West Coast Infrastructure Exchange

Performance-Based Infrastructure (PBI)

Transportation Project Case Studies
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Introduction

What is Performance-Based Infrastructure?

Performance-Based Infrastructure (PBI) is a project delivery method that keeps assets in public ownership and consolidates responsibility for the key phases of a project’s full life cycle—design, construction, and maintenance—into a performance-based contract with a private partner. This consolidation of responsibility, with its emphasis on payment for performance, can create additional public benefits when compared with traditional procurement methods: design and construction innovations, shorter design and construction timelines, improved cost and schedule certainty, lower total life cycle costs, and long-term performance guarantees. PBI procurements can also include elements of private sector financing and operational responsibility.

It is common to summarize a project’s delivery method by referring to the key responsibilities and phases of the project’s life cycle by the first letter of each word: Design (D), Build (B), Finance (F), Operate (O), and Maintain (M). These phases can be arranged in a variety of ways to signify the differing degrees of private sector responsibility. For example, the term “DBFOM” signifies that the private partner is responsible for designing, building, financing, operating, and maintaining the asset.

All of the case studies included in this report are DBFOM projects.
One of the compelling incentives behind procuring infrastructure as PBI is that it transfers risk from the public owner to the private partner. As the graphic above demonstrates, the more project aspects that the private partner is responsible for, the more risk that the public sector is able to transfer. A traditional design-bid-build procurement results in the greatest amount of retained risk for the public sector, while a Design-Build-Finance-Operate-Maintain (DBFOM) arrangement transfers the most risk from the public sector to the private partner.
Glossary

**Concession / Concessionaire**
Project agreements between the public and private sectors are commonly referred to as the “concession.” The private partner is commonly referred to as the “concessionaire.”

**Alignment / Design**
To ensure consistency of use and interpretation, WCX classifies “alignment” as consisting of where the trackwork and stations are physically located as well as the number of stations on the route for transit projects and the geographic layout or arrangement of the route for highway projects (essentially, the right-of-way). “Design” is considered to encompass the features of the asset.

**Availability Payment**
Availability payments are regular payments made by the public entity to the concessionaire. Availability payment intervals are dependent upon the specific agreement and include credits for nonperformance. If the private partner fails to meet the performance specifications set out in the project agreements—i.e. if the project is not “available” according to the agreed-upon standards—the public partner can make deductions from its availability payments to the concessionaire.

**Turnback / Handback / Turnover**
Individual agreements refer to this concept differently, as demonstrated by the multiple terms above. Regardless of the semantics, these contract provisions require that the asset meet certain criteria at the end of the concessionaire’s responsibility for operations and maintenance.

**Public Sector Comparator**
A public sector comparator (PSC) provides a baseline cost assessment by comparing the expected life cycle cost of the PBI procurement to the estimated life cycle cost of the project if it were procured traditionally by the public sector owner.
Executive Summary

This report provides case studies of five Performance-Based Infrastructure (PBI) projects from the transportation sector. Specifically, WCX studied:

Highway Projects
- US 36 Phase II between Denver and Boulder
- The Presidio Parkway in San Francisco

Rail Transit Projects
- The Purple Line in Maryland
- The Eagle Project in Denver
- The Canada Line in Vancouver, B.C.

WCX’s findings in key topic areas are as follows:

Construction Budget and Schedule Outcomes
The five included projects are at various stages in their operations or procurement, ranging from the Canada Line opening in 2009 to the Purple Line recently achieving financial close. On the transit side, the Canada Line was delivered early and on budget; the Denver Eagle project has thus far been delivered on time and on budget; and the Purple Line is still years away from opening. In regard to the highway case studies, US 36 was delivered on time and on budget while the Presidio Parkway is currently in the midst of a dispute about significant construction cost overruns that could also affect its schedule. This dispute is attributable to public governance issues—i.e. ultimate approval of project design rests with a public agency (The Presidio Trust) that is independent of the project sponsor (The California Department of Transportation).

Risk Transfer
The PBI approach enables the public sector to transfer many risks that it would retain in a traditional procurement. In compiling this report, organizational contacts were asked to identify the largest risks associated with the project and how they were ultimately allocated via the project agreement. A sizeable majority of risks were either fully transferred to the concessionaire or shared between the public and private partners. For example, the Colorado Department of Transportation was able to transfer all toll revenue risk associated with US 36 to the private partner; identified utility relocation risk on the Purple Line and Eagle project were transferred; and the Canada Line...
transferred all geotechnical risk to the concessionaire. A key concept underlying the approach to risk transfer in PBI procurements is allocating risks to the party that is best able to manage or mitigate them. Accordingly, some risks—such as acquiring property for right-of-way and obtaining environmental approval—are consistently retained by the public sector.

**Maintenance as a Deliverable**

The five projects studied all require the private partner to perform routine maintenance throughout the term of the concession. In all cases, detailed maintenance requirements are contractual obligations, and failure to meet these obligations can result in payment deductions.

**Stakeholder Management**

Stakeholder management and public outreach are integral to the success of PBI procurements. These efforts can take on even greater significance in highway projects, as roadway users are often resistant to changes that affect established driving patterns and behaviors. The two Colorado projects provide an interesting example of differences in stakeholder management across transportation modes. Denver’s Regional Transportation District encountered little public opposition in its procurement of more than 40 new miles of commuter rail. The Colorado Department of Transportation’s stakeholder engagement efforts, which focused on local elected officials and did not target the general public or state legislators, prompted significant public backlash against the 16-mile US 36 project.

**Environmental Review**

The private sector is generally unwilling to bear the environmental approval risks associated with major transportation projects. The environmental review process for transportation-related PBI projects must therefore be completed by the public sector prior to the issuance of the Request for Proposals.

This requirement restricts opportunities for RFP respondents to provide innovative design solutions within the transportation sector. Of the five case studies, the Canada Line serves as the example with the most flexibility and innovation in design over the course of its procurement. The results are unique, however, as Canada’s environmental review and approval processes are considerably different from those in the United States.

**Handback Requirements**

Handback requirements dictate minimum standards for project assets at the end of the PBI partnership. With terms ranging from 30 to 50 years, incentivizing long-term and
life cycle maintenance via handback requirements is a key aspect of a successful PBI agreement. Within the reviewed projects, approaches to handback requirements ran the gamut from very open-ended (Denver Eagle) to very prescriptive (US 36). The Eagle project requires the concessionaire to return the commuter rail system in a condition which 1) could reasonably be expected of an equivalent commuter rail system in existence and operated for a period equal to the concession, assuming that such a system was properly maintained in accordance with the project agreement’s O&M, and 2) is capable of complying with the project agreement’s O&M standards for at least three years following the end of the concession. The US 36 project agreement, on the other hand, contains pages of detailed inspection requirements for specific structures; these requirements are attached as an appendix to that case study.

Private Financing
All five case studies included private sector responsibility for financing the project. For the four US projects studied, private financing consisted of a mix of exempt-facility (i.e. tax exempt) private activity bonds, low-interest TIFIA loans from the federal government, and private equity. Depending on the relative mix of these sources, the public sector’s costs of capital for a transportation PBI project with private financing can rival traditional infrastructure financing approaches.

For example, the Purple Line, which closed on its private financing in June, 2016 has an overall, weighted cost of capital between 3.10% and 3.62%. See table below.

<table>
<thead>
<tr>
<th>Purple Line Financing</th>
<th>Cost of Capital</th>
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</thead>
<tbody>
<tr>
<td>Private Activity Bonds</td>
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<tr>
<td>True Interest Cost</td>
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<td>Cost of Financing (%)</td>
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<td><strong>Weighted Cost of Debt</strong></td>
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<tr>
<td>Equity</td>
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<td>Debt / Equity Ratio</td>
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<tr>
<td><strong>Total Weighted Cost of Capital</strong></td>
<td>3.10% - 3.62%</td>
</tr>
</tbody>
</table>

1 RTD FasTracks Eagle Project – Concession and Lease Agreement, p. 209.
2 These numbers are reported as a range because the returns required by the equity investor are proprietary information not available to the public. Consistent with PBI project trends in the United States, the range reported assumes returns of 8% at the low end and 13% at the high end.
US 36 Phase II

Project Overview

US 36 is a multi-phase project to reconstruct US 36 from Federal Boulevard in Denver to Table Mesa Drive in Boulder. Phase I was procured as a design-build (DB) project while Phase II was procured as performance-based infrastructure. The concessionaire is responsible for operations and maintenance of the managed lanes and routine maintenance of general purpose lanes across both Phase I (approximately 11 miles) and Phase II (approximately 5 miles). A description of each phase is provided in Appendix 1.

The road features two general purpose lanes in each direction and a buffer-separated managed express lane in each direction. The express lanes accommodate high-occupancy vehicles (HOV), bus rapid transit (BRT), and tolled vehicles. The project also includes components related to bridge replacement, the construction of a commuter bikeway, BRT improvements, and installation of Intelligent Transportation Systems (ITS) for tolling. The US 36 project is a toll concession, in which the concessionaire is paid via funds generated by tolls.

Delivery Method
Design, Build, Finance, Operate, and Maintain (DBFOM). The resulting agreement between the public and private sectors is commonly referred to as the “concession.” The private partner is the “concessionaire.”

Term
50 years

Owner
The Colorado High-Performance Transportation Enterprise (HPTE), a division of the Colorado Department of Transportation (CDOT)¹

Project Type
Greenfield²

¹ For simplicity, the case study refers to CDOT as the owner throughout the report.
² The project’s managed lanes are new additions to the existing right-of-way.
Respondents
Four proponents submitted a response to the RFQ, of which three were shortlisted and issued the RFP. Two proponents returned the RFP.

Project Budget (Capital Costs)
Approximately $179.5 million

Organizational Contact
Nicholas Farber
Operations Manager, High-Performance Transportation Enterprise
Colorado Department of Transportation

Timeline & Process
2012 – Request for Qualifications issued; three teams shortlisted
2012 – Request for Proposals issued
2013 – Final proposals received; preferred proponent selected
2013 – Commercial close reached
2014 – Financial close reached
2016 – Express Lanes fully open

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3 Colorado Department of Transportation – Project Report: Achieving Value for Money
4 InfraDeals – US 36 P3: Project History
Phase I is shown in green; Phase II is shown in red.

(Source: Colorado Department of Transportation – US 36 Project Limits)
**Risk**

*What were determined to be the largest risks associated with the project, and how were those risks ultimately allocated via the public-private partnership?*

**TIFIA Loan**
- The concessionaire was responsible for closing on the TIFIA loan for Phase II and assuming responsibility for the Phase I TIFIA loan. This project marked the first occurrence of the Federal Highway Administration transferring a TIFIA loan executed with a governmental entity to a concessionaire. CDOT provided assistance in the process, but the risk was allocated to the concessionaire.

**Schedule**
- Any delays in the construction schedule would consequently delay the collection of toll revenues required to repay the TIFIA loan. Schedule risk was transferred to the concessionaire, which was subject to liquidated damages if the project was not completed on time.

**Toll revenue risk**
- CDOT did not feel confident in the traffic and revenue projections for the corridor, so risk associated with toll revenues was transferred to the concessionaire.

**Flood plain regulatory risk**
- This risk was shared, though the concessionaire was responsible for obtaining final approvals.

For additional information on how risks were allocated between CDOT and the concessionaire, please see Appendix 2.

*After determining that a P3 would be used as the delivery method, did any route/alignment/design options reemerge as viable?*

No. As a continuation of Phase I (DB), Phase II (PBI) was constrained and restricted by the requirements of the Record of Decision, and the project passed through sensitive environmental areas with limited impacts permitted.
What project benchmarks were established in the following areas and what penalties result from the private sector’s failure to meet those benchmarks?

Note: While the DBFOM concessionaire did not procure all elements of the US 36 reconstruction, the project agreement requires that it operate and maintain both Phase I and Phase II components as well as the managed lanes of I-25, which connect with US 36, though life cycle maintenance responsibilities (i.e. major capital repairs) apply only to the managed lanes.

**Toll Revenue**
CDOT does not retain any downside risk concerning toll revenues. Provided that the concessionaire achieves a minimum rate-of-return, CDOT receives a share of the toll revenues. The extent of the revenue sharing between CDOT and the concessionaire depends on the extent to which actual revenues exceed projections. If toll revenues are lower than forecasted, the concessionaire is still responsible for operating and maintaining the managed lanes but is not required to share the revenues. CDOT retains approval of the concessionaire’s proposed toll amounts, but there are limited reasons for which the toll schedule can be rejected.

**Operations & Maintenance**
The concessionaire must submit annual operations and maintenance plans for review and approval by CDOT.

The annual operations plan must include such elements as:
- An overview description of all facilities, systems and equipment to be operated by the concessionaire;
- The methods for monitoring the condition and operational performance of the managed lanes;
- A description of the parameters to be used for setting, increasing and decreasing the tolls to optimize use of the managed lanes;
- A description of how performance monitoring will be accomplished; and
- The approach to addressing the requirements of the TIGER Performance Measures for the managed lanes.

The concessionaire is also required to submit a variety of other operations reports on a quarterly basis unless otherwise noted. Examples of items in operations reports include:
- A monthly summary of the status of the managed lanes for the month covering all essential statistics for the lanes including revenue, usage by vehicle type, non-revenue, etc.;
• A list that identifies the location, nature, and cause of non-compliance items (as measured against concession agreement benchmarks) and the steps that will be, or have been, taken to address them; and
• Customer relations activities, including complaints, complaint tracking data, customer service rating data, and the details of the concessionaire’s response.

The annual maintenance plan must be separated into two sections: Roadway/Roadside Maintenance and Managed Lanes Electronic Toll Collection System (ETCS) Maintenance. The Roadway/Roadside Maintenance section must include such elements as:

• An overview description of all road assets, including any inventory of facilities, systems and equipment to be maintained by the concessionaire;
• A description of the staffing plan (including all positions, work locations, and work hours) and related workshop, maintenance garages, major equipment, vehicles, storage facilities, etc., as necessary to support the roadway assets and maintenance program;
• A list of sub-contractors used to perform any roadway asset maintenance services and the identification of the services expected to be provided; and
• Diagnostic procedures for equipment and systems.

The ETCS section must include such elements as:

• An overview description and system breakdown of all ETCS components;
• A description of the maintenance management system that will be used for inventory and maintenance tracking;
• A description of the staffing plan and qualifications as necessary to support ETCS devices maintenance;
• Detailed preventative maintenance and routine maintenance procedures and schedule for all toll system devices, software and firmware; and
• Diagnostic procedures for equipment and systems.

The concessionaire is also required to provide, if requested by CDOT, monthly maintenance reports that identify any activities involving the maintained assets for the month as well as actual maintenance performed. The reports must include such elements as:

• A summary of the planned maintenance activities for the upcoming month;
• A summary of the maintenance performed and completed for the month;
• A summary of the planned maintenance that was not completed for the month, including the reasons for the incompletion of the planned maintenance and summary of deferred days for each deferred item;
Detailed results of all inspections assessments and testing activities, including the related procedures, forms, etc.; and
Monthly toll system performance reports.

The concessionaire is also required to develop and submit a Life Cycle Maintenance Plan ninety days before the beginning of each calendar year on an annual basis that addresses a full five years of life cycle maintenance. “Life Cycle Maintenance” is synonymous with major capital repairs—i.e. the repair, reconstruction, rehabilitation, restoration, renewal or replacement of items that:
- Are not normally included as an annually recurring cost in maintenance and repair budgets;
- Require a significant amount of time to accomplish; and
- Must be coordinated, scheduled and planned well in advance of the work effort.

The Life Cycle Maintenance Plan must include such elements as:
- The estimated residual life of project components;
- A brief description of the type of maintenance anticipated to be performed on those components;
- The estimated cost of such maintenance;
- The total estimated cost of life cycle maintenance in each of the years covered by the Life Cycle Maintenance Plan; and
- A schedule of anticipated closures and work windows for the performance of the maintenance during the upcoming five years.

Noncompliance Points
The concessionaire is also required to report monthly to CDOT regarding noncompliance events. Noncompliance events, which can occur in both operations and maintenance components of the concession, result in the accumulation of points. For each point earned in a month, the concessionaire’s share of toll revenue is reduced by a payment to CDOT in the amount of $5,000 (indexed). The agreement includes a provision that CDOT will not allocate points for the first instance of each event unless the concessionaire fails to resolve the issue within the specified time period. Noncompliance events are divided into different categories that require different response times and carry different point values. For more information on the noncompliance point system, please see Appendix 3.

Turnback
The concessionaire is required to prepare a handback plan to submit to CDOT no later than five years prior to the end of the concession. The handback plan includes details concerning methodologies and activities to be undertaken in order to meet the
handback requirements upon completion of the term. Handback requirements, which include features such as toll collection equipment, structures, and road pavement, are dependent upon the element itself. Different elements entail different inspection and residual life requirements at handback. Please see Appendix 4 for the project’s handback requirements.

The project agreement includes three separate residual life inspections to be conducted by a qualified independent expert prior to handback:

- The initial residual life inspection must be done 65 to 60 months prior to the end of the term.
- The intermediate residual life inspection must be done between 21 and 18 months prior to the end of the term.
- The final residual life inspection must be done between 120 and 60 days prior to the end of the term.

Following the initial inspection (completed 65 to 60 months prior to the end of the concession), the concessionaire must provide CDOT with the estimated cost of the renewal work associated with handback requirements. Within six months of determining the cost of the renewal work, the concessionaire must establish a handback reserve via one of two options:

- Pay 20 percent of the renewal amount into an interest bearing account, opened by CDOT and maintained until the contract expires; or
- Provide an irrevocable letter of credit, in form and substance reasonably satisfactory to CDOT for the same amount.

Following the intermediate inspection (completed 21 to 18 months prior to the end of the concession), the handback reserve will be reviewed and adjusted to reflect changes in the cost of the renewal work. If renewal work is completed by the end of the term, CDOT will release the funds or return the letter of credit to the concessionaire. If there is additional renewal work to be done at the end of the term to meet the handback requirements and the concessionaire does not complete that work within 45 business days, CDOT has the right to draw upon the fund or letter of credit in the amount required to address such failures up to the full amount of the security available. Any remaining amounts held in the fund or any letter of credit provided by the concessionaire will be returned to it once handback requirements are met.
Outcomes

What were the key outcomes (beyond alignment and design) that the procuring agency emphasized in the procurement process? What outcomes were sought in regard to the commuter bikeway?

CDOT emphasized:

- Toll risk transfer to the concessionaire;
- A multi-modal corridor that reflected the desires and input of the community;
- Accelerated completion and schedule certainty;
- A BRT system with guaranteed travel speeds; and
- A facility that minimizes life cycle costs.

The managed lane travel speed goals during peak periods, which apply to the BRT system, are as follows:

- From Table Mesa to Broomfield Park-n-Ride: average of 55 mph
- From Broomfield Park-n-Ride to Pecos Street: average of 50 mph
- From Pecos Street to Denver Union Station: a travel time of no more than 8.75 minutes.\(^5\)

The commuter bikeway was constructed with the intent to provide a backbone that integrates numerous bike paths and routes in the corridor. The 18-mile commuter bikeway sought to maximize both safety and the user’s experience by separating the bikeway from the highway and constructing numerous grade separations.

To what extent did the articulation of project objectives include broad community goals—e.g. improved access to jobs for low-income communities, revitalization of distressed communities—in addition to specific transportation goals?

The project established participation goals for Disadvantaged Business Enterprises (DBE) specifically in regard to Phase II construction work, which was 11 percent. That goal does not apply to operations, routine maintenance, life cycle maintenance, or snow and ice removal activities.

\(^5\) The concessionaire adjusts toll rates within an established schedule to ensure these average speeds and maximum travel time. If such adjustments do not result in meeting average speed and maximum travel time requirements, the concessionaire is obliged to create a revised toll schedule for approval by CDOT.
The project agreement includes an incentive for the concessionaire to subcontract with Emerging Small Businesses (ESB) during Phase II construction work. For each 1 percent of qualifying ESB participation on Phase II construction work, the concessionaire was eligible for a $50,000 incentive, up to a maximum of $150,000. The concessionaire was first required to meet the DBE requirements in order to be eligible for the ESB incentive.
**Alignment & Design**

*How much design work did the procuring agency complete before issuing a Request for Proposals?*

CDOT completed approximately 30% of Phase II design work before issuing the RFP.

*How much of that design work was influenced by an initial budget and assumptions as to how the project would be delivered (e.g. P3 or traditional design-bid-build)?*

The design work was not influenced by an initial budget or project delivery methodology assumptions.

*To what extent did the project’s ultimate design evolve during the course of the procurement, as competing proponents responded to the project goals differently?*

The project’s ultimate design did not significantly evolve over the course of the procurement. With the base configuration set via the procurement of Phase I, there were not many opportunities for evolution in design in the respondents’ proposals. CDOT allowed for the inclusion of Alternative Technical Concepts (ATCs) in the proposals, but none of the approved ATCs amounted to a significant difference in design.

*To what extent did the RFP process interact at all with NEPA approvals? Was there any need to reopen the environmental approval process?*

The RFP process did not interact with NEPA approvals. CDOT sought to avoid ATCs that would require any reopening of the environmental review process, as this would have had an adverse impact on the project’s schedule.
**Innovation**

*Did the RFP process present procuring agencies with significantly different design and construction choices?*

No. As Phase II was a continuation of Phase I, the basic configuration had already been set via the design process. Constraints imposed by environmental requirements within the provided right-of-way and the sequencing of the project (i.e. that Phase II was a continuation of Phase I) limited the amount of opportunities for proponents to provide innovative responses.

*Does the project agreement include considerations for possible changes in tolling technology over the course of the concession?*

Changes in tolling technology over the course of the concession is a risk held by the concessionaire, while CDOT retains overall approval of the technology. The technology itself is less essential than continually meeting the performance requirements of the managed lanes, i.e. the emphasis is placed on minimum car and bus speeds in the managed lanes rather than the technology itself.
Cost

Did the RFP process result in proposals with significantly different life cycle costs?

No, the RFP process did not result in proposals with significantly different life cycle costs.

Were any proponents willing to take on the cost of providing vehicle transponders?

No, the provision of vehicle transponders was a responsibility that CDOT always planned to assume itself. CDOT has other corridors in the state that are also tolled, and it wanted to specify which technology would be used for US 36 in order to integrate with the other corridors.

Were these costs compared with a hypothetical traditional procurement approach to determine the best value for the public? If yes, what value was provided?

Yes, CDOT hired a consultant to perform a Project Value Analysis (PVA) that compared a risk-adjusted analysis of the PBI model to the public sector comparator (PSC). The consultant determined that the PBI model required a (nominal) public subsidy of $48.8 million compared to the PSC of $66.0 million—a difference of $17.2 million.

The PVA also examined the net present value (NPV) of the overall concession, calculated as the upfront subsidy plus excess revenues less the NPV. Overall, the PBI concession was found to provide a total project value of $2.2 million over the PSC. While the difference in NPV between the two project delivery methods was modest given the overall cost of the project, CDOT emphasized the value in transferring risk—especially toll revenue risk—to the concessionaire while retaining the right to share in excess revenues.

Another benefit of the PBI delivery method, though not accounted for in the PVA process, is the accelerated timeframe in which Phase II was able to be procured. CDOT assumed that, if procured traditionally, Phase II would only be completed in 2035. By utilizing the PBI delivery method, CDOT was able to complete the US 36 project 19 years earlier than expected.

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**Stakeholder Relations**

How did the procuring agencies discuss procurement options with key stakeholders: e.g. its employees and the general public?

CDOT’s outreach efforts for this project focused on discussions with mayors, county commissioners, and their staffs. According to a report commissioned by the State Auditor, the High-Performance Transportation Enterprise—i.e. the government agency responsible for delivering US 36—held 54 public board meetings and 16 documented meetings with local government stakeholders. However, HPTE did not hold any town hall meetings seeking public involvement and input into the P3 approach or the US-36 P3 Project. Additionally, HPTE provided annual reports to the General Assembly and CDOT held legislative briefings and met one-on-one with legislators covering various CDOT topics that included the US-36 P3 Project; however, the information provided did not include adequate detail for understanding the complexity of the Project or the differences between P3 and traditional public procurement approaches. HPTE management also did not hold any one-on-one meetings with legislators, including legislators representing the US-36 region, to educate and provide details on the US-36 P3 Project…

…By not conducting town hall style meetings and providing one-on-one meetings between HPTE management and legislators, HPTE did not receive important input that could have benefited the Project. Instead, HPTE faced large public outcry from both traditional and social media, threatening the US-36 P3 Project and the future use of the P3 approach in Colorado.7

This outcry led to legislation that aimed to expand public and legislative involvement in PBI procurements and expand legislative oversight of PBI procurements. The governor vetoed the legislation but issued an executive order requiring additional transparency. Specifically, the executive order requires:

- A minimum of at least three public town hall meetings for any potential P3—i.e. (1) at the vision stage; (2) before the issuance of a draft RFP; and (3) after preparations for, but prior to, the issuance of a final RFP; and
- Additional reports and presentations to the General Assembly upon the request of any legislator.8

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8 Ibid, p. 70.
CDOT stated that it did not encounter opposition from public sector unions regarding the concessionaire’s responsibility for operations and maintenance of the project. CDOT did require in the project agreement, however, that the concessionaire compensate and provide benefits to its O&M staff at the same levels as CDOT employees.

*Were explanations of PBI included in efforts to obtain project funding sources, whether from legislatures or direct popular votes?*

Yes, though the emphasis was on local elected officials, leading to the audit findings discussed above.
Funding

What are the public funding sources that enabled the project’s financing?

- $15 million contribution from CDOT
- $18.5 million contribution from Regional Transportation District
- $15 million contribution from the Denver Regional Council of Governments
- $11 million contribution from local governments

Total Phase II public funding: $59.5 million

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Financing

What role does privately-obtained debt and equity play in the project’s financing?

Concessionaire is responsible for:
- $60 million TIFIA loan
- $20 million term loan
- $20 million in Private Activity Bonds
- $20 million equity component

Total Phase II private financing: $120 million

At what point in the design process did the sponsoring agency decide upon public and/or private financing options? How did that analysis affect design considerations?

Originally, CDOT had envisioned that Phase II of the project, if procured traditionally, would only be completed in 2035. After performing a Project Value Analysis, CDOT determined that Phase II could be procured as a toll revenue concession, and the decision to move forward with that method was made in late 2011 / early 2012. CDOT was approved to procure Phase II as PBI before the design-build contract was signed for Phase I.

The decision to procure Phase II as PBI did not affect design considerations, as Phase II was a continuation of Phase I and was constrained by the Record of Decision and environmental approvals.
Appendix 1 – Description of Project Phases

**Phase I**

Phase I entailed the rebuilding of approximately 11 miles of US 36. Phase I:
- Added an express lane in each direction of US 36 for BRT, HOV, and tolled vehicles;
- Reconstructed existing pavement on US 36 and widened the highway to accommodate 12-foot-wide inside and outside shoulders;
- Replaced five bridges;
- Made improvements to the Westminster Promenade and East and West Flatiron bridges;
- Added BRT improvements, including new electronic display signage at stations and bus priority improvements at ramps. The improvements also allow buses to operate on the shoulders of US 36 between interchanges to decrease bus travel time;
- Installed Intelligent Transportation Systems (ITS) for tolling, transit, traveler information and incident management;
- Installed a separate commuter bikeway along much of the corridor; and
- Improved Regional Transportation District (RTD) stations along the corridor, including new canopies with enhanced weather protection.

**Phase II**

Phase II entailed the rebuilding of approximately 5 miles of US 36. Phase II:
- Constructed an express lane in each direction of US 36 between 88th Street and Table Mesa for BRT, HOV, and tolled vehicles;
- Reconstructed two general purpose lanes in each direction between 88th Street and Table Mesa Road;
- Widened the highway to accommodate 12-foot-wide inside and outside shoulders;
- Replaced/rehabilitated/widened three bridges;
- Added BRT improvements, including new electronic display signage at stations and bus priority improvements at ramps. The improvements also will allow buses to operate on the shoulders of US 36 between interchanges to decrease bus travel time;
- Installed ITS for tolling, transit and traveler information and incident management;
- Installed a separate commuter bikeway along the rest of the corridor; and
- Improved the RTD station at McCaslin Boulevard.

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10 Colorado Department of Transportation – [US 36](#)
## Appendix 2 – Risk Allocation

<table>
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<tr>
<th>Risk</th>
<th>Allocation</th>
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<tr>
<td>Design of highway and structure</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Construction of highway and structures (risk of time and cost overruns)</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Revenue risk, i.e. the risk that toll revenue is not sufficient to pay off debt raised for the project</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Majority of risks associated with environmental factors including changes to restrictions and permitting (with the exception of permits obtained by CDOT or HPTE)</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Geotechnical (for example, soil below the highway surface)</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Operations and maintenance, including routine maintenance and life cycle maintenance, life cycle maintenance in relation to non-separable tasks on the general purpose lanes</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Snow and ice removal on both the general purpose lanes and the managed lanes</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Handback of the facility at the end of the term of the contract which fulfills CDOT and HPTE requirements in relation to the residual life of the highway at that time</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Acquisition of property required for highway construction—including risks related to cost and timeliness to acquire such property</td>
<td>CDOT</td>
</tr>
<tr>
<td>Responsibility for repairing any latent defects in work which as completed prior to the contract commencement date or for works undertaken by other CDOT contractors</td>
<td>CDOT</td>
</tr>
<tr>
<td>Bringing the highway back into agreed-upon condition after the occurrence of a significant natural event</td>
<td>CDOT</td>
</tr>
<tr>
<td>Require to undertake soils or other remediation as the result of the discovery of undisclosed contaminated soils</td>
<td>CDOT</td>
</tr>
<tr>
<td>Requirements for moving utilities to construct the highway and structures and the risk that utility companies will not move quickly enough to meet concessionaire’s schedule or that they will levy higher than expected charges for the relocation work</td>
<td>Shared</td>
</tr>
<tr>
<td>Increases in the future of general insurance premium cost charged by the insurance industry for the insurance required by the contract</td>
<td>Shared</td>
</tr>
</tbody>
</table>

(Source: Colorado Department of Transportation - [Project Report: Achieving Value for Money](https://www.colorado.gov/pacific/transportation))
THE APPENDIX

Table 1

<table>
<thead>
<tr>
<th>Noncompliance Category</th>
<th>Cure period deemed to start</th>
<th>When Noncompliance Points may be allocated</th>
</tr>
</thead>
</table>
| A                      | Cure period shall be deemed to start upon the date the Concessionaire first obtained knowledge of, or should have known of the Noncompliance if the Concessionaire had been performing its duties under the HPTE Service Requirements and the Concessionaire’s Service Proposals in accordance with this Contract. For this purpose the Concessionaire shall be deemed to first obtain knowledge of the breach or failure not later than the date of delivery of the initial statement to the Concessionaire, as described in paragraph 1.2. | Noncompliance Points may be allocated  
(a) if the Concessionaire has failed to cure the Noncompliance by the end of the applicable cure period  
and  
(b) if the Noncompliance has not been cured after one or more subsequent periods equal to the cure period then on the expiry of each such period further Noncompliance Points may be allocated |
| B                      | Cure period shall be deemed to start from the date on which the breach or failure occurred, whether or not an initial notice has been delivered to the Concessionaire, as described paragraph 1.2. | Noncompliance Points may be allocated on the date of the written statement from HPTE to the Concessionaire pursuant to paragraph 1.2 and additionally  
(c) if the Concessionaire has failed to cure the Noncompliance by the end of the applicable cure period further Noncompliance Points may be allocated to the Concessionaire  
and  
(d) if the Noncompliance has not been cured after a one or more subsequent periods equal to the cure period then on the expiry of each such period additional further Noncompliance Points may be allocated. |
| C                      | No cure period              | Noncompliance Points may be allocated on the date of the written statement from HPTE to the Concessionaire pursuant to paragraph 1.2. |
Table 2

Period I – From the Commencement Date until the day before the Phase 1 Services Commencement Date

Period II – From the Phase 1 Services Commencement Date until the day before the start of Period III

Period III – From the Full Services Commencement Date or the First anniversary of the Phase 1 Services Commencement Date (whichever is later) onwards

<table>
<thead>
<tr>
<th>Row #</th>
<th>Uncured Noncompliance Points</th>
<th>B</th>
<th>Cumulative Unexpired Noncompliance Points (Cured or Uncured) over 365 Day Period</th>
<th>C</th>
<th>Cumulative Unexpired Noncompliance Points (Cured or Uncured) over 1.095 Day Period</th>
<th>Remedy available to HPTE (see section 5)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
<td>B</td>
<td></td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Period I</td>
<td>Period II</td>
<td>Period III</td>
<td>Period I</td>
<td>Period II</td>
<td>Period III</td>
</tr>
<tr>
<td>1</td>
<td>30</td>
<td>40</td>
<td>30</td>
<td>40</td>
<td>60</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>35</td>
<td>50</td>
<td>40</td>
<td>60</td>
<td>90</td>
<td>75</td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>70</td>
<td>50</td>
<td>80</td>
<td>140</td>
<td>100</td>
</tr>
</tbody>
</table>
Table 3 Noncompliance Schedule

The column Max Points describes the maximum points which may be assessed for a single occurrence. For the categories listed with points in the column "GP Lane Routine Maint Max Points", the US 36 General Purpose Lanes (including the BOS Corridors) shall be assessed separately from the Managed Lanes and the Maximum Points shall be those prescribed in the column "GP Lane Routine Maint Max Points."

Failure by the Concessionaire to report a Noncompliance which should have been identified as part of the routine processes prescribed in the Maintenance Management Plan or Operations Management Plan shall double the Maximum Points prescribed below.

<table>
<thead>
<tr>
<th>ID</th>
<th>Source Document</th>
<th>Heading</th>
<th>Noncompliance occurs if the following conditions are not fulfilled:</th>
<th>Category</th>
<th>Cure Period</th>
<th>Max Points (*)</th>
<th>GPLane Routine Maint Max Points (*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Schedule 6 – Appendix 6-2</td>
<td>Toll Maintenance/ETCS Equipment</td>
<td>All ETCS equipment is fully functional and housing is functioning and free of defects.</td>
<td>A</td>
<td>14 days</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Schedule 6 – Appendix 6-2</td>
<td>Toll Maintenance/ETCS Equipment</td>
<td>All beacons or other equipment associated with HOV enforcement are functioning as required when a vehicle passes through the lane declared as HOV.</td>
<td>B</td>
<td>7 days</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Schedule 6 – Appendix 6-2</td>
<td>Toll Maintenance/ETCS Equipment</td>
<td>All antennas and readers are capturing 99.95% of transactions where a transponder is present in the vehicle.</td>
<td>B</td>
<td>14 Days</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Schedule 6 – Appendix 6-2</td>
<td>Toll Maintenance/ETCS Equipment</td>
<td>Lane controllers are up and running 99.99% of the time that the managed lanes are open.</td>
<td>B</td>
<td>14 Days</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Schedule 6 – Appendix 6-2</td>
<td>Toll Maintenance/ETCS Equipment</td>
<td>AVC system is classifying the correct number of axles on vehicles correctly 99.95% of the time a transaction is detected in the lane.</td>
<td>B</td>
<td>14 Days</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>Source Document</td>
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<tr>
<td>6</td>
<td>Schedule 6 – Appendix 6-2-</td>
<td>Operations/ Contact Center</td>
<td>The Concessionaire takes necessary action with customer service center to validate and then if valid, have error corrected and customer informed within seven (7) days of receiving notice that an incorrect toll amount has been charged (provided appropriate customer information available) This shall apply for errors in excess of $0.25 (to be determined on a per transmission basis). Further, as part of the validation process the Concessionaire must assess and take appropriate action to address any underlying billing problem.</td>
<td>B</td>
<td>7 days</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Schedule 6 – Appendix 6-2-</td>
<td>Operations/ Contact Center</td>
<td>Respond within seven days to customer inquiries and complaints about the Managed Lanes where contact details of customers have been provided.</td>
<td>A</td>
<td>2 days</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Schedule 6 – Appendix 6-2-</td>
<td>Operations/ Contact Center</td>
<td>Telephone line manned during business hours and 24 hour availability of messaging system.</td>
<td>A</td>
<td>Monthly</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Schedule 6</td>
<td>Operations/ Contact Center</td>
<td>Maintain a monthly average of at least 4.0 on a scale of 1.0 to 5.0 on Customer Driven Management (CDM) customer service survey results</td>
<td>A</td>
<td>Assessed Monthly</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Schedule 6</td>
<td>Operations/ Contact Center</td>
<td>Maintain a monthly average of 2.0 or better on a scale of 1.0 to 5.0 on “after-call” customer service surveys done through the phone system in accordance with Appendix 6-2</td>
<td>A</td>
<td>Assessed Monthly</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>ID</td>
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<td>Heading</td>
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<tr>
<td>11</td>
<td>Schedule 6</td>
<td>Operations/ Contact Center</td>
<td>Requirements for answering calls, wait times, quality measurement for phone audits, workforce management software are met in accordance with Appendix 6-2</td>
<td>A</td>
<td>Assessed Monthly</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Schedule 6</td>
<td>Operations/ Contact Center</td>
<td>An monthly average of 98% of all customer and non-customer requests and correspondence, regardless of communication method, responded to within three (3) business days</td>
<td>A</td>
<td>Assessed Monthly</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Schedule 6</td>
<td>Operations/ Contact Center</td>
<td>Requirements for online customer access (web), email system functionality, phone system and IVR (Interactive Voice Response) system functionality are met</td>
<td>A</td>
<td>Assessed Monthly</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Schedule 6</td>
<td>Operations</td>
<td>Transmit transactions that are not duplicates with the correct toll amounts to the Customer Service Center (to be determined on a per transmission basis).</td>
<td>C</td>
<td>None</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Schedule 6</td>
<td>Operations</td>
<td>Upon notification of a duplicate transaction or an incorrect toll amount on a per transmissions basis, the Concessionaire shall reconcile or audit the data transmission within one Business Day to identify any and all other duplicate transactions or incorrect toll charges that may have occurred (to be determined on a per transmission basis). Upon identification, the Concessionaire shall transmit the correct information to the customer service center for rectification including</td>
<td>A</td>
<td>3 days</td>
<td>5</td>
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<td>ID</td>
<td>Source Document</td>
<td>Heading</td>
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</tr>
<tr>
<td>16</td>
<td>Schedule 6</td>
<td>Operations</td>
<td>appropriate correspondence and crediting/debiting of accounts within five days.</td>
<td>C</td>
<td>None</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Schedule 6</td>
<td>Operations</td>
<td>The Concessionaire shall only request payment from an account on the list of current active tags transmitted by the customer service center (to be determined on a per transmission basis). Following receipt of two or more complaints within 30 days emanating from a single toll point Concessionaire shall investigate claims of tag reads from General Purpose (&quot;GP&quot;) lanes and in the event that an erroneous toll read occurred, or reasonable doubt exists as to whether such occurred, Concessionaire shall immediately contact HPTE and prepare correspondence that can be sent to all customers who have made such a complaint regarding the erroneous GP reads. This shall occur within fifteen (15) days of receipt of such second complaint within a thirty (30) day period.</td>
<td>C</td>
<td>None</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>Source Document</td>
<td>Heading</td>
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<tr>
<td>18</td>
<td>Schedule 6</td>
<td>Operations</td>
<td>Upon notification of the display of an incorrect toll amount, the Concessionaire shall reconcile or audit the data transmission within one Business Day to identify any and all other customer accounts that may have been impacted by the incorrect signage (to be determined on a per transmission basis).</td>
<td>A</td>
<td>3 day</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Schedule 6</td>
<td>Operations</td>
<td>Comply with standards applicable to the retention of and use of customer records pursuant to applicable Law.</td>
<td>C</td>
<td>None</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Schedule 6</td>
<td>Operations</td>
<td>Disclose a policy regarding privacy of Customer Confidential Information to Customers in accordance with Schedule 6 Appendix 6-2.</td>
<td>C</td>
<td>None</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Schedule 6</td>
<td>Operations - Incident Management</td>
<td>Achieve an incident response time that complies with Incident Response Plan</td>
<td>C</td>
<td>None</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>22</td>
<td>Schedule 6</td>
<td>Operations - Courtesy Patrol</td>
<td>Provide Courtesy Patrol in accordance with paragraph 4.4.1 of Schedule 6 of the Concession Agreement.</td>
<td>C</td>
<td>None</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Schedule 6</td>
<td>Roadway Maintenance - Category 1 Defect</td>
<td>Address a Category 1 defect within the time period shown in Appendix 6-1 of Schedule 6.</td>
<td>B</td>
<td>As specified in Appendix 6-1</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>24</td>
<td>Schedule 6</td>
<td>Roadway Maintenance - Category 2 Defect</td>
<td>Address a Category 2 defect within the time period shown in Appendix 6-1 of Schedule 6.</td>
<td>B</td>
<td>7 days</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>25</td>
<td>Schedule 6</td>
<td>Roadway Maintenance - Asset Condition</td>
<td>Achieve a mean Asset Condition Score of 3.5 but at least 2 for any Element Category in any quarterly audit as described in paragraph 2.3.7 of Schedule 6 of the Concession Agreement</td>
<td>C</td>
<td>None</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>ID</td>
<td>Source Document</td>
<td>Heading</td>
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</tr>
<tr>
<td>26</td>
<td>Schedule 6</td>
<td>Roadway Maintenance - Asset Condition</td>
<td>Achieve a mean Asset Condition Score of less than 2 and greater than 1 for any Element Category in any quarterly audit as described in paragraph 2.3.7 of Schedule 6 of the Concession Agreement.</td>
<td>C</td>
<td>None</td>
<td>9</td>
<td>14</td>
</tr>
<tr>
<td>27</td>
<td>Schedule 6</td>
<td>Roadway Maintenance - Asset Condition</td>
<td>Achieve a mean Asset Condition Score of 1 or less for any Element Category in any quarterly audit as described in paragraph 2.3.7 of Schedule 6 of the Concession Agreement.</td>
<td>C</td>
<td>None</td>
<td>12</td>
<td>18</td>
</tr>
<tr>
<td>28</td>
<td>Schedule 6</td>
<td>Roadway Maintenance - Inspection</td>
<td>Identify material defects in the inspection reports, life cycle maintenance plan, or work currently undertaken.</td>
<td>C</td>
<td>None</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>29</td>
<td>Schedule 6</td>
<td>Roadway Maintenance – Inspection/Operations</td>
<td>Include identified material defects in the next Life Cycle Maintenance Plan and/or the Operations and Maintenance Plan.</td>
<td>A</td>
<td>14 days</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>30</td>
<td>Schedule 6</td>
<td>Roadway Maintenance/Toll Maintenance</td>
<td>Meet requirements of work zone safety, management, maintenance of traffic and diversion routes for regular maintenance during operations.</td>
<td>B</td>
<td>60 minutes</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>31</td>
<td>Schedule 6</td>
<td>Managed Lanes Reporting</td>
<td>Accurately gather and report on a timely basis the information required for any FHWA reporting requirements as designated by HPTE.</td>
<td>C</td>
<td>None</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Schedule 6</td>
<td>Public Information</td>
<td>Issue information to the public through any means that is factually incorrect.</td>
<td>C</td>
<td>None</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>33</td>
<td>Schedule 6</td>
<td>Public Information</td>
<td>Abide by all requirements of the Managed Lanes Communications Plan</td>
<td>C</td>
<td>None</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>Source Document</td>
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</tr>
<tr>
<td>34</td>
<td>Schedule 6</td>
<td>Incident Management Plan</td>
<td>Comply with a requirement in respect of the Incident Management Plan as required by Schedule 6</td>
<td>C</td>
<td>None</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>35</td>
<td>Schedule 6</td>
<td>Maintenance Management</td>
<td>Achieve a smooth transition of maintenance activities from HPTE in accordance with the Transition Plan.</td>
<td>B</td>
<td>4 days</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>36</td>
<td>Schedule 6</td>
<td>Maintenance Management Plan</td>
<td>Comply with a requirement in respect of the Maintenance Management Plan as required by Schedule 6 of the Concession Agreement.</td>
<td>B</td>
<td>7 days</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>37</td>
<td>Schedule 6</td>
<td>Operations Management Plan</td>
<td>Comply with a requirement in respect of the Operations Management Plan as required by Schedule 6 of the Concession Agreement where the failure impacts or has potential to impact on the level of service provided to users</td>
<td>B</td>
<td>7 days</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>38</td>
<td>Schedule 6</td>
<td>Record keeping</td>
<td>Create the required O&amp;M records.</td>
<td>A</td>
<td>2 days</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>39</td>
<td>Schedule 6</td>
<td>Record keeping</td>
<td>Use, maintain and update the Maintenance Management Information System in accordance with paragraph 5.1 of Schedule 6</td>
<td>A</td>
<td>2 days</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>40</td>
<td>Schedule 6</td>
<td>Safety</td>
<td>Formally establish and adhere to a policy, procedure, process, or guideline as required by the Safety Plan</td>
<td>B</td>
<td>7 days</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>41</td>
<td>Schedule 6</td>
<td>Safety</td>
<td>Report safety related incidents to the HPTE within one day unless they constitute an immediate hazard (Category 1), in which case HPTE shall be notified as soon as practicable but in no case less than 1 hour from occurrence.</td>
<td>B</td>
<td>7 days</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
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</tr>
<tr>
<td>42</td>
<td>Schedule 6</td>
<td>Safety</td>
<td>Observe the safety plan or to carry out any operation or maintenance activity in contravention of (or in absence of) the safety plan or in a manner that represents a hazard to project workers or the general public in accordance with Schedule 6 of the Concession Agreement.</td>
<td>A</td>
<td>1 day</td>
<td>3</td>
<td>Assessed with ML</td>
</tr>
<tr>
<td>43</td>
<td>Schedule 6, Schedule 25</td>
<td>Project Plans</td>
<td>Produce, review, and, as necessary, update the following plans during the Services Period in accordance with the Concession Agreement including but not limited: (1) Maintenance Management Plan; (2) Quarterly, One-Year and Five Year Work Plans; (3) Operations Management Plan; (4) Disaster Recovery Plan; (5) Transition Plan; (6) Incident Response Plan; (7) Managed Lane Communications Plan; (8) Life Cycle Maintenance Plan,</td>
<td>A</td>
<td>30 days</td>
<td>3</td>
<td>Assessed with ML</td>
</tr>
<tr>
<td>44</td>
<td>Schedule 25</td>
<td>Snow and Ice Control</td>
<td>Produce, review, and, as necessary, update the Snow Removal and Ice Control Operations Plan</td>
<td>A</td>
<td>30 Days</td>
<td>3</td>
<td>Assessed with ML</td>
</tr>
<tr>
<td>ID</td>
<td>Source Document</td>
<td>Heading</td>
<td>Noncompliance occurs if the following conditions are not fulfilled:</td>
<td>Category</td>
<td>Cure Period</td>
<td>Max Points (*)</td>
<td>GPLane Routine Maint Max Points (*)</td>
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</tr>
<tr>
<td>45</td>
<td>Schedule 25</td>
<td>Snow and Ice Control</td>
<td>Failure to meet the requirements for completing sweeping within 72 hours after a Precipitation Event per 3.4 of Schedule 25.</td>
<td>C</td>
<td>none</td>
<td>5</td>
<td>Assessed with ML</td>
</tr>
<tr>
<td>46</td>
<td>Schedule 25</td>
<td>Snow and Ice Control – Service Level Scoring</td>
<td>A Service Level Score of 4 is received for an individual Precipitation Event related to the Managed Lanes</td>
<td>C</td>
<td>none</td>
<td>1</td>
<td>Not subject to Noncompliance, addressed per Schedule 25</td>
</tr>
<tr>
<td>47</td>
<td>Schedule 25</td>
<td>Snow and Ice Control – Service Level Scoring</td>
<td>A Service Level Score of 3 is received for an individual Precipitation Event related to the Managed Lanes</td>
<td>C</td>
<td>none</td>
<td>2</td>
<td>Not subject to Noncompliance, addressed per Schedule 25</td>
</tr>
<tr>
<td>ID</td>
<td>Source Document</td>
<td>Heading</td>
<td>Noncompliance occurs if the following conditions are not fulfilled:</td>
<td>Category</td>
<td>Cure Period</td>
<td>Max Points (*)</td>
<td>GPLane Routine Maint Max Points (*)</td>
</tr>
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</tr>
<tr>
<td>48</td>
<td>Schedule 25</td>
<td>Snow and Ice Control – Service Level Scoring</td>
<td>A Service Level Score of 2 is received for an individual Precipitation Event related to the Managed Lanes</td>
<td>C</td>
<td>none</td>
<td>3</td>
<td>Not subject to Noncompliance, addressed per Schedule 25</td>
</tr>
<tr>
<td>49</td>
<td>Schedule 25</td>
<td>Snow and Ice Control – Service Level Scoring</td>
<td>A Service Level Score of 1 is received for an individual Precipitation Event related to the Managed Lanes</td>
<td>C</td>
<td>none</td>
<td>5</td>
<td>Not subject to Noncompliance, addressed per Schedule 25</td>
</tr>
<tr>
<td>50</td>
<td>Snow and Ice Control</td>
<td>Service Level Scoring</td>
<td>A Service Level Score of 0 is received for an individual Precipitation Event related to the Managed Lanes</td>
<td>C</td>
<td>none</td>
<td>7</td>
<td>Not subject to Noncompliance, addressed per Schedule 25</td>
</tr>
<tr>
<td>51</td>
<td>Project Management</td>
<td>Quality Management</td>
<td>Establish, maintain, update or comply with any requirement of a Quality Management Plan in accordance with Section 25 of the Concession Agreement</td>
<td>A</td>
<td>7 Days</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>52</td>
<td>Schedule 16</td>
<td>Tolling price</td>
<td>Comply with the toll pricing requirements (including notification requirements) and vehicle usage/access requirements approved by the HPTE</td>
<td>C</td>
<td>None</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>Source Document</td>
<td>Heading</td>
<td>Noncompliance occurs if the following conditions are not fulfilled:</td>
<td>Category</td>
<td>Cure Period</td>
<td>Max Points (*)</td>
<td>GPLane Routine Maint Max Points (*)</td>
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<td>----</td>
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<td>----------------------------------</td>
</tr>
<tr>
<td>53</td>
<td>Schedule 16/IGA with Denver RTD</td>
<td>US36 Managed Lanes Speed</td>
<td>Maintain an average speed of at least fifty-five (55) mph for the portion of the US 36 Managed Lanes from Table Mesa to the Broomfield Park'n'Ride during Peak Periods, measured over a timeframe of one (1) month where the actual speed is fifty (50) mph or less.</td>
<td>C</td>
<td>None</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>54</td>
<td>Schedule 16/Denver RTD IGA</td>
<td>US36 Managed Lanes Speed</td>
<td>Maintain an average speed of at least fifty-five (55) mph for the portion of the US 36 Managed Lanes from Table Mesa to the Broomfield Park'n'Ride during Peak Periods, measured over a timeframe of one (1) month such that the average is between 40-50 miles per hour.</td>
<td>C</td>
<td>None</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>Schedule 16/Denver RTD IGA</td>
<td>US36 Managed Lanes Speed</td>
<td>Maintain an average speed of at least fifty-five (55) mph for the portion of the US 36 Managed Lanes from Table Mesa to the Broomfield Park'n'Ride during Peak Periods, measured over a timeframe of one (1) month such that the average is less than forty (40) miles per hour.</td>
<td>C</td>
<td>None</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>Schedule 16/Denver RTD IGA</td>
<td>US 36 Managed Lanes Speed</td>
<td>Maintain an average speed of at least fifty (50) mph for the portion of the US 36 Managed Lanes from the Broomfield Park'n'Ride to Pecos Street during Peak Periods, measured over a timeframe of one (1) month where the average speed is forth-five (45 mph) or less.</td>
<td>C</td>
<td>None</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>ID</td>
<td>Source Document</td>
<td>Heading</td>
<td>Noncompliance occurs if the following conditions are not fulfilled:</td>
<td>Category</td>
<td>Cure Period</td>
<td>Max Points (*)</td>
<td>GPLane Routine Maint Max Points (*)</td>
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</tr>
<tr>
<td>57</td>
<td>Schedule 16/Denver RTD IGA</td>
<td>US 36 Managed Lanes Speed</td>
<td>Maintain an average speed of at least fifty (50) mph for the portion of the US 36 Managed Lanes from the Broomfield Park'n'Ride to Pecos Street during Peak Periods, measured over a timeframe of one (1) month such that the average is between 35-45 miles per hour.</td>
<td>C</td>
<td>None</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>58</td>
<td>Schedule 16/Denver RTD IGA</td>
<td>US 36 Managed Lanes Speed</td>
<td>Maintain as average speed of at least fifty (50) mph for the portion of the US 36 Managed Lanes from the Broomfield Park'n'Ride to Pecos Street during Peak Periods, measured over a timeframe of one (1) month such that the average is less than thirty-five (35) miles per hour.</td>
<td>C</td>
<td>None</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>IGA with Denver RTD</td>
<td>I-25 Managed Lanes Speed</td>
<td>Maintain an average travel time of no more than 8.75 minutes from Pecos Street to Denver Union Station during Peak Periods measured over a rolling period of four (4) weeks.</td>
<td>C</td>
<td>Assessed Monthly</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>Schedule 26</td>
<td>Handback Reserve</td>
<td>Establish and fund the Handback Reserve when required and provide appropriate account information in accordance with Section 48.8 of the Concession Agreement</td>
<td>B</td>
<td>30 days</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>Concession Agreement</td>
<td>Key Personnel</td>
<td>Compliance with a requirement with regard to Key Personnel in the Concession Agreement,</td>
<td>B</td>
<td>14 days</td>
<td>2</td>
<td>Assessed with ML</td>
</tr>
<tr>
<td>62</td>
<td>Concession Agreement</td>
<td>Maintenance and inspection of records</td>
<td>Keep, maintain or make available to HPTE and its designated representative any book, record or document in accordance with Schedule 6 of the Concession Agreement.</td>
<td>A</td>
<td>7 days</td>
<td>1</td>
<td>Assessed with ML</td>
</tr>
<tr>
<td>Element Category</td>
<td>Residual Life at Handback (years)</td>
<td>Inspection Requirements</td>
<td>Residual Life Methodology (RLM) Requirement</td>
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<tr>
<td>Road Pavement</td>
<td>10</td>
<td>Pavement inspections shall be by independent testing organizations. Inspections shall provide a continuous or near-continuous record of Residual Life, the number of valid measurements in each Auditable Section shall be sufficient to give a statistically valid result. Inspections shall be repeatable to an agreed level of accuracy and inspection contracts shall include an agreed proportion of inspections to verify accuracy. Inspections shall include ride quality, skid resistance and rutting.</td>
<td>RLM shall be capable of calculation of Residual Life for each Auditable Section. For a nominal 10 year Residual Life at Handback, 85% of Auditable Sections shall have a Residual Life exceeding 10 years, and no Auditable Section shall have a calculated Residual Life of less than 7 years. See Table 1 below for further instructions on RSL calculations</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Element Category</td>
<td>Residual Life at Handback (years)</td>
<td>Inspection Requirements</td>
<td>Residual Life Methodology (RLM) Requirement</td>
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<td></td>
<td></td>
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<tr>
<td>Structures</td>
<td></td>
<td></td>
<td>RLM shall:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reinforced concrete</td>
<td>25</td>
<td>Inspections of structures shall be undertaken by independent testing organizations.</td>
<td>Draw on historic asset maintenance records, inspection and test histories for each structure.</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Pre-stressed concrete</td>
<td>25</td>
<td>Inspections shall follow the latest inspection guidelines (as they apply at the relevant date that the testing is undertaken) recognized by CDOT.</td>
<td>Take account of CDOT and FHWA records of other structures on the network with similar characteristics.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Structural steelwork</td>
<td>25</td>
<td>A close examination shall be made of all parts of each structure.</td>
<td>Include an assessment of load carrying capacity based on the original structural design calculations, the as built drawings and results of load deflection tests where appropriate.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weathering steel</td>
<td>25</td>
<td>Non-destructive tests shall be undertaken appropriate to the type of structure. These shall include the measurement of structural deflection under calibrated load, the identification and measurement of chloride and carbonation profiles from surface to reinforcement and/or tendon level, and the in-situ strength testing of concrete Element.</td>
<td>Take account of any trends in asset deterioration to determine the rate of deterioration and to predict the future condition of individual Elements and the entire structure.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Corrugated steel</td>
<td>25</td>
<td>Testing of steel structures shall include the depth of corrosion and/or the measurement of remaining structural thickness for hidden and exposed parts.</td>
<td>Additional Bridge Evaluation Requirements: No bridge will be structurally deficient as defined by the NBI, all NBI condition ratings should be 7 or greater, all Points condition states should be 1 or 2, no bridge should be load restricted (as per the bridge weight limit map), no bridge should have a vertical clearance less than 16 (or 16.5) feet, no bridge should be scour critical, and all bridge and guardrail transitions should meet current</td>
<td></td>
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<tr>
<td>Element Category</td>
<td>Residual Life at Handback (years)</td>
<td>Inspection Requirements</td>
<td>Residual Life Methodology (RLM) Requirement</td>
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</tr>
<tr>
<td>I-25 Bridge Deck Superstructure</td>
<td>5</td>
<td>As above.</td>
<td>AASHTO and FHWA standards.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Element Category</td>
<td>Residual Life at Handback (years)</td>
<td>Inspection Requirements</td>
<td>Residual Life Methodology (RLM) Requirement</td>
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</tr>
<tr>
<td><strong>Toll Collection Equipment</strong></td>
<td>10</td>
<td>Inspections shall comply with Good Industry Practice.</td>
<td>RLM shall draw on historical asset maintenance records, inspection and test histories for each piece of equipment.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Drainage</strong></td>
<td></td>
<td></td>
<td>RLM shall draw on historical asset maintenance records, inspection and test histories for each individual drainage asset.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Underground storm sewer</td>
<td>25</td>
<td>Inspections shall comply with Good Industry Practice and as agreed with HPTE.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Culverts</td>
<td>25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ditches</td>
<td>**10</td>
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<td></td>
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<td></td>
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<tr>
<td>Inlets</td>
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<td></td>
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<td></td>
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<tr>
<td>Outfalls</td>
<td>**10</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Media Filter Drains</td>
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<tr>
<td><strong>Ancillary</strong></td>
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<tr>
<td>Pavement markings</td>
<td>**</td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>Delineators</td>
<td>**5</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Roadside traffic signs</td>
<td>**5</td>
<td></td>
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<tr>
<td>Earthwork slopes</td>
<td>**</td>
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<tr>
<td>Metal beam guard rail</td>
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<td></td>
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<tr>
<td>Concrete barrier</td>
<td>**</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Impact attenuators</td>
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<tr>
<td>Lighting columns</td>
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<td>Overhead signs</td>
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<tr>
<td>Traffic signal poles</td>
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<td></td>
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<td>Mid-mast lighting</td>
<td>10</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manhole covers, gratings, frames, and boxes</td>
<td>**10</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Curbs and gutters</td>
<td>**10</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Lanterns (lamps/luminaries)</td>
<td>**5</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Node Building 2</td>
<td>As originally transferred (1)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70th Avenue Sand Dome and Magnesium Chloride</td>
<td>As originally transferred(1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For items designated with ***, the residual life requirement shall be met if Element is being maintained as prescribed by Appendix 6-1 or 6-2 and is in a condition whereby it is able to fulfill its intended purpose. Where a life is also indicated after the *** it is informational as to expected replacement cycles.
<table>
<thead>
<tr>
<th>Element Category</th>
<th>Residual Life at Handback (years)</th>
<th>Inspection Requirements</th>
<th>Residual Life Methodology (RLM) Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storage</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(1) As Originally Transferred shall mean that upon the Commencement Date an inspection shall be made of these items and the asset shall be returned in "as equal" or better condition.
## Table 1
### Pavement Calculations for 10-Year RSL

<table>
<thead>
<tr>
<th>Distress Type</th>
<th>Threshold (per tenth mile)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Deformation</td>
<td>0.50 inches in any wheel path</td>
</tr>
<tr>
<td>Longitudinal Cracking</td>
<td>30 feet</td>
</tr>
<tr>
<td>Transverse Cracking</td>
<td>5 counts</td>
</tr>
<tr>
<td>Load Associated Longitudinal Cracking</td>
<td>50 square feet</td>
</tr>
<tr>
<td>Bleeding</td>
<td>50 square feet</td>
</tr>
<tr>
<td>Raveling</td>
<td>50 square feet</td>
</tr>
<tr>
<td>Roughness, IRI or MRI</td>
<td>150 in/mile</td>
</tr>
</tbody>
</table>
Presidio Parkway Phase II

Project Overview

The Presidio Parkway project entails the reconstruction of a 1.6-mile segment of Route 101 in San Francisco, including a new six-lane facility south of the Golden Gate Bridge. The parkway is the only regional roadway link between the San Francisco Peninsula and North Bay Area counties. The project includes a variety of tunnels, viaducts, undercrossings, and interchanges. Phase II of the project was procured as performance-based infrastructure, while Phase I was procured as design-bid-build. A description of each phase is provided later in the document.

Delivery Method
Design, Build, Finance, Operate, and Maintain (DBFOM). The resulting agreement between the public and private sectors is commonly referred to as the “concession.” The private partner is the “concessionaire.”

Term
30 years

Owner
The California Department of Transportation (Caltrans) and the San Francisco County Transportation Authority (SFCTA)

Project Type
Combination Greenfield/Brownfield

Respondents
Three proponents were shortlisted entering the RFP stage of the procurement. One proponent did not submit a final proposal, leaving two proponents that returned the RFP. One of the proposals was non-responsive.

Project Budget (Capital Costs)
Approximately $360 million

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1 This amount reflects the budgeted cost of Phase II, which was the PBI portion of the project. Phase I (delivered as a design-bid-build project) cost an estimated $496 million (Source: SFTCA – Presidio Parkway Fact Sheet, May 2016). Phase II has experienced significant cost increases above its initial budget, which are discussed at the end of this case study.
**Organizational Contacts**
Fred Kessler  
Partner  
Nossaman LLP (Procuring Agencies’ Legal Advisor)

Ignacio Barandiaran  
Principal  
Arup (Procuring Agencies’ Technical and Financial Advisor)

**Timeline & Process**

2010  Request for Qualifications issued

2010  Statements of Qualification received; three teams shortlisted; Request for Proposals issued

2010  Proposals received; preferred proponent selected

2011  Commercial close reached; pre-construction begins

2012  Financial close reached; construction begins

2015  Project open to traffic; construction to continue into late 2016 to complete the project

2016  Expected completion

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2 InfraDeals – Presidio Parkway Doyle Drive Concession: Project History
CONSTRUCTION TIMELINE & PROJECT FEATURES

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- **Phase I**
- **Traffic Shift**

- **Phase II**
- **Traffic Shift**

(Source: Presidio Parkway – Construction Timeline & Project Features)
Risk

What were determined to be the largest risks associated with the project, and how were those risks ultimately allocated via the public-private partnership?

Professional Engineers in California Government (PECG) litigation, resulting in certain delay and potential risk of (a) an adverse court decision and (b) unfavorable changes in financing terms and pricing

- PECG filed a lawsuit against Caltrans alleging that Phase II of the Presidio Parkway project was inconsistent with the state’s PBI enabling legislation because it uses an availability payment structure rather than tolls or user fees. PECG ultimately lost its case in the California State Supreme Court. The litigation process resulted in a long period between commercial and financial close, subjecting Caltrans to changes in financing terms over that period. Caltrans retained this risk.

Interfacing with the Presidio Trust

- Caltrans does not own the right-of-way (ROW) associated with the Presidio Parkway. The ROW is owned by the Presidio Trust, a federal agency that manages and operates the Presidio. There was risk concerning changes in design requirements, environmental management and mitigation, the use of park roads during construction, and delay caused by the Presidio Trust. The project agreement attempted to allocate these risks to the concessionaire. However, ambiguity in the contract language and significant cost increases allegedly attributable to the Presidio Trust’s conduct has led to more than $180 million in claims by the concessionaire against Caltrans and SFCTA (see Appendix 1). For additional details on the unique nature of this project involving the interaction between the procuring agencies, concessionaire, and Presidio Trust, please see the final section of this case study.

Eligibility of federal funds for availability payments

- The Presidio Parkway project was the first instance in which a significant portion of a PBI availability payment would consist of federal highway funds. The Federal Highway Administration (FHWA) was initially concerned about the potential use of federal money to make payments to the concessionaire’s equity investors. Ultimately, it concluded that federal funds can be used to repay equity on PBI procurements. In wake of this project, FHWA produced a guidance memorandum applicable to PBI projects involving federal funds and availability payments. This risk was retained by the procuring agencies.
Post-construction seismic performance
- Caltrans initially hoped to transfer risk associated with the seismic performance of the highway. However, it ultimately determined that seismic performance is a systemic risk affecting its entire portfolio that could not be transferred at an affordable cost. Caltrans therefore retained seismic performance risk, although there is a provision in the project agreement that requires the concessionaire to respond in the event of an earthquake to assume operations and maintenance responsibilities up to a capped cost.

Maintenance of traffic throughout construction
- As a major regional roadway connection in the Bay Area, certain levels of traffic were required to be maintained during construction. This risk was allocated to the concessionaire.

*After determining that a P3 would be used as the delivery method, did any route/alignment/design options reemerge as viable?*

The project—both Phases I and II—was originally planned as a design-bid-build (DBB) procurement. The route/alignment had already been established via the NEPA process and the design and construction associated with Phase I. Approximately 90-95 percent of design work was completed prior to the issuance of the Phase II RFP. While Phase II proponents were not required to use those designs, the Phase II elements were required to integrate with parallel elements of Phase I, effectively necessitating the use of the reference designs.

*What project benchmarks were established in the following areas and what penalties result from the private sector's failure to meet those benchmarks?*

The project agreement includes specific operational, maintenance, and replacement and rehabilitation requirements over the course of the concession.

**Operations & Maintenance**
The concessionaire is responsible for the operation and maintenance (O&M) of both Phase I (DBB) and Phase II (PBI) of the project. The concessionaire is required to create an O&M Plan that is updated annually and applies to the entire project. The O&M Plan contains such elements as:
- An overview description of all roadway assets, facilities, ITS systems, tunnel systems and equipment within the areas for which the concessionaire is responsible for operations and maintenance;
• A description of the concessionaire’s approach to inspection, routine maintenance, planned maintenance and other maintenance services;
• The details of contractors employed to undertake O&M works; and
• The O&M work activities planned for the next 12 months, on a monthly basis.

Annual requirements specific to project operations include:
• A list of operations procedures and protocols, including a schedule of routine operations tasks and the required frequency;
• A contact list of the various entities and agencies, including Caltrans, that the operations staff will require coordination with, including their contact information (contact person, address, e-mail address, telephone numbers, website address);
• Operating protocols, agreements and interactions with other entities such as Caltrans, municipalities, police, fire and any other similar governmental entities; and
• Copies of all operations forms and checklists, including Construction Noncompliance Event and O&M Noncompliance Event logs, Noncompliance logs related to the performance of the O&M work, and closures and construction closures logs, including permitted closures and permitted construction closures.

Annual requirements specific to project maintenance include:
• A list of routine maintenance and planned maintenance procedures and required frequencies for all roadway assets, landscaped areas, ITS systems and tunnel systems;
• Diagnostic procedures for equipment and systems;
• Copies of all as-built drawings that detail the elements of the O&M work and Renewal Work (see description later in this section) to be provided and the physical limits or boundaries of the O&M work, including wiring diagrams, schematic drawings, logic block diagrams, assembly and disassembly drawings clearly identifying the components; and
• Copies of all inspection forms, checklists, etc.

In addition to the annual O&M Plan, the concessionaire must also provide Caltrans with monthly O&M reports no later than the 7th day of each month. Monthly O&M reports must include such information as:
• A summary of planned maintenance activities for the upcoming month;
• A summary of maintenance performed and completed for the previous month and confirmation that the concessionaire performed all O&M work in accordance with the contract;
- A summary of the planned maintenance that was not completed for the month, including the reasons for the incompletion of the planned maintenance and a summary of deferred days for each deferred item;
- Detailed results of all planned maintenance and other maintenance work that was performed during the month;
- A summary of Noncompliance Points (see below) assessed including details of each assessment; and
- Monthly ITS and tunnel systems performance reports.

The concessionaire is also responsible for consolidated annual O&M reports that summarize O&M activities for the year. The annual O&M reports must contain a summary of all monthly O&M reports from the preceding year, a statement of all adjustments to the monthly O&M reports from the preceding year, and a summary, by month, of any information requested by Caltrans during the preceding year.

**Noncompliance Points**

Failure to meet operations and maintenance requirements results in noncompliance events. O&M requirements are split into two phases—construction period O&M requirements and operating period O&M requirements, with each containing their own noncompliance events. Noncompliance events have associated classifications, cure periods, and intervals of recurrence. There are five noncompliance event classifications, with “A” resulting in the fewest points and “E” resulting in the most points and greatest possible payment adjustments.

All noncompliance events result in noncompliance points, which are summed quarterly and translate into availability payment deductions. Certain noncompliance events—i.e. those with a “D” or “E” classification—also result in automatic availability payment deductions. For example, failure to maintain travel lanes free of standing water greater than one inch deep results in a payment deduction of $5,000 during high priority hours. The concessionaire must also clear any incidents that involve a breakdown, minor accident, non-hazardous material spill or debris that results in a closed travel lane within 30 minutes, otherwise it faces a payment deduction of $5,000 during high priority hours.

The project agreement also allows for Caltrans to add entries to the noncompliance event list, though the additions are limited to obligations concerning O&M work and points cannot be assessed for a noncompliance event that occurs prior to its addition.
The concessionaire can offset points, however, through good faith efforts toward Disadvantaged Business Enterprise (DBE) and Small Business Enterprise (SBE) goals (detailed in the “Outcomes” section below).

Renewal Work
The concessionaire must submit, on an annual basis, a Renewal Work (i.e. capital maintenance) schedule for the subsequent five fiscal years. The schedule must include, by component:

- Estimated design life;
- Estimated residual life (i.e. the amount of time until the component will require reconstruction, rehabilitation, restoration, renewal, or replacement);
- A brief description of the type of renewal work anticipated to be performed at the end of the component’s residual life;
- The estimated cost in current fiscal year dollars of such renewal work;
- The total estimated cost in current fiscal year dollars of renewal work in each of the years that renewal work is anticipated to be performed under the schedule; and
- A schedule of anticipated closures and work windows for the performance of the renewal work covered by the renewal work schedule during the upcoming five fiscal years and in accordance with the contract documents.

Turnback
The concessionaire is required to submit a turnback renewal work plan detailing all renewal work necessary to meet turnback conditions four fiscal years prior to the end of the concession. The plan will include:

- Assessment of the condition, performance, and residual life of the project assets at the concession’s end date;
- Renewal work through maintenance repair, reconstruction, rehabilitation, restoration, renewal or replacement of assets such that assets comply with acceptance criteria (attached as Appendix 2);
- A plan for the transition of operation and maintenance responsibilities to Caltrans; and
- Staff training for Caltrans on all O&M manuals, systems, and procedures.

In addition to detailing the renewal work to be done in order to meet the criteria specified in the project agreement, the turnback renewal work plan must include the proposed schedule for implementation and cost details. The concessionaire must also provide, at least six months prior to the end of the concession, a comprehensive training to Caltrans staff on operations and maintenance of the project assets.
Beginning four fiscal years prior to the end of the concession, the concessionaire is required to establish a turnback requirements reserve account. If, thirty-six months prior to the end of term, the amounts in the reserve account are insufficient to pay the costs of the turnback renewal work, the concessionaire must make monthly deposits to fund the gap. If the concessionaire does not have sufficient funds to reconcile the shortfall, subsequent availability payments will be deposited into the account instead of paid to the concessionaire. The concessionaire may provide letters of credit rather than establish a turnback reserve account.
Outcomes

What were the key outcomes (beyond alignment and design) that the procuring agency emphasized in the procurement process?

The procuring agencies emphasized:
- Cost and schedule certainty;
- Accelerated completion;
- Pricing within the affordability limit set by the California Transportation Commission;
- Effective traffic management during construction; and
- Integration with Phase I.

To what extent did the articulation of project objectives include broad community goals—e.g. improved access to jobs for low-income communities, revitalization of distressed communities—in addition to specific transportation goals?

The project established participation goals for small and disadvantaged business enterprises for the design and construction work. The goals are based on the cost of design, construction, and maintenance and rehabilitation. Goals were:
- Small Business Enterprises – 25%
- Disadvantaged Business Enterprises – 13.5%
- Local Business Enterprises – 5%
- Underutilized Disadvantaged Business Enterprises\(^3\) – 5%
- Disadvantaged Veterans Business Enterprises – 3%

Categories are not mutually exclusive and may overlap. While goals were not established for operations and maintenance work, the concessionaire is obligated to make good faith efforts to encourage such enterprises to participate in the O&M work.

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\(^3\) UDBEs meet the definition of a DBE and are a member of one of the following groups: Black Americans, Native Americans, Asian-Pacific Americans, or Women.
Alignment & Design

How much design work did the procuring agency complete before issuing a Request for Proposals?

The vast majority—approximately 90-95 percent—of design work was completed prior to the RFP under an initial assumption that the entire project would be delivered via the traditional design-bid-build method.

How much of that design work was influenced by an initial budget and assumptions as to how the project would be delivered (e.g. P3 or traditional design-bid-build)?

Phase II design work was influenced by an initial budget and assumptions that it would be delivered via the traditional design-bid-build method.

To what extent did the project’s ultimate design evolve during the course of the procurement, as competing proponents responded to the project goals differently?

The project’s ultimate design did not evolve during the Phase II procurement given the requirement that Phase II integrate with the design and construction of Phase I.

The map and legend on the following page shows the allocation of work between Phases I and II and how intertwined the two phases are. Phase I (DBB) consisted of Contracts 1 – 4, while Phase II (PBI) consisted of Contracts 5 – 8. Responsibility for key structures was split between the phases and, at the time that Phase II was being procured as PBI, Phase I had already been designed and was under construction. For example:

- The Southbound High Viaduct (Contract 3) was designed and constructed during Phase I, while the Northbound High Viaduct (Contract 7) was constructed via Phase II.
- The Southbound Battery Tunnel (Contract 4) was designed and constructed during Phase I, while the Northbound Battery Tunnel (Contract 5) was constructed via Phase II.

As parallel structures, the design of the Northbound High Viaduct was required to integrate with the Southbound section; the same conditions hold true for the Battery Tunnel. This arrangement essentially required that the design and aesthetics of the PBI-
procured elements be substantially similar to their parallel DBB-procured elements and that the concessionaire utilize the designs provided in the RFP.

Phase II innovations were therefore limited to means and methods. For example, on the Southbound High Viaduct (Phase I DBB), full depth casings were used in drilling piles. Whereas on the Northbound High Viaduct (Phase II PBI), the concessionaire utilized a design that eliminated the need for casings.¹

To what extent did the RFP process interact at all with NEPA approvals? Was there any need to reopen the environmental approval process?

The NEPA approval process was completed prior to the issuance of the RFP for Phase II; there was no need to reopen the environmental approval process.

¹ Antillón, Javernick-Will, and Molenaar – *The Influence of Public-Private Partnerships on Design Flexibility and Downstream Design Feedback in the Presidio Parkway*
Innovation

*Did the RFP process present procuring agencies with significantly different design and construction choices?*

No. The amount of design work done by the procuring agencies, combined with the phasing of the project work, constrained the amount of innovative solutions and different design and construction choices that the proponents could propose. At the time that Phase II was being procured, Phase I had already been designed and was under construction. Phases I and II share geographical layouts, and Phase II was required to integrate with the design of Phase I. Moreover, of the two proposals received, one was non-responsive.
**Cost**

*Did the RFP process result in proposals with significantly different life cycle costs?*

No. While Caltrans did receive two proposals with differing life cycle costs, one of the proposals was non-responsive.

*Were these costs compared with a hypothetical traditional procurement approach to determine the best value for the public? If yes, what value was provided?*

Yes, the bid prices were compared to risk-adjusted cost estimates via a value for money (VfM) analysis. The bids were required to meet an affordability limit ($35,000,000 for the first year) established by the California Transportation Commission. The VfM resulted in a net present value (NPV) for a design, build, finance, operate, and maintain concession of an estimated $488 million; this was estimated to cost $147 million less in NPV—approximately 23 percent—over the 33-year term of the concession than the design-bid-build option.5

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5 Arup – *Analysis of Delivery Options for the Presidio Parkway Project*
Stakeholder Relations

How did the procuring agencies discuss procurement options with key stakeholders: e.g. its employees and the general public?

Caltrans and SFTCA agreed that, as the local agency, SFCTA was the more appropriate procuring agency to communicate with local stakeholders and residents. SFCTA led public communications and outreach efforts, hiring consultants to assist with the process.

Were explanations of PBI included in efforts to obtain project funding sources, whether from legislatures or direct popular votes?

Explanations of PBI were included at numerous points throughout the outreach process, including in the business case analysis, testimony presented to the California Transportation Commission, and materials provided to the Public Infrastructure Advisory Commission.
Funding

What are the public funding sources that enabled the project’s financing?6

Federal Grants $5,900,000
American Recovery and Reinvestment Act $46,000,000
State Highway Operations and Preservation Program $72,200,000
Proposition K Sales Tax $36,000,000
Regional Improvement Program $67,000,000
State Local Partnership $19,400,000
Metropolitan Transportation Commission $34,000,000
Golden Gate Bridge Highway and Transportation District $75,000,000
Transportation Authority of Marin $4,000,000
Sonoma County Transportation Authority $1,000,000

Total Phase II public funding: $360.5 million

6 SFCTA – Presidio Parkway Fact Sheet, May 2016
Financing

What role does privately-obtained debt and equity play in the project’s financing?

Concessionaire is responsible for:
- $166.6 million in senior bank loans
- $150 million TIFIA loan
- $45.6 million equity component

Total Phase II private financing: $362.2 million

At what point in the design process did the sponsoring agency decide upon public and/or private financing options? How did that analysis affect design considerations?

Financing options were only determined after approximately 90-95 percent of the design process was completed. With the vast majority of design already complete, the approach to financing did not significantly affect design considerations.
Interfacing with the Presidio Trust

The Presidio Parkway is a unique PBI highway project because Caltrans, the lead procuring agency, does not own the right-of-way associated with the asset. The Presidio Trust (PT) owns the land, and the concessionaire was therefore subject to significant interaction with, and oversight by, an additional public agency independent from the project sponsors. The concessionaire has no contract with the PT, yet the PT has control over many of the project’s requirements: e.g. permitting, design, environmental management and mitigation, and use of park roads during construction.

There have been considerable cost overruns that the concessionaire attributes to the PT’s actions, and Caltrans and the concessionaire disagree over the contract language allocating responsibility for absorbing these costs. The concessionaire is currently alleging that PT requirements imposed subsequent to the execution of the project agreement have increased project costs by more than $180 million and that Caltrans bears the risk of these cost overruns. At the June 29-30, 2016 meeting of the California Transportation Commission, Caltrans staff initially recommended that the agency offer $120M to settle these claims but amended its recommendation to offer the concessionaire $29M (see presentation to the California Transportation Commission, included as Appendix 1). As of the date of this case study, the issue of who will ultimately bear the risk of these cost overruns is not fully resolved.
MEMORANDUM

To: CHAIR AND COMMISSIONERS
CALIFORNIA TRANSPORTATION COMMISSION

From: NORMA ORTEGA
Chief Financial Officer

Subject: SUPPLEMENTAL FUNDS FOR PUBLIC PRIVATE PARTNERSHIP – PRESIDIO PARKWAY PROJECT

RECOMMENDATION:

The California Department of Transportation (Department) recommends that the California Transportation Commission (Commission) allocate up to $120,100,000 for the Public Private Partnership Presidio Parkway Project (Project) for unanticipated expenses in excess of the Risk Reserve. This request is intended to address all claims, known or unknown, related to the issues resolved in the proposed settlement, including the identified Notice of Potential Claims, Department Changes, remaining work, Landscaping Work and the current litigation. It also represents the best business decision to resolve the total known universe of claims to articulate a path to successfully complete the Project.

ISSUE:

This supplemental request is for the three categories of Project expenses identified below:

A. Contract Obligations: Contract obligations are based on additional scope of work arising from differing site conditions and obligations to pay the Department’s share of costs incurred during the execution of the Project. The supplemental request for the Contract Obligations is split into two categories. The first category with a sum of $4.7 million is for the additional scope of work that was completed by the Developer. The second category with an estimated cost of not more than $24.3 million is for additional scope of work to be performed by the Developer to achieve Final Acceptance. The supplemental request for the Contract obligations is not to exceed $29 million.

B. Proposed Settlement: A significant portion of the “Settlement” is resolving the dispute of responsibility and risk transfer to the Developer to obtain all approvals from the Presidio Trust. The Department has been working diligently to resolve certain outstanding potential disputes at the lowest possible cost. The supplemental request for the Proposed Settlement is $90.1 million.

C. Owner Control Insurance Program (OCIP): A delay in the overall project timeline has caused the need for extending OCIP. The supplemental request for OCIP is $1 million.
BACKGROUND:

The Public Private Partnership (P3) Presidio Parkway Project (PPNO 0619P) is located in the city and county of San Francisco on Doyle Drive (Route 101) and Richardson Avenue from Lombard Street to the Golden Gate Bridge Toll Plaza. An initial budget of $1.4 billion was approved by the Commission in May 2010. In June 2013, the Commission adopted a revised budget of $1.08 billion, which included a risk reserve to pay for Department obligations expressly identified in the Contract Documents.

That $36.84 million risk reserve, approximately 3.4 percent of the total approved budget, has been drawn down to cover the following costs, with Commission’s approval:

- $6 million to cover the costs of the Owner Controlled Insurance Program (OCIP), September 2012
- $12 million for staffing, May 2014
- $1.8 million for additional scope of work resulting from differing site conditions, May 2014
- $600,000 for the Resident Engineer’s construction office, December 2014
- $3.75 million to cover the Presidio Trust fees for oversight of design and construction activities for its facilities, January 2015
- $3.135 million was for Department Changes and Dispute Resolution Board fees, May 2015

In September 2015, the Developer received a $185 million milestone payment for reaching Substantial Completion of the Project by opening the main line to traffic. Substantial Completion also entitled the Developer to partial quarterly installments of the Availability Payments (AP) for the Maintenance and Operation of the Project. Until the Developer achieves Final Acceptance, however, the Department will withhold 20 percent of the quarterly payments as required by the Contract Documents.

While most of the work to be completed are outside the Department’s right-of-way, the Developer claims that it has been hindered in achieving Final Acceptance because of delays the Developer largely attributes to the permitting authority of the federally established Presidio Trust. The Developer also maintains that additional changes and unresolved disputes will greatly impact the likelihood of Final Acceptance by the September 2016 date required in the Contract Documents. Details of the delays are discussed further in this request.

BASIS FOR SUPPLEMENTAL FUNDS:

A. Contract Obligations

The request for up to $29.0 million identified below, is to cover the Department Changes (DCOs) resulting either from work which was not performed under Phase 1, due to physical constraints or design and construction sequencing of the Project. There were elements of Phase 1 that were not completed at the time the Developer submitted its proposal. Therefore, issues that arose in construction of Phase 1 had an impact on the work that was contemplated by Developer at the time its

"Provide a safe, sustainable, integrated and efficient transportation system to enhance California’s economy and livability”
bid was submitted, resulting in either a change of the scope of work required or in differing site conditions that could not have been reasonably anticipated by the Developer before submitting its bid. These DCOs are identified in more detail below:

**Completed DCOs ($4.74 million):**

**Department Change No. 10 – Abandon and Protect Unidentified Utilities along Girard ($53,000)**
This DCO compensates the Developer for the removal of abandoned existing vault and sewer line, and the protection of an electrical line, along Girard Road. These facilities were not previously known and not shown in the Indicative Preliminary Design Plan. Therefore, they were not identified before the Department received the Developer’s bid. This work is completed.

**Department Change No. 13 – ST-10 Barrier Rail along Southbound US 101 ($1,183,000)**
This DCO compensates the Developer for installing approximately 618 ft. of ST-10 barrier rail on SB-101. These sections of railing were not installed under Phase 1 as they were either in the way of the temporary detour or in conflict with the shoring that was holding up the old abutment. This determination was not made until after the Developer was selected. In addition, it compensates the Developer for all the work associated with the modifications of Traffic Operation System (TOS) equipment, drainage, vaults and electrical system that were installed in Phase 1 at this location that are now in conflict with the installation of the new ST-10 barrier rail. This change was made after the Department received the Developer’s bid. This work is completed.

**Department Change No. 14 – Polyester Concrete Overlay at Hook Ramp ($10,266)**
This DCO compensates the Developer for work entailing the infill of a dip in the concrete pavement under the Hook Ramp Bridge with Polyester Concrete. The Phase 1 portion of the Hook Ramp tunnel was cast with a grade variation that is outside of specification requirements. This variation was not known at the time of the completion of Phase 1 since it was located next to a temporary shoring wall and could not be properly profiled. Therefore, it was not known to the Developer at the time its proposal was submitted. The Department is sharing the cost of this work with the Developer as they also failed to catch this error and cast their work to meet the existing grades. This change was made after the Department received the Developer’s bid. This work is completed.

**Department Change No. 17 – Battery Tunnel Fire Water Connection ($52,000)**
This DCO compensates the Developer for locating a fire water supply line tie-in from Phase 1 and the removal and replacement of the Continuously Reinforced Concrete Pavement (CRCP) to access the connection. The water line was extended beyond Phase 1 CRCP. This change was made after the Department received Developer’s bid. Work is completed.

**Department Change No. 20 – Conflicts with Phase 1 South Bound Battery Tunnel (SBBT) Opening Infill ($85,000)**
This DCO compensates the Developer for additional work required to close the existing SBBT opening. The opening was not built per Phase 1 initial plans due to changes that were made during construction and not known to Developer at bid submittal, and the extent of the changes were not visible at the surface. Previous cost estimate for this closure was contingent upon the existing opening having been constructed per Phase 1 plans. Further investigation by the Developer revealed
that additional work was required, including the removal of PVC sleeves to extend bar reinforcing steel through the beams, chipping down the top of the longitudinal beams to lay transverse bars at the correct elevation, drilling holes for longitudinal rebars where existing bar couplers were filled with mortar, and correcting rebar coupler alignment for the large transverse bars. This change was made after the Department received the Developer’s bid. This work is completed.

**Department Change No. 23 – Restriping at Hook Ramp Bridge ($10,359)**
This DCO compensates the Developer for restriping and signage at the Hook Ramp Bridge leading from Northbound US 101 to Southbound State Route 1. During the construction of Phase 1, a solid edge stripe was placed from SB101 to SB1 instead of the final delineation. The decision to not place the final pavement delineation was made towards the end of Phase 1 construction and after the Department received the Developer’s bid. This work is completed.

**Department Change No. 25 – Northbound Presidio Viaduct & Veterans Off-Ramp Steel Fin Design Phase 1 Contract Change Order No 73 ($808,563)**
This DCO compensates the Developer for matching the architectural details of Southbound High Viaduct steel fins, for the construction of Northbound Presidio Viaduct & Veterans Off-Ramp. Phase 1, Contract Change Order 73 revised SB High Viaduct steel fins design details by modifying the structural tube size and reconfiguring the web plate connection details. This change was made after the Department received the Developer’s bid. This work is completed.

**Department Change No. 30 – Temporary Storm Drain Bypass and Pump System at SBBT, Phase 1 Contract Change Order 22 ($211,774)**
This DCO compensates the Developer for managing temporary storm drain bypass and a pump system installed in Phase 1 to dewater the SBBT. This change was made after the Department received the Developer’s bid. Work is completed.

**Department Change No. 31 – Various Electrical & Systems Change Orders from Phase 1 ($2,033,000)**
This DCO compensates the Developer for finishing and completing the installation of the electrical systems that were modified in Phase 1. This change was made after the Department received the Developer’s bid. This work is completed.

**Department Change No. 32 – Bridge Demolition (not completed in Phase 1) ($190,133)**
This DCO compensates the Developer for Extra Work Costs for demolition and removal of a portion of the on-ramp bridge that could not be completed in Phase 1. This change was made after the Department received the Developer’s bid. This work is completed.

**Department Change No. 37 – Phase 1 Camera Replacement ($100,431)**
This DCO compensates the Developer for upgrading the existing Cameras that were installed in Phase 1 to a higher definition cameras. This change was made after the Department received the Developer’s bid. This work is completed.
Uncompleted DCOs (not to exceed $24.26 million):

**Department Change No. 12 – Signaling at Richardson and Gorgas Intersection ($201,500)**
This DCO compensates the Developer for Extra Work Costs associated with modifications required for the signals at the intersection to meet City standards. Work was initially performed to Department standards, however the Developer was unaware that the intersection is subject to a cooperative agreement with the City. This change was made after the Department received the Developer’s bid. This work is not completed.

**Department Change No. 15 – ST-10 Barrier Rail at the Existing Southbound High Viaduct ($406,000)**
During Phase 1 construction, Southbound High Viaduct was cast with a temporary widened section to accommodate contraflow traffic. After the selection of the Developer, the Department made constructability changes to the details of this widened section. Since the changes were made after the Developer submitted its bid, this DCO compensates the Developer for work including the removal of polyester overlay to uncover couplers, adjusting Phase 1 alignment (curb, edge of deck and anchors), drilling and bonding additional bar reinforcing steel, and supplying larger diameter anchor rods. This work also includes the maintenance of K-rail and delineators during the time required for finishing the work. This change was made after the Department received the Developer’s bid. This work is not completed.

**Department Change No. 18 – Reclaimed Water Line Work ($782,188)**
This DCO compensates the Developer for Extra Work Costs to relocate a reclaimed water line that was not shown in the Indicative Preliminary Design (IPD) plan. Additionally, the pre-existing alignment of the water line would have placed it in the middle of and be exposed in the future wetlands. The Developer is entitled to compensation under the Contract Documents (Volume 1, Article 4, Subsection 4.5.8, “Unknown Utilities,”) since the reclaimed water line was not shown on the Utility Information sheets. This change was made after the Department received the Developer’s bid. This work is not completed.

**Department Change No. 21 – Demolish Barrier and Retaining Wall at Richardson ($208,099)**
This DCO compensates the Developer for demolition of a barrier and short retaining wall along Richardson. The Phase I contract was originally tasked to remove this portion of rail and fence. At the time of this work, it was more important to open up the temporary detour alignment to traffic, so barrier and wall were not demolished. Additionally, the location of the existing rail did not affect the overall geometry of the temporary detour. For these two reasons, the rail and fence were left in place. This change was made after the Department received the Developer’s bid. This work is not completed.

**Department Change No. 27 – Detour Design Change Cellular Concrete from Phase 1 Contract Change Order 45 and 59 ($5,570,332)**
This DCO compensates the Developer for removing cellular concrete that was placed under the temporary bypass road in Phase 1, Contract Change Order 45 and 59. This change was made after the Department received the Developer’s bid. This work is not completed.
Department Change No. 33 – Presidio Trust Lighting Criteria ($333,500)
This DCO compensates the Developer for Extra Work Costs associated with new criteria for lighting set by the Presidio Trust that was different from the lighting requirements in the Contract Documents. This change was made after the Department received the Developer’s bid. This work is not completed.

Department Change No. 34 – Realignment of Lincoln ($1,385,131)
This DCO compensates the Developer for Extra Work Costs incurred in realigning Lincoln Boulevard from its current alignment constructed in Phase 1 to its final configuration over the Battery Tunnel. This work was not explicitly defined in the Contract Documents. This change was made after the Department received the Developer’s bid. This work is not completed.

Department Change No. 35 – Utility Line installed at Cavalry Bowl ($100,000)
This DCO compensates the Developer for adjusting utility lines installed during Phase 1 that are in conflict with the final grading plan. At the time of installation, the final grading plan was not yet developed. This change was made after the Department received the Developer’s bid. This work is not completed.

Department Change No. 36 – Trust Required Rail/Fencing (west McDowell) ($200,000)
This DCO compensates the Developer for Extra Work to change the original rail/fencing at McDowell as required by the Presidio Trust to match Phase 2 rail and fencing. This change was made after the Department received the Developer’s bid. This work is not completed.

Department Change No. 38 – Southbound High Viaduct ST -10 Barrier Railing at Seismic Joints ($515,000)
This DCO compensates the Developer for all the work associated with the installation of ST-10 Barrier Railing over the Seismic Joints at Southbound High Viaduct. Southbound High Viaduct was cast with a temporary widened section to accommodate contraflow traffic on the Temporary Bypass in Phase 1. In order to accommodate future installation of ST-10 Barrier Railing, bar reinforcing steel inserts and anchor couplers were cast into the deck by Phase 1 contractor. During the design, the Developer made a determination that there were insufficient amounts of inserts and couplers installed at the seismic joints and additional work and material will be required by the Developer to finish the installation of the ST-10 Barrier Railing into its final configuration. This work is not completed.

Department Change No. 39 – Girard Rd, remove barrier left from Phase 1($97,000)
This DCO compensates the Developer for removal of barrier rail left from Phase 1. This portion of barrier was to be removed under the Phase 1 contracts but was left in place to expedite the initial traffic switch to allow for the P3 contract to proceed. The barrier rail was not in conflict with the temporary detour. This change was made after the Department receiving of the Developer’s bid. Work is not completed.
Department Change No. 45 – Building 201 ($366,000)
This DCO compensates the Developer for Extra Work Costs in restoring building 201 including, resizing of gas line, garbage enclosure and deck as required by the Presidio Trust. This change was made after the Department received the Developer’s bid. This work is not completed.

Department Change No. 47 – Additional Asphalt Concrete removal at Parking Lot C&D and Temporary Girard Detour ($85,000)
This DCO compensates the Developer for the removal of additional Asphalt Concrete at parking lots C&D and Temporary Girard Detour that was placed in Phase 1. This change was made after the Department received the Developer’s bid. This work is not completed.

Department Change No. 50 – Unknown Utility High-Density Polyethylene Pipe (HDPE) temporary drain ($250,000)
This DCO compensates the Developer for inspection and proper abandonment of an underground drain line installed during Phase 1 as a temporary drain line. This change was made after the Department received the Developer’s bid. This work is not completed.

Department Change No. 51 – Battery Substation Retaining Wall and Fence ($250,000)
This DCO compensates the Developer for removing a portion of Retaining Wall No. 04 and the chain link railing atop the wall in accordance with Presidio Trust requirements. This change was made after the Department received the Developer’s bid. This work is not completed.

Department Change No. 52 – Reconfigure Waterline Adjacent to YMCA ($250,000)
This DCO compensates the Developer for the unanticipated relocation of an existing waterline, in accordance with Presidio Trust requirements. This change was made after the Department received the Developer’s bid. This work is not completed.

Department Change No. 53 – Storm Drain 32 ($250,000)
This DCO compensates the Developer for installing Storm drain that was not included in the Contract Documents. This change was made after the Department received the Developer’s bid. This work is not completed.

Department Change No. 54 – Safety Rail at Sta 75+00. ($199,146)
This DCO compensates the Developer for installing additional Safety Rail at various locations within the job limits above and beyond the Department’s cable safety railing. The cable railing previously installed by the Department will be replaced with this new railing. At the time of the P3 bid and during Phase I contracts, the Department was still in negotiations with the Presidio Trust and had not yet agreed to an acceptable railing type. This change was made after the Department received the Developer’s bid. This work is not completed.

Department Change No. 55 – Demo Parapet Wall from Phase 1 ($227,719)
This DCO compensates the Developer for removing a parapet wall left from Phase 1 as required by the Presidio Trust to facilitate installation of their landscaping. This change was made after the Department received the Developer’s bid. This work is not completed.
Other DCOs are under discussion with the Developer and final estimated cost will be included in this estimate of work.

B. Proposed Settlement

As with any project, and as allowed under the P3 Agreement, the Department is in receipt of potential claims from the Developer. The request for $90.1 million identified below is to cover the proposed settlement of those potential claims. While it is the position of the Department that the risk was allocated to the Developer on these potential claims under the Contract Documents, based on the uncertainty of litigation it is in the Department’s best interest to settle these claims at this point. The Proposed Settlement is for the following potential disputes and the total amount the Developer’s claims is over $250 million:

1. **Design Changes due to the Quartermaster Reach (QMR) Wetland Restoration Project** ($1,320,227): The Presidio Trust has an ongoing, adjacent project entitled Quartermaster Reach (QMR) wetland restoration project. During the design process the Trust issued their criteria for the design of the Tennessee Hollow and Girard bridge foundations within the QMR restoration project. The Developer claims that the additional mandatory design criteria requirements by the Presidio Trust’s QMR restoration project impacted the design and construction activities and schedule. These changes include but are not limited to additional analyses, revised foundations for Tennessee Hollow and Girard Bridges, revised grading plans, revised support features for Halleck Street, revised utility alignments and revised boundaries of the QMR restoration project. This work was completed.

2. **Allowance Landscaping for Recreated Bluffs** ($5,000,000): The Project Allowance Landscaping includes certain elements of work for which the Contract Documents describe an allocation of cost and risk sharing between the Developer and the Department. The Developer claims the embankment work necessary to construct the road way is not included in the Allowance Landscaping costs, but that the earthwork to recreate the historic bluffs is part of the costs of the Allowance Landscaping. The Developer claims that the recreated bluffs are strictly a landscape feature and are not necessary for the construction of the roadways, and therefore all costs for the construction of the recreated bluffs are included in the Allowance Landscaping including the design, purchase (including transportation and handling), construction, installation and any stabilization measures. This work is not completed.

3. **Battery Bluffs, Landscape Outside the Temporary Construction Easement (TCE)** ($4,326,354): The Developer claims the scope of work as detailed in Volume 2, Division II, Landscaping is bound by the limits of the (TCE) secured by the Department from the Presidio Trust under the Right of Entry Agreement. Based on the Landscape Design Criteria provided by the Department, the Developer claims all landscaping identified in the criteria was bound by the (TCE) as described in the Contract Documents and no landscaping was shown outside the TCE in the area north of the Battery Tunnels at Battery Bluff. The Developer is requesting additional compensation and time extension for landscaping outside the TCE at the Battery Bluffs. This work is not completed.
4. **Storm Water Treatment Permit Modification ($2,542,000):** The Developer claims the additional acreage, increased from 27.3 acres to 33.37 acres, requested by the Regional Water Quality Control Board (RWQCB) is more than the area of the project Right of Way for which the storm water can be collected. In addition to the revised treatment area, the RWQCB required a sizing methodology impacted the Project’s tributary area to size BMP. Since the RWQCB requirements took effect after the Department’s selection of the Developer. This work is not completed.

5. **Swords to Plowshares Parking Lot ($1,358,020):** The Developer claims the Presidio Trust required a complete replacement of the Swords to Plowshares parking lot, including but is not limited to moving the parking lot further to the south and constructing new retaining walls, access, drainage, and landscaping. The Developer claims that this scope is not included in Contract Documents and therefore additional compensation is due to the Developer for the new scope of work. This work is not completed.

6. **Gorgas Avenue/Richardson Avenue Intersection Design and Traffic Studies ($536,767):** The Developer claims the Presidio Trust have demanded the Developer to perform design development and analysis for various options along Gorgas at the Richardson intersection. These demands included the review of a roundabout design, multiple revisions to traffic studies based on evolving criteria from the Presidio Trust, various turn lane options at Richardson and parking solutions along Gorgas. Also the Developer claims this work is outside the (TCE) and requested additional compensation. Work was completed.

7. **Main Post Tunnel (MPT) Substation Power ($312,376):** The Developer claims that a lack of coordination between the Department and PG&E to provide a utility line to the MPT substation has impacted the sequence of activities that must occur after the line is installed and has caused a delay. Additionally, the Developer had to mitigate the impacts of this issue through the use of acceleration measures and additional compensation. Work was completed.

8. **Multiple Use Trail (MUT) at Lyons Street ($118,731):** The Developer claims the Presidio Trust has demanded that the Developer construct the connection of the MUT from Lyon Street to Gorgas Street as shown in the Architectural Criteria. The Developer also claims that this work is not part of the Contract Documents scope and this area is not within the TCE and therefore additional compensation will be due to the Developer for the new scope of work. This work is not completed.

9. **Presidio Trust (PT) Service Fees ($4,000,000):** The Developer claims the Contract Documents does not require the Developer to enter into an agreement with the Presidio Trust to reimburse the Presidio Trust for the costs of their review, inspection and oversight for their facilities that are designed and constructed by the Developer. During Phase 1, the Department entered into such agreement with the Presidio Trust.

10. **Presidio Trust Permit Process ($84,028,674 for this item and item 11 below):** The Developer claims the Presidio Trust has required the Developer to apply for multiple Excavation Clearance Permits (dig permits) in order to commence construction work. The Developer also claims the Presidio Trust is improperly using the permit process as an additional approval process in order to control the work and extract further scope, concessions, or construction costs from the Developer. Delays in issuance of permits by the Presidio Trust have caused significant delays to critical path work, increased application...
reviews, and added requirements resulting in additional costs. Some permits are still outstanding and the Developer is waiting for the Trust to issue them before commencing the work.

11. **Reimbursement for Management of the Presidio Trust:** The Developer claims the Presidio Trust has challenged the design authority of the design-build joint venture (DBJV) regarding the design of the Presidio Trust facilities by requesting that the DBJV provide a large amount of additional analysis, reports, and memos. The Developer also claims the Presidio Trust has requested the DBJV to evaluate design alternatives and demonstrate that they are not in conflict with the Contract Requirements. The Developer claims these requests and comments from the Presidio Trust required work that is beyond what is defined by the Contract Documents and is considered to be Extra Work. Furthermore, the Developer claims that these requests should be managed and directed by the Department and the Department should have sole responsibility for consulting and interacting with the Presidio Trust. The Developer claims there are no contractual obligations by which the Developer is required to receive or respond to comments directly from the Presidio Trust. Therefore, the management of interactions with the Presidio Trust is beyond the Developer’s contractual obligations and has significantly impacted the Developer's resources and management of the Project.

12. **Vegetation Preservation Plan (VPP) ($716,958):** The Developer claims even after the Department provided a conditional approval of the VPP and the Treatment Oversight Panel had no further comments on the VPP, the Presidio Trust provided specific comments on the VPP and requested that the Presidio Trust's Technical Requirements for Forested Areas be incorporated as a standard for the Work. The Trust made the incorporation of this standard a prerequisite to issue Excavation Clearance Permits. The Developer claims the Presidio Trust’s changes in the VPP caused significant Extra Work that was not included in the Contract Documents. Work was completed.

13. **Presidio Trust (PT) Geotechnical Criteria ($22,040,094):** The Developer claims the Presidio Trust requested the implementation of their newly developed geotechnical and seismic criteria called "Supplemental geotechnical requirements for deep fills and slopes returned to Trust ownership and built as part of the Presidio Parkway". The Trust has generated these criteria to be utilized for the design and construction of several features on the Presidio Parkway Project. The Developer claims these requirements are not in conformance with the Contract Documents and were developed after the designs had reached the Release for Construction stage and after the Developer’s bid was accepted. The Developer claims this new criteria constitutes a change to the contract requirements, resulting in increased costs and delays. This work is not completed.

14. **Soils Management for Planting Soils ($40,085,556):** The Developer claims that the Presidio Trust requested that the Developer prepare a soils management plan for earthwork activities. The Developer complied with the Trust's ambiguous request and provided numerous plans describing earthwork activities, including testing, cut to fill, and off-haul and stockpiling plans. The Presidio Trust continued to request further iterations and additional information as each plan was provided. The Presidio Trust developed their own Supplemental Soils Management Requirements (SSMRs) for Horticultural Soil and provided them to the Department and the Developer in draft form. The Developer claims that these standards impose significant Extra Work. The Developer claims that the Presidio Trust ignored their comments on the SSMRs
and proceeded to evaluate and permit certain earthwork activities based on their specifications. The Developer claims the Presidio Trust's SSMRs are not required under the Contract Documents and impose significant Extra Work on the Developer, resulting in additional costs. This work is not completed.

15. **Re-Route Phase 1 Electrical and Lighting Systems ($250,000):** The Developer claims re-routing of the power feeds from the substation at the MacArthur Tunnel to the substation at the Battery Tunnel for 8 street lights constructed in Phase 1 was not part of the Contract documents and is Extra Work. This work is not completed.

C. **Owner Control Insurance Program**

**OCIP:** A delay in the overall project timeline and Final Acceptance of the Project has caused the need for extended OCIP coverage. Based on the current changes, it is estimated that another $1 million will be needed to pay for OCIP service cost for the reminder of the project activities.

The parties have entered into a conditional agreement, subject to the approval of the CTC and FHWA, to settle the potential disputes for an amount totaling $90.1 million. The Department believes that approval of the global settlement for these certain potential claims minimizes its exposure in court where litigation risk is uncertain. As with any “Major Projects” the Department had already engaged FHWA and based on our ongoing discussions we believe that this request will be approved for federal reimbursement.

**LANDSCAPING WORK:**

Initially Doyle Drive Replacement Project was programed into 8 contracts. The first four contracts were delivered using Design-Bid-Built delivery method. The eighth contract was designated for Landscaping work and was combined with contracts five, six and seven into one Public Private Partnership contract. In order to facilitate the global settlement and keep the project moving forward, the Developer will complete the landscaping work and associated soil improvements within the State’s right of way per the Contract Documents, however the final landscape work for areas returning to the Presidio Trust will be removed from the Developers scope and will be delivered separately from the P3 Project. The Department is currently working with the Presidio Trust and other stakeholders to finalize the scope and the costs of the Landscape Work within the Presidio Trust’s right of way. The Contract Documents establishes a cost-share allowance for landscaping work. The Department will receive a credit from the Developer for the reduced scope and it is expected that another request to the CTC will be submitted once that scope is finalized, for additional funds to supplement the current allowance and complete the final landscaping work.
LITIGATION SUMMARY:

Litigation for declaratory relief was commenced by the Developer on July 20, 2015 in the Superior Court for the State of California, County of San Francisco (Golden Link Concessionaire LLC v. State of California Dept. of Transportation Case No. CGC-15-546962). The parties agreed to stay the litigation to allow the parties to engage in the negotiations that have resulted in the proposed settlement.

CONCLUSION:

Because it is the first P3 delivered under the authority granted in SB 4, the Presidio Parkway P3 will naturally be a topic of debate regarding this particular delivery method. While this supplemental funds request will no doubt figure into that conversation, useful conclusions are unlikely to emerge until a thorough post-project analysis can be conducted. A thorough examination will ultimately yield data-based conclusions about the impact of changing delivery methods after the first phase of a complex project, about limitations of risk transfer and assumptions and consequences of relying on a contingency of about 3.4 percent to a project which if delivered under a different method might have been assigned a more typical contingency of 10 percent. The effects of those decisions, along with the unusual complications of building without land ownership, under the oversight of a uniquely structured authorizing agency, deserve and will likely receive robust analysis.

It is worth noting that Substantial Completion occurred as scheduled, the corridor is seismically safe, and the facility opened to full traffic on time. Operations and maintenance have been executed well by the Developer, and the Department is relieved of those activities for 30 years. In addition to controls the Department will obtain through this settlement agreement, the P3 Agreement retains a measure of performance enforcement. The Developer provided performance and payment bonds equal to 15 percent of the design-build contract price of $271 million. A letter of credit is also in place equal to 5 percent of the design-build contract price. Developer also had to provide parent company guarantees on a joint and several basis that will not expire until the end of the warranty period. Lastly, the Department holds back 20 percent of the quarterly Availability Payments (before any adjustments). This is approximately $1 million per payment.

FINANCIAL RESOLUTION:

Resolved, that $120,100,000 be allocated from the Budget Act of 2015, Budget Act Items 2660-302-0042 and 2660-302-0890, to provide funds to complete construction on the Presidio Parkway P3 Project.

“Provide a safe, sustainable, integrated and efficient transportation system to enhance California’s economy and livability”
Project’s Location:
### Performance and Measurement Table Baseline

#### Table 5.1- Handback Requirements

<table>
<thead>
<tr>
<th><strong>TABLE 5.1 – HANDBACK REQUIREMENTS</strong></th>
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<tbody>
<tr>
<td><strong>Asset Description</strong></td>
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<td>Flexible Pavement</td>
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<td>Rigid Pavement</td>
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<td>Guardrail</td>
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<td>Attenuators</td>
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<tr>
<td>Signs and beacons</td>
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<tr>
<td>Asset Description</td>
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<table>
<thead>
<tr>
<th>Asset Description</th>
<th>Asset Sub System Description</th>
<th>Handback Evaluation Tasks</th>
<th>Handback Evaluation Criteria</th>
<th>Life Remaining at Handback (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Striping and Markings</td>
<td>Striping, markings, lettering, symbols within the O&amp;M Limits</td>
<td>Inspect pavement markings/delineation in accordance with Maintenance Manual Volume II, Section 4 for the M Family; and Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>No damaged delineation posts/reflectors; No faded, worn, debonded, damaged, non-reflective and/or missing pavement striping and markings; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>2 Years</td>
</tr>
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<tr>
<td><strong>Drainage Systems</strong></td>
<td>Drainage systems elements (side/cross drains, roadside ditches, inlets, and miscellaneous drainage structures)</td>
<td>Conduct a final video inspection of all drainage pipes and other drainage systems elements (side/cross drains, roadside ditches, inlets, and miscellaneous drainage structures) within 90 calendar days before the end of the Term; and Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>No blockages in slots or grates. Defective materials cleaned and repaired or replaced as necessary. Slot drains cleaned; No spalled or cracked concrete that has damage to structural integrity; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>20 Years</td>
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<tr>
<td>Highway Lighting</td>
<td>Includes Roadway, under-deck, signing and high mast within the O&amp;M Limits</td>
<td>Final inspection shall be conducted within 30 calendar days before the end of the Term; and Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>100% of lights must be operational; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>N/A</td>
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<tbody>
<tr>
<td>High Mast Light Poles</td>
<td>Structural within the O&amp;M Limits</td>
<td>Final inspection, including x-rays of the lighting bases, shall be conducted within 180 calendar days before the end of the Term; and Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>All High Mast Light Poles must be in an overall condition that is in accordance with the criteria set forth in the Department’s Manuals and Guidelines current at the time of inspection; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>15 Years</td>
</tr>
<tr>
<td>Over-Lane Sign Structures</td>
<td>Structural within the O&amp;M Limits</td>
<td>Final inspection of over-lane sign Structures shall be conducted within 180 calendar days before the end of the Term; and Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>All over-lane sign structures must be in an acceptable condition according to the Department’s Manuals and Guidelines current at the time of inspection; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>15 Years</td>
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<tr>
<td>Signals</td>
<td>Traffic signals, housings, mountings, signal controllers and ancillary equipment within the O&amp;M Limits</td>
<td>Final inspection of all structures shall be conducted in accordance with Maintenance Manual Volume II, Section 4 for the K Family within 45 calendar days before the end of the Term; and Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>No outages or improperly functioning signals; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>5 Years</td>
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<td><strong>Bridges</strong></td>
<td>Within the O&amp;M Limits</td>
<td>Final inspection of all structures shall be conducted in accordance with Maintenance Manual Volume II, Section 4 for the H Family within 180 calendar days before the end of the Term; and Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>Overall condition rating of eighty (80) or better on the FHWA Standard Structure Sufficiency Rating scale for all Structures; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>45 Years</td>
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<tr>
<td><strong>Tunnels</strong></td>
<td>Within the O&amp;M Limits</td>
<td>Final tunnel inspection shall be conducted within 180 calendar days before the end of the Term. The following tunnel components must be replaced within one year (12 months) before the end of the Term: -Tunnel ventilation; -Tunnel lighting system; and -Tunnel Fire Life system. Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>Overall tunnel condition will be guided by table 4.2 of Division II Section 4 and the Department’s Highway Design Manual or successor; Tunnel systems are integrated with the Department’s existing Command and Control Center; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>10 Years</td>
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<tr>
<td>Retaining Walls</td>
<td>Within the O&amp;M Limits</td>
<td>Final inspection of all structures shall be conducted within 180 calendar days before the end of the Term; and Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>All walls meet necessary standards in the Department’s Highway Design Manual or successor; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>20 Years</td>
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<tr>
<td>Landscaping &amp; Irrigation</td>
<td>To be determined at Handback</td>
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</tr>
<tr>
<td>Fencing</td>
<td>Within the O&amp;M Limits, all fencing along or within the Project used to preserve a property boundary, control pedestrian and animal access, and maximize the safety and security of project users</td>
<td>Final inspection of all fencing shall be conducted within 90 calendar days before the end of the Term; and Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>All fencing must be within 0.75 inches of plumb and grade and repaired or replaced in accordance with the criteria set forth in the Department’s Manuals and Guidelines current at the time of inspection; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td></td>
</tr>
<tr>
<td>Asset Description</td>
<td>Asset Sub System Description</td>
<td>Handback Evaluation Tasks</td>
<td>Handback Evaluation Criteria</td>
<td>Life Remaining at Handback (Years)</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------</td>
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<td>-----------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>ITS</td>
<td>Includes all ITS subsystems, communication and ancillary components</td>
<td>The Developer shall purchase new hardware in the final year of the program and configure, test, deploy and deliver the fully operational system within 180 days before the end of the Term. The Department will retain manufacturer warranties; and Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>100% of all ITS devices are operational; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>N/A</td>
</tr>
</tbody>
</table>

TABLE 5.1 – HANDBACK REQUIREMENTS

- ITS: Includes all ITS subsystems, communication and ancillary components
- Handback Evaluation Tasks: The Developer shall purchase new hardware in the final year of the program and configure, test, deploy and deliver the fully operational system within 180 days before the end of the Term. The Department will retain manufacturer warranties; and Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.
- Handback Evaluation Criteria: 100% of all ITS devices are operational; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.
- Life Remaining at Handback (Years): N/A
<table>
<thead>
<tr>
<th>Asset Description</th>
<th>Asset Sub System Description</th>
<th>Handback Evaluation Tasks</th>
<th>Handback Evaluation Criteria</th>
<th>Life Remaining at Handback (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software programs</td>
<td></td>
<td>Developer shall deliver the software programs updated to the most recent version, including manuals and passwords, if applicable, available from the vendor within 12 months before the end of the Term; Software licenses are to be transferred to the Department and be available to be used with out fee for a minimum of 2 years from the end of Term. The Department will have full rights to use/modify/upgrade without any restrictions; The Department will retain manufacturer warranties on the software ; and Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>Software is licensed and available for Department use for duration of the new ITS equipments’ expected life; Control of all ITS facilities within the Project ROW is integrated into the Department’s Command and Control Center; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>N/A</td>
</tr>
</tbody>
</table>
**TABLE 5.1 – HANDBACK REQUIREMENTS**

<table>
<thead>
<tr>
<th>Asset Description</th>
<th>Asset Sub System Description</th>
<th>Handback Evaluation Tasks</th>
<th>Handback Evaluation Criteria</th>
<th>Life Remaining at Handback (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spare parts</td>
<td></td>
<td></td>
<td>1 year’s worth of all spares and spare parts, test equipment and any custom maintenance equipment shall be delivered to the Department.</td>
<td>N/A</td>
</tr>
<tr>
<td>Loop Detectors</td>
<td>Loop with Amplifier Controllers, Controller Cabinet, Fiber Optic Cable, and other Ancillary Equipment</td>
<td>100% system functionality; and Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>Developer shall no sooner than 90 days prior to end of term demonstrate that the systems are fully functioning with no defects or failed components; All cabinets and other systems components must not show signs of corrosion; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>N/A</td>
</tr>
<tr>
<td>Asset Description</td>
<td>Asset Sub System Description</td>
<td>Handback Evaluation Tasks</td>
<td>Handback Evaluation Criteria</td>
<td>Life Remaining at Handback (Years)</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>-----------------------------</td>
<td>--------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>All Project Aspects Not Specifically Addressed</td>
<td>N/A</td>
<td>Meet or exceed the minimum performance requirements specified in Table 4.2.; and Complete all tests in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>Curing of all deficiencies identified in the final annual O&amp;M inspection as outlined in the O&amp;M Plan (to be done within 180 days before the end of the Term) in accordance with the Department’s current standards and procedures; and Achievement of standards in the Handback Renewal Work Plan to demonstrate the achievement of the required life remaining at the end of the Term.</td>
<td>N/A</td>
</tr>
</tbody>
</table>
Maryland Purple Line

Project Overview

Maryland’s Purple Line project is a 16.2 mile, 21 station, east-west light rail transit line inside the I-495 Capital Beltway near Washington, D.C. The alignment includes one short tunnel, three sections elevated on structures, and multiple bridge structures.

Delivery Method
Design, Build, Finance, Operate, and Maintain (DBFOM). The resulting agreement between the public and private sectors is commonly referred to as the “concession.” The private partner (“concessionaire”) is also responsible for supplying the light rail vehicles.

Term
30 years

Owner
The Maryland Transit Administration (MTA), a division of The Maryland Department of Transportation (MDOT)

Project Type
Greenfield

Respondents
Four proponents were shortlisted entering the RFP stage of the procurement. All four proponents returned an RFP.

Project Budget (Capital Costs)
Approximately $2.6 billion

Organizational Contact
Jeffrey Ensor
TDD Chief of Staff and Director of Project Delivery & Finance
Maryland Transit Administration, Office of Transit Development and Delivery (TDD)
Timeline & Process

2002-2008  MTA studies a range of alignments and different transit modes for the Purple Line project area

2009  Light rail selected as the mode of transit; alignment identified

2009-2014  Conceptual and Preliminary Engineering Phase

2013  MTA decides to use a Public-Private Partnership to design, build, finance, operate, and maintain the Purple Line

2013  FTA accepts the Final Environmental Impact Statement

2014  FTA issues the Record of Decision

2014  MTA issues Request for Proposals

2016  Preferred proponent selected

2016  Financial Close

2016-2021  Final design and construction

2022  Purple Line service begins

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1 Maryland Department of Transportation – Project Overview
Purple Line Route Map

(Source: Maryland Department of Transportation – Maps)
Risk

What were determined to be the largest risks associated with the project, and how were those risks ultimately allocated via the public-private partnership?

Systems integration and start up
- MTA identified systems integration as the single greatest risk. Specifically cited was the integration of the light rail vehicles with the technology systems. This risk was fully transferred to the concessionaire.

Contract interface and integration
- The project requires the successful management of complicated and overlapping contracts with multiple contractors. MTA was concerned about the implications and costs associated with potential delays related to specific contracts and contractors and how those would affect other elements of the project. This risk was fully transferred to the concessionaire.

Delays due to utility relocations
- The concessionaire is fully responsible for identified utility relocation risk, while unidentified utility relocation risk is shared between MTA and the concessionaire using a tiered approach. The concessionaire is responsible for the first $5 million of costs associated with unidentified utility relocations; MTA and the concessionaire will share costs evenly for subsequent costs beyond the initial $5 million and up to $10 million; and MTA is solely responsible for any unidentified utility relocation costs beyond the initial $10 million.

Geotechnical / Site conditions / Tunneling
- The Purple Line alignment includes a 4/10th mile cut-and-cover tunnel in which the tunneling risk was fully transferred to the concessionaire. Geotechnical risk is shared: the concessionaire retains the majority of the geotechnical risks, while MTA retains archaeological risks and risks associated with the accuracy of its information when providing borings.

Right-of-way
- Right-of-way risk is retained by MTA given its powers and authority. MTA divided the required right-of-way into a series of groupings and established a series of dates by which each grouping must be delivered to the concessionaire. If MTA is late in delivering a grouping, the concessionaire has an obligation to
mitigate the impact and delay its work until there is a conflict with the schedule’s critical path, in which case a relief event is triggered.

For additional information on how risks were allocated between MTA and the concessionaire, please see Appendix 1.

**What project benchmarks were established in the following areas and what penalties result from the private sector’s failure to meet those benchmarks?**

MTA has only guaranteed two types of payment regardless of performance benchmarks and factors: insurance and life cycle costs (i.e. the replacement of capital items). MTA does not guarantee payments to the concessionaire for operations, maintenance, project debt service, or projected equity returns. Per the “availability payment” concept, the concessionaire only receives its expected full payments if it achieves the operational and maintenance benchmarks as set forth in the agreement.

**Energy Utilization**

While MTA is responsible for directly paying for the power consumed by the Purple Line, the concessionaire made guarantees to MTA concerning the amount of electricity that the system will consume per year over the 30-year operating term of the concession. The project agreement contains an incentive structure—known as a pain-share / gain-share approach—that incentivizes efficient energy usage during the operations and maintenance period of the agreement.

On an annual basis, provided that the concessionaire consumes the amount of energy specified in the project agreement, MTA is responsible for paying the electric costs. If the concessionaire consumes more electricity in any given year than the total stated in the project agreement, MTA makes an energy efficiency deduction from the concessionaire’s availability payments. The concessionaire absorbs 70% of the cost impact of the increased energy consumption while MTA absorbs 30% of the impact (pain-share). The inverse is true in the same proportions. If the concessionaire consumes less electricity than projected, it receives a bonus payment from MTA (gain-share).

**Operations Components**

There are a multitude of system operations guarantees for which the concessionaire is responsible during the term of the concession. Failure to meet these performance requirements results in Activity Noncompliance Occurrences (ANO). ANOs can be either service or quality types and fall within categories of minor, medium, or major. ANOs can occur at a variety of frequencies, including immediately, hourly, daily, weekly, monthly, and annually.
Failure to remedy Activity Noncompliance Occurrences in the specified timeframe results in Activity Noncompliance Events (ANE). Triggering an ANE results in an automatic financial deduction to the concessionaire as well as the accrual of noncompliance points, based on the type and category of the ANE. These accrued points determine the Monthly Operations Performance Factor (MOPF), which determines the amount deducted from that month’s availability payment.

**Maintenance**

The concessionaire is required to develop and continually update an Asset Management Plan. The concessionaire is responsible for updating and submitting the plan to MTA on an annual basis for approval. The Asset Management Plan is required to include, for example, elements such as:

- The inventory of assets, including description, location, cost, age, and current condition;
- Estimated useful life and projected residual life by asset;
- Criteria for determining whether rehabilitation, overhaul, or replacement will be used such that the asset meets the operational, performance, and life-remaining requirements of the asset;
- Planned preventative maintenance of the asset over its life cycle consistent with the approved maintenance plans;
- Planned renewal work, including refurbishment, major rehabilitation, overhaul, or replacement of the assets throughout the O&M period; and
- Estimated cost in current fiscal year dollars of asset management work for each year of the O&M period.

The concessionaire is responsible for following the plan and maintaining the system to the level prescribed in the plan as approved by MTA. Availability payments include assumptions of maintenance and replacement work to be done by the concessionaire; it must anticipate that work and include it in the regularly updated Asset Management Plans. If actual maintenance costs exceed the estimated costs in those plans, the overruns are the responsibility of the concessionaire. If agreed upon maintenance is not completed, the concessionaire’s availability payment is reduced according to a schedule in the project agreement. These provisions, as well as the turnback provisions that follow, provide incentive to the concessionaire to adhere to the plan and ensure that assets remain in good working condition.

**Turnback**

At the end of the operations and maintenance period, the residual life of system assets is required to be the greater of:
• The remaining useful life of each asset had it been maintained in a state of good repair;
• 10 years for trackwork cross ties; or
• No less than three years after the end of the term assuming regular maintenance consistent with concessionaire’s maintenance plans continues after completion of the handback requirements.

Any rehabilitation, overhaul, or replacement work scheduled to occur in the three-year period following handback must be accelerated so that it occurs prior to the handback.

Beginning five years prior to the end of the agreement, the concessionaire and MTA will work together to identify the renewal work to be done in preparation for turnback and determine the schedule and budget for the process. One aspect of this effort is a plan that, at a minimum, must include:

• Additional asset actions required to meet the condition of no asset rehabilitation, overhaul, or replacement being performed in the three-year period immediately following handback;
• A plan for the transition of operation and maintenance responsibilities to owner;
• A procedure for acceptance of the project elements by owner; and
• A procedure for training owner on operations and maintenance of project elements.

Beginning five years prior to the end of the concession, if available funds will prove insufficient to pay for the work necessary to meet handback requirements, MTA may reduce the availability payment as appropriate. Reductions on availability payments are capped at the concessionaire’s equity distribution.
Outcomes

To what extent did the RFP process focus on general outcomes rather than specific alignments and design?

The alignment was specified prior to the release of the RFP, whereas design was left largely to the respondents to provide their best solutions and proposals. MTA did provide respondents with expected service levels, but it was up to the respondents to determine how to achieve those requirements based on system design.

To what extent did the articulation of project objectives include broad community goals—e.g. improved access to jobs for low-income communities, revitalization of distressed communities—in addition to specific transportation goals?

The procurement documents did not include broad community goals such as those in the question. It did set participation goals for Disadvantaged Business Enterprises (DBE) and Minority Business Enterprises (MBE). Those goals are 26% for design services and 22% for construction services, excluding the supply of LRVs.
Alignment & Design

How much alignment and design work did the procuring agency complete before issuing a Request for Proposals?

MTA selected an alignment and took design to the 30 percent level prior to issuing the RFP. The streets that the system will run on were chosen by MTA and the agency also decided how many stations would be included on the line. MTA determined which sections would be elevated, at grade, or underground. MTA noted that it did not receive feedback from the four proponents on the level of design completed (i.e. too much or too little), but its impression was that the amount of work was appropriate to give a baseline while not over-designing and consequently constraining innovation.

How much of that alignment and design work was influenced by an initial budget and assumptions as to how the project would be delivered (e.g. P3 or traditional design-bid-build)?

The alignment and design work was entirely procurement-neutral and thus not influenced by how the project would be delivered. Up until 2011, it was assumed that the project would be delivered as design-bid-build. It was not until 2012 that the decision was made to procure the Purple Line as performance-based infrastructure.

To what extent did the project’s ultimate alignment and design evolve during the course of the procurement, as competing proponents responded to the project goals differently?

The project’s ultimate alignment did not differ significantly from the one included by MTA in the RFP. MTA made proponents aware that, if they wanted to change the alignment, they would be required to accept the resulting National Environmental Policy Act (NEPA) process risk. MTA indicated that this provision likely prevented the proposers from offering alternative alignments. MTA also informed proponents that they could vary the alignment up to five feet horizontally from the original design without requiring an Alternative Technical Concept proposal.

The largest variation from the original alignment involved a station near the Silver Spring Transit Center, which provides transfer access to WMATA’s (Washington Metropolitan Area Transit Authority) Red Line. One proponent proposed shifting the alignment from one side of the transit center to the other (effectively a few hundred feet), which prevented MTA from having to deal with a conflict involving an office building. The proponent that included this variation was not selected as the preferred
proponent, but MTA suggested the variation to the preferred proponent, which accepted the change. MTA estimates that the change saved the organization approximately $30 million. One proponent considered eliminating the tunnel portion of the segment by moving the alignment, but it ultimately decided against it in its proposal.

MTA’s 30% drawings included in the RFP proposed tunneling at the Bethesda station (the western terminus of the line and a transfer station to WMATA’s Red Line). All proposers responded that the tunneling proposal could not be constructed and each redesigned the entrance for that station in their proposals.

**How did any changes in the project’s alignment between the RFP and project agreement affect/interplay with the NEPA process?**

MTA informed proponents that they would be responsible for any risk associated with the NEPA process involving a variation made to the alignment. The variation made to the Silver Spring Transit Center station did not require a full reopening of the NEPA process or a supplemental environmental impact statement (EIS). Rather, the variation was deemed sufficiently small to only require a reevaluation, which MTA stated took approximately one additional month in working with the Federal Transit Administration to approve the change.
**Innovation**

*Did the RFP process present procuring agencies with significantly different design and construction choices?*

MTA noted that the RFP process resulted in multiple design choices that were ultimately included in the project agreement. For example:

- MTA assumed that the electrical system would need to be a 750-volt system, which is what all LRT systems in the US operate on (except for Sound Transit, which is a 1500-volt system). MTA assumed that technical issues (e.g. spacing of wires) prevented the construction of a 1500-volt system. Three out of the four responses it received proposed a 1500-volt system, including the preferred proponent. This allowed them to cut the number of required power stations in half and will result in more efficient electricity consumption.

- MTA assumed that the trains would consist of two cars (as MAX does) in order to meet capacity requirements. Three of the proposals included single-car trains. One proponent determined that it would be more efficient to run single-car trains more frequently. The preferred proponent designed a single-car train that was able to meet MTA’s capacity requirements by using a longer car while maintaining the assumed headways.

- The concessionaire found ways to reuse soil excavated from parts of the project to use in walls along the line, saving costs by reducing the need for engineered fill.

- MTA assumed the underside of the Baltimore-Washington Parkway would need to be reconstructed, but the concessionaire devised an alternative concept that prevented any need to do so.

- Other innovations include: an additional connection at the New Carrollton station; prevention of taking down a bridge; a reduced number of lost parking spaces at a station; and prevention of taking down an elevator.
Cost

Did the RFP process result in proposals with significantly different life cycle costs?

Yes, the RFP process resulted in proposals with significantly different life cycle costs. MTA stated that the four proposals reflected the following scenarios:

1. Low initial costs; high life cycle costs
2. High initial costs; low life cycle costs
3. Low initial costs; low life cycle costs
4. High initial costs; high life cycle costs

MTA ultimately selected the proposal reflected in the second scenario, valuing the initial upfront investment in the system and ongoing maintenance as a means to avoid large life cycle costs over the course of the asset’s life.

Were these costs compared with a hypothetical traditional procurement approach to determine the best value for the public? If yes, what value was provided?

Yes, the costs of a PBI procurement were compared to a traditional design-bid-build procurement, but they were not made public. MTA conducted a comparison prior to the issuing of the RFQ and then updated the estimate approximately six months before the RFP responses were submitted. While MTA was unable to share the specific dollar values, it noted that the first comparison initially assumed 20 percent savings whereas the updated comparison resulted in cost savings in the range of 7 to 10 percent. These estimated savings reflect the entire life cycle costs of the asset and account for the allocation of risk between the two parties.

Prior to receiving approval to move the project forward as PBI, MTA did provide stakeholders with a presolicitation report, which included a synopsis of the procurement comparison. MTA noted that there was some pressure to make the results of the comparisons more transparent. Essentially, the strategy was to provide some information but not invite public debate.
Stakeholder Relations

How did the procuring agencies discuss procurement options with key stakeholders: e.g. its employees and the general public?

The presolicitation report (referred to in the previous question) served as the main method for discussing procurement options with key stakeholders. The Deputy Secretary of MDOT championed procuring the project as PBI. The organization, in its messaging, emphasized that it was incentivizing performance and improving accountability. MTA stated that the message was received better than they had anticipated it would be. However, MTA also noted that not all employees believed that PBI was the best method, citing decreased control over project elements as an uncomfortable experience for some.

Outreach and communications with public employee unions were generally limited in this project. MTA currently only operates in Baltimore; the Purple Line will be opening in an entirely new service area for MTA. As a greenfield project outside of MTA’s traditional Baltimore footprint, there were no conflicts with the agency’s staff surrounding private operation of the system.

Whereas the Purple Line project was greenlighted, a proposed east-west transit line through Baltimore (the Red Line\(^2\)) did not receive approval to move forward. The Red Line was also being conceived as a PBI procurement; however, rather than a design-build-finance-operate-maintain (DBFOM) arrangement, the Red Line was proposed as a design-build-finance-maintain (DBFM) project, with the public employee union that operates current MTA transit systems in Baltimore operating the system.

Were explanations of PBI included in efforts to obtain project funding sources, whether from legislatures or direct popular votes?

MTA stated that explanations of PBI and how the project is being procured is a continual process that is still ongoing, even as the project approached financial close.

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\(^2\) MTA’s rejected Red Line is distinct from WMATA’s Red Line; there are multiple stations along the Purple Line that allow for transfers to WMATA’s Red Line.
Funding

What are the public funding sources that enabled the project’s financing?

- $900 million FTA New Starts Grant
- $210 million contribution from Montgomery County
- $120 million contribution from Prince George’s County

Total public funding: $1.23 billion
Financing

What role does privately-obtained debt and equity play in the project’s financing?

Concessionaire is responsible for:
- $875 million TIFIA loan
- $322 million in Private Activity Bonds
- $140 million equity component

Total private financing: $1.33 billion

Please see Appendix 2 for additional details on the Purple Line’s cost of capital.

At what point in the design process did the sponsoring agency decide upon public and/or private financing options? How did that analysis affect design considerations?

Financing options were determined once it was decided that the Purple Line would be procured as PBI. While financing options did not significantly affect alignment or design considerations, they did play a role in determining the exact PBI arrangement. There was discussion of procuring the project as design-build-operate-maintain (DBOM) rather than design-build-finance-operate-maintain (DBFOM), but DBFOM was seen as the superior option to ensure additional private sector accountability, risk transfer, and life cycle incentives. Moreover, MTA wanted to align the length of the concession with the assumed useful life of the assets. Procuring the project as DBFOM allowed for this, whereas DBOM concessions that utilize tax-exempt public financing are limited to a maximum twenty year operations and maintenance period.

MTA also noted that, because possible payment deductions can arise from lack of performance and put the private debt at risk, the private lenders essentially act as an additional layer of accountability for the concessionaire and incentivize the project to remain on schedule and on budget.
<table>
<thead>
<tr>
<th>Risk</th>
<th>Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final design approval by public partner</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Design errors/omissions</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Utility relocations</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Contractor interface issues during construction</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Commodity inflation during project construction</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Labor inflation during project construction</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Contractor-caused cost overruns and schedule delays</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Timely rolling stock procurement</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Rolling stock interface with systems</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Integration of project elements (LRVs, systems, track, etc.)</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Commissioning and final acceptance</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Performance of the system and vehicles</td>
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</tr>
<tr>
<td>Operation of the system and vehicles</td>
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<tr>
<td>Maintenance of the system and vehicles</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>State of Good Repair and Capital Renewal Work</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>State of Good Repair on Hand Back to Owner</td>
<td>Concessionaire</td>
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<tr>
<td>Record of Decision (ROD) from FTA</td>
<td>MTA</td>
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<tr>
<td>FTA Full Funding Grant Agreement (FFGA) approval</td>
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<tr>
<td>Right-of-way acquisition</td>
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<tr>
<td>Owner or Third Party directed changes</td>
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<tr>
<td>Fare policy and rate setting</td>
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<td>Fare revenue and ridership</td>
<td>MTA</td>
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<tr>
<td>Third party, permits, and external review approvals</td>
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<tr>
<td>Implementation of ROD &amp; stakeholder commitments</td>
<td>Shared</td>
</tr>
<tr>
<td>Project funding during construction and operations</td>
<td>Shared</td>
</tr>
<tr>
<td>Interest rate fluctuations during solicitation process</td>
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<td>Unanticipated utilities and unreasonable utility delays</td>
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<td>Unanticipated hazardous materials</td>
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<td>Quality Assurance / Quality Control</td>
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<td>Geotechnical risks</td>
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<td>Intersections, grade crossings, and signal operations</td>
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<td>Stakeholder outreach and communications</td>
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<tr>
<td>Changes in government law impacting the project</td>
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<tr>
<td>Force Majeure events</td>
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<tr>
<td>Maintenance of roadways</td>
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</tr>
<tr>
<td>Inflation during operating period</td>
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</table>

(Source: Public-Private Partnership Agreement – Appendix 1: Risk Allocation)
### Purple Line Financing Cost of Capital

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private Activity Bonds</td>
<td>$312,945,000</td>
</tr>
<tr>
<td>True Interest Cost</td>
<td>3.27%</td>
</tr>
<tr>
<td>Credit Rating</td>
<td>BBB+</td>
</tr>
<tr>
<td>TIFIA ($)</td>
<td>$875,000,00</td>
</tr>
<tr>
<td>Cost of Financing (%)</td>
<td>2.41%</td>
</tr>
<tr>
<td><strong>Weighted Cost of Debt</strong></td>
<td>2.64%</td>
</tr>
<tr>
<td>Equity</td>
<td>$140,000,000</td>
</tr>
<tr>
<td>Debt / Equity Ratio</td>
<td>89% / 11%</td>
</tr>
<tr>
<td><strong>Total Weighted Cost of Capital</strong></td>
<td>3.10% - 3.62%³</td>
</tr>
</tbody>
</table>

³ These numbers are reported as a range because the returns required by the equity investor are proprietary information not available to the public. The range reported assumes returns of 8% at the low end and 13% at the high end.
Denver Eagle P3

Project Overview

The Denver Eagle P3 project consists of three different commuter rail lines that total 40.2 miles. The University of Colorado (A) Line runs 22.8 miles between Denver Union Station and Denver International Airport and includes eight stations. The Gold (G) Line will run 11.2 miles between Denver Union Station and Wheat Ridge and includes eight stations. The Northwest Rail (B) Line will run 6.2 miles between Denver Union Station and Westminster and includes two stations. The 6.2 miles of the B Line segment of the Eagle P3 are the first of a proposed 41-mile commuter rail line. The different lines are set to open on different dates (all in 2016), which are detailed in the Timeline & Process section below. The Eagle P3 project is an element of the Regional Transportation District of Denver’s (RTD) 2004 voter-approved FasTracks plan and also includes the construction of a commuter rail maintenance facility (CRMF) to store, clean, and repair the commuter rail vehicles.

Delivery Method
Design, Build, Finance, Operate, and Maintain (DBFOM). The resulting agreement between the public and private sectors is commonly referred to as the “concession.” The private partner (“concessionaire”) is also responsible for supplying the commuter rail vehicles.

Term
34 years

Owner
The Regional Transportation District (RTD)

Project Type
Greenfield

Respondents
Three teams submitted a Statement of Qualifications. Those three teams were then shortlisted for the RFP stage and issued the RFP. One team dropped out, leaving two proponents that returned the RFP.
**Project Budget (Capital Costs)**
Approximately $2.2 billion

**Organizational Contact**
Brian Middleton
Executive Project Manager
Jacobs Engineering

**Timeline & Process**

2008  RTD issues Request for Qualifications

2009  RTD issues Request for Proposals

2010  Final proposals received

2010  Preferred proponent selected

2010  Financial Close; Phase I Notice to Proceed issued (A Line, CRMF, procurement of rolling stock)

2011  $1.03 billion federal grant awarded; Phase II Notice to Proceed issued (Gold Line, Northwest Rail Line)

2016  Project opens
  - The University of Colorado A Line (Denver Union Station to Denver International Airport) opened on April 22, 2016
  - The Northwest Rail (B) Line (Denver Union Station to Westminster) opened on July 25, 2016
  - The Gold (G) Line (Denver Union Station to Wheat Ridge) will open in the fall of 2016

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1 RTD FasTracks Eagle P3 – [2016 Fact Sheet](#)
(Source: Regional Transportation District - FasTracks Eagle P3 Project)
(Source: RTD FasTracks – University of Colorado A Line)
 Northwest Rail Line

(Source: RTD – B Line)
Risk

What were determined to be the largest risks associated with the project, and how were those risks ultimately allocated via the public-private partnership?

RTD approached this question by considering the five risks with the greatest potential cost consequences.

Property acquisition
- Property and right-of-way acquisition was retained by RTD given its powers and authority.

Adjacent projects
- The terminal stations on the University of Colorado A Line from Denver Union Station to Denver International Airport were being built via separate contracts but were required to integrate with the Eagle project. The risk was shared between RTD and the concessionaire, with the concessionaire holding the risk for coordination and RTD retaining the risk for the completion of the adjacent projects.

Utilities
- The Eagle project corridor required approximately 400 utility relocations. The concessionaire assumed the cost and schedule risks associated with all identified utility relocations. RTD retained the risk associated with unidentified utilities.

Design and construction cost and schedule
- Risk associated with design and construction was transferred to the concessionaire, but RTD retained risk associated with any approval withheld by a third party concerning design review.

Regulatory compliance
- Risks associated with changes in regulations were retained by RTD; the concessionaire is responsible for compliance with law.
What project benchmarks were established in the following areas and what penalties result from the private sector’s failure to meet those benchmarks?

**Energy Utilization**

The concessionaire is responsible for paying for all electrical power consumed in the process of operating the system except for traction power, for which RTD is responsible. The concessionaire is responsible for guaranteeing the amount of traction power to be used in the operation of the three lines. The concessionaire has incentive to meet or consume less than the traction power energy benchmarks in the project agreement. If the project consumes less traction power than anticipated, the concessionaire receives a positive adjustment to its availability payments. Conversely, it is responsible for any overruns if the project consumes more traction power than anticipated.

**Operations Components**

The concessionaire is subject to a variety of system operations guarantees. If performance requirements are not met, a task order is issued. Task order elements (e.g. rolling stock; facilities and stations) have standards that, if unresolved by the concessionaire within a specified timeframe, result in the accrual of points. For each 12-hour period that the task order remains unremedied, the associated points are multiplied by a predetermined factor. Points accrue monthly and are applied to a performance deduction formula that produces a percentage to be deducted from the concessionaire’s monthly availability payments.

**Maintenance**

The concessionaire must maintain the system so that it meets the standards set forth in the agreement’s turnback provisions. A component of meeting those standards involves preparing, submitting, and updating a Rolling Stock, Facility and Infrastructure Maintenance Plan that details the concessionaire’s maintenance efforts. The plan is required to include:

- Reliability and maintainability requirements for the fleet and fixed assets on the concessionaire-operated components;
- The maintenance and inspection functions and frequencies required;
- The personnel or subcontractors that shall perform those functions;
- The quality control and monitoring system; and
- Compliance with and support of RTD’s sustainability goals.
**Turnback**

Thirty months prior to the end of the concession, RTD and the concessionaire will establish a committee with three representatives from each organization to determine procedures and timetables for work associated with turning the system back to RTD and ensuring that it is in compliance with the turnback requirements. The turnback requirements are general in their description, requiring the concessionaire to return the system in a condition which

1) Could reasonably be expected of an equivalent commuter rail system in existence and operated for a period equal to the concession, assuming that such system was properly maintained in accordance with the project agreement’s O&M; and

2) Is capable of complying with the project agreement’s O&M standards for at least three years following the end of the concession.²

Once the scope of turnback work is determined (no later than 24 months prior to the end of the concession), the concessionaire is responsible for creating a turnback proposal that details:

- The specific work plan, such that turnback work can be performed without disruption to the commuter rail services in compliance with the O&M standards;
- The proposed schedule for implementation of the turnback work, such that all the associated work is completed no less than 90 days prior to the end of the concession; and
- An estimate of the cost to the concessionaire to perform the turnback work in the proposed manner.

The concessionaire is responsible for performing the work in accordance with the turnback proposal at its own cost, regardless of whether the actual cost is higher than the estimated cost. The concessionaire is also required to provide one or more on-demand letters of credit for the benefit of RTD. The letters of credit must be issued no later than seven days following the acceptance of the turnback proposal and remain valid for a period of 90 days after the end of the concession date in an aggregate amount that is 20 percent higher than the estimated cost. If the concessionaire fails to provide this security, RTD is entitled to deduct the total required amount of the security from the availability payments that the concessionaire would otherwise receive.

² Concession and Lease Agreement, p. 209
Outcomes

To what extent did the RFP process focus on general outcomes rather than specific alignments and design?

The alignment was specified prior to the release of the RFP, whereas design was left largely to the respondents to provide their best solutions and proposals. RTD did include required spans of service and headways, ridership and load point capacity requirements, and maximum allowable run times for all three lines. How to achieve those requirements was left to the respondents.

To what extent did the articulation of project objectives include broad community goals—e.g. improved access to jobs for low-income communities, revitalization of distressed communities—in addition to specific transportation goals?

The procurement documents did not include broad community goals such as those in the question. It did set participation goals for Disadvantaged Business Enterprises (DBE) and Small Business Enterprises (SBE). DBE goals were at least 19% for work relating to design services and supplies and 20% for work relating to construction services and supplies. SBE goals were at least 19% for work relating to design services and supplies and at least 18% for work relating to construction services and supplies. There is also an SBE O&M goal that at least 17% of the work performed during the operating period be performed by SBEs; there is no O&M goal for DBEs. These percentages are calculated by total dollar value, less the amount paid under the rolling stock contract.
Alignment & Design

How much alignment and design work did the procuring agency complete before issuing a Request for Proposals?

RTD selected an alignment and took design to the 30 percent level prior to issuing the RFP. These designs were included in the RFP as reference documents but were not made into requirements. Essentially, RTD was providing the right-of-way and inviting the proponents to design and construct the lines within that framework. There was flexibility in terms of horizontal alignment within the provided right-of-way.

By including its own 30 percent designs as reference rather than requirements, RTD was able to absolve itself of any issues associated with those designs. If the proponents wanted to use the 30 percent designs included in the reference documents, they were required to apply their name and guarantees to the designs, taking on responsibility for any issues. RTD noted that approximately 80 percent of the initial trackwork was adopted by the proponents.

How much of that alignment and design work was influenced by an initial budget and assumptions as to how the project would be delivered (e.g. P3 or traditional design-bid-build)?

RTD’s initial budget did play a role in the preliminary alignment and design work. A portion of the rail segment is vulnerable to flooding. The initial approach involved track hardening through those vulnerable areas and the acceptance that the track would flood at times; this approach was initially rejected upon receiving additional details concerning drainage. An alternative approach involved putting the rail on an elevated structure to avoid the flooding issues, but this was deemed too expensive. Ultimately, RTD suggested the track hardening approach to the concessionaire, which adopted that suggestion.

To what extent did the project’s ultimate alignment and design evolve during the course of the procurement, as competing proponents responded to the project goals differently?

The most significant design change related to the project’s alignment involved sections of the airport segment that were reduced from a double track to a single track. While RTD had assumed that the airport (A) line would be a double track for the entire portion of the segment, the proponents determined that, within the 15-minute headway requirements, some sections could be reduced to single-track. The preferred proponent
proposed two single-track sections, while the unsuccessful proponent proposed three single-track sections.

The Commuter Rail Maintenance Facility (CRMF) serves as an example of design evolution in a PBI procurement. RTD provided a conceptual design that essentially only included the building’s footprint. It was left to the proponents to figure out what the facility would look like and how it would be laid out, though it was required that the building meet LEED Silver standards at a minimum. The two designs that RTD received from the proponents varied significantly.

*How did any changes in the project’s alignment between the RFP and project agreement affect/interplay with the NEPA process?*

Changes to the alignment resulted in the need for 10 Categorical Exclusions (CATEX) to be filed with the FTA detailing the impacts. RTD stated that this was a minor process that took approximately six weeks. While RTD performed the work to secure the FTA’s approval, the concessionaire retained the design and schedule risk. If the FTA had rejected any of the CATEXs, the concessionaire would have been required to modify the design to avoid the need for the CATEX.
Innovation

*Did the RFP process present procuring agencies with significantly different design and construction choices?*

The RFP process did not produce numerous or significantly different design and construction choices. The rolling stock is standard for a commuter rail system, and RTD required that the system employ Positive Train Control (PTC). RTD noted that, between the two proponents that returned RFPs, the technical scores differed by 0.2 points.

One Alternative Technical Concept (ATC) cited by RTD as innovative involved a pedestrian bridge that was assumed necessary to cross over the Gold Line. The unsuccessful proponent included an ATC with an underpass that eliminated a vertical transition and allowed the system to come in at grade through the underpass. RTD liked the idea and requested that the successful proponent include the ATC in the project agreement, which it did.
Cost

Did the RFP process result in proposals with significantly different life cycle costs?

Yes, the proposals contained significantly different life cycle costs due to an ATC proposed by the preferred proponent. RTD assumed that the project would require a 40-year financing to be viable, but the preferred proponent secured a 30-year financing period. The preferred proponent included an ATC in its proposal to reduce the term of the concession from 46 to 34 years. RTD, however, informed the proponent that the ATC would only be accepted if the team were selected according to the original 46-year term criteria. Ultimately, the preferred proponent was still selected according to the original term criteria, upon which RTD accepted the 34-year ATC proposal.

Between the two proposals, there was a difference of $300 million in capital costs. The unsuccessful proponent would have needed to finance the extra $300 million over the 46-year term, which was less favorable than the preferred proponent’s 30-year (or 40-year) financing.

An additional benefit to the reduced term of the concession involved the life cycle of the rolling stock. It made sense from RTD’s perspective to enter into a 34-year concession so that, upon turnback, the rolling stock would be reaching the end of its useful life and thus subject to replacement at the end of the term. A 46-year concession would have ended approximately halfway through the useful life of the second generation of rolling stock, leaving RTD with an older fleet and the increased risk associated with it.

Were these costs compared with a hypothetical traditional procurement approach to determine the best value for the public? If yes, what value was provided?

RTD did not compare the costs of the proposals to a hypothetical procurement approach. RTD felt that it had sufficiently-detailed design-build and operations and maintenance estimates that there was no need to do a value-for-money analysis or develop a public sector comparator. RTD compared the proposals’ costs to their own engineer’s estimates for the design-build and operations and maintenance phases and felt comfortable that they were within a reasonable range.
Stakeholder Relations

*How did the procuring agencies discuss procurement options with key stakeholders: e.g. its employees and the general public?*

Outreach and education were comprehensive processes that took place throughout the project’s procurement, beginning with engaging stakeholders during the predevelopment stages. RTD emphasized that its approach was to attempt to best understand what the affected jurisdictions needed. A committee consisting of approximately 60 identified stakeholders, many of them from affected jurisdictions, was established and reviewed technical proposals; RTD noted that the stakeholder committee’s report matched its own internal technical evaluation. The committee had direct input on the process but did not have a vote.

There was some resistance within RTD concerning relinquishing control over the design and engineering processes. PBI proponents within RTD responded by stressing that elements considered critical to RTD would be prescriptively required, but that the proponents could and should devise innovative solutions to noncritical components.

Public employee unions did not play a significant role in the stakeholder outreach process. The union agreement governing the operation of RTD’s light rail system is specific to light rail and does not apply to the commuter rail lines of the Eagle project. The concessionaire’s employees are non-unionized but are currently contemplating unionizing.

*Were explanations of PBI included in efforts to obtain project funding sources, whether from legislatures or direct popular votes?*

PBI explanations were a significant element of its communications with the organization’s Board of Directors. Turnover on the board required continual education on what PBI is and the evaluation criteria that were being used.
Funding

What are the public funding sources that enabled the project’s financing?

- $1.03 billion FTA Full Funding Grant Agreement
- 0.4% RTD sales and use tax

The Eagle project was one of three pilot projects selected by FTA’s Public-Private Partnership Pilot Program (Penta-P). RTD estimates that being selected for Penta-P resulted in receiving an extra $300 million in FFGA funds.

RTD levies a sales tax of 1.0% across counties within its service area. Of that 1.0% tax, 0.4% is dedicated to paying for the construction and maintenance of the Eagle project.
Financing

What role does privately-obtained debt and equity play in the project’s financing?

Concessionaire is responsible for:
- $397 million in Private Activity Bonds
- $54 million equity component

RTD is responsible for:
- $280 million TIFIA loan (subsequent to financial close)

Subsequent to the project’s financial close, RTD received a TIFIA loan in the amount of $280 million to apply toward the Eagle project, as it was federally cleared. This allowed RTD to release monies tied to the Eagle project for use in other projects that were not federally cleared via NEPA.

At what point in the design process did the sponsoring agency decide upon public and/or private financing options? How did that analysis affect design considerations?

Upon deciding that the Eagle project would be procured as PBI, RTD assumed that the private sector would finance a portion of the project. RTD had a revenue stream via its sales tax to support the project, but it was not enough to finance the entire endeavor. Based on RTD’s estimates, it assumed that the private sector would need to provide $700-800 million in financing. However, the preferred proponent’s lower design-build price ultimately required only $450 million.

In procuring the project as PBI, RTD became less prescriptive in its design requirements and details.
Other Project Information

Original Bridge Design & Reconstruction
The concessionaire originally designed the project’s bridges to American Association of State Highway and Transportation Officials (AASHTO) standards rather than American Railway Engineering Maintenance of Right-of-Way (AREMA) standards. RTD identified this mistake, upon which the concessionaire had an independent design review conducted. The review ultimately resulted in the concessionaire completely demolishing and rebuilding a bridge at its own expense. The concessionaire estimated that the original bridge would have encountered issues approximately 20 years into the project agreement. It decided to remedy the issue in the present rather than risk a major repair that would trigger a contract default during the concession. In addition to demolishing and rebuilding the one bridge, the concessionaire retrofit another five structures at its own expense.

RTD framed these outcomes as a benefit of the PBI delivery method, noting that it would have been more difficult to require the private partner to remedy the situation under a design-bid-build or design-build contract. The concessionaire’s long-term responsibility for operations and maintenance and compensation under an availability payment structure created an incentive to fix these problems, at the concessionaire’s own expense, as they arose.

Rolling Stock Specification Language
Prior to selecting the PBI approach for the procurement, RTD staff and consultants originally produced rolling stock design specifications that totaled 800 pages. All design specifications were ultimately reduced to an approximately 200-page document, of which only 46 pages focused on rolling stock. To encourage innovation, this condensed document emphasized performance-based specifications rather than detailed design specifications.

Alternative Technical Concepts (ATCs)
ATCs were another method to encourage innovation among the proponents. Proponents’ inclusion of ATCs in their proposals provided RTD with a variety of solutions that conveyed the proponents’ comfort level with the allocation of certain risks and the overall PBI procurement process. ATCs allowed proponents to be noncompliant with the RFP provided that the proposals still achieved project performance and availability requirements. ATCs replaced the value engineering (VE) process.
**Stipends**

RTD offered a stipend to any team that responded to the RFP and was compliant with the RFP and ATC process but was not selected as the preferred proponent. The stipend of $2.5 million was in recognition of the teams needing to engage in the process for an extended period of time when the procurement experienced delay. RTD also offered up to $20 million if a team was selected as the preferred proponent but ultimately not awarded a contract due to RTD canceling the project or choosing not to proceed with a PBI procurement. These stipends were offered to demonstrate RTD’s commitment to the process.
The Lessons—Summary

The following lessons were taken directly from RTD’s “Eagle P3 Project Procurement Lessons Learned” document, published in August 2011.

- A successful P3 procurement is heavily dependent on buy-in from, and support of, a broad base of entities including procuring agency personnel, agency management, and board members.

- Develop and insist upon decisive leadership at all levels. Decentralize decision making, empower your leaders, and push your troops beyond their perceived limitations. (One’s reach should always exceed their grasp).

- Involving internal (and external) legal counsel and financial managers and advisors at the start of the procurement process is critical for a P3 since it is at the core a business deal rather than a traditional construction contract.

- It is essential to provide P3 project proposers with maximum design flexibility. Allowing this level of design freedom was a significant learning experience for RTD. We saved significant money (approximately $300 million) without compromising our ability to meet operational requirements.

- Incorporating ATC provisions was a key element in providing both RTD and the proposers the confidence that the Eagle P3 Project could be designed, delivered, operated, maintained, and financed at an acceptable cost.

- The provision of a stipend is very important to demonstrate RTD’s commitment and to partially offset the costs associated with the complex and expensive P3 proposal process—from the proposers’ perspectives—and was key in corporate decision-making at different stages of the procurement.

- Keep the procuring agency’s focus on performance standards rather than design or infrastructure aspects of the procurement.

- Develop the performance standards and availability parameters so the proposed system allows applying quantitative metrics to the evaluation process.

- Allowing the future concessionaire to develop detailed specifications, combined with ATCs, can result in greater confidence a P3 Project can be delivered at the most favorable cost and in the minimum time.
• Risk transfer and ownership considerations are keys to determining which party develops design specifications.

• Qualify teams early so that they can be involved in the development process and understand the agency’s goals and expectations.

• Allow teams to organize to their strengths, but always be led by their equity participants to maintain life-cycle focus.

• The use of performance specifications and availability criteria reduces the agency workload and provides the proposers with freedom to propose a project that they feel is feasible and cost-effective to deliver under DBFOM. The availability component is particularly important for obtaining financing and favorable ratings from the rating agencies.

• Keeping to the established schedule was very valuable in establishing and maintaining our credibility with the proposing teams and their financing partners.

• Using the best value approach is a good way to ensure quality technical proposals.

• Involve all levels of management, including legal counsel, at all stages of the procurement process.

• Ensure all parties—stakeholders, Board members, agency staff, and area residents are kept fully informed of the process and decisions and provide them appropriate venues for expressing their views and opinions.

• Bring potential proposers—primes/major subcontractors and SBE/DBE firms—into the RFQ/RFP development process as early as possible.

• Take full advantage of the experience and lessons learned offered by the potential proposers.

• The agency’s Board must be “on board” from the outset of the procurement process if a DBFOM/P3 approach is to work. Their unequivocal support is essential.
Appendix 1 – RTD Summary of Lessons Learned

- The industry forum was a valuable way to provide consistent information to all potential proposers.

- Stakeholder involvement is critical to the overall success of a project. Obtaining their concurrence with project requirements is essential. Their insights benefit the project.

- Regular communication with all stakeholders is essential to obtaining community support of any project.

- Peer review is essential given the limited number of current and past P3 projects in the U.S.

- Be prepared to go forward with only one qualified proposing team, but work hard to maintain competition with more than one team.

- Provide for a stipend for the teams that respond to the final RFP.

- Schedule adherence is critical to meet the unique aspects of the DBFOM project delivery and establish/maintain agency credibility. Staying on schedule is very important to the financing entity on each proposing team.

- Provide the proposers with clear understandings of where they scored well and where they scored poorly.

- Strike a balance between the information provided by the agency in top level performance specifications and the level of design detail required of the proposers in their technical proposals.

- Develop a risk allocation model that reassures the proposers as to which entity will assume crucial risks, thereby reducing the proposers’ need to reserve for all possible risks.

- Having strong public sector support reduced the financing costs by five to eight basis points. In addition, TABOR\(^3\)-like restrictions can be “backstopped” by strong agency and financing entity guarantees.

\(^3\) Taxpayer Bill of Rights
Appendix 1 – RTD Summary of Lessons Learned

- Motivate and inform the Board, stakeholders and public throughout the procurement process.

- Actively involve the FTA—P3 is new to them, too.
TransLink Canada Line

Project Overview

The Canada Line is an 11.8 mile, 16 station, north-south rail rapid transit line that connects downtown Vancouver, Vancouver International Airport, and Central Richmond. The alignment includes 5.6 miles of tunnel and two bridges. The project is owned by TransLink, Metro Vancouver’s regional transportation authority, with the two exceptions noted under “Owner” below.

Delivery Method
Design, Build, Finance, Operate, and Maintain (DBFOM). The resulting agreement between the public and private sectors is commonly referred to as the “concession.” The private partner (“concessionaire”) was also responsible for the provision of the rail cars.

Term
35 years

Owner
TransLink owns the main line from Richmond to Vancouver while the Vancouver International Airport Authority owns the line from Bridgeport Station to the airport. The concessionaire owns the rail cars.

Project Type
Greenfield

Respondents
TransLink received 10 responses to its Request for Expressions of Interest, from which four teams were prequalified and selected to participate in the Request for Proposals stage. One team withdrew, leaving three proponents that returned the RFP. Two teams were then selected to take part in the Best and Final Offer (BAFO) stage.

Project Budget (Capital Costs)
Approximately $2 billion (CAD)

Organizational Contacts
Don Fairbairn
President
DCF Consulting
David Calver  
Director, Transport Advisory  
SNC-Lavalin

**Timeline & Process**

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<thead>
<tr>
<th>Year</th>
<th>Events</th>
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<tr>
<td>2002</td>
<td>TransLink issues Request for Expressions of Interest</td>
</tr>
<tr>
<td>2003</td>
<td>10 responses received; TransLink issues Request for Proposals to four shortlisted proponents; one team withdraws from the process</td>
</tr>
<tr>
<td>2004</td>
<td>RFPs received; TransLink issues Best and Final Offers (BAFOs) to two teams</td>
</tr>
<tr>
<td>2004</td>
<td>BAFOs received; preferred proponent selected</td>
</tr>
<tr>
<td>2005</td>
<td>Commercial and Financial Close</td>
</tr>
<tr>
<td>2009</td>
<td>Canada Line opens</td>
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1 Canada Line, British Columbia – 2009 Gold Award for Infrastructure  
2 The project was originally scheduled for a November 30, 2009 service commencement but opened ahead of schedule on August 17, 2009.
Canada Line Route Map

(Source: ProTrans BC – Canada Line)
Risk

What were determined to be the largest risks associated with the project, and how were those risks ultimately allocated via the public-private partnership?

Project governance
- TransLink identified project governance as the single greatest risk in the procurement process, noting that multiple government and non-profit entities (TransLink, City of Vancouver, Province of British Columbia, Federal Government of Canada, and Vancouver International Airport Authority) were involved. This risk had to be addressed outside the scope of the project agreement, because it could not be transferred to the private sector.

Ridership revenue
- While TransLink had modeled ridership forecasts, the organization also acknowledged that ridership revenue would vary as a function of the concessionaire’s performance and the design of the line, much of which was left to the proponents in order to incentivize innovation. Ridership revenue risk, other than a ridership volume bonus/deduction to the concessionaire capped at $250,000 (CAD) per year, lies with TransLink.

Geotechnical
- TransLink transferred all geotechnical risk to the concessionaire. TransLink provided enough baseline information that the concessionaire was also willing to take on the unidentified geotechnical risk.

Utilities
- Utility risk was shared between TransLink and the concessionaire via a cost capping mechanism. The concessionaire was responsible for utility relocations up to a cost cap, subject to a plan that was approved by TransLink. Cost overruns or savings relative to the cost cap were split equally between TransLink and the concessionaire.

Schedule
- As the host of the 2010 Winter Olympics, TransLink required that the line begin operations prior to the start of the games. The concessionaire took on the risk of completing the project on schedule. If the concessionaire did not meet the service commencement deadline, it would have been responsible for liquidated damages in the amount of $10,000 (CAD) per day.
For additional information on how risks were allocated between TransLink and the concessionaire, please see Appendix 1.

**What project benchmarks were established in the following areas and what penalