating a seventh construction contract with the CM/GC contractor in February 2023). The Department awards a preconstruction fee—paid through monthly installments throughout the life of the contract—to compensate the CM/GC contractor for their work to develop construction packages, and this fee is generally set as a percentage of construction costs (e.g., between 0.8 and 1.5 percent of construction costs). For example, the Department had set a $2.7 million preconstruction fee for the CM/GC contractor for the I-25N Mead to Johnstown project, as of September 2022. This project is expected to continue its preconstruction phase until April 2024, and the Department may continue to increase the preconstruction fee as additional funds are identified for the construction of the project.

- **Construction Contract Negotiation.** The CM/GC contractor is required by the preconstruction contract to submit and negotiate Construction Agreed Price (CAP) proposals for completing each construction package of the project. The CM/GC contractor's CAP proposals must detail the contractor's itemized costs and quantities of construction labor and materials for each package. If the Department accepts the contractor's CAP proposal for a given construction package, then the Department enters into a separate construction contract with the CM/GC contractor to build that construction package. For example, as of June 2022, the Department had negotiated and awarded a total of six construction contracts to the CM/GC contractor for the I-25N Mead to Johnstown, totaling nearly $174 million in compensation for construction work. The process of negotiating construction contracts is described in more detail in the **Construction Contract Negotiation** section below.

- **Overall Construction Budget and Management Price Percentage.** The Department sets the overall construction budget for a project within the CM/GC preconstruction contract, which governs the maximum, potential amount that the Department could award to the CM/GC contractor through approving CAP proposals and awarding subsequent construction contracts. The Department also establishes within the CM/GC preconstruction contract a management price percentage that will be applied on top of the costs of each winning CAP proposal and within the total construction contract costs, which provides the contractor a margin for profit and overhead for conducting construction work. For example, the I-25N Mead to Johnstown preconstruction contract provides the CM/GC contractor a management price percentage of 7 percent for each construction contract it is awarded, resulting in a potential of $27.5 million for profit and overhead within the project's $420 million construction budget.

  Until October 2021, the Department included the management price percentage as a proposal item that potential CM/GC contractors bid on as part of submitting their preconstruction contract proposals; the proposed management price percentage was an element of the proposal that was scored as part of awarding the preconstruction contract, and winning proposals typically had a management price percentage of 7 percent. Starting with the Floyd Hill project's October 2021 Request for Proposal, the Department has changed its approach by setting the management price percentage as a stipulated term advertised in the preconstruction contract's Request for Proposal, and requires proposers to submit a form to either accept or reject the management price percentage rather than submitting bids on their proposed management price percentage. The Department reported that it made this change based on national trends, construction industry feedback, and consulting with the FHWA. The Department established the set management price percentage to be 10.5 percent for the Floyd Hill project. The Department also indicated in its November 2022 Request for Proposal for a new CM/GC project related to I-270 Critical Bridge Replacement that the management price percentage would be 10.5 percent.

Independent Cost Estimator Procurement and Responsibilities during Construction Contract Negotiations

Around the same time as awarding a CM/GC preconstruction contract for a project, the Department separately awards a professional services contract to a firm to perform work as an independent cost estimator, based on its expertise with costs in the construction industry. The independent cost estimator assists the Department in CM/GC construction contract negotiations during preconstruction. Throughout the process of negotiating construction contracts, the independent cost estimator helps the Department "question the Contractor's prices, quotes, methods, and [cost] estimate in order to ensure that CDOT is receiving a fair and open price from the Contractor" [2015 CDOT CM/GC Manual, Section 3.1]. To do this, the independent cost estimator performs initial estimates of material, labor, and equipment quantities, considers sub-contractor and supplier quotes, and considers historical cost data in the Department's yearly cost data book. The independent cost estimator also works to understand local market conditions when formulating reasonable estimates for construction items for each package, such as prices and quantities of necessary labor, materials, equipment, and bond premiums. The Department compensates each independent cost estimator through a set fee. For example, the Department has paid approximately $1.9 million to the independent cost estimator for the I-25N Mead to Johnstown project for their cost estimating services on this project, from April 2019 to June 2022.

Photo Credit: Shutterstock

The Department has set up a process to help ensure the independence of its independent cost estimators by requiring each independent cost estimator to disclose if it has any conflict of interest with regard to the project's CM/GC contractor. The Department also prohibits the independent cost estimator from engaging in actions that "reasonably appear to be in conflict" with the contract work, and if a conflict arises between the CM/GC contractor and the independent cost estimator, the Department will resolve the conflict and the independent cost estimator must comply with that resolution

Construction Contract Negotiation

As design progresses on each construction package during the preconstruction phase, the CM/GC contractor and Department staff, with assistance from the independent cost estimator, begin an iterative process of negotiating construction costs for each construction package. These negotiations culminate in the CM/GC contractor submitting a CAP proposal that serves as the contractor's formal bid on a construction package, in an effort to be awarded a construction contract. The negotiation process goes as follows:

- **Setting acceptable percentage differences.** The Department sets an acceptable percentage difference between the CM/GC contractor's CAP proposal and the independent cost estimate

that is typically between 2 percent and 10 percent, depending on the size and complexity of the CM/GC project. The acceptable percentage difference is not a contractual requirement; rather, it is a guideline for Department staff to help them in the negotiation process and should be determined by the Department's regional management and staff working on a project, prior to negotiating a CAP proposal.

- **Development of a cost model.** At about 30 percent design completion for the construction package, the CM/GC contractor meets with Department staff and the independent cost estimator to discuss the contractor's "Cost Model" that includes the types and quantities of construction labor and materials needed to complete the construction package (e.g., removing trees, adding guardrails), and the means, methods, and assumptions upon which the CM/GC contractor is basing their cost estimates within the cost model, such as the calculation of concrete per unit costs based on current market prices.

- **Submission of cost proposals and comparisons to independent cost estimates.** After developing the cost model for a specific construction package, the CM/GC contractor and the independent cost estimator submit a series of preliminary construction cost proposals and independent estimates, respectively, to Department staff for each construction package being negotiated; these separate, iterative cost proposals and estimates are submitted at 30 percent, 60 percent, and 90 percent design completion. The CM/GC contractor and the independent cost estimator further refine and update their preliminary cost proposals and estimates after each submission until the CM/GC contractor ultimately submits a formal CAP proposal. Upon receiving each set of preliminary construction cost proposals and cost estimate submissions, Department staff compare itemized quantities and costs within the CM/GC contractor's preliminary cost proposal against the independent cost estimate. After conducting this comparison, Department staff do not share the independent cost estimate with the CM/GC contractor, but instead inform the CM/GC contractor if a construction item is above or below a certain percentage of the independent cost estimate (e.g., 10 percent) and then discuss the CM/GC contractor's rationale for its costs and quantities. The goal of these iterative submissions of preliminary cost proposals and discussions "is to narrow pricing differences throughout the CMGC preconstruction process, with the end goal of having the CAP Proposal within a percentage of the [independent cost estimator's cost estimate] that is acceptable to CDOT" [CM/GC Manual, Section 3.6.7]. After reviewing preliminary cost proposal submissions, the Department, CM/GC contractor, and independent cost estimator may agree to revise a construction package's cost model to ensure that the CM/GC contractor and independent cost estimator use the same assumptions to develop cost estimates. This process continues for each successive construction package developed to build a project during a project's preconstruction phase.

- **Submission of a formal CAP proposal**. At about 90 percent design completion, the CM/GC contractor submits a CAP proposal with the itemized prices and total cost. Department staff can decide to (1) accept the CAP proposal or (2) reject the CAP proposal and continue negotiations

with the CM/GC contractor. If the Department rejects the first CAP proposal, the contractor is allowed to submit a second and, if necessary, third CAP proposal. If the Department rejects the third and final CAP proposal, each CM/GC preconstruction contract states that the Department reserves the right to place the construction package out to bid on the open market and the Department's guidance to staff is to deny the CM/GC contractor from bidding on the construction package. However, Department staff reported that they have never placed a construction package out to bid for any of the 25 CM/GC projects the Department has managed through the construction phase since starting to use this delivery method in 2009.

- **Approval and contract formation.** Once Department staff decide that a CAP proposal is acceptable, they submit a concurrence letter to the Chief Engineer. The letter provides the CM/GC contractor's CAP proposal cost, the independent cost estimate, and the difference between the two costs. If the Chief Engineer approves the cost of the CAP proposal, the Department enters into a construction contract with the CM/GC contractor for that construction package. If federal funds are used on a project, the FHWA must also receive a concurrence letter and approve the accepted CAP proposal for each construction package. The preconstruction phase of each CM/GC project concludes once the Department accepts the final CAP proposal for the final construction package to build the project.

What audit work was performed and what was the purpose?

We reviewed CAP proposals, independent cost estimates, and concurrence letters for the 27 CM/GC construction contracts for all 9 non-emergency CM/GC projects active in Fiscal Years 2021 and 2022 that had at least one executed construction contract as of June 2022, to determine how close the CM/GC contractors' final CAP proposals were to the independent cost estimates and how many rounds of proposals were submitted for negotiation before the Department agreed on the price of a contract. For all of these nine projects, the management price percentage was set in the preconstruction contract after a competitive bidding process, and was awarded at 5 percent for one project and 7 percent for the rest. One CM/GC project active in Fiscal Years 2021 and 2022 (Floyd Hill) did not yet have any construction contracts executed as of June 2022 when our testing was completed and so was not included in our review. We interviewed nine Department staff (including project managers and resident engineers) from a targeted selection of 5 of the 9 projects, chosen based on factors relating to issues identified throughout our audit work, to understand if and how the Department ensures that it sets acceptable percentage differences before the start of negotiations, project staff's overall approach to conducting negotiations, and what training the Department provides to project staff on conducting negotiations. The purpose of this audit work was to determine whether the Department is effectively negotiating CM/GC construction package proposals in a way that ensures CM/GC projects provide the best overall value to the State.

How were the results of the audit work measured?

The Department must be a good steward of taxpayer funds by negotiating reasonable costs for CM/GC construction contracts. The Department should ensure the process of negotiating CM/GC construction contracts results in awarding contracts that (a) represent cost effective projects that provide best overall value to the State, (b) are based on reasonable cost estimates, and (c) leverage available negotiating opportunities. This is required under statute, federal regulations, Department guidance, and national best practices, as follows:

- **Cost effective and best overall value.** Under statute, the Department's use of alternative delivery methods must adhere to the State's "integrated project delivery" statutes, which allow the Department to use an alternative delivery method like CM/GC if the Department determines that the delivery method "represents a timely or cost-effective alternative" to awarding contracts just to build a project, such as in traditional Design-Bid-Build [Section 24-93-104(1), C.R.S.]. Statute requires the Department to select and award CM/GC contracts to the contractor whose "proposal is most advantageous and represents the best overall value to the state" [Section 24-93-106(2), C.R.S.].

- **Reasonable cost estimates.** The independent cost estimator is contracted to provide the Department with a reasonable "estimate in order to ensure that CDOT is receiving a fair and open price from the Contractor" [CM/GC Manual, Section 3.1]. The independent cost estimator should engage in an iterative process of working "with the Contractor to understand the competitive market near the project site, regionally, nationally, and globally" [CM/GC Manual, Section 3.1]. Federal guidance also emphasizes the importance of ensuring the reasonableness of costs. For example, federal regulations state that a cost for projects using federal funds is "reasonable if, in its nature and amount, it does not exceed that which would be incurred by a prudent person under the circumstances prevailing at the time the decision was made to incur the cost" [2 CFR 200.404].

- **Leverage available negotiating opportunities.** The Department's internal guidance for negotiating CM/GC construction contracts allows that a CM/GC contractor's CAP proposal "can be offered and negotiated up to three times" and if the Department rejects the third CAP proposal, the Department reserves the right to advertise the construction package for public competition and disallow the CM/GC contractor from bidding on the work [CM/GC Manual, Section 4.3].

- **Limit costs to be within acceptable percentage differences.** The Department requires staff to determine an acceptable percentage difference between the independent cost estimator's cost estimate and the contractor's proposal. The Department's CM/GC Manual states that, "CDOT may accept the CAP Proposal when it is within a percentage of the [independent cost estimator's cost estimate] that is acceptable to CDOT…**The acceptable percentage shall be determined prior to entering CAP negotiations [original emphasis]**" [CM/GC Manual, Section 4.4].

What problems did the audit work identify?

Overall, we found that the Department may not always effectively negotiate CM/GC construction contracts in a way that ensures CM/GC projects are cost effective and provide the best overall value to the State. The Department generally stops negotiating after the first CAP proposal and awards CM/GC construction costs above the independent cost estimates without requiring the contractor to submit a second or third CAP proposal. In addition, the Department did not always establish an acceptable percentage difference for costs between the CM/GC contractor's CAP proposal and the independent cost estimate or adhere to the acceptable percentage. We identified the following issues across the 9 CM/GC projects and 27 construction contracts reviewed:

- **The Department agreed to pay $18 million more than independent cost estimates for CM/GC projects active in Fiscal Years 2021 and 2022.** The Department agreed to CM/GC contractors' CAP proposals and paid a net total of nearly $18 million more than the independent cost estimates across 27 contracts executed for 9 CM/GC projects active in Fiscal Years 2021 and 2022. These nine CM/GC projects had construction contracts totaling $705 million. For 23 of the 27 construction contracts (85 percent), the Department paid a total of $18.3 million more than what was considered reasonable within the independent cost estimates. For the remaining four contracts (15 percent), the Department awarded about $300,000 less than the independent cost estimate. For each of these projects, the Department included in its payments to contractors the management price percentage that was set in the preconstruction contract, ranging from 5 percent to 7 percent.

- **For 23 of the 27 CM/GC construction contracts, the Department did not exhaust all negotiating opportunities.** Specifically, we found:

    - For 19 contracts (70 percent), the Department accepted the first CAP proposal offered by the CM/GC contractor, resulting in $8 million in construction costs over the independent cost estimates.

    - For 4 contracts (15 percent), the Department accepted the second CAP proposal, resulting in $5.6 million in construction costs over the independent cost estimate.

    - For 4 contracts (15 percent), the Department accepted the CM/GC contractor's third and final CAP proposal, resulting in $4.4 million in construction costs over the independent cost estimate.

- **For 14 of the 27 CM/GC construction contracts, the Department either did not establish or did not adhere to an acceptable percentage difference between the independent cost estimate and the contractor's proposal.**

- For 13 contracts across three projects, the Department did not document an acceptable percentage difference in the concurrence letters approved by the Chief Engineer. These projects awarded contracts in excess of the independent cost estimates by a collective total of nearly $9.6 million. We asked project staff from these projects whether they had established acceptable percentages as part of their negotiation process. While none had documented their approach, they recalled to us what the project team was targeting—from one project, staff said that they agreed in meetings that the acceptable percentage should be 2 to 3 percent; from the second project, staff said that the "rule of thumb" was 3 to 5 percent; and from the third project, staff stated that their target was 0 to 3 percent.

- For 1 contract, the Department set an acceptable percentage difference of 5 percent, but awarded a contract in the amount of the contractor's first CAP proposal that was $1.9 million (6.5 percent) over the independent cost estimate. In the concurrence letter sent to the Chief Engineer, project staff acknowledged that the construction contract was over the 5 percent acceptable percentage difference, and then said that they were confident the second and final construction contracts would result in the *total* construction costs staying under 5 percent for both packages. While the combined total of the contractor's two CAP proposals ultimately came in below the 5 percent acceptable percentage difference (4.8 percent), this outcome was not known at the time the Department agreed to the first contract's CAP proposal that exceeded the acceptable percentage difference and risked the Department paying more than reasonable costs for the project.

For the 9 CM/GC projects and 27 construction contracts within those projects that we reviewed, Exhibit 2.2 shows the CM/GC contractor's CAP proposal number and cost accepted by the Department, the independent cost estimator's cost estimate, and the difference between the two.

Exhibit 2.2
Negotiated Construction Agreed Price (CAP) Proposals

Package Number	CAP Proposal Number Accepted	Contractor Proposal Amount Accepted	Independent Cost Estimator (ICE) Price	Difference between Contractor & ICE ($)	Difference between Contractor & ICE (%)	Acceptable Percentage Difference[1]
ADA Curb Ramp Replacement						
#1	1	$1,232,000	$1,224,000	$8,000	0.7%	Undocumented
#2	1	$1,820,000	$1,765,000	$55,000	3.1%	Undocumented
#3	1	$4,844,000	$4,688,000	$156,000	3.3%	Undocumented
Project Totals		$7,896,000	$7,677,000	$219,000	2.9%	Undocumented
I-25 South GAP						
#1	1	$54,813,000	$54,491,000	$322,000	0.6%	Undocumented
#2	2	$99,173,000	$96,464,000	$2,709,000	2.8%	Undocumented
#3	3	$123,757,000	$119,675,000	$4,082,000	3.4%	Undocumented
#4	3	$9,816,000	$9,666,000	$150,000	1.6%	Undocumented
Project Totals		$287,559,000	$280,296,000	$7,263,000	2.6%	Undocumented
Military Access						
#0	1	$213,000	$210,000	$3,000	1.4%	Undocumented
#1	3	$3,620,000	$3,676,000	($56,000)	-1.5%	Undocumented
#2	3	$7,267,000	$6,958,000	$309,000	4.4%	Undocumented
#3	1	$24,343,000	$24,026,000	$317,000	1.3%	Undocumented
#4	1	$87,937,000	$86,724,000	$1,214,000	1.4%	Undocumented
#5	2	$13,791,000	$13,461,000	$329,000	2.5%	Undocumented
Project Totals		$137,171,000	$135,055,000	$2,116,000	1.6%	Undocumented
I-70 Mile Post 211						
	1	$11,537,000	$11,156,000	$381,000	3.4%	5%
I-70 West Vail Pass						
#1	1	$8,667,000	$8,286,000	$381,000	4.6%	5%
#2	1	$21,966,000	$20,969,000	$997,000	4.8%	5%
Project Totals		$30,633,000	29,255,000	$1,378,000	4.7%	5%
Eastern Timber Bridge Replacement						
	3	$10,416,000	$10,219,000	$197,000	1.9%	5%
I-25N Mead to Johnstown						
#1	1	$16,686,000	$16,610,000	$76,000	0.5%	5%
#1.5	1	$8,275,000	$8,224,000	$50,000	0.6%	5%
#2/3	1	$99,744,000	$97,219,000	$2,525,000	2.6%	5%
#4	2	$35,654,000	$33,972,000	$1,681,000	5.0%	5%
#5	1	$6,514,000	$6,250,000	$265,000	4.2%	5%
#6	1	$7,041,000	$6,839,000	$203,000	3.0%	5%
Project Totals		$173,914,000	$169,114,000	$4,800,000	2.8%	5%

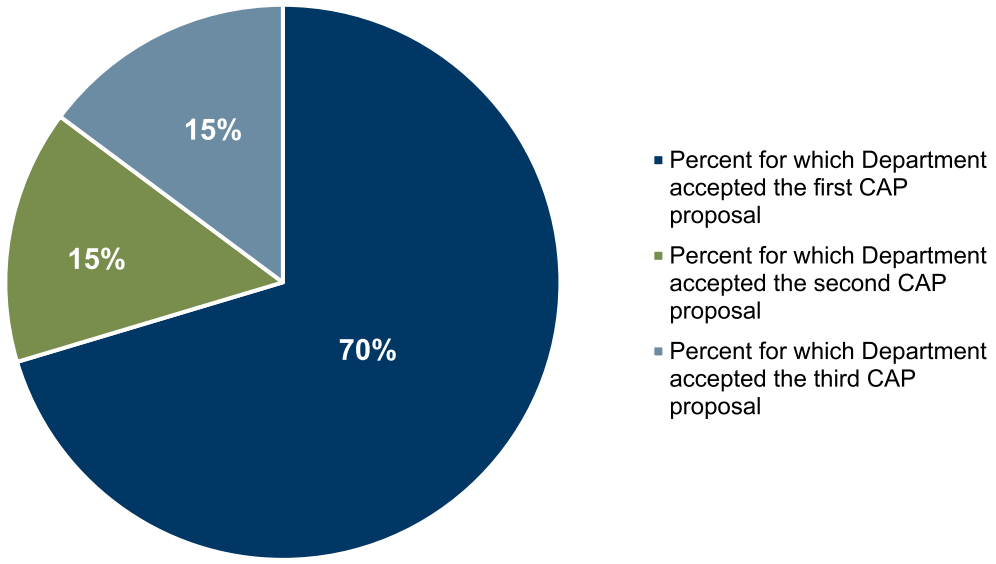
SH 7 Permanent Repair						
#1	1	$30,593,000	$28,738,000	$1,855,000	6.5%	5%
#2	1	$5,521,000	$5,719,000	($198,000)	-3.5%	5%
Project Totals		$36,114,000	$34,457,000	$1,657,000	4.8%	5%
US 287/SH 40 Passing Lanes						
#1	1	$5,272,000	$5,292,000	($20,000)	-0.4%	5%
#2	2	$4,234,000	$4,269,000	($35,000)	-0.8%	5%
Project Totals		$9,506,000	$9,561,000	($55,000)	-0.6%	5%
Net Totals Across All Projects		**$704,746,000**	**$686,790,000**	**$17,957,000**	**2.2%**	

Source: Office of the State Auditor analysis of Department of Transportation CM/GC construction contract negotiation information for non-emergency CM/GC projects active in Fiscal Years 2021 and 2022 that had at least one executed construction contract as of June 2022.

[1] Entries of "Undocumented" indicate that the acceptable percentage difference was not disclosed or made available within the concurrence letters.

Exhibit 2.3 further illustrates the percentage of CM/GC construction contract packages that went through one, two, or three rounds of CAP proposal negotiations.

Exhibit 2.3
Percentage of CM/GC Construction Contracts Where the Department Accepted the CM/GC Contractor's First, Second, or Third CAP Proposal



Source: Office of the State Auditor analysis of Department of Transportation CM/GC construction contract negotiation information for non-emergency CM/GC projects active in Fiscal Years 2021 and 2022 that had at least one executed construction contract as of June 2022.

Why did these problems occur?

We recognize that, regardless of the delivery method used for a project, the Department relies on estimates when planning for how much a project's contract will cost and that the actual costs of awarded contracts will likely differ from those estimates. For example, with traditional Design-Bid-Build projects, Department staff first estimate the project cost and this figure is used when considering bid amounts and when awarding contracts to the lowest bidders. According to the Department, in Calendar Year 2021, it awarded Design-Bid-Build contracts totaling $17.5 million less than the estimated $572 million in estimated contract costs, but in Calendar Year 2022, the Department awarded Design-Bid-Build contracts totaling $13.3 million more than the $687 million in estimated contract costs. This demonstrates that in both CM/GC negotiations and traditional Design-Bid-Build procurement, the Department can end up awarding contracts that are more or less than estimated costs.

While the Department may not award contracts exactly at its estimated costs, the Department is responsible for negotiating CM/GC contracts until "a 'fair' negotiated construction price" is reached [CM/GC Manual, Section 2.3] and ensuring CM/GC contracts represent "the best overall value to the state" [Sections 24-93-106(2), C.R.S.]. Therefore, it is important that the Department effectively negotiate CM/GC contracts. We found the following issues that contributed to the problems we identified:

The Department does not have adequate guidance on how to plan time to negotiate CAP proposals to keep the project on schedule. Project staff indicated that one reason they do not use all negotiation opportunities to reduce the cost of CAP proposals is due to time and schedule pressure, and they further stated that it is sometimes not feasible for the Department to continue negotiating past one or two CAP proposals and still keep the project on schedule. For example, staff from the I-25N Mead to Johnstown project explained that they had an internal goal of keeping CAP proposals within 3 percent—although their documented acceptable percentage difference was 5 percent of the independent cost estimate—but for construction package #4, staff decided to not pursue a third round of negotiations and allow a 5 percent difference because it was more important to get the construction started quickly and keep the overall project on schedule than to resolve the $1.68 million cost difference.

We looked into whether CM/GC project schedules factor in time to negotiate construction contracts, and found that, under the CM/GC preconstruction contract, the Department requires the CM/GC contractor—not project staff—to develop the project schedule and the Department does not set requirements for how CM/GC contractors plan time for CAP proposal negotiations. According to the Department, project staff provide comments to the CM/GC contractor's proposed schedule to assist in developing the project schedule, however, the Department does not require or direct staff to ensure that project schedules include sufficient time to allow for up to three rounds of CAP proposal negotiations or time for the Department to take a construction package out

to bid if negotiations fail. A lack of time to negotiate CAP proposals can add to the pressure on staff to agree to CAP proposals without negotiating additional cost savings.

Project staff also indicated that they rely on the Department's CM/GC manual when negotiating CAP proposals, which states that, "The decisions to accept a CAP Proposal is a collaborative decision between the CDOT Project Manager, the [Engineering Estimate and Market Analysis team], and the established review team. CDOT must decide if any price differences will be saved if the project is competitively bid, recognizing that there are additional cost and schedule impacts involved with bidding the project" [CM/GC Manual, Section 4.4]. To strengthen the Department's negotiation stance for CAP proposals, it could provide additional guidance to staff on how to ensure that project schedules allow enough time to negotiate CAP proposals and on what factors to consider prior to accepting a CAP proposal above the independent cost estimate. For example, this might include providing written examples of scenarios where a construction package should be put to competitive bid.

Inadequate guidance for establishing the acceptable percentage difference. The Department's primary mechanism for controlling CAP proposal costs is to have CM/GC project staff establish an acceptable percentage difference for each construction package, and to use that percentage difference to determine at what point the Department will accept a CM/GC contractor's price proposal that costs more than the independent cost estimate. While this practice could be a useful tool to guide CM/GC project staff through negotiations, we identified two areas where this control could be improved to assist in effective cost negotiations:

- **Establishing the acceptable percentage difference.** The Department's CM/GC manual provides limited guidance on how to set acceptable percentage differences. The manual states, "There is no set amount for an acceptable percentage" and it "will depend on the overall project size and complexity, but it typically ranges from 2% to 10%," but the manual provides no other guidance on how to establish the percentage. There is no guidance, for example, on how or whether a contractor's management price percentage—which the Department is now setting at 10.5 percent for new CM/GC projects—should be factored in when establishing the acceptable percentage difference. With the management price percentage representing the CM/GC contractor's margin for profit and overhead, a higher management price percentage may warrant setting the acceptable percentage difference at a conservatively low value to ensure that the contractor's price is as close as possible to the independent cost estimator's estimate of fair market value for itemized construction items.

  Department staff do not document when or how they set the acceptable percentage difference, so we could not review documentation to determine the factors staff applied when setting these percentages. When we interviewed nine CM/GC project staff on how this percentage is set, some said there are discussions between regional staff and project staff, while others said their regional directors set the percentage for the project. When we asked what factors are considered when setting the percentage, the staff could not recall what specific factors were used for their

projects, though one staff person suggested that project budget and market volatility *could* play a role in determining an acceptable percentage difference. Project staff reported that a contractor's management price percentage has not been a factor in setting the acceptable percentage difference even though, since the management price percentage is applied to total costs, it can be an incentive for contractors to keep costs high in order to receive more for profit and overhead. One project staff person who managed a project team with more experienced staff members who previously worked on CM/GC projects stated that it would be helpful to have more guidance from the Department on how to determine an acceptable percentage difference.

- **When to set and document an acceptable percentage difference.** The Department's CM/GC manual indicates that, at the start of cost proposal negotiations when design is about 30 percent complete, CM/GC project staff will assess whether the contractor's price proposal items are within an acceptable percentage difference from the independent cost estimate. However, the Department's guidance is not specific as to at what stage of the construction price negotiation process the project staff should establish the acceptable percentage difference; rather, it only states the percentage should be determined "prior to entering into CAP negotiations" [CM/GC Manual, Section 4.4]. Four of the nine CM/GC project staff that we spoke with stated that they did not know when this percentage difference was established. Due to the lack of documentation, we could not confirm when acceptable percentage differences were established.

  The CM/GC manual also does not provide guidance on how project staff should document the acceptable percentage difference that was established. The only documentation we identified that references the acceptable percentage difference is the concurrence letters staff send to the Chief Engineer *at the end* of the CAP proposal process. Most of these concurrence letters specify the percentage difference established for each construction package. However, three of the nine projects provided incomplete information, with one project's letter stating that the percentage difference is "within the specified tolerance" without specifying the tolerance, another project's letters simply stating the calculated difference and that it was acceptable without specifying the acceptable percentage difference, and for the other project, one letter stated that "the estimate and the CAP were less than 1%" while another letter stated that "the team found that the estimate and the CAP were less than 3.5%." None of these letters indicated the actual acceptable percentage difference. This indicates that staff are not consistently documenting the acceptable percentage difference once it is established; four of the nine CM/GC project staff we spoke with stated that they do not document the acceptable percentage difference.

The Department does not provide staff with adequate training or resources to negotiate CM/GC construction contracts. In interviews with project staff from five of the nine projects we reviewed, nine staff indicated that they did not receive formalized training before leading their first negotiation as a project manager. Staff reported that they instead would reach out to other project teams within the Department to gain insight on how to conduct CAP negotiations, or would sit in on other CAP negotiations to understand the process. Staff also reported that, while the Alternative

Delivery Program manager was a resource for learning about alternative delivery methods more broadly, they felt there was a lack of training provided by the Department on the tools available to project teams to conduct CM/GC construction contract negotiations, such as being provided and instructed on how to use a standard comparison worksheet to track changes and compare pricing estimates of construction bid items over the course of the design development and negotiation process. One project staff member said that while training efforts have "come a long way" and "been a bit more formalized" over the years, the Department could provide more resources to support project staff with the CAP negotiation process.

Why do these problems matter?

Higher Construction Costs. When the Department does not consistently negotiate CM/GC construction contracts to reach an agreed-upon price closer to the independent cost estimate, it results in higher construction costs and reduces the amount of state and federal funds that could otherwise be used for other highway construction and maintenance priorities. For the nine CM/GC projects we reviewed, the Department paid almost $18 million more in construction costs than the independent cost estimate.

The Department is aware of the risks of paying higher construction costs through CM/GC negotiations. In Project Delivery Selection Matrix documents for several projects we reviewed, staff noted the risk of CM/GC contract negotiations resulting in higher costs. For example, for one project (I-25 South Gap) staff noted:

> "…CAP negotiations have sometimes resulted in negotiated costs being higher than anticipated, and the lack of competition on pricing creates budget concerns, particularly in later packages when construction is underway."

Staff on this project also noted that, "Later design packages can be difficult to negotiate" and that there is a, "Loss of benefit of competitive, sealed bid." For two other projects (I-25N Mead to Johnstown, SH 7 Permanent Repair), staff noted that, "Not coming to an agreed upon price" can be an obstacle for CM/GC and that CM/GC is, "Not as competitive of pricing as low bid," and, "Not a competitive price." Project staff stated that the negotiation process can be effective at incentivizing contractors to negotiate to a lower CAP proposal price, since the Department includes regional management in the second CAP proposal negotiations and the Department's executive management in the third CAP proposal negotiations, and that failing to reach an agreement with the Department could harm a contractor's reputation within the construction industry. Having strong controls in place to manage these known risks associated with CM/GC contract negotiations, including using the second and third rounds of negotiation when needed, is important for coming to an agreed upon price that is consistent with fair market rates.

Additionally, the Department's CM/GC manual allows for acceptable percentage differences to range from 2 to 10 percent and the Department states that this is in-line with Design-Bid-Build statutes that allow the Department to award Design-Bid-Build projects if there are fewer than three bidders and the lowest bid is within 10 percent of the Department's estimate [Section 43-1-113(16)(a), C.R.S.]. However, as construction package costs rise to the tens or hundreds of millions, a range allowing for up to 10 percent higher costs than the Department's independent cost estimates may not be effective at controlling costs. For example, if a construction package is estimated to cost $100 million, the Department could pay between $2 million and $10 million more than fair market cost estimates if the CM/GC manual's percentage range is followed.

Agreeing to a CAP proposal that is higher than the independent cost estimate could also impact the cost of future highway construction projects, regardless of delivery method, since amounts negotiated for each CM/GC package—including the management price percentage applied to each construction item price—are averaged and incorporated into the Department's cost data book. The cost data book is then used as a resource to estimate costs of future projects. The cost data book is a public data repository that provides all construction item prices and quantities approved within traditional Design-Bid-Build and CM/GC construction contracts in a given calendar year. While the Department, the construction industry, and the independent cost estimators for CM/GC projects use various sources of information to help estimate the cost of construction items, the cost data book can be used as a source of historical pricing data (e.g., average construction item price) to validate cost estimates for future projects. If prices higher than market rates from CM/GC projects are averaged into the cost data book, it could result in awarding prices higher than market rates on future construction projects.

With higher guaranteed margins for profit and overhead, controlling itemized construction costs becomes more important. With the Department's recent change in approach in establishing a set management price percentage of 10.5 percent, rather than having potential CM/GC contractors bid on management price percentages, it is even more important for the Department to control itemized project costs. When construction costs are not negotiated down to reflect the fair market rates within the independent cost estimates, these above-market costs will compound once the management price percentage is applied to each construction item. For the 27 construction contracts reviewed, the CM/GC contractors received approximately $1 million more from the management price percentage than they would have if the Department had negotiated contract amounts closer to the independent cost estimate. This number is based on each project's respective management price percentage, which was 7 percent for all but one of the nine projects reviewed; one project's management price percentage was 5 percent. To illustrate the impact of the Department's shift to providing a standard management price percentage of 10.5 percent, we calculated what the CM/GC contractors' extra profit and overhead would have been had the 10.5 percent management price percentage been in place for the projects we reviewed. If the nine projects we reviewed had the now-standard 10.5 percent management price percentage, rather than the 5 percent or 7 percent rates they had, the CM/GC contractors would have received approximately $1.9 million *on top of* the roughly $18 million dollars in excess of independent cost

estimates. With contractors' margins for profit and overhead already accounted for in the management price percentage, and now at a rate that is higher than the market rate when bid out, costs can escalate if not controlled.

Recommendation 4

The Department of Transportation should improve its controls over Construction Manager/General Contractor (CM/GC) construction contract negotiations to ensure it effectively negotiates CM/GC construction contracts in a way that is most cost effective and provides best overall value to the State. This should include:

A. Developing written guidance for staff on how to ensure project schedules allow enough time to negotiate Construction Agreed Price (CAP) proposals, while also determining what factors to consider prior to accepting a CAP proposal above the independent cost estimate.

B. Designing, clarifying, and implementing written guidance related to (1) how and when the acceptable percentage difference should be established, including factors that should be considered when setting the percentage difference; (2) how the acceptable percentage difference should be documented, and (3) refining the range of the acceptable percentage difference to ensure the range does not result in paying amounts above fair market rates for construction costs.

C. Implementing formalized trainings for project staff on the tools available to project teams to conduct CM/GC construction contract negotiations.

Response

Department of Transportation

A. Agree
Implementation Date: July 2024

The Department is currently drafting an internal memorandum that will address the need for project teams to consider allocating adequate schedule timeframes for CM/GC construction contract negotiations within project schedules. Once finalized, the internal memorandum will become a best practice and will be documented in the CDOT CM/GC Manual. The Department will also update the existing CDOT CM/GC Approach and Management training session to better emphasize the need for allocating adequate schedule timeframes for construction contract negotiations.

B. Agree
Implementation Date: July 2024

The Department is currently drafting an internal memorandum that will document the considerations that should contribute to establishing the project specific acceptable percentage difference for CM/GC construction contract negotiations. Once finalized, the internal memorandum will become a best practice and will be documented in the CDOT CM/GC Manual. The efforts described above will contribute to refining the project specific acceptable range percentages to ensure that the range reflects market pricing for construction cost. This will help guide the Department as to how to narrow the range of acceptable percentage difference, and document what factors contribute to construction estimating variability.

C. Agree
Implementation Date: January 2024

The Department will update the existing CDOT CM/GC Approach and Management training session to emphasize available tools and best practices to conduct CM/GC construction contract negotiations. This training will be proactively provided to the existing CM/GC project teams and will be provided to future CM/GC project teams on a project specific basis upon project commencement.

Chapter 3

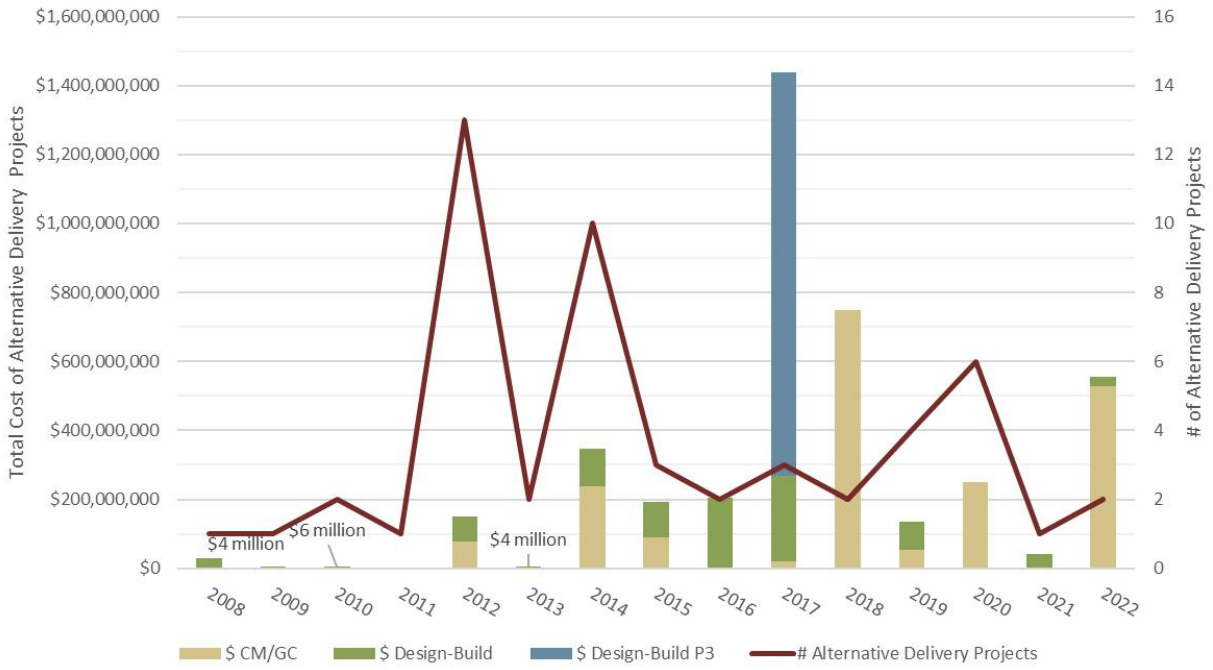
Transparency and Accountability of Alternative Delivery Projects

Alternative delivery contracting methods for highway improvements are viewed as especially useful on complex, multi-faceted, and high-cost projects and the Department of Transportation (Department) has embraced their use since it received special permission to do so by the Federal Highway Administration (FHWA). In 1997, the FHWA authorized the Department to use Design-Build and the Department has since used this method for more than two dozen projects, including the highest cost projects in the State's history—the 2001 T-REX project, with a Design-Build contract and a total project cost of $1.67 billion, and the 2017 Central 70 project, with a Design-Build-Finance-Operate-Maintain contract of $1.17 billion that is financed through a Public-Private Partnership. In 2009, the FHWA gave the Department permission to use the Construction Manager/General Contractor (CM/GC) alternative delivery method and the Department has used it for 28 projects since then, including three under solicitation as of March 2023.

Exhibit 3.1 shows the number and original expected costs of alternative delivery projects over the last 15 years based on the year each contract was awarded and the project's original contract price. Overall, the Department has used alternative delivery methods to deliver increasingly higher cost projects in recent years. Exhibit 3.1 only reflects the original expected costs of these projects at the time of contract execution, and does not reflect their final, completed costs.

Interstate 70 in Denver
Photo Credit: Shutterstock

Exhibit 3.1
Cost and Number of Alternative Delivery Method Projects by Award Year
Calendar Years 2008 through 2022[1]



Source: Office of the State Auditor analysis of data provided by the Department of Transportation on alternative delivery contracts for highway construction projects executed between Calendar Years 2008 and 2022.

[1] A single CM/GC construction project may comprise multiple construction package contracts. This count of CM/GC construction projects treats each CM/GC project as one project, regardless of how many construction package contracts were executed to complete the project.

As the Department increasingly relies on alternative delivery methods for high cost projects, it is important for it to ensure that such projects achieve expected benefits. According to federal and state transportation officials, projects using alternative delivery methods are more likely to stay on schedule and on budget, while shifting risk to the contractor and away from the state, which should reduce legal disputes, as compared to the traditional Design-Bid-Build delivery method.

The Department has affirmed the importance of accountability and transparency about the extent to which alternative delivery projects achieve these benefits. In a March 2021 letter to the construction industry and Department staff, Department management stated that these projects "generally have a larger price tag and thus represent a significant share of the total CDOT construction budget…This makes these projects more visible, thus reinforcing the critical nature of transparency and accountability." The letter also stated that, "To ensure the best values and best practices for [the Department], there must be trust on how the taxpayers' money is spent and how contracts are awarded." Finally, the letter recommended that specific communications about alternative delivery projects be established in statute; this occurred when the General Assembly passed Senate Bill 21-260, which included requirements for the Department to post on its website the justification for

using an alternative delivery method, include the justification in its requests for proposals and requests for qualifications for the project, obtain approval of the Transportation Commission of Colorado (Commission) to use the method for higher-cost projects, and establish an online transparency platform that shows the status of each alternative delivery project. The bill became effective in June 2021.

The Department also has a responsibility to generally operate in a transparent manner. For example, the State Measurement for Accountable, Responsive, and Transparent (SMART) Government Act declares that, "It is important that state government be accountable and transparent in such a way that the general public can understand the value received for the tax dollars spent by the state" and requires all state departments to annually prepare performance plans with operational goals and report their progress in achieving the goals. [Section 2-7-200.1. et seq., C.R.S.] The Department has included accountability and transparency goals in its performance plans since 2018. The Colorado Open Records Act (CORA) [Section 24-72-200, et seq., C.R.S.] further establishes fundamental principles of open, transparent government by requiring state agencies, such as the Department, to allow access to public records, so that individuals can learn "quickly and completely - what their government is doing. … [and] understand how Colorado's government affects their lives" [Colorado Attorney General Opinion No. 01-1].

Finding 5
Performance of Alternative Delivery Methods

The Department is responsible for constructing and maintaining all roads comprising the state highway system [Section 43-2-102, C.R.S.] as part of its overall mission of ensuring that Colorado has a safe and efficient highway system. A significant aspect of the Department's mandate is to oversee highway construction projects and ensure taxpayers' investment in the infrastructure of our highway system is carried out efficiently and effectively.

In determining the best way to deliver highway construction projects, statute allows the Department to use alternative delivery methods instead of the traditional Design-Bid-Build delivery method "upon the determination by [the Department] …that [the alternative delivery method] represents a timely or cost-effective alternative for a public project" [Section 24-93-104(1), C.R.S.]. Statute does not explicitly state how the Department should make this determination.

The Department has publicly communicated the benefits it expects of alternative delivery, including in response to a January 2021 Request for Information from the Joint Budget Committee, as follows:

- **Greater likelihood of staying on time.** "…alternative delivery methods allow the owner to establish…schedule certainty earlier [than Design-Bid-Build]," where schedule certainty indicates that the Department knows that a project will be completed within a certain timeline.

- **Greater likelihood of staying on budget.** "…alternative delivery methods allow the owner to establish cost…certainty earlier [than Design-Bid-Build]," where cost certainty indicates that the Department knows that a project will be completed within a certain budget.

- **Reduced risk to the State.** Alternative delivery methods "make the [contractor] accountable for the majority of the [project] design…which shifts risk to the contractor and away from the state," where the shifting of risk away from the State should reduce the number and cost of legal disputes against the State when compared to the traditional Design-Bid-Build delivery method.

Research from the FHWA and academic sources supports the expected benefits communicated by the Department. For example, on its website, the FHWA "encourages States to consider the use of alternative delivery methods to expedite project implementation, streamline costs, and improve outcomes" and wrote in a 2018 report that "agencies are saving substantial time in project delivery" and achieving earlier cost certainty by using alternative delivery methods. Meanwhile, academic studies have concluded that alternative delivery methods in highway construction save time and establish cost certainty earlier than Design-Bid-Build, with one study published in 2019 concluding that "CM/GC and [Design-Build] are superior to the traditional [Design-Bid-Build] method for the performance metrics of project duration, project intensity, and timing of cost certainty…."

How were the results of the audit work measured, what audit work was performed, and what was the purpose?

We reviewed Department manuals, training materials, and public communications on alternative delivery methods; and studies conducted by the FHWA and academic community. We also interviewed FHWA and Department staff to determine the benefits they expect from alternative delivery when compared to traditional Design-Bid-Build. In addition, we reviewed statutes; the Department's internal guidance on alternative delivery methods; the Department's external, public communications on alternative delivery methods; the Department's Fiscal Years 2020 through 2023 SMART Government Act performance plans, including the metrics for its Accountability and Transparency goal, and the associated reported performance for Fiscal Year 2022; the seven lessons learned reports that the Department has written since 2012 that assess the performance of alternative delivery projects after their completion; the Department's response to the Joint Budget Committee's 2021 Request for Information regarding use of alternative delivery methods; and the minutes and agendas for the Commission's Efficiency and Accountability Committee meetings held between January 2016 and July 2022.

We conducted two sets of analyses:

- First, we compared key project metrics for the 16 alternative delivery projects with original awarded bid amounts of $5 million or more that the Department completed during Calendar Years 2012 through 2021 (see Appendix B for a list of these projects) to the 261 Design-Bid-

Build projects with original awarded bid amounts of $5 million or more that the Department completed during the same time period. We focused on projects of $5 million or more to prioritize projects that represented a higher risk level for the State due to their larger budgets and scopes; we excluded a total of 19 alternative delivery projects (12 CM/GC and 7 Design-Build) and 861 Design-Bid-Build projects under $5 million from the analysis. We also excluded two alternative delivery projects delivered in response to an emergency (e.g., flooding) since emergency projects may not reflect the Department's standard practice of managing projects. Throughout our analysis, we categorize all projects into three groups based on their original awarded bid amounts—$5 million to $35 million, $35 million to $65 million, and $65 million and above—to enable comparisons of performance across projects of similar monetary size. Our analysis included reviewing data from the Department's accounting system, SAP, and data manually compiled by the Department about each project's schedule, planned and actual costs, and any associated legal settlements paid by the Department to the contractors.

- Second, we compiled information on key project metrics for a targeted selection of 4 of the 19 alternative delivery method projects that were active in Fiscal Years 2021 and 2022: Central 70, I-25N Mead to Johnstown, I-25N Johnstown to Fort Collins, and I-25 South Gap. These were the highest cost and highest profile alternative delivery projects actively under construction in Fiscal Years 2021 and 2022, and the management of these projects' cost and schedule is significant to safeguarding taxpayer funds. The metrics provide information about whether the projects are on track to achieve the expected benefits of alternative delivery projects. Specifically, we reviewed procurement documents; executed contracts and amendments; contract change order tracking logs; contractor payment data from SAP, the Department's accounting system; Commission meeting minutes and resolutions; Department project update documents; and the Department's website's project pages for the four projects.

The purpose of our work was to determine the extent to which the Department has assessed whether Colorado projects delivered under alternative delivery methods have achieved the expected benefits and to assess how alternative delivery projects have performed compared to traditional Design-Bid-Build projects.

What problems did the audit work identify?

Overall, we found that the Department has not assessed the extent to which Colorado projects completed using an alternative delivery method have achieved the expected benefits of using these types of approaches because it does not conduct analyses of its projects to evaluate and compare their effectiveness. According to the Department, it believes that alternative delivery methods are effective because staff have experienced more collaboration with Design-Build and CM/GC contractors than with Design-Bid-Build contractors and the CM/GC method has not resulted in disputes with CM/GC contractors. However, our comparison of alternative delivery projects—with projects completed under the traditional Design-Bid-Build approach—indicates that projects using

alternative delivery methods may not be achieving all of the expected benefits. Specifically, we found the following:

There are indications that Design-Build may not be achieving time- and cost-savings or reducing risk to the State when compared to Design-Bid-Build, and CM/GC performs similarly to Design-Bid-Build. Because the Department did not already have established methods and metrics for assessing the effectiveness of alternative delivery projects, we conducted two sets of analyses to look at indications of how alternative delivery projects are performing in achieving their intended results: (1) we analyzed 10 years of construction contract data on completed projects, and (2) we assessed how the construction phases of four ongoing projects are doing in keeping with their planned schedules and budget.

Through our audit work, we attempted to assess the effectiveness of alternative delivery methods in staying on time, staying on budget, and reducing legal risks to the State when compared to Design-Bid-Build projects. Our analyses were limited to assessing the construction phase for CM/GC and Design-Bid-Build projects due to a lack of Department data on the preconstruction phases of these projects, which the Department states is when time savings can be realized through alternative delivery methods. Therefore, our analyses may not reflect all expected benefits—or risks—of alternative delivery methods when compared to traditional Design-Bid-Build.

Analysis of Completed Projects

Our analysis of project metrics for projects completed over our 10-year review period indicates that alternative Design-Build projects resulted in greater cost and schedule growth than the traditional Design-Bid-Build and alternative CM/GC projects completed over that same period, and may not be reducing the risk of legal disputes, as expected.

To conduct our analysis, we first compiled data on the 16 alternative delivery projects and the 261 Design-Bid-Build projects with original awarded bid amounts of $5 million or more that were completed between January 2012 and December 2021. Exhibit 3.2 shows the number and original awarded bid amounts of these projects. The original awarded bid amounts reflect the contract costs without force account amounts (discussed below) and prior to any amendments that may have been made to the contracts during the project, but do not include any additional program costs related to these projects, such as the costs of right of way clearances, utility costs, payments to other contractors (e.g., design consultant contractors that work alongside CM/GC contractors), or the Department's own expenses such as for program management and construction oversight.

Exhibit 3.2
Original Awarded Bid Amounts of Completed Highway Construction Projects
Calendar Years 2012 through 2021[1]

Delivery Method by Original Awarded Bid Amounts	Total Number of Projects	Range of Original Awarded Bid Amounts	Average Original Awarded Bid Amounts	Total Original Awarded Bid Amounts for All Projects
Design-Bid-Build [2]	**261**	**$5 to $56M**	**$10M**	**$2,505M**
$5M - $35M	255	$5 to $32M	$9M	$2,242M
$35M - $65M	6	$38 to $56M	$44M	$263M
CM/GC[2, 3]	**10**	**$6 to $106M**	**$35M**	**$348M**
$5M - $35M	6	$6 to $18M	$13M	$79M
$35M - $65M	3	$48 to $63M	$54M	$163M
>$65M	1	$106M	$106M	$106M
Design-Build	**6**	**$10 to $68M**	**$31M**	**$185M**
$5M - $35M	4	$10 to $25M	$16M	$65M
$35M - $65M	1	$52M	$52M	$52M
>$65M	1	$68M	$68M	$68M
Grand Total	**277**			**$3,038M**

Source: Office of the State Auditor analysis of Department of Transportation data on contracts for highway construction projects of $5 million or more completed between Calendar Years 2012 through 2021, excluding emergency projects.
[1] In this table, "M" represents "million."
[2] For Design-Bid-Build and CM/GC projects, figures represent the construction phase and do not include the preconstruction phase due to a lack of Department data on the preconstruction phase.
[3] A single CM/GC construction project may comprise multiple construction package contracts. This count of CM/GC construction projects treats each CM/GC project as one project, regardless of how many construction package contracts were executed to complete the project.

We then calculated and compared, by delivery method, the schedule growth and cost growth for the projects. To assess how the different delivery methods shifted risks away from the State, we looked at the number and monetary value of any settlements associated with legal disputes related to the projects that the Department paid to the contractors.

We reached the following conclusions based on three key analyses:

1. Design-Build does not appear to be a timely alternative to Design-Bid-Build, and CM/GC performs similarly to Design-Bid-Build.

To assess the timeliness of projects completed between January 2012 and December 2021, we compared the *original* expected completion dates of the projects to the actual completion dates, as a percentage of the duration of the contracts.

Overall, we found that projects completed under the traditional Design-Bid-Build delivery method and alternative CM/GC delivery method performed about the same with respect to staying on schedule, with Design-Bid-Build projects having average schedule growth over original project schedules of 17.6 percent and CM/GC projects performing slightly better with average schedule growth of 17.3 percent. However, alternative Design-Build projects were completed later, on average, with a growth of 53.7 percent over the projects' original schedule. It is possible that Design-Bid-Build projects performed better than these calculations indicate but we were not able to determine due to data issues, as discussed below. Exhibit 3.3 shows the average schedule growth between the *original* expected completion date and actual completion date, by delivery method, from Calendar Years 2012 through 2021.

Exhibit 3.3
Average Schedule Growth of Completed Highway Construction Projects Based on Original Expected Completion Date and Actual Completion Date Calendar Years 2012 through 2021[1]

Delivery Method by Original Awarded Bid Amounts	Number of Projects	Average Schedule Growth by Project (Based on Original Expected Completion Date)
Design-Bid-Build[2,3]	**261**	**17.6%**
$5M-$35M	255	17.6%
$35M-$65M	6	18.3%
CM/GC[3,4]	**10**	**17.3%**
$5M-$35M	6	18.7%
$35M-$65M	3	21.9%
>$65M	1	-4.5%
Design-Build	**6**	**53.7%**
$5M-$35M	4	38.7%
$35M-$65M	1	64.0%
>$65M	1	103.3%

Source: Office of the State Auditor analysis of Department of Transportation data on contracts for highway construction projects of $5 million or more completed between Calendar Years 2012 through 2021, excluding emergency projects.

[1] In this table, "M" represents "million."

[2] It is possible that Design-Bid-Build projects performed better than these calculations indicate due to Department data entry issues, as discussed in the narrative below.

[3] For Design-Bid-Build and CM/GC projects, figures represent the construction phase and do not include the preconstruction phase due to a lack of Department data on the preconstruction phase.

[4] A single CM/GC construction project may comprise multiple construction package contracts. In this calculation, the schedule growth of each project reflects the average schedule growth of its packages.

The Department indicated that it is important to assess project timeliness based on *revised* expected completion dates, in the event that additional scope or other changes are made to a project. To take project scope changes into account, we first assessed how often the Department extended projects' original expected completion dates and, on average, the percentage of time added to the projects. We determined that, on average, the Department added more time to alternative delivery projects, with 31 percent more time added to Design-Build projects and 20 percent more time added to CM/GC projects, compared to 18 percent more time added to Design-Bid-Build projects.

We then assessed the average schedule growth between the final *revised* expected completion date and the actual completion date, by delivery method, from Calendar Years 2012 through 2021. The expected completion date for some projects is revised multiple times during the project; therefore, we applied the final revised expected completion date in our analysis. When taking into account the final *revised* expected completion dates, we found, on average, that CM/GC projects were completed ahead of schedule, with a 3.5 percent time savings, Design-Bid-Build projects were completed ahead of schedule with a 0.9 percent time savings, and Design-Build projects were completed late with a 17.8 percent schedule growth. Exhibit 3.4 shows the average schedule growth or savings between projects' final *revised* expected completion dates and actual completion dates, by delivery method, from Calendar Year 2012 through 2021.

Exhibit 3.4
Average Schedule Growth of Completed Highway Construction Projects Based on Final Revised Expected Completion Dates and Actual Completion Dates Calendar Years 2012 through 2021[1]

Delivery Method by Original Awarded Bid Amounts	Number of Projects	Average Schedule Growth by Project (Based on Final *Revised* Expected Completion Dates)
Design-Bid-Build[2, 3]	**261**	**-0.9%**
$5M-$35M	255	-1.1%
$35M-$65M	6	3.4%
CM/GC[3,4]	**10**	**-3.5%**
$5M-$35M	6	0.3%
$35M-$65M	3	-10.6%
>$65M	1	-4.5%
Design-Build	**6**	**17.8%**
$5M-$35M	4	16.2%
$35M-$65M	1	9.3%
>$65M	1	32.4%

Source: Office of the State Auditor analysis of Department of Transportation data on contracts for highway construction projects of $5 million or more completed between Calendar Years 2012 through 2021, excluding emergency projects.
[1] In this table, "M" represents "million."
[2] It is possible that Design-Bid-Build projects performed better than these calculations due to Department data entry issues, as discussed in the narrative below.
[3] For Design-Bid-Build and CM/GC projects, figures represent the construction phase and do not include the preconstruction phase due to a lack of Department data on the preconstruction phase.
[4] A single CM/GC construction project may comprise multiple construction package contracts. In this calculation, the schedule growth of each project reflects the average schedule growth of its packages.

We recognize that our data analysis is impacted or limited by the following complexities related to the Department's data:

- **Expected completion and actual completion dates are not always entered in the Department's data systems correctly.** When projects require contractors to complete a "landscape warranty" period that requires the contractor to maintain landscaping for a period of time after construction completion (e.g., 24 months to allow for landscaping to become established), Department internal guidance requires that expected and actual completion dates be entered into its data systems based on the end of that landscape warranty period. We identified inconsistencies with how Department staff are entering dates based on the application of this requirement. For example, we saw that for some projects, Department staff incorrectly entered the expected completion date as the end of construction rather than the end of the warranty period, and correctly recorded the actual completion date to be the end of the landscape warranty period. This resulted in projects appearing to be over schedule by up to 300 percent. In another case, the Department correctly entered the expected completion date as the

date of the end of the landscape warranty period but incorrectly entered the actual completion date as the end of construction, resulting in this project appearing to be completed 202 days ahead of schedule.

In February 2023, the Department provided additional documentation and we were able to correct these errors for our analysis for all of the alternative delivery projects that we reviewed and for one Design-Bid-Build project that we identified as a clear outlier. However, due to time constraints and the Department not having information readily available, we were not able to confirm whether any other Design-Bid-Build project schedules were affected by incorrect data entries for expected and actual completion dates. As a result, it is possible that the Design-Bid-Build project data had errors that incorrectly showed some projects as being overschedule or under-schedule. To analyze Design-Bid-Build timeliness, we conservatively used the latest possible completion dates, as provided by the Department. As a result, we expect that Design-Bid-Build performed at least as well as presented in Exhibits 3.3 and 3.4, and may have performed better in completing projects on time in cases where expected and actual completion dates were incorrectly entered by Department staff into its system based on landscape warranty start and end dates.

- **Lack of comparative design and procurement data.** According to the Department, alternative delivery methods can result in time savings during the design and procurement phases of a project, when compared to Design-Bid-Build. However, the Department does not collect data specifically on the design phases for any of the delivery methods. Our analysis of Design-Build projects above represents the timeliness of both the design and construction phases combined—since the Department does not collect data on the start or end dates of these two phases within a project—whereas the CM/GC and Design-Bid-Build data reflects the timeliness of only the construction phase. We also did not assess the timeliness of the procurement phase of any delivery method, which the Departments states is another opportunity to realize time savings through alternative delivery methods.

To perform an analysis of project timeliness that addresses these limitations, the Department would need to gather data on the following:

- **Expected and actual completion dates.** A project's expected completion date, any revisions to that completion date through contract amendments, and responsibility for any landscape warranty period are reflected in the project's applicable Requests for Proposals, contracts, and contract amendments. However, this information is not always accurately entered into the Department's data systems. It is important that Department staff accurately record these dates, including the correct application of landscape warranties to the dates, in the Department's data systems so that they can rely on the data to assess project performance.

- **Expected and actual start and end dates of each project's design phase**. This would require having the Department set expected start and end dates for the design phase of Design-

Build projects and then have Design-Build contractors identify the start and end dates of their design work. It also would require the Department to track the start and end dates of design work for Design-Bid-Build. In addition, the Department could incorporate the start and end dates of CM/GC preconstruction contracts into a timeliness analysis, which the Department tracks within its SAP accounting database.

- **Expected and actual start and end dates of each project's construction phase.** The Department tracks these dates for traditional Design-Bid-Build construction contracts. However, it does not set expected—or track the actual—start and end dates of construction for Design-Build projects or for the overall construction work of CM/GC projects. Instead, for CM/GC, the Department sets what it calls "aspirational" expected completion dates within each CM/GC projects' Requests for Proposals, but it does not track those expected completion dates in a dataset or track whether a CM/GC project's individual construction contracts are completed on or before the project's expected completion date. For our analysis, we averaged the timeliness of each individual CM/GC construction contract within a given project to approximate the overall project's timeliness. The Department could achieve greater precision in assessing project timeliness if it set expected start and end dates for each CM/GC project overall. For Design-Build, the Department only sets a completion date for the entire project—including both design and construction of the project—since the Design-Build contractor holds responsibility for the project design, which does not allow the Department to discern the timeliness of these two phases of the projects. If the Department had access to more information from its Design-Build contractors about the expected and actual length of time of construction, it could more easily compare Design-Build projects to those projects delivered through other methods.

2. Design-Build does not appear to be more cost-effective than Design-Bid-Build, and CM/GC performs similarly to Design-Bid-Build.

To determine if alternative delivery methods provided a cost-effective alternative to the traditional Design-Bid-Build method, we assessed how closely each project stayed within its original expected project costs. To do this, we compared for each delivery method the sum of *original* awarded bid amounts against *final* contract costs (the actual amount paid to contractors after change order contract amendments) for the 10-year period between January 2012 and December 2021.

Overall, we found that Design-Bid-Build projects generally performed best at delivering cost-effective projects. The Design-Build projects completed between January 2012 and December 2021 resulted in *greater* increases in contract costs compared to Design-Bid-Build projects, when measured as a percentage of the original awarded bid amount, while CM/GC projects performed similarly to Design-Bid-Build projects. Exhibits 3.5 and 3.6 show that, overall, Design-Bid-Build had the lowest growth over original awarded bid amounts at 6 percent, compared to CM/GC at 7 percent, and Design-Build at 13 percent. However, for projects between $5 and $35 million, Design-Build performed best in terms of keeping close to the original awarded bid amounts, with the excess $2 million paid representing 3 percent of original awarded bid amounts, compared to 10 percent for

CM/GC ($8 million) and 7 percent for Design-Bid-Build ($147 million). While no Design-Bid-Build projects completed over this period had original awarded bid amounts above $65 million, for the one CM/GC project and the one Design-Build project that fell within this category, the Department paid $1 million (1 percent) and $9 million (13 percent) over their original awarded bid amounts, respectively. This analysis focuses on projects' original awarded bid amounts and does not consider the Department's contingency funds set aside for each project, known as "force accounts," which we discuss below.

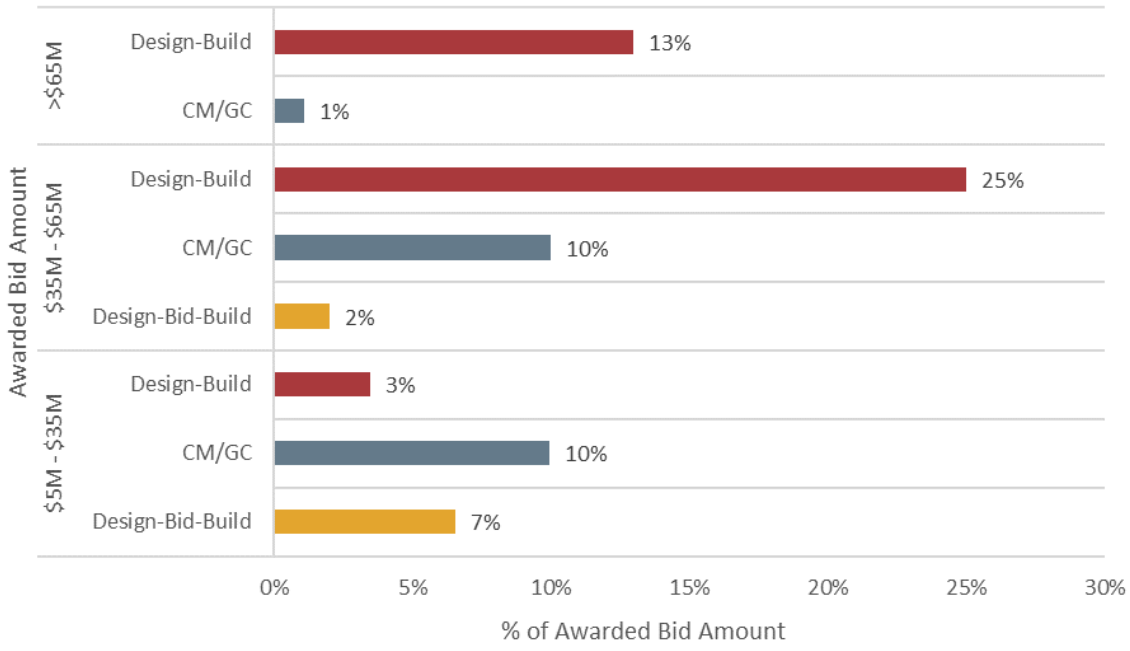
Exhibit 3.5
Payments to Contractors Over Original Awarded Bid Amounts
Calendar Years 2012 through 2021[1]

Delivery Method by Original Awarded Bid Amounts	Total Number of Projects	Original Awarded Bid Amounts Excluding Force Accounts	Payments to Contractors	Difference	Difference as % of Original Awarded Bid Amounts
Design-Bid-Build[2]	**261**	**$2,505M**	**$2,658M**	**$153M**	**6%**
$5M - $35M	255	$2,242M	$2,389M	$147M	7%
$35M - $65M	6	$263M	$269M	$6M	2%
CM/GC[2,3]	**10**	**$348M**	**$374M**	**$26M**	**7%**
$5M - $35M	6	$79M	$87M	$8M	10%
$35M - $65M	3	$163M	$180M	$17M	10%
>$65M	1	$106M	$107M	$1M	1%
Design-Build	**6**	**$185M**	**$209M**	**$24M**	**13%**
$5M - $35M	4	$65M	$67M	$2M	3%
$35M - $65M	1	$52M	$65M	$13M	25%
>$65M	1	$68M	$77M	$9M	13%
Grand Total	**277**	**$3,038M**	**$3,241M**	**$203M**	**7%**

Source: Office of the State Auditor analysis of Department of Transportation data on contracts for highway construction projects of $5 million or more for projects completed between Calendar Years 2012 through 2021, excluding emergency projects.
[1] In this table, "M" represents "million."
[2] For Design-Bid-Build and CM/GC projects, figures represent the construction phase and do not include the preconstruction phase.
[3] A single CM/GC construction project may comprise multiple construction package contracts. This count of CM/GC construction projects treats each CM/GC project as one project, regardless of how many construction package contracts were executed to complete the project.

Exhibit 3.6 shows the data provided in Exhibit 3.5 on percentage growth in the form of a bar chart.

Exhibit 3.6
Payments to Contractors Above Original Awarded Bid Amounts as a Percent of Original Awarded Bid Amounts, Calendar Years 2012 through 2021[1,2,3]



Source: Office of the State Auditor analysis of Department of Transportation data on contracts for highway construction projects of $5 million or more for projects completed between Calendar Years 2012 through 2021, excluding emergency projects.
[1] In this table, "M" represents "million."
[2] A single CM/GC construction project may comprise multiple construction package contracts. This count of CM/GC construction projects treats each CM/GC project as one project, regardless of how many construction package contracts were executed to complete the project.
[3] For Design-Bid-Build and CM/GC projects, figures represent the construction phase and do not include the preconstruction phase.

In Exhibits 3.5 and 3.6 we excluded force account amounts from our analysis because they are not funds guaranteed to be paid to the contractor, but instead are contingency funds that can be added to the contract at a later date, if needed based on risks that arise during the project, or incentives paid to the contractor if specified conditions are met. For the 10 years of projects we reviewed, the average force account amount was 11 percent of the project's original awarded bid amount for CM/GC and Design-Bid-Build projects and 7 percent for Design-Build projects. Force account amounts as a percentage of original awarded bid amounts varied widely across these projects (e.g., from 0 percent to 60 percent of original awarded bid amounts).

According to the Department, analyses of cost effectiveness should capture when a project's costs increase due to added scope, such as reconstruction of additional highway mileage, and include

contingency funds contained in project force accounts when calculating the original awarded bid amounts because the Department considers the sum of a project's original contract cost (e.g., the original awarded bid amount) and force account amount as the "do not exceed" expenditure amount for that project. The Department only considers a project to have exceeded expected costs if it requires more funds than the "do not exceed" amount. In addition, the Department stated that an increase in costs above the project's "do not exceed" amounts may not indicate inefficiencies; instead, it could reflect the costs of added project scope or the reinvestment of project savings back into the project. The data we received from the Department did not distinguish payments above the "do not exceed" amount paid for additional scope elements; instead, the data simply contained total payments to contractors. We could not identify a reliable way to identify cost increases due to additional scope elements based on the data the Department provided for projects completed in the 10-year period we reviewed.

Based on the Department's feedback, we assessed the extent to which each delivery method experienced cost growth above total available project costs—original awarded bid amounts plus the force account amount—as a percent of total available project funds, as shown in Exhibits 3.7 and 3.8. For projects with original awarded bid amounts between $5 million and $35 million, none of the three delivery methods experienced cost growth over the total available project funds. However, for projects in the $35 million to $65 million range and greater, Design-Build experienced the most cost growth over total available project funds, including force account amounts.

Exhibit 3.7
Payments to Contractors Over Original Awarded Bid Amounts and Force Accounts
Calendar Years 2012 through 2021[1]

Delivery Method by Original Awarded Bid Amounts	Sum of All Original Awarded Bid Amounts	Sum of All Force Account Amounts	Available Project Funds (Original Awarded Bid Amounts + Force Account Amounts)	Sum of All Payments to Contractors	Difference Between Available Project Funds and Payments to Contractors	Difference as % of Available Project Funds
Design-Bid-Build [2]	**$2,505M**	**$259M**	**$2,764M**	**$2,658M**	**-$106M**	**-4%**
$5M - $35M	$2,242M	$232M	$2,474M	$2,389M	-$86M	-3%
$35M - $65M	$263M	$27M	$290M	$269M	-$21M	-7%
CM/GC[2,3]	**$348M**	**$30M**	**$378M**	**$374M**	**-$4M**	**-1%**
$5M - $35M	$79M	$10M	$89M	$87M	-$2M	-2%
$35M - $65M	$163M	$12M	$175M	$180M	$5M	3%
>$65M	$106M	$8M	$114M	$10M	-$7M	-6%
Design-Build	**$185M**	**$16M**	**$201M**	**$209M**	**$8M**	**4%**
$5M - $35M	$65M	$3M	$68M	$67M	-$1M	-1%
$35M - $65M	$52M	$5M	$57M	$65M	$8M	14%
>$65M	$68M	$8M	$76M	$77M	$1M	1%
Grand Total	**$3,038M**	**$305M**	**$3,343M**	**$3,241M**	**-$102M**	**-3%**

Source: Office of the State Auditor analysis of Department of Transportation data on contracts for highway construction projects of $5 million or more for projects completed between Calendar Years 2012 through 2021, excluding emergency projects.

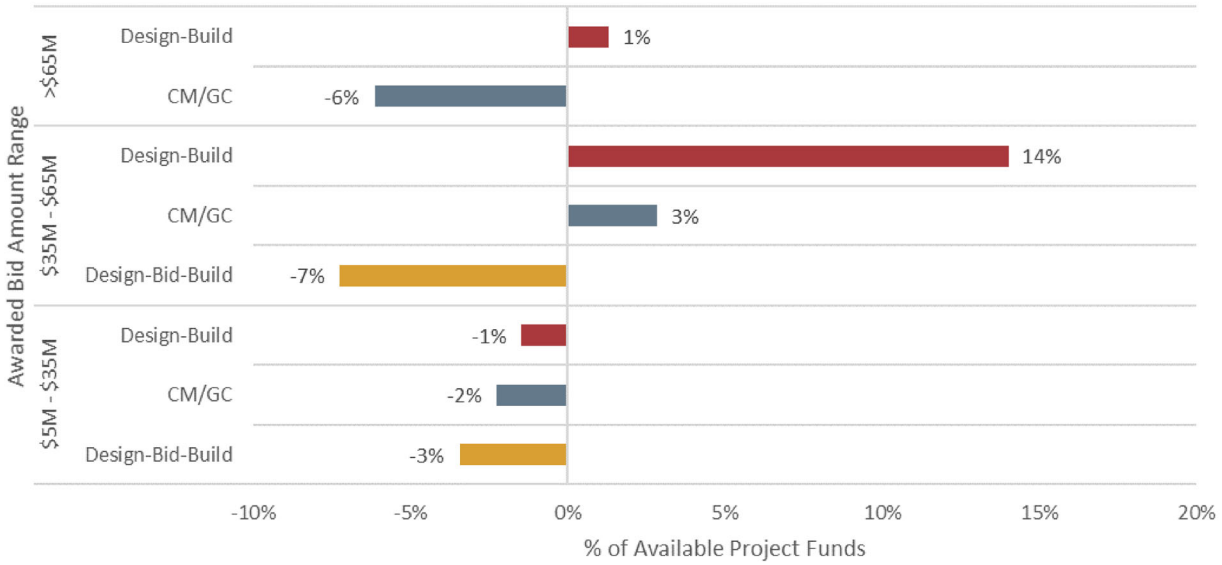
[1] In this table, "M" represents "million."

[2] For Design-Bid-Build and CM/GC projects, figures represent the construction phase and do not include the preconstruction phase due to a lack of Department data on the preconstruction phase.

[3] A single CM/GC construction project may comprise multiple construction package contracts. This count of CM/GC construction projects treats each CM/GC project as one project, regardless of how many construction package contracts were executed to complete the project.

Exhibit 3.8 shows the data provided in Exhibit 3.7 on percentage growth in the form of a bar chart.

Exhibit 3.8
Payments to Contractors Above/Below Available Project Funds as Percent of Available Project Funds[1, 2,3], Calendar Years 2012 through 2021



Source: Office of the State Auditor analysis of Department of Transportation data on contracts for highway construction projects of $5 million or more for projects completed between Calendar Years 2012 through 2021, excluding emergency projects.
[1] In this table, "M" represents "million."
[2] For Design-Bid-Build and CM/GC projects, figures represent the construction phase and do not include the preconstruction phase due to a lack of Department data on the preconstruction phase.
[3] A single CM/GC construction project may comprise multiple construction package contracts. This count of CM/GC construction projects treats each CM/GC project as one project, regardless of how many construction package contracts were executed to complete the project.

3. Design-Build does not appear to shift legal risk away from the State and CM/GC may be more effective at shifting legal risk, when compared to Design-Bid-Build.

To determine and compare the extent to which the three delivery methods had shifted a type of risk—legal risk—away from the Department, we counted the number and settlement value of legal disputes and claims made by contractors against the Department associated with each project completed between January 2012 through December 2021. Overall, we found that CM/GC—but not Design-Build—may be more effective at shifting legal risk away from the State when compared to the traditional Design-Bid-Build method. For projects completed in the 10-year period we reviewed, no CM/GC projects were subject to legal disputes or proceedings, while the Department paid a total of $10.5 million in settlements relating to three Design-Build projects, which represents approximately 7 percent of the original awarded bid amounts of those projects. Of this settlement amount, approximately $10.2 million was paid in relation to five disputes for a single Design-Build

project completed in 2016. For one dispute on a Design-Build project, the Department paid no settlement. Meanwhile, the Department paid $1.7 million in settlements for 21 Design-Bid-Build projects, representing 0.5 percent of those projects' original awarded bid amounts. Exhibit 3.9 shows the number and value of legal disputes and settlements finalized, by delivery method, as of March 2022.

Exhibit 3.9
Number and Value of Legal Disputes and Settlements for Completed Highway Construction Projects, Calendar Years 2012 through 2021[1]

Delivery Method By Original Bid Amounts	Number of Projects with Disputes	Total Number of Disputes	Sum of Original Awarded Bid Amounts of Projects with Disputes	Sum of Settlements Paid by the Department	Settlements as Percent of Original Awarded Bid Amounts
Design-Bid-Build	**21**	**45**	**$314.5M**	**$1.7M**	**0.5%**
$5M - $35M	19	32	$215.3M	$1.6M	0.8%
$35M-$65M	2	13	$99.2M	$0.1M	0.1%
Design-Build	**3**	**7**	**$144.7M**	**$10.5M**	**7.3%**
$5M - $35M	1	1	$25.0M	$0.3M	1.0%
$35M-$65M	1	5	$51.7M	$10.2M	19.8%
>$65M	1	1	$68.0M	-	0.0%
Grand Total	**24**	**52**	**$459.2M**	**$12.2M**	**2.7%**

Source: Office of the State Auditor analysis of Department of Transportation data on contracts for highway construction projects of $5 million or more for projects completed between Calendar Years 2012 through 2021, excluding emergency projects, as of March 2022.
[1] In this table, "M" represents "million."

This analysis of legal disputes and settlements provides some context for understanding the extent that different delivery methods shift risk from the Department, but risk management is complex and not easily summarized into a singular look at cost data. It can be difficult to measure the Department's efforts in shifting of risk to contractors. For example, the Department has stated that it uses alternative delivery methods for projects with schedule, design, or other complexities that inherently increase project risks, including legal risks.

The Department disagreed with this analysis of legal risk, stating that they believe that legal risk relating to a project's contract differs from risks of delivering the project.

Analysis of Four Active Alternative Delivery Projects

To better understand the performance of the Department's more recent use of alternative delivery methods, we evaluated a targeted selection of 4 of the 19 alternative delivery projects that were active in Fiscal Years 2021 and 2022. Appendix C provides a timeline summary of each of the four projects.

Overall, we found that all four projects are over their original schedule; two projects are above their original project costs, as set within each project's contracts and procurement documents; one project is within its original costs but has paid about $20 million in legal settlements to the contractor; and one project is within its original costs but has extended its completion date to the end of Calendar Year 2028, so total project costs remain unclear. In looking at the context for each of these selected projects, we found that the time extension of either the design or construction phases of these projects, as well as the increases in project costs have generally been due to unexpected legal disputes, additional funds becoming available to add or revise scope elements, or delays in securing necessary funds to complete the planned projects—and then adding additional scope elements to the projects once funding was secured.

Exhibit 3.10 shows the original, expected completion date and the current expected completion date for each project.

Exhibit 3.10
Original and Current Expected Project Completion Dates as of February 2023

Central 70 Design-Build-Finance-Operate-Maintain Financed through a Public-Private Partnership	
Contract Award Year	**2017**
Original Expected Completion Date	**March 2022**
Current Expected Completion Date	**February 2023**
Original Contract Cost	**$1.17 billion**
Expected Contract Cost ($ difference; % difference)	**$1.17 billion** ($0; 0 percent)

Factors contributing to schedule and/or cost growth:

In May 2019, the Department executed a legal settlement of $7.6 million related to timely execution of the Union Pacific Railroad (UPRR) Agreement, incomplete yard expansion work by UPRR, and increases in steel and aluminum prices. In September 2021, the Department executed a legal settlement of $12.5 million related to construction specifications for UPRR railroad. According to the Department, its planned contingency funding for the project covered these legal settlements, though it appears these settlements contributed to the delay in the project's completion date.

I-25N Mead to Johnstown CM/GC	
Contract Award Year	**2018**
Original Expected Completion Date	June 2021—**Preconstruction completion** 2025—**Segment 6 Construction Completion** Undefined (in procurement documents)—**Segment 5 Construction Completion**
Current Expected Completion Date	April 2024—**Preconstruction Completion** 2024—**Segment 6 Construction Completion** 2028—**Segment 5 Construction Completion**
Original Contract Cost	**$422.1 million**
Current Expected Contract Cost ($ difference; % difference)	**$426.3 million** • $193 million expected costs for Segment 6; • $245.6 million estimated for Segment 5; Department expects to reduce this cost and stay within the $420 million construction budget. • Preconstruction fees increased from $2.1 million to $6.3 million (+$4.2 million; 1 percent)

Factors contributing to schedule and/or cost growth:

The Department established the scope of the project to first complete one section of the work – Segment 6 – and, if additional funds were secured, complete the rest of the project – Segment 5. From 2018 through 2022, the contractor only conducted work on Segment 6. The CM/GC preconstruction contract required that all design of the project be completed in 2021 – however, the Department continued working with the contractor and finally secured funding in September 2022 to complete the Segment 5 work, which is expected to be completed in December 2028.

I-25N Johnstown to Fort Collins Design-Build	
Contract Award Year	**2018**
Original Expected Completion Date	**February 2022**
Current Expected Completion Date	**August 2024**
Original Contract Cost	**$248.3 million**
Current Expected Contract Cost ($ difference; % difference)	**$482.7 million** (+$234.4 million; 94 percent)

Factors contributing to schedule and/or cost growth:

In 2016, the Department did not have enough funding at the time to build the project in accordance with Federal Environmental Impact Statement (FEIS) design standards, so the Department decided to set the scope of the project in a way that did not align with the FEIS, with the intention that in the future, the Department would come back to re-do a portion of the highway to comply with the FEIS. However, in 2019, the Department identified funding to build the project in accordance with the FEIS and since the Department already had a contract with the Design-Build contractor, the Department decided to amend the scope of the project and add the newly identified funding to the project, with the support of the FHWA.

I-25 South Gap CM/GC	
Contract Award Year	**2018**
Original Expected Completion Date	**Design completion:** June 2020 **Construction completion:** Spring 2021
Current Expected Completion Date	**Design completion:** January 2021 **Construction Completion:** November 2022
Original Contract Cost	**$325.8 million**
Current Expected Contract Cost ($ difference; % difference)	**$337.2 million** (+$11.4 million; 3 percent)
Factors contributing to schedule and/or cost growth: The Department initially planned for a construction scope element related to the County Line Road bridge, but this element could not be covered by the original construction budget set in the contract. The Department secured additional funding and executed a construction contract in 2021 to build this element for about $10 million.	

Source: Office of the State Auditor analysis of Department of Transportation alternative delivery method contracts and amendments, procurement documents, change order logs, Construction Agreed Price proposal approval memos, and project webpages, as well as Department staff interviews.

Why did these problems occur?

The Department does not perform measurements to assess the effectiveness of its alternative delivery methods. As part of establishing performance measures for the SMART Government Act, required by Section 2-7-204(3), C.R.S., that demonstrate the value received for the tax dollars spent, the Department established a goal in its Fiscal Years 2021, 2022, and 2023 performance plans of ensuring preconstruction and construction engineering costs do not exceed 20 percent of total project costs. This performance measure helps demonstrate the efficiency with which the Department manages its highway construction projects that "maximize dollars spent directly on the transportation system infrastructure…." The Department measures performance against this benchmark for its highway construction projects, and data from most alternative projects are included in the measurement showing that the Department has met its goal in these years. However, this performance benchmark looks at performance of the Department's highway construction projects in the aggregate, and does not help demonstrate the performance of alternative delivery projects, specifically. The Department has not developed performance benchmarks against which to measure the performance of its alternative delivery methods, such as the percentage of alternative delivery projects that are completed on time and on budget. The Department could use such benchmarks to measure the effectiveness of its operations and processes, compare performance of alternative delivery methods to its traditional Design-Bid-Build method, and publicly report on the value provided by alternative delivery projects. For example, the Department could establish benchmarks related to:

- The percentage of alternative delivery projects completed by their originally expected completion date. This could measure the number of projects completed on or before the construction completion date set within the CM/GC project Request for Proposal (RFP)—since the start and end dates of individual CM/GC construction contracts only reflect the start and end dates of specific construction packages and not the full construction of the project—or the completion deadline set in Design-Build contracts.

- The percentage of alternative delivery projects that are completed within their originally anticipated budgets. This could measure the number of CM/GC projects completed within the budget advertised within the RFP and the number of Design-Build projects completed within the design-build contract's original agreed upon price before any price amendments.

The Department told us that it does not collect some data that it would need to provide certain comparisons of its alternative delivery projects to projects delivered by the traditional Design-Bid-Build method. As outlined in the "**What problems did the audit work identify?**" section, such data would need to include expected and actual start and end dates of each project's design phase and expected and actual start and end dates of each project's construction phase. The Department would also need to have processes to ensure the expected and actual completion dates have been entered consistently and accurately based on each project's contract and contract amendments, particularly when projects involve a landscape warranty period. This information would allow the Department to compare with more precision how alternative delivery projects perform with respect to timeliness when compared to the traditional Design-Bid-Build method.

The Department does not consistently write lessons learned reports to assess the performance of alternative delivery projects, and the reports do not provide a comparison to traditional Design-Bid-Build methods. Department staff periodically write internal reports on the lessons learned and best practices of completed or ongoing alternative delivery projects and methods; the Department has written 7 reports out of the 35 alternative delivery projects completed between 2012 through 2021. The purpose of these reports is for Department management and staff to provide assessments of the performance of individual projects, such as an overview of the procurement or construction strategies that worked well or an explanation of project elements that could have been improved. The Department does not require that these reports be completed for each project, and the Department does not have a standard format for the reports. The seven reports we reviewed did not provide a comprehensive assessment of the Department's alternative delivery method projects because they did not compare the project's actual performance against the expected benefits of alternative delivery methods, such as how the project performed with respect to timeliness and cost. FHWA staff that we spoke with also stated that one of the Department's possible areas for improvement is in more consistently identifying needed improvements learned from alternative delivery projects and applying these lessons learned to ongoing and upcoming projects.

The Department has not shared information on the performance of alternative delivery methods with the Efficiency and Accountability Committee. The Commission's Efficiency and Accountability Committee is established in statute to "seek ways to maximize the efficiency and accountability of the department to allow increased investment in the transportation system over the short, medium, and long term" and make recommendations to the Commission and the Executive Director related to efficiency improvements [Section 43-1-106(17), C.R.S.]. We reviewed the Efficiency and Accountability Committee's agendas and minutes and interviewed a member of the committee and found that, while the committee has generally remained active and made recommendations to the Commission and the Executive Director between Calendar Years 2016 and 2022 (except for not meeting in 2021 during the COVID-19 Pandemic), the Department has not shared information on the performance of alternative delivery projects with the Efficiency and Accountability Committee, nor has the committee conducted its own assessment on the efficiency or cost-effectiveness of alternative delivery methods.

Why do these problems matter?

Undermining public trust in the Department and discouraging competition. The Department's lack of information to support its claims that alternative delivery projects are completed more timely and/or cost-effectively than traditional Design-Bid-Build projects reduces its ability to provide transparency to the public and policymakers with respect to these projects on the value the State is receiving for the tax dollars being spent. This may undermine the public's trust in whether the Department is a good steward of state funds. In a presentation to FHWA and Department management by the Quality Improvement Council, which consists of Department and FHWA staff, the Council stated that:

> "If CDOT's larger, more complex projects continue to have construction contract management issues, then public perception may be degraded and Federal-aid funds exposed to waste. … Because these projects are the larger capacity projects, they are in the public spotlight. If they go bad, it could shine a negative light on CDOT/FHWA and our ability to deliver. Through association, it also casts some shade on alternative contracting like CM/GC or [Design-Build]. If these large projects aren't getting done on time, there are impacts to the travelling public and it will cost more."

In addition, the Department risks creating the appearance that it is using less effective delivery methods to award a single, large dollar contract to one contractor to build a project, instead of awarding multiple, smaller dollar contracts to multiple contractors to build that same project. By delivering projects with a single, large dollar contract, this can effectively limit the pool of eligible construction industry firms that can compete for these contracts. This is because, under the Department's rules, contractors must first be prequalified by the Department to bid on any highway construction project, regardless of delivery method, and based on the contractors' financial information, the Department can prequalify each contractor to submit bids on projects within a certain dollar range. The Department has set four tiers of financial prequalification that specify the dollar range of bid amounts that contractors can submit [2 CCR 601-10(2.02.1(i)], and all of the

Fiscal Year 2021 and 2022 active alternative delivery contracts required prequalification within the third and fourth highest tier (i.e., $5 million to $20 million, and over $20 million). If the Department began analyzing the effectiveness of its alternative delivery methods against traditional Design-Bid-Build projects—typically under $5 million in size—it could provide useful information to the industry and the public about how the Department balances its responsibility to identify alternative delivery contract proposals that provide "the best overall value to the State" [Section 24-93-106(2), C.R.S.], as well as ensuring that alternative delivery methods "encourage competition" and "do not serve as a barrier to free and open competition" [Section 24-93-102(1), C.R.S. and 23 CFR Section 635.504].

Lack of reliable information to show that the State is getting the best overall value. When the Department does not assess whether alternative delivery methods result in more timely, cost effective projects when compared to the traditional Design-Bid-Build delivery method, the Department risks using a delivery method that could result in increased costs and timeframes for completing projects. The Department has communicated to policymakers and the public—such as through its website and a public letter—that alternative delivery methods are best suited for projects that have a complex design (e.g., reconstructing a flood-damaged highway through a canyon that must withstand future natural disasters), complex schedule (e.g., traffic sequencing), and/or complex funding (e.g., adhering to federal grant requirements). By not conducting comprehensive analyses of the performance of alternative delivery projects compared to traditional Design-Bid-Build projects, the Department poses the risk that they are not awarding construction contracts to the contractors that offer the best overall value to the State for its most complex projects. We found limited information showing that other states do this type of analysis. However, given the Department's trends in using alternative delivery methods for increasingly higher cost projects, analysis of the effectiveness of alternative delivery methods could help ensure the Department uses public funds in the most effective way.

Lost opportunities to improve staff guidance on managing alternative delivery projects. By not regularly assessing and comparing the actual performance of individual alternative delivery projects to the expectations for that project, the Department may miss valuable opportunities to identify areas where it could improve internal guidance to staff, as well as enhance the ability to share experiential knowledge among staff on how to deliver an alternative delivery project successfully. In an internal presentation developed by the Department's Alternative Delivery Program on alternative delivery methods and complex tolling projects, the Department noted that, "There is very little consistency and implementation of best practice" and "general malaise surrounding Design-Build," indicating that Department staff may lack sufficient understanding and comfort in managing alternative delivery projects. Two of the 9 CM/GC project staff we interviewed told us they had no prior experience managing an alternative delivery project and informally reached out to other staff with alternative delivery experience to help learn how they work. Another 2 of the 9 CM/GC project staff that we interviewed mentioned that it would be beneficial if the Department were to hold roundtables with staff responsible for managing alternative delivery projects to share best practices.

Recommendation 5

The Department of Transportation (Department) should ensure that it has the information it needs to assess whether projects delivered under alternative delivery methods have achieved the expected benefits of using these types of approaches. This should include:

A. Establishing performance benchmarks for measuring the effectiveness of the Department's alternative delivery methods, such as benchmarks related to whether projects are completed on time and on budget, collecting accurate data needed to measure projects against the established benchmarks, and developing methods for regularly analyzing and reporting results.

B. Establishing written guidance for Department staff for writing lessons learned reports for alternative delivery projects, including direction for the reports to provide analysis on whether the projects met the expected benefits of using the alternative delivery methods.

C. Obtaining feedback from the Transportation Commission of Colorado's Efficiency and Accountability Committee about what types of information on alternative delivery methods the Department should collect in order to assess the efficiency and statutory compliance of alternative delivery methods, as well as the effectiveness of newly created reports, benchmarks and data collection efforts.

Response

Department of Transportation

A. Agree
Implementation Date: July 2024

The Department will develop a plan to determine performance benchmarks for measuring the effectiveness of the Department's alternative delivery methods. To accomplish this, the Department will coordinate with agency stakeholders such as the Federal Highway Administration (FHWA) and Department of Transportation (DOT) agencies to review current best practices of measuring the effectiveness of alternative delivery methods, collecting accurate data needed to measure projects against the established benchmarks, and developing methods for regularly analyzing and reporting results.

B. Agree
Implementation Date: Month July 2024

The Department is currently drafting an internal memorandum that will document the benefits of developing a lessons learned report on alternative delivery projects and at a minimum assess whether a project met the expected benefits of utilizing the alternative delivery method. Once

finalized, the internal memorandum will become a best practice and will be documented in the CDOT CM/GC Manual and CDOT Design-Build Manual.

C. Agree
Implementation Date: July 2024

Once the Department has a plan to determine the metrics for performance and a plan to gather the data necessary to calculate those metrics, the Department will initiate a conversation with the Efficiency and Accountability Committee (Committee). The Department will present a plan to the Committee, how it was developed, and how other Department of Transportation (DOT) agencies are measuring performance and solicit feedback on the plan and the associated metrics.

Finding 6
Website Transparency of Alternative Delivery Method Projects

The Department uses various means to offer visibility into its projects, including alternative delivery projects. The Department holds public meetings; posts on social media (e.g., Facebook, Twitter, Instagram); emails individuals and organizations that have signed up for notifications; issues press releases; and publishes information on its website. In 2021, the General Assembly passed Senate Bill 21-260, which requires the Department to take certain actions and post specific information on its website to increase transparency for alternative delivery projects. These actions include posting (1) the justification for using the alternative method and (2) transparency platforms that show the ongoing status of each alternative delivery project. The bill became effective in June 2021.

The Department often requires its contractors (e.g., construction firms) to provide public information services for the projects they carry out. The Department has standard provisions that (1) require the contractors to assign a Public Information Manager with various duties, including developing project information and submitting the information using online forms for the Department to post on its website, and (2) require Department staff to review and approve such information before it is placed online. In addition, the Department has standard templates for project pages and online forms to populate the pages, and a Procedural Directive and style guide for web information, all of which contractors are expected to follow.

What audit work was performed and what was the purpose?

We reviewed statutes that contain specific transparency requirements enacted through Senate Bill 21-260 [Section 24-93-110(2), C.R.S.]; the Department's performance plans for Fiscal Years 2019 through 2023 for goals and strategies about transparency; and its written guidelines, policies, and

specifications for its website. We also interviewed Department staff about the information available on its website about alternative delivery projects.

We reviewed information on the Department's website as of January 2023 for the three alternative delivery projects that were subject to Senate Bill 21-260 and for a targeted selection of 4 of the 19 alternative delivery projects that were active in Fiscal Years 2021 and 2022 (Central 70, I-25 South Gap, I-25N Mead to Johnstown, and I-25N Johnstown to Fort Collins). These four projects began before the effective date of Senate Bill 21-260.

In the review of the selected projects, we focused on webpages and linked documents (referred to as "project pages" in this finding) on the Department's website that contained non-technical information on the projects. We focused on project pages as sources of general and relatively comprehensive information on each project (such as the improvements planned, their intended benefits, project costs, and project schedules or timelines) that would be understandable to someone who is not routinely involved in transportation planning and does not have technical project knowledge, such as members of the public and policy makers. We also looked for information about the performance of each project in terms of being on-time and on-budget, which included looking at the Department's online Accountability Dashboard.

We did not review webpages on other Department activities, such as pages on safety, daily road conditions, or working with the Department, and we conducted limited reviews of documents designed for transportation officials or regulators, such as the Department's budgets, transportation improvement plans, and environmental impact statements, statewide transportation plans, and 10-Year Vision Plans (Vision Plans). Vision Plans are part of the Department's long-term transportation planning process that list the cost and funding for each project prioritized for action within 10 years. The Department prepared its first Vision Plan in May 2020 and updates it periodically, with the most recent being in September 2022.

The purpose of our audit work was to assess the extent to which the information about alternative delivery projects the Department publishes on its website complies with applicable statutory provisions and the Department transparency strategies, as described below.

How were the results of the audit work measured and what problems did the audit work identify?

Our audit work in this area consisted of two approaches. First, we assessed the Department's compliance with statutory requirements for alternative delivery projects that were established through Senate Bill 21-260. The Department applies these requirements to projects that were selected for alternative delivery methods after the bill's June 2021 effective date. Second, we evaluated the extent to which project pages for alternative delivery projects that began before June 2021 aligned with Department goals and strategies to improve transparency

We found the Department is largely compliant with the transparency requirements of Senate Bill 21-260, but is not fully achieving its own transparency strategy to provide information on its website about how individual projects perform in terms of delivering on scope, schedule, and budget.

Statutory Transparency Requirements

Senate Bill 21-260, passed by the General Assembly to address the sustainability of the State's transportation system, added required communications that apply only to projects that the Department (1) intends to deliver through an alternative delivery method, and (2) selected the delivery method after the bill went into effect. We found the Department has complied with the transparency requirements in the bill, with one exception.

Justification for Alternative Delivery Method. Before beginning procurement, the Department must publish online its justification for selecting an alternative delivery method for the project and include the justification in the project's Requests for Qualifications and Requests for Proposals [Section 24-93-110(2)(b)(I) and (II), C.R.S.]. We found the Department complied with these requirements for all three of the projects for which it selected an alternative delivery method between June 2021 and January 2023 (when we completed our work in this area), which include the $528.2 million Floyd Hill CM/GC project, the $27.2 million Eisenhower-Johnson Tunnel Design-Build project, and the $141.4 million I-270 CM/GC project, which is under solicitation, as of January 2023.

For projects expected to cost more than $75 million, two additional steps are required before procurement: (1) holding public meetings with the construction industry and public about the justification for the alternative delivery method, and (2) obtaining Commission approval to use the method [Section 24-93-110(2)(a)(I) and (II), C.R.S.]. We found the Department complied with both of these requirements for the two projects (Floyd Hill and I-270) expected to cost more than $75 million.

Evaluations of Project Solicitations. Once a contract has been awarded, the Department must post online the evaluation scores for each step of the solicitation process for all solicitations reviewed [Section 24-93-110(2)(b)(III), C.R.S.]. We found the Department fully complied with this requirement for the Floyd Hill project, but for the Eisenhower-Johnson Tunnel project, the Department had not posted complete evaluation scores for each step of the solicitation process, as required. Specifically, the Department did not post accurate scores related to evaluating statements of qualifications, did not post any scores related to evaluating initial proposals (the step after considering statements of qualifications), and did not post scores related to evaluating bidders' prices as part of the final process in this procurement.

Transparency Platforms. The Department must establish and maintain an online "transparency platform" that indicates the ongoing status of each alternative delivery project, from contract execution until project completion [Section 24-93-110(2)(b)(IV), C.R.S.]. We found the Department complied with this requirement for the two projects (Floyd Hill and Eisenhower-Johnson Tunnel)

that had executed contracts as of January 2023. The platform for the Floyd Hill project could be found through a link on the main project page but the platform for the Eisenhower Tunnel project was not linked to any project page at the time of our review in January 2023. We found it only by searching the website for "EJMT-DPHT," the specific acronym used by the Department for the project, which returned 10 pages of results. One result was a link to a 2-page list of further links, the last page of which contained the final link to get to the platform. The Department told us this location was an oversight and in early 2023 it added links to the project page. The Department also noted that it built the dashboards for the Floyd Hill and Eisenhower-Johnson Tunnel projects quickly, using readily-available tools, and is still determining how best to communicate the nuances of each project's progress and performance.

Department Strategy to Provide Online Reporting on Project Performance

The Department adopted goals to increase project transparency as early as 2018 and included them in its Fiscal Year 2019 Performance Plan. Its Fiscal Year 2021 Performance Plan announced a specific strategy to establish online "dashboards that show how each … project is performing in terms of delivering on scope, schedule, and budget." This strategy was confined to projects that received funding through several senate bills passed between 2017 and 2021 (referred to collectively as Senate Bill funding), which includes three of the four selected projects that we reviewed. In its Fiscal Year 2022 Performance Plan, the Department affirmed that it planned to "continue refinement of CDOT's Project Accountability Dashboard." The Department's Fiscal Year 2023 Performance Plan includes an "Accountability & Transparency" goal but no strategies to improve transparency.

The Department currently has a highly summarized "Accountability Dashboard" that shows the total number of projects receiving Senate Bill funding along with aggregate funding and expenditures, but no project-level detail. Previously, the Department had a dashboard that allowed users to drill down on individual projects for information such as total project cost, funding, expenditures to date, and phase (e.g., preconstruction, construction). The Department told us that it activated this detailed dashboard in late 2019, but removed it from the website in 2022 because it was difficult to use and maintain. The Department reported that it plans to develop dashboards that will pull information from new project management software currently being implemented. In the meantime, the existing dashboard is too summarized to show how individual projects perform in terms of delivering on scope, schedule, or budget, as intended by the Department's strategies.

We then searched through project pages on the Department's website for the four selected projects that we reviewed. We found they all contained some information of interest to local residents, which the Department prioritizes as an audience for the website, and had links to traffic impacts, which the Department stated is the information most sought by website users. However, we found the Department could improve its project pages to serve a wider audience by providing clearer and more complete information about each project, including indicators of how the projects perform.

Examples of Unclear Cost Information. For the I-25N Johnstown to Fort Collins project, the $302 million total cost posted on project pages was inaccurate when we viewed it in January 2023. Based on data provided by the Department, the actual cost of the project as of January 2023 was more than $482.7 million. The $302 million figure may have been accurate at some point during Calendar Year 2020, based on Department data, but the project pages did not indicate it was an outdated estimate. The project pages we reviewed for the four projects lacked any date reference for the information posted.

In addition, for the I-25N Mead to Johnstown project, none of the project pages provided a total cost estimate for either segment—Segment 5 or Segment 6—although the Department had general estimates for both as of August 2021. According to the Department's Vision Plans, its 2021 total cost estimates were $364.5 million for Segment 5 and $294.4 million for Segment 6. The Vision Plans also indicated that the estimate for Segment 5 had risen to $369 million by September 2022. However, the project pages we viewed did not reflect either the older or the more current estimates. Since the Vision Plans are not linked to project pages, website users may not know to look within the Vision Plans for cost information.

Further, for the I-25 South Gap project, the Department had originally estimated the overall project cost (including contract and Department costs) at $350 million, but later increased it by about 20 percent, to $419 million. According to one project page, the additional funds were needed for construction of a bridge, a climbing lane, a chain-up station, and to address problems with unsuitable soil. However, none of the project pages clarified whether the bridge, climbing lane, or chain-up station were costlier than expected or had not been included in the initial cost estimate at all. In general, the project pages we reviewed often lacked any information about changes in the cost or scope of a project.

Examples of Incomplete Timeline Information. In our review, we looked for clear and complete timelines of significant dates for each project, such as when construction began, when specific elements of the work (e.g., bridge reconstruction or interchange repairs) occurred or were planned to occur, and when the overall project was complete or was planned to be complete. We found that many of the project pages we reviewed lacked complete timelines of project events; they generally provided one or two specific dates—most commonly when construction began or was completed. Further, some of the timeline information was inconsistent across project pages or unclear. For example, for Segment 6 of I-25N Mead to Johnstown, project pages gave two different dates for when construction was to be completed—2023 and 2024—with no explanation of the apparent conflict.

In addition, information about the I-25N Mead to Johnstown and the I-25N Johnstown to Fort Collins projects was sometimes combined within single project pages that had dates that were unclear or inconsistent. For example, one project page stated that in October 2019 "crews began construction near CO 402," which appears to conflict with a separate timeline on the page that

indicates work started in "early 2018." The project page also lists three project phases not associated with the timeline, so a user cannot tell when each phase is planned to begin and end.

A fact sheet about these projects had information about additional funding that had been secured and stated, "Without these additional funds, this stretch would not have happened until 2035" but instead would be completed in 2023. It does not specify what "stretch" is meant, so users could easily misinterpret this information to mean all the planned work on the two projects, which comprise a 26-mile stretch of I-25. In fact, construction work on Segment 5 of the I-25N Mead to Johnstown project—about 8 miles of the highway—has not yet begun. Based on data we obtained through the audit, the additional funds allowed the Department to significantly expand the scope of the contract for the I-25N Johnstown to Fort Collins project to include work that was originally not planned to occur for another 10 years. None of the project pages explained this change in scope, or that the expected completion date of the original scope was 2021.

Examples of Lacking Explanatory Detail. The project pages we reviewed for the I-25N Johnstown to Fort Collins project contained information that lacked detail needed to fully understand it. For example, one project page stated that by completing the project early, "the benefits will be implemented … at a fraction of the cost." No further detail was provided on any project page to explain or support this statement, such as the original and current cost, or how the shortened timeline led to savings. In addition, the project pages did not explain what was meant in stating that "crews began construction near CO 402." This could reference a number of planned project elements, such as construction on the I-25/CO 402 interchange itself, or adding lanes on I-25 north or south of the intersection, or both.

Similarly, for the Central 70 project, a December 2022 news release posted on the Department's website stated that "At $1.2 billion, the Central 70 Project is … finishing …under budget." Neither the news release nor any of the project pages explained how the expected total cost of $1.17 billion (rounded to $1.2 billion) was under budget when this is the amount the Department initially expected the project to cost.

Reporting on Project-Specific Goals. The Department establishes goals for each project, some of which relate to performance in terms of scope, budget, and schedule. For example, for the I-25N Johnstown to Fort Collins project, the Department had a goal to "Maximize the Scope with the Available Fiscal Resources," which it evaluated as part of reviewing proposals. Although these goals are not included on the project pages, adding them could be a valuable expansion to communicating project performance. The Department told us it is working on means to ensure project pages differentiate current and historical data.

Why did these problems occur?

The problems we found indicate a need for the Department to strengthen its controls over the content and design of project pages for alternative delivery projects beyond its existing requirements which are contained in contract specifications, webpage templates, online forms, and written guidance. The Department could address the problems we found and promote greater project-level transparency through expanded policies and tools, as discussed below.

- **Guidance or directives that specify the level of detail to be posted for each project.** The contract specifications, templates, online forms, and written guidance provide some specification about what project information should be posted on the Department's website, but do not establish the type or amount of detail about a project that should be published. For example, the templates outline general categories ("about the project", "work schedule", "traffic impacts", "cost", "contractor" and "timeline"), to be included on project pages. The online forms have fields for a number of specific data points including project name, phase, and region; the location of the project and roadways affected; project cost; estimated start and completion dates; and project descriptions including goals and benefits. However, these resources do not provide direction about updating information when there are changes in cost, scope, or schedule of the project, or the reasons for such changes.

- **Guidance or directives that specify the duties of Department staff with respect to online information.** Although the contract specifications assign duties to the contractor's Public Information Manager and indicate that the Department staff are expected to review and approve information before it is posted online, they do not describe the purpose of the review or what it entails. In particular, they do not instruct staff to ensure accuracy or understandability, or whether it is sufficient to fulfill the authority/requirement for the information and to serve various audiences. A checklist or similar tool could assist in this process.

- **Revised templates and online forms to more clearly specify the type and amount of data expected in each category.** For example, the Department could enhance its templates by adding a brief narrative of the type and level of data to include in the established categories and specifying that cost, work schedule, and timeline information should be updated when they change and that explanations for such changes should be posted. The Department could also review other states' transportation department websites for ways to expand and clarify its templates. For example, the Washington State Department of Transportation website creates a main page for each project with cost and overall timeline and what phase the project is in (e.g., construction, design). Each main page has the same set of links: to project history, community engagement, key project elements, photos/maps, and environment. These specific elements may not be feasible for the Department, but could generate new ideas.

- **Engaging the Commission's Efficiency and Accountability Committee to support transparency efforts.** The Efficiency and Accountability Committee members represent key audiences and users of alternative delivery project information, including the State's executive and legislative branches, the construction and engineering industries, transportation planning organizations, local government, and nonpartisan good governance organizations. Further, the Efficiency and Accountability Committee is statutorily created to seek ways to maximize and ensure the efficiency of the Department to allow increased investment in the transportation system over the short, medium, and long term [Section 43-1-106(17), C.R.S.]. It has discussed transparency and accountability topics, such as consistent project administration, transparency in construction costs, and the proper use of design and construction management consultants.

Why do these problems matter?

Overall, the issues we found reduce the value of the project pages on the Department's website as a transparency tool. The lack of complete, clear, detailed information on project pages denies website users the chance to gauge whether the Department's alternative delivery projects are in the best interests of the State. This notion is indicated in the statutory stipulations that alternative delivery methods be used when they are "a timely or cost-effective alternative" for a project [Section 24-93-104(1), C.R.S.], and that they lead to selection of "the … entity whose proposal is most advantageous and represents the best overall value to the state" [Section 24-93-106(2), C.R.S.]. Without having historical, detailed, cost and timeline information on project pages, a user cannot readily determine if a project is timely, cost-effective, or provides the best value to the State and its citizens.

Further, the information posted on alternative delivery projects may not adequately serve key audiences. The Department indicated that it takes into account local users affected by the projects when choosing what to publish, but there is a risk that the needs of other key users are not being met. For example, the Commission and legislators may rely primarily on communication sources designed specifically for them, such as planning documents, budgets, and periodic updates from the Department. However, these individuals may also look to the website as a supplemental source of information, particularly because planning documents and budgets are not organized to provide comprehensive, cohesive information on individual projects. In addition, clearly providing the history and performance of alternative delivery projects on the website would allow the Commission to easily access it to inform decisions on approving alternative delivery methods, and authorizing funding for them, in the future. Similarly, members of the General Assembly could readily obtain information on the progress and performance of transportation projects to respond to constituent questions and make decisions about transportation legislation.

Finally, although the Department uses many methods of communicating with external parties, it is important for the website to have comprehensive, understandable, and accessible information that is widely available and can be accessed at any time without the need to subscribe to updates or have an

account on a social media platform. It is the only platform that can reasonably provide comprehensive information, including project descriptions and explanations and both historical and current information.

Recommendation 6

The Department of Transportation (Department) should improve transparency for alternative delivery projects. This should include:

A. Expanding written guidance, templates, and/or forms and establishing related tools, as needed, to specify the type and amount of detail to include when posting information on the Department's website project pages, including what events should be reflected in timelines, what information should be updated (such as project scope, cost, or schedule changes), and the reasons for such changes, to meet the needs of the Department's key audiences and to demonstrate how projects perform in terms of being on-time and on-budget. Details should include significant changes to project scope, budget, or schedule and the reasons therefor; and date references that indicate when the information was posted.

B. Including in written policies or directives a description of the duties of Department staff with respect to online information that includes the parameters of the review process to ensure that it includes verifying the accuracy, completeness, consistency, and understandability of information before it is posted on the Department's project pages.

C. Involving the Transportation Commission of Colorado's Efficiency and Accountability Committee in identifying and implementing processes to enhance online transparency of alternative delivery projects.

Response

Department of Transportation

A. Agree
Implementation Date: July 2023

Currently, project pages on the Department's website include the following common pieces of information: cost, contractor, timeline, location, and the Department is expanding the guidance and processes for publishing updates to this key information. In addition to periodic review processes that are further detailed below, the Department's Office of Communications is developing a standard process for making significant updates regarding a project, including the nature of the change and examples of brief context to include. As more sophisticated project management software tools become available, the Department anticipates possibly migrating some of this information to a dashboard that could clearly note this information and any

relevant changes in real time. Such a migration would adhere to a best practice for web management of minimizing the number of changing data points that are presented as static text on a web page so that information posted in multiple locations online remains current and consistent.

B. Agree
Implementation Date: July 2023

The Department agrees that a more specific review process that spells out roles and timelines can help ensure the ongoing accuracy of project web pages. To that end, the Department's Office of Communications is developing formal guidance for relevant staff to conduct periodic reviews of project page information. The Office of Communications is also including this expectation in written guidance to Public Information Manager subcontractors as part of the normal dialogue between the Office of Communications and public information subcontractors that takes place at the beginning of each construction season.

C. Agree
Implementation Date: July 2024

The Department will leverage the Efficiency and Accountability Committee to provide input on how the Department can enhance the online transparency of alternative delivery projects.

Finding 7
Colorado Open Records Act

The Colorado Open Records Act (CORA) defines documents produced by or kept by a state agency, including the Department, as public records, which can be inspected by any individual who submits a CORA request [Sections 24-72-202(6)(a)(I) and 24-72-203(1)(a), C.R.S.]. The Department, as a custodian of public records [Section 24-72-202(1.1), C.R.S.], must review any CORA request it receives to determine what information is being requested, and respond to an applicant within 3 business days [Section 24-72-203(3)(b), C.R.S] by either providing the requested documentation or notifying the requesting applicant that the information cannot be provided because it is considered CORA-exempt. The Department is required to deny inspection of prohibited information, such as trade secrets [Section 24-72-204(3)(a)(IV), C.R.S.]. When responding to CORA requests, it is important for the Department to strike a balance between the public's right to access public records and the Department's responsibility to protect information that is prohibited from inspection. The key to striking this balance is "found by interpreting the specific text of the laws involved in the light of the particular circumstances of the request for information" [Colorado Attorney General Opinion No. 01-1].

What audit work was performed and what was the purpose?

We reviewed CORA requirements and Department procedures for handling public records requests, as established within the Department's Procedural Directive 508.2. We also reviewed documents provided by the Department pursuant to two CORA requests—one that was made in May 2018 related to the I-25N Johnstown to Fort Collins project and one that was made in February 2022 related to the Floyd Hill project. For each request, the Department had provided redacted documents to the requestor. We obtained the original, unredacted documents and assessed the Department's redactions for the two projects. Specifically, we compared the five original, unredacted proposals for the Floyd Hill CM/GC preconstruction contract awarded in January 2022, to the redacted versions the Department provided to the applicant in response to a CORA request received in February 2022, and the original, unredacted statements of qualifications for the I-25N Johnstown to Fort Collins Design-Build contract awarded in November 2017, to the redacted versions or five proposals the Department provided to the applicant in response to a CORA request received in May 2018. In addition, we reviewed the Department's solicitation documents associated with these two projects to assess how the Department instructed potential bidders of CORA redaction procedures, as well as solicitation documents for all three Design-Build projects issued after May 2018, when the Department's new guidance related to CORA requests for alternative delivery projects went into effect (US 550/US 160 Connection South, Region 2 Bridge Bundle, and Eisenhower-Johnson Tunnel). We also reviewed the public websites for the contractors who had submitted the proposals that we reviewed, and other state department of transportation websites to determine if information that had been redacted from their proposals was otherwise publicly available.

We interviewed two Department staff responsible for handling CORA requests—one from the Department's Communication Office, who receives all public records requests, and one from the Engineering Contract Services Office, who handles CORA requests for alternative delivery contracting documents. Finally, we reviewed State Procurement Rules for handling CORA requests of procurement documents; although the Department is not required to follow State Procurement Rules for its highway construction projects [Section 24-101-105(1)(a)(I), C.R.S., and 1 CCR 101-9, R-24-101-105], and can set its own supplemental provisions for its alternative delivery projects separate from State Procurement Rules [Section 24-93-107, C.R.S.], the rules can serve as a best practice for the Department.

The purpose of our work was to assess whether the Department's practices with respect to responding to CORA requests related to alternative delivery projects are consistent with accountability and transparency expectations under CORA.

How were the results of the audit work measured?

The Department can only redact specific content from procurement documents. Except for information exempted from disclosure under CORA, such as "trade secrets, privileged information [or] confidential commercial, financial, geological, or geophysical data," [Section 24-72-204(3)(a)(IV), C.R.S.], statute requires that "all public records shall be open to inspection" [24-72-203(1)(a), C.R.S.]. The Department is responsible for identifying CORA-exempt material (i.e., information that should be redacted from solicitation materials prior to providing these documents to an applicant) [Section 24-72-204(3)(a), C.R.S.].

The Department's procedural directive on CORA Procedure for Engineering Contracts, effective May 2018, states, "The RFP shall outline any areas of the proposal that have been identified in advance as having the potential to contain proprietary information which shall be considered exempt from disclosure as set forth [in this procedural directive]. The designation in the RFP shall supersedes [sic] all designations in individual Proposals" [Procedural Directive 508.2(V)(C)(1)]. For example, the RFP for the CM/GC project proposals that we reviewed identified five specific sections of proposals that could include "blanket, all-inclusive identifications" of CORA exempt material including information relating to Strategic Project Approach, Approach to Risk, and management price percentage proposals.

What problem did the audit work identify?

Overall, we found that the Department's practices with respect to responding to CORA requests related to alternative delivery projects may not be consistent with accountability and transparency expectations under CORA. Specifically, we identified the following issues related to the Department's redaction of alternative delivery method procurement documents in response to CORA requests.

The Department allowed inappropriate redactions within 4 of the 10 proposals and statements of qualifications we reviewed, as follows.

- For one of the five proposals for the Floyd Hill project, the Department provided to the CORA applicant a version of the proposal that redacted all but the first sentence of the Contractor Capability section. In the Contractor Capability section, contactors typically include descriptions of their previous projects that relate to the project that they are bidding for. For the other four proposals, this section was not redacted and contained information such as project names, delivery methods, project schedules, work with stakeholders, and the projects' senior leadership. When we reviewed the unredacted version of this proposal, the information in the Contractor Capability section reflected similar content left unredacted within the four other proposals. While the Department specified in the RFP certain sections that are considered CORA-exempt—such as Strategic Project Approach, Approach to Risk, and management price

percentage—the RFP did not indicate that the Department would consider the Contractor Capability section CORA-exempt. When we asked the Department why this information was redacted from the Department's response to the CORA applicant, staff said that when they reviewed this proposer's requests for non-disclosure, they considered the potential that this firm's Contractor Capability section did include proprietary information. The Department said that if it denied the proposer's request, the Department could have risked disclosing proprietary information.

- For three of the five statements of qualifications for the I-25N Johnstown to Fort Collins project, the Department provided to the CORA applicant a version of the statements of qualifications that redacted the firm's previous projects and staff names, titles, and resumes. Specifically, for three statements of qualification, the Department allowed complete redactions of the proposers' staff names, titles, and resumes, giving the CORA applicant no indication of the names or qualifications of the proposers' staff who would be working on the project. Additionally, for one of these three statement of qualifications, the Department allowed complete redactions to both the proposers' staff names, titles, and resumes and the previous projects that the proposer had worked on. Neither CORA statute nor the project's request for qualifications solicitation specify that this type of information is exempt from disclosure. Also, these projects were included on the proposer's public website, as well as the websites of the state departments of transportation that the proposer worked for, indicating this was not proprietary material. For the other two proposals, this information was not redacted.

  When we asked the Department about these redactions, staff said that disclosing names and resumes of contractor staff with specific specialized skills could reveal proprietary information about the "proprietary idea to use that service or specialty for the project that is the subject of the proposal." However, this runs counter to the Department's general position that public information and information on proposers' staff are not CORA-exempt material.

Why did this problem occur?

The Department does not inspect proposals upon receipt to determine the validity of CORA-exempt material identifications. State procurement rules, which the Department is not required to follow for its highway construction projects, require procuring agencies to "examine the bids to determine the validity of any requests for nondisclosure of trade secrets and other proprietary data identified in writing" when proposals are opened [1 CCR 101-9, R-24-103-201-13(c)]. This requirement generally positions state agencies to be prepared to respond to CORA requests within the required 3 business days, at any point such a request may come in, even if that request is made after the agency's relationship with the firms that submitted bids has ended. These rules can serve as a best practice for the Department in efficiently handling procurement documents that are subject to public inspection, but may also contain proprietary information that needs to remain confidential.

While the Department includes language in its CM/GC and Design-Build solicitations directing proposers to indicate what information in their response to the solicitation should be exempt from public disclosure, the Department does not review this information for reasonableness when accepting and reviewing the proposals. For example, for the Floyd Hill project, the RFP stated, "The Proposer shall specifically identify and mark any proprietary information, trade secrets, or confidential commercial and financial information that a Proposer believes should be exempted from disclosure. During the Procurement phase, CDOT will accept materials clearly and prominently labeled 'PROPRIETARY', 'TRADE SECRET', or 'CONFIDENTIAL' by the Proposer." However, the Department could not provide evidence to show that staff reviewed the five proposals at the time of receipt for whether the proposers flagged items in their proposal appropriately.

Department staff we interviewed stated that it is standard practice to wait until a CORA request is made before the Department requests proposers to submit their requests for redaction of CORA-exempt material for CM/GC and Design-Build proposals, and that staff rely on what proposers have flagged as CORA-exempt in their proposals as governing what will be redacted. According to Department staff, they handle CORA requests in this way because CM/GC and Design-Build proposals are unique and complicated compared to proposals received by other state agencies, and it would be inefficient to commit redaction review resources automatically when proposals are received when they may never be requested as part of a CORA request. Department staff also believe that the highway construction industry would raise concerns about the time and expense of redacting proposals before a CORA request is made. However, other state agencies do evaluate proposal redaction requests at the time of submission and there is risk to a state agency in not being able to engage with an entity about needed redactions after the agency's relationship with the entity has ended, such as when a contract has been awarded in a procurement and they were not the winning firm.

While the Department's practice to allow proposers to identify needed redactions without Department review is in line with its Procedural Directive 508.2, in which the Department allows proposers to "assert a legal basis" to redact additional CORA-exempt material from their proposals not already identified, the Department's reliance on the contractor to determine the legal basis for denial of inspection does not appropriately place the responsibility on the Department to uphold its role as custodian of public information. The Department should examine requests for nondisclosure from proposers to ensure appropriateness at the time the proposals are received, as doing so may allow time to communicate with proposers and clear up discrepancies well before the submission of a CORA request, and could help the Department adhere to the 3-business-day-response requirement.

The Department's Design-Build solicitations do not indicate if any parts of proposals can be redacted as CORA-exempt material. While the Department's Floyd Hill CM/GC RFP clearly indicated which areas of the proposals had the potential to contain propriety information and would be considered exempt from disclosure, the Department's Design-Build solicitations do not indicate

any areas of proposals that have the potential to contain propriety information. The solicitation for the I-25N Johnstown to Fort Collins Design-Build project was issued in November 2016, before the Department started requiring staff in May 2018 to indicate in its solicitations what sections can be considered to be CORA-exempt through its Procedural Directive 508.2. However, we reviewed all three Design-Build solicitations issued after the Department's Procedural Directive became effective in May 2018, as of January 2023, and found that none had indicated any sections of proposer's responses that could be considered proprietary.

When we asked the Department if the Design-Build solicitations should identify specific sections of proposers' documents that could likely contain proprietary information, the Department told us that its Procedural Directive guidance on what is considered exempt from disclosure is sufficient. However, the Department's response is not consistent with the requirement in the Procedural Directive that specific sections of proposals must be identified in solicitation documents [Procedural Directive 508.2(V)(C)(1)]. We reviewed the Procedural Directive, and found that it is silent on what specific sections of solicitation responses are considered CORA-exempt, except for stating that, "Proposers' financial statements and cost proposals are included in CORA exempt material" [Procedural Directive 508.2(V)(B)(3)]. However, this does not provide any more guidance than what is provided in the CORA statute, which states that confidential financial information cannot be disclosed [Section 24-72-204(3)(a)(IV), C.R.S.]. The Department's practice of marking areas of its CM/GC solicitations that may likely contain proprietary information in the corresponding proposals not only communicates to proposers about areas where they can and should not expect to be able to keep information confidential from public disclosure, but also provides Department staff criteria for assessing whether proposers have appropriately flagged content as CORA-exempt. Having a similar process for its Design-Build solicitations may prove an efficient and effective way to help ensure the Department provides the transparency expected under CORA.

Why does this problem matter?

When the Department inappropriately redacts information from documents requested under CORA, it is not ensuring transparency. The Department told us that interest in public records requests for alternative delivery method procurement documents has increased in recent years. The Department's transparency efforts for alternative delivery method projects is important because many are high-dollar projects and have a major impact on the traveling public. However, despite the Department's creating Procedural Directive 508.2 "in order to provide greater transparency for requests concerning professional service, CM/GC, [and] design-build" projects, transparency was a concern of stakeholders that we interviewed during our audit. Stakeholders brought to our attention documents that were obtained from the Department through CORA requests, which contained large amounts of redacted information, including some pages that were entirely redacted. This indicated to stakeholders that the Department was not transparent with its alternative delivery method projects.

In addition, the Office of the State Auditor's 2015 performance audit of the US 36 Public-Private-Partnership managed by one of the Department's enterprises—the High Performance Transportation Enterprise (HPTE), currently called the Colorado Transportation Investment Office (CTIO)—found that tension occurred between HPTE and stakeholders related to confusion of what procurement documents would be available under CORA and when they could be made public. Similarly, the Department's current practice of not indicating within the Design-Build solicitation documents what sections can be redacted, as well as allowing redactions in excess of what is stated in RFPs, appears to have resulted in tension between the Department and stakeholders that could be lessened through refinement of the Department's CORA procedures and practices.

Recommendation 7

The Department of Transportation should ensure that it adheres to accountability and transparency expectations under the Colorado Open Records Act (CORA) when responding to CORA requests for alternative delivery projects. This should include:

A. Developing written policies and procedures for inspecting alternative delivery project proposals and statements of qualifications upon receipt to assess the validity of CORA-exempt material identified by the contractor and resolve any discrepancies.

B. Updating standard language used in Design-Build solicitations to indicate what sections of the statement of qualifications or proposals have the potential to contain CORA-exempt materials in accordance with Procedural Directive 508.2.

Response

Department of Transportation

A. Agree
Implementation Date: January 2024

The Department will develop a procedure for inspecting alternative delivery project proposals and statements of qualifications upon receipt to assess the validity of CORA-exempt material identified by the proposer. This procedure will help commence the inspection and resolution process of any discrepancies in advance of the Department receiving a CORA request related to alternative delivery projects.

B. Agree
Implementation Date: January 2024

The Department shall follow Colorado Open Records Act (CORA) and update the language in the Department's Design-Build solicitations to confirm the materials that are not subject to disclosure under CORA based on the CORA exemptions for proprietary and confidential

materials. Such protections may include, but are not limited to, Alternate Technical Configurations (ATCs) and the associated supporting information are proprietary materials exempt from CORA. Accordingly, CDOT will automatically redact the sections dedicated to ATCs as well as invite proposers to identify information associated with other portions of their proposal that may need protection.

Appendix A

Compensation Awarded and Committed Under CM/GC Preconstruction Contracts

Under Construction Manager/General Contractor (CM/GC) preconstruction contracts, the Department awards the contractors preconstruction fees to perform preconstruction work, including providing constructability input on the project's design, developing construction packages for the project, and conducting any long-lead time procurements necessary for anticipated construction packages and contracts. The Department sets within this contract each project's construction budget—representing the total amount of funding the contractor could be awarded through separate construction contracts. Part of the CM/GC contractor's compensation is a management price percentage, set within the preconstruction contract, that is applied to the cost of construction and paid through the construction contracts. The management price percentage provides the CM/GC contractor a margin for profit and overhead. The CM/GC contractor's compensation includes:

- **Preconstruction Fees.** The Department pays the CM/GC contractor's preconstruction fees during the life of the preconstruction contract, through monthly installment payments. The Department sets these fee amounts by using one of two different methods:
    - **Lump Sum.** This is a set preconstruction fee that is not indexed to the construction budget.
    - **Escalating Fee.** For these types of fees, the Department generally sets an initial preconstruction fee based on a certain percentage of the construction budget; as the Department increases the construction budget, the preconstruction fee also increases by that set percentage (e.g., between 0.8 and 1.5 percent). The Department also has used a different model of an escalating fee, where the preconstruction fee increases as the number of work hours required for construction increases.

  The Department can also choose to award additional types of preconstruction fees to compensate contractors for work during the preconstruction phase. This can include:
    - **Co-location Fee.** The Department can choose to compensate a CM/GC contractor through a co-location fee, which provides payment for the contractor to set up and maintain an office site near the construction site where the Department, the design consultant, and the CM/GC contractor can work together. The Department only paid a co-location fee to one of the CM/GC projects active in Fiscal Years 2021 and 2022, and this fee totaled over $3.3 million.
    - **Other Fees.** For one project active in Fiscal Years 2021 and 2022, the Department paid the CM/GC contractor $215,000 to conduct additional work to develop the design of the project, which the Department states is work that was not included in the original scope of work.

- **Management Price Percentage.** The management price percentage is applied on top of construction costs awarded under any future construction contracts for the project and this amount is paid to the contractor during the construction phases as a margin for profit and overhead. For 10 of the 12 CM/GC projects active in Fiscal Years 2021 and 2022, the Department required—as part of project Requests for Proposals (RFP)—proposers to submit bids on the management price percentage, where the Department awarded the highest points to the lowest percentage; awarded percentages ranged from 5 to 7 percent. For one emergency project active in Fiscal Years 2021 and 2022, the Department did not provide a management price percentage to the contractor.

  Starting in the Calendar Year 2021 RFP for the Floyd Hill CM/GC project, the Department changed this practice; instead of having proposers bid on the percentage, the Department set an automatic 10.5 percent management price percentage and required proposers to accept or reject the percentage. The Department is using this same method in the Calendar Year 2022 RFP for the upcoming I-270 Critical Bridge Replacements CM/GC project. The Department stated that this method and percentage amount aligns with national best practices.

  Exhibit A.1 shows the compensation awarded under each CM/GC preconstruction contract active in Fiscal Years 2021 and 2022.

Exhibit A.1
Compensation Awarded and Committed to Contractors within CM/GC Preconstruction Contracts for Projects Active in Fiscal Years 2021 and 2022

Project Name	Original Preconstruction Fee(s) (Amended fee)	Lump Sum Fee or Escalating Fee
Floyd Hill	$3,200,000	**Lump Sum**
I-25N Mead to Johnstown	$2,100,000 ($6,300,000)[1]	**Escalating Fee[2] (Increases 1.5%)**
US34 Big Thompson Canyon	$900,000 ($3,200,000)	**Lump Sum**
I-25 South Gap	$750,000	**Lump Sum**
Military Access	$656,000 ($1,040,000)	**Escalating Fee[2] (Increases 0.8%)**
I-70 West Vail Pass	$1,500,000	**Escalating Fee (Increases 1.36%)**
SH 7 Permanent Repair	$600,000	**Escalating Fee (Increases 1.5%)**
Eastern Timber Bridge Replacement	$240,000	**Escalating Fee (Increases 1%)**
I-70 Mile Post 211	$145,000	**Escalating Fee (Increases with work hours)**
US 287/SH 40 Passing Lanes	$100,000	**Escalating Fee[3] (Increases 1.19%)**
ADA Curb Ramp Replacement	$120,000	**Escalating Fee (Increases 1.5%)**
US 36 Emergency Repair	$150/hour up to $36,000	**Lump Sum**
Totals Across CM/GC Projects	**$10,347,000 ($17,231,000)**	

Source: Office of the State Auditor analysis of the Department of Transportation's executed CM/GC preconstruction contracts and amendments for projects active in Fiscal Years 2021 and 2022, as of September 2022.

[1] For I-25N Mead to Johnstown, the Department increased the preconstruction fee by 1.5% of the increase in construction budget to equal $2.7 Million, added a $3.4 Million co-location fee, and a $215,000 fee to conduct an evaluation study of Segment 5.

[2] The preconstruction fee increased due to one or more increases to the construction budget based on additional available funding for the project.

[3] Despite an increase to the construction budget, the Department and the contractor agreed not to increase the preconstruction fee the specified 1.19 percent of additional construction budget.

Original Construction Budget (Increased Budget)[4]	Management Price Percentage
$525 million	10.5%
$420 million	7%
$90 million ($329 million)	5%
$325 million	5%
$82 million ($128 million)	7%
$110 million	7%
$40 million	7%
$24 million	7%
$15 million	7%
$8.4 million ($10.2 million)	7%
$8.2 million	7%
None[5] ($14.2 million)	None
$1,647.6 million ($1,948.6 million)	

[4] The construction budget represents the total paid for construction cost proposals plus the management price percentage.

[5] The US 36 Emergency Repair was an emergency project in which the part of US 36 collapsed due to a failure in a retaining wall. The Department invoked emergency contracting procedures for this project. The Department did not set a construction budget for the project within the preconstruction contract. The $14.2 million shown is the actual, completed construction contract cost.

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Appendix B

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Completed Alternative Delivery Projects Included in Finding 5

Exhibit B.1 provides the names of the 16 alternative delivery projects with original awarded bid amounts of $5 million or more that the Department completed during Calendar Years 2012 through 2021, that were included in the analysis of completed alternative delivery projects outlined in Finding 5.

Exhibit B.1
Completed Highway Construction Projects, Calendar Years 2012 through 2021[1]

Delivery Method by Original Awarded Bid Amount	Project Name
CM/GC[2]	
$5-$35M	I-70 Dotsero Bridge Over Colorado River
	I-70 Eagle Interchange
	I-70 Edwards Interchange
	I-70 Pecos
	I-70 Vail Pass Underpass
	US287 /US40 Passing Lanes
$35M-$65M	I-25/Arapahoe Road Interchange
	I-70 EB Peak Period Shoulder Lane
	SH 82 Grand Avenue Bridge
>$65M	I-70 Twin Tunnels (Both Eastbound and Westbound)
Design-Build	
$5-$35M	EJMT Fire Suppression System
	I-70 Havana Bridge Replacement
	SH92 Mile Post 13.8 To Mile Post 15.5
	US6 over Garrison Bridge Replacement
$35M-$65M	I-25 Widening North of Colorado
>$65M	I-25 Ilex

Source: Office of the State Auditor analysis of Department of Transportation data on contracts for highway construction projects of $5 million or more completed between Calendar Years 2012 through 2021, excluding emergency projects.
[1] In this table, "M" represents "million."
[2] A single CM/GC construction project may comprise multiple construction package contracts. This count of CM/GC construction projects treats each CM/GC project as one project, regardless of how many construction package contracts were executed to complete the project. The cost of CM/GC projects is based on total awarded bid amounts.

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Appendix C

Timelines for Selected Alternative Delivery Method Projects

In this Appendix C, we have compiled information on key project metrics for a targeted selection of 4 of the 19 alternative delivery method projects that were active in Fiscal Years 2021 and 2022—Central 70, I-25N Mead to Johnstown, I-25N Johnstown to Fort Collins, and I-25 South Gap. These were the highest cost and highest profile alternative delivery projects actively under construction in Fiscal Years 2021 and 2022, and the management of each project's costs and schedules is significant to safeguarding taxpayer funds. The metrics provide information about whether the projects are on track to achieve the expected benefits of alternative delivery projects. Specifically, we reviewed:

- procurement documents;
- executed contracts and amendments;
- contract change order tracking logs;
- contractor payment data from SAP, the Department's accounting system;
- commission meeting minutes and resolutions;
- Department project update documents; and
- the Department's website's project pages for the four projects.

Within each timeline, we identify for each alternative delivery project: the start of procurement for the contract, the date the contract was awarded, original expected project completion date and contract cost, the current expected project completion date and contract cost, and significant milestones or events of the project.


Cheyenne
Sterling
Fall River Pass
Greeley
Steamboat Springs
Boulder
Longmont
Berthoud Pass
Denver
Aurora
Castle Rock
COLORADO
Aspen
Colorado Springs
Salida
Monarch Pass
Pueblo

Central 70

Central 70—Project Overview

Project Name

Central 70

Delivery Method

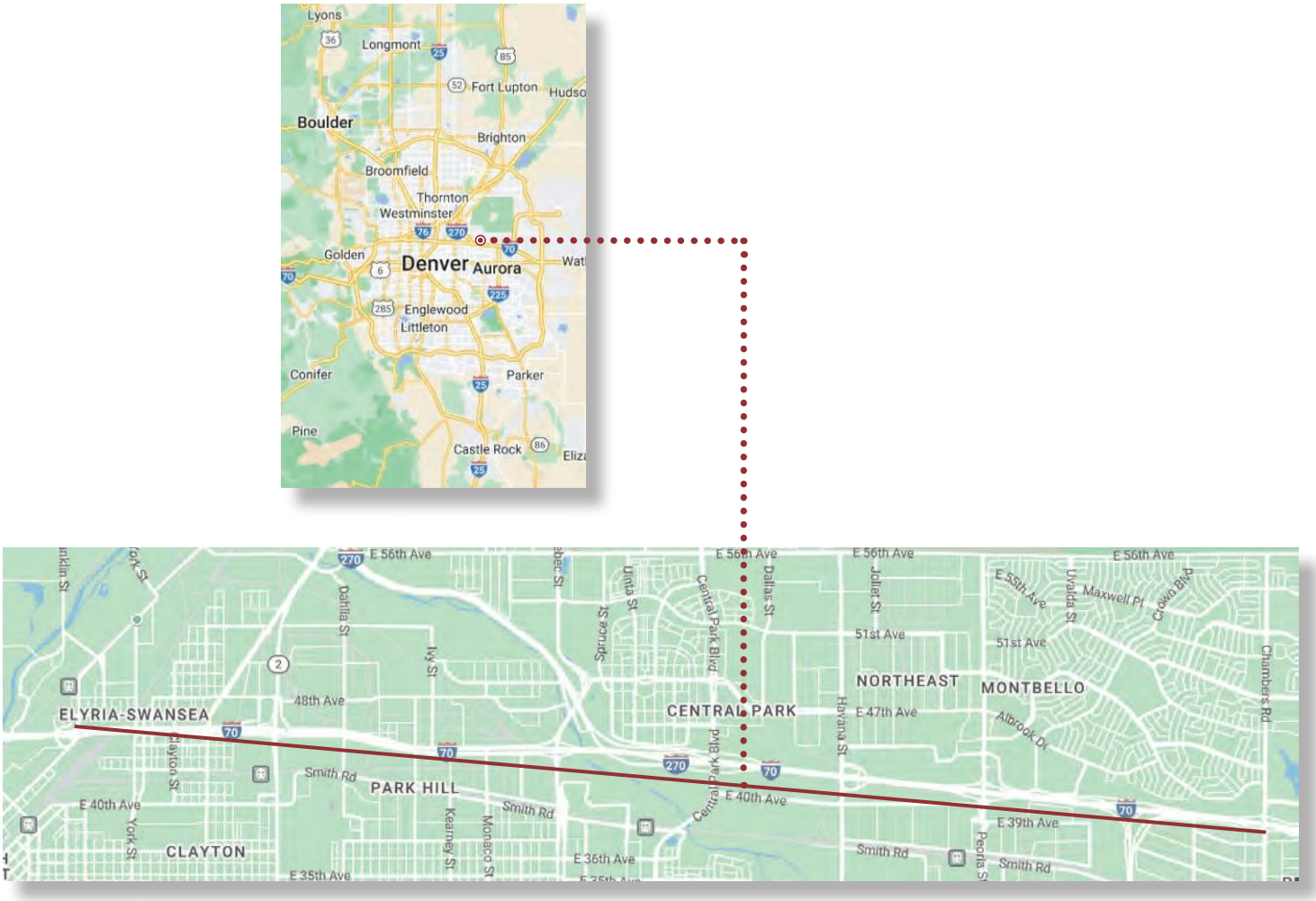
Design-Build-Finance-Operate-Maintain

Duration & Cost

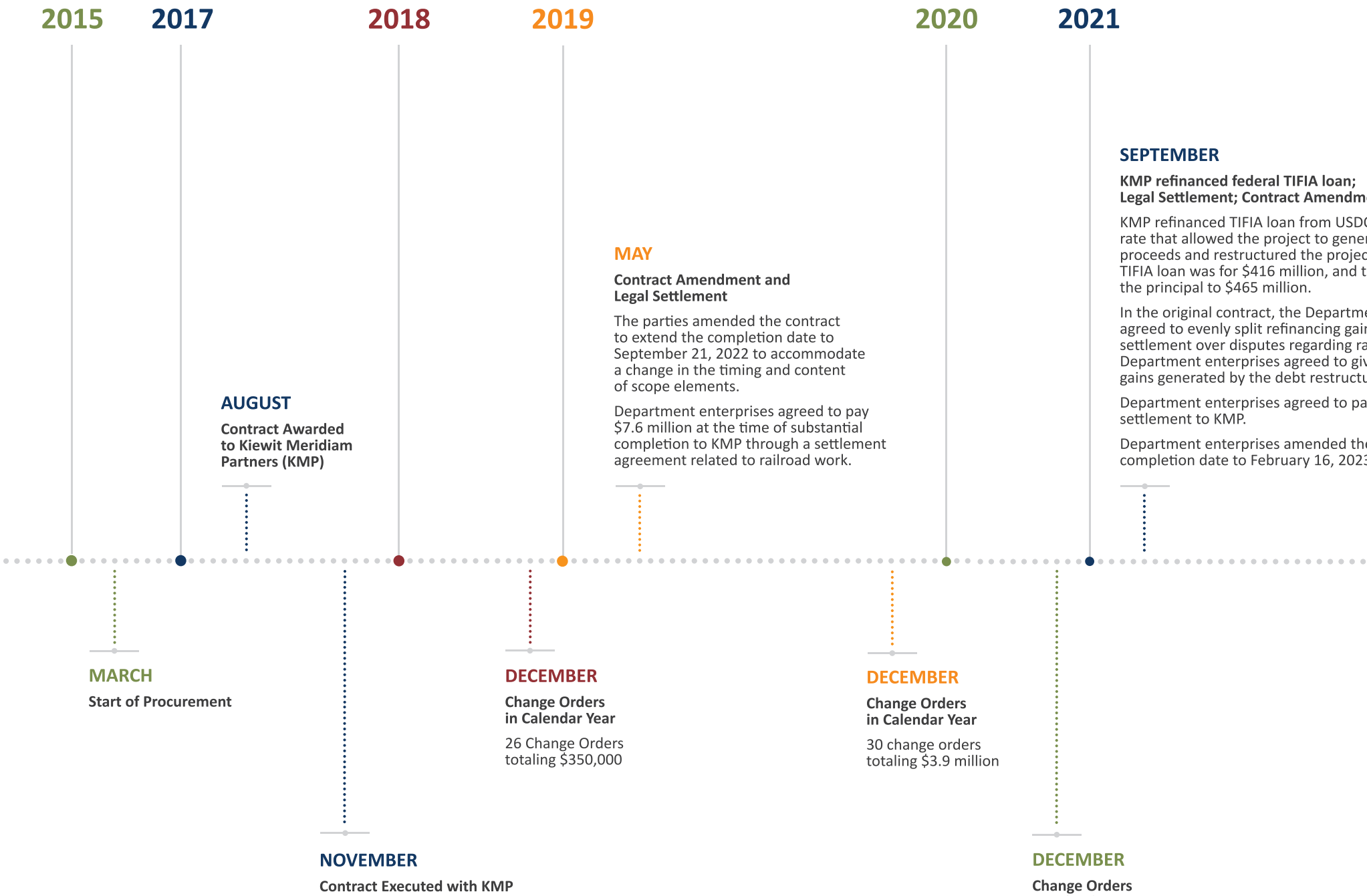
Original: 2017 to 2022 at a cost of $1.17 billion
Current: 2017 to 2023 at a cost of $1.17 billion

Project Summary

To improve the safety and capacity of a 10-mile stretch of I-70 between Brighton Boulevard and Chambers Road, and improve the connectivity of the Elyria-Swansea neighborhood by demolishing the aging I-70 viaduct, lowering a portion of the interstate and building a park on top of it, and adding express lanes. This project is financed through a Public-Private-Partnership between the contractor and two state enterprises housed within the Department—Statewide Bridge and Tunnel Enterprise and the High-Performance Transportation Enterprise, recently rebranded as Colorado Transportation Investment Office.



PROJECT TIMELINE


2015
2017
2018
2019
2020
2021
MARCH
Start of Procurement
AUGUST
Contract Awarded to Kiewit Meridiam Partners (KMP)
NOVEMBER
Contract Executed with KMP
DECEMBER
Change Orders in Calendar Year
26 Change Orders totaling $350,000
MAY
Contract Amendment and Legal Settlement
The parties amended the contract to extend the completion date to September 21, 2022 to accommodate a change in the timing and content of scope elements.
Department enterprises agreed to pay $7.6 million at the time of substantial completion to KMP through a settlement agreement related to railroad work.
DECEMBER
Change Orders in Calendar Year
30 change orders totaling $3.9 million
DECEMBER
Change Orders
SEPTEMBER
KMP refinanced federal TIFIA loan; Legal Settlement; Contract Amendm
KMP refinanced TIFIA loan from USD
rate that allowed the project to gene
proceeds and restructured the projec
TIFIA loan was for $416 million, and t
the principal to $465 million.
In the original contract, the Departme
agreed to evenly split refinancing gai
settlement over disputes regarding ra
Department enterprises agreed to giv
gains generated by the debt restructu
Department enterprises agreed to pa
settlement to KMP.
Department enterprises amended th
completion date to February 16, 2023

I-25N Mead to Johnstown

I-25N Mead to Johnstown—Project Overview

Project Name

I-25N Mead to Johnstown

Delivery Method

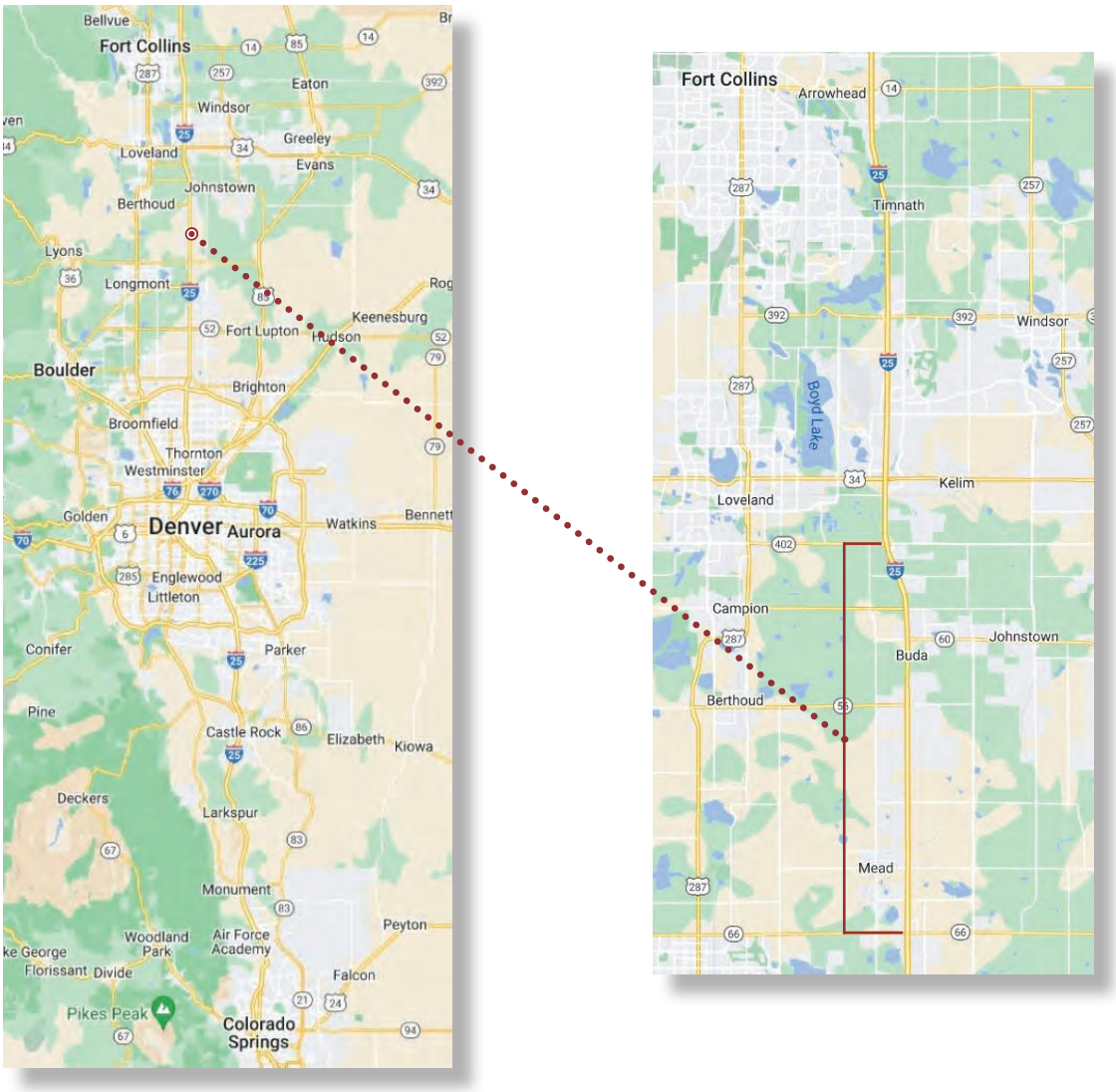
Construction Manager/General Contractor (CM/GC)

Duration & Cost

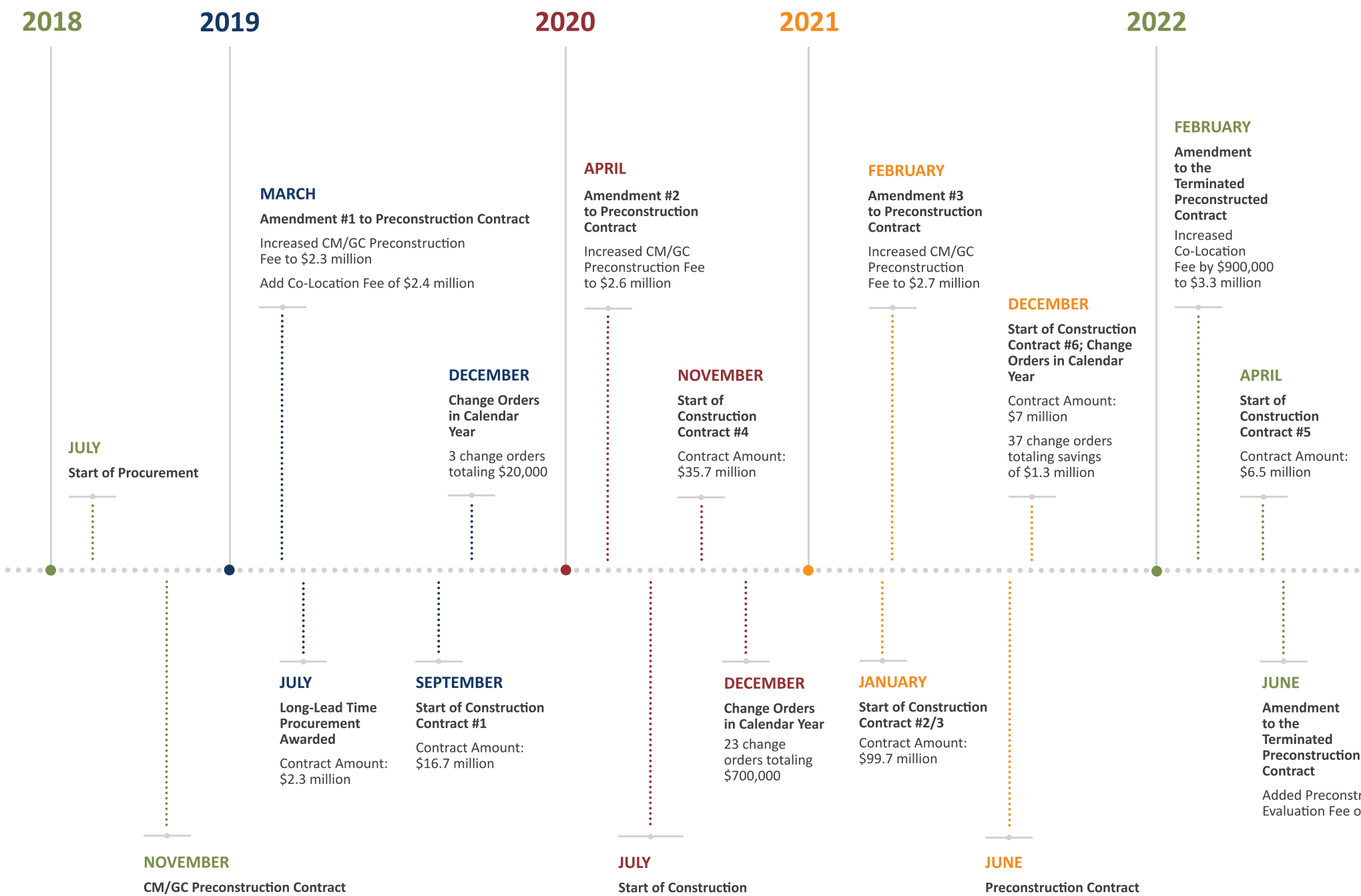
Original: 2018 to 2025 at a cost of $422.1 million
Current: 2018 to 2028 at a cost of $426.3 million

Project Summary

To improve mobility and traffic operations for travelers in Northern Colorado by widening the highway, adding shoulders, and replacing bridges along I-25 North between State Highway 66 in Mead and State Highway 402 in Johnstown.



PROJECT TIMELINE


2018
2019
2020
2021
2022
JULY
Start of Procurement
NOVEMBER
CM/GC Preconstruction Contract
MARCH
Amendment #1 to Preconstruction Contract
Increased CM/GC Preconstruction Fee to $2.3 million
Add Co-Location Fee of $2.4 million
JULY
Long-Lead Time Procurement Awarded
Contract Amount: $2.3 million
DECEMBER
Change Orders in Calendar Year
3 change orders totaling $20,000
SEPTEMBER
Start of Construction Contract #1
Contract Amount: $16.7 million
APRIL
Amendment #2 to Preconstruction Contract
Increased CM/GC Preconstruction Fee to $2.6 million
JULY
Start of Construction
NOVEMBER
Start of Construction Contract #4
Contract Amount: $35.7 million
DECEMBER
Change Orders in Calendar Year
23 change orders totaling $700,000
FEBRUARY
Amendment #3 to Preconstruction Contract
Increased CM/GC Preconstruction Fee to $2.7 million
JANUARY
Start of Construction Contract #2/3
Contract Amount: $99.7 million
DECEMBER
Start of Construction Contract #6; Change Orders in Calendar Year
Contract Amount: $7 million
37 change orders totaling savings of $1.3 million
JUNE
Preconstruction Contract
FEBRUARY
Amendment to the Terminated Preconstructed Contract
Increased Co-Location Fee by $900,000 to $3.3 million
APRIL
Start of Construction Contract #5
Contract Amount: $6.5 million
JUNE
Amendment to the Terminated Preconstruction Contract
Added Preconstr
Evaluation Fee o

I-25N Johnstown to Fort Collins

I-25N Johnstown to Fort Collins—Project Overview

Project Name

I-25N Johnstown to Fort Collins

Delivery Method

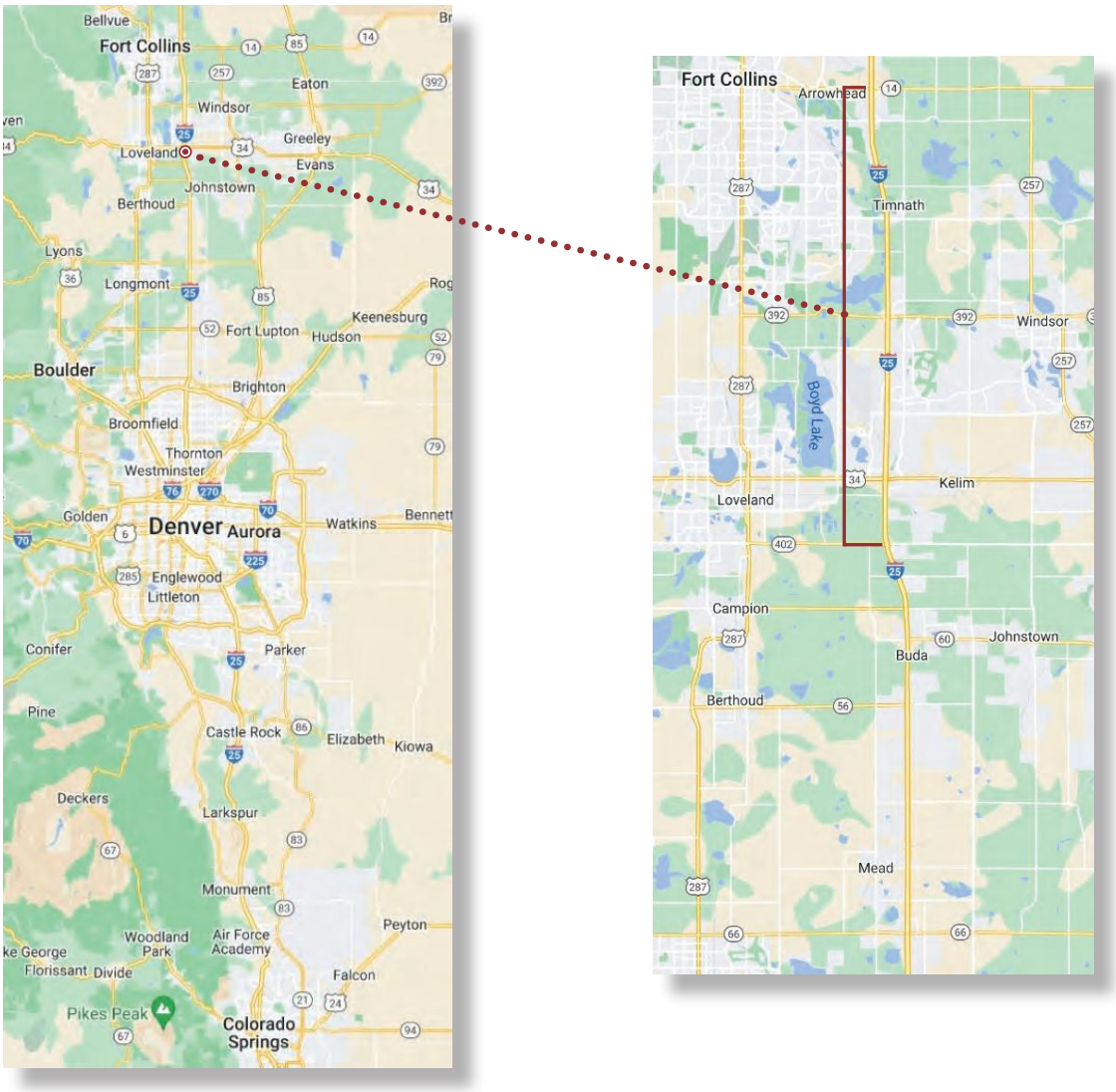
Design-Build

Duration & Cost

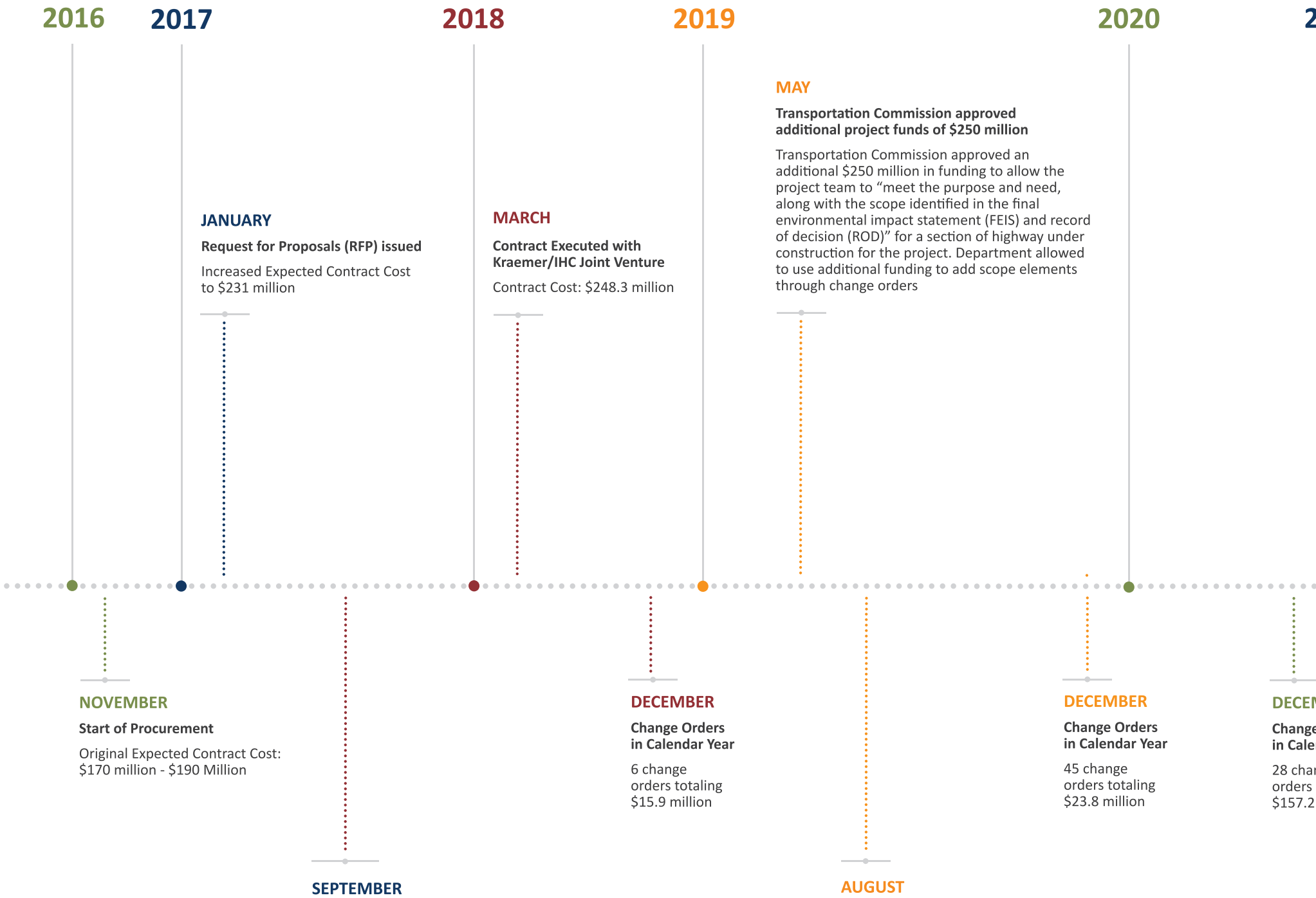
Original: 2018 to 2022 at a cost of $248.3 million
Current: 2018 to 2024 at a cost of $482.7 million

Project Summary

To improve mobility and traffic operations for travelers in Northern Colorado by adding northbound and southbound express lanes, replacing and widening bridges, building an underpass, and adding bus transit slip ramps between State Highway 402 in Loveland and State Highway 14 in Fort Collins.



PROJECT TIMELINE


2016
2017
2018
2019
2020
2
JANUARY
Request for Proposals (RFP) issued
Increased Expected Contract Cost to $231 million
MARCH
Contract Executed with Kraemer/IHC Joint Venture
Contract Cost: $248.3 million
MAY
Transportation Commission approved additional project funds of $250 million
Transportation Commission approved an additional $250 million in funding to allow the project team to "meet the purpose and need, along with the scope identified in the final environmental impact statement (FEIS) and record of decision (ROD)" for a section of highway under construction for the project. Department allowed to use additional funding to add scope elements through change orders
NOVEMBER
Start of Procurement
Original Expected Contract Cost: $170 million - $190 Million
SEPTEMBER
DECEMBER
Change Orders in Calendar Year
6 change orders totaling $15.9 million
AUGUST
DECEMBER
Change Orders in Calendar Year
45 change orders totaling $23.8 million
DECE
Change in Cale
28 cha orders $157.2

I-25 South Gap

I-25 South Gap—Project Overview

Project Name

I-25 South Gap

Delivery Method

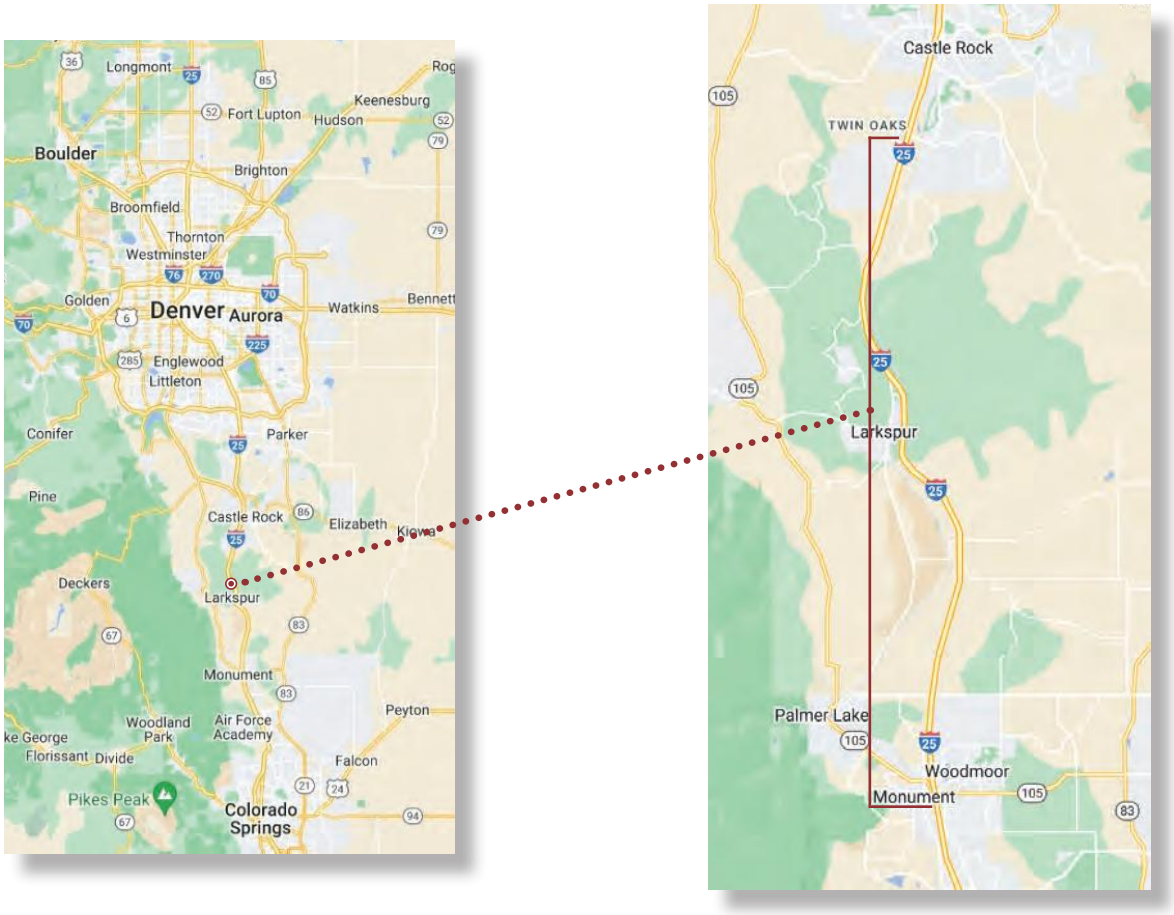
Construction Manager/General Contractor (CM/GC)

Duration & Cost

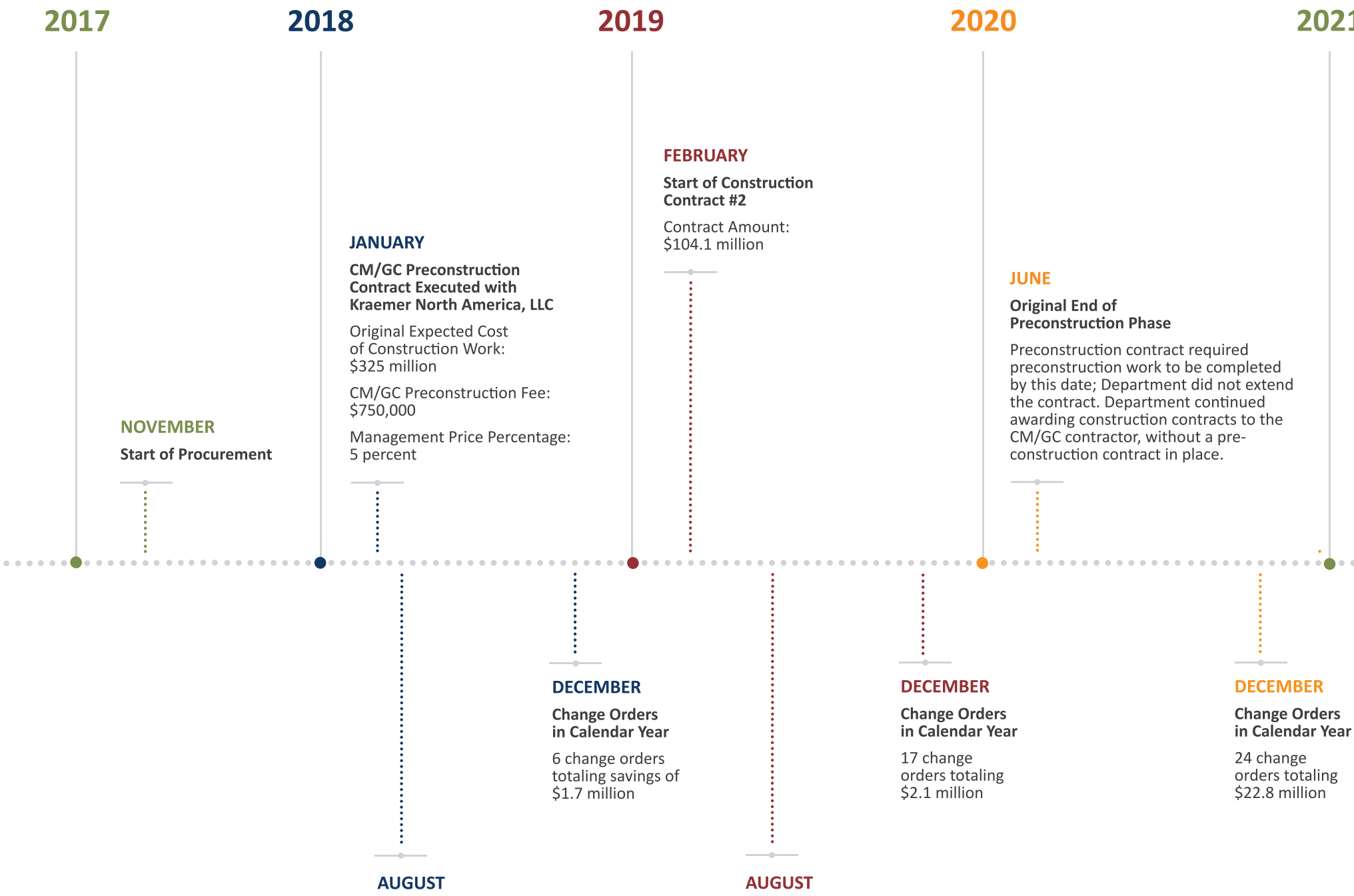
Original: 2018 to 2021 at a cost of $325.8 million
Current: 2018 to 2022 at a cost of $337.2 million

Project Summary

To alleviate congestion and improve safety on I-25 between Monument and Castle Rock by adding express lanes, expanding shoulders, and replacing bridges.



PROJECT TIMELINE


2017
2018
2019
2020
2021
NOVEMBER
Start of Procurement
JANUARY
CM/GC Preconstruction Contract Executed with Kraemer North America, LLC
Original Expected Cost of Construction Work: $325 million
CM/GC Preconstruction Fee: $750,000
Management Price Percentage: 5 percent
FEBRUARY
Start of Construction Contract #2
Contract Amount: $104.1 million
JUNE
Original End of Preconstruction Phase
Preconstruction contract required preconstruction work to be completed by this date; Department did not extend the contract. Department continued awarding construction contracts to the CM/GC contractor, without a pre-construction contract in place.
DECEMBER
Change Orders in Calendar Year
6 change orders totaling savings of $1.7 million
AUGUST
AUGUST
DECEMBER
Change Orders in Calendar Year
17 change orders totaling $2.1 million
DECEMBER
Change Orders in Calendar Year
24 change orders totaling $22.8 million

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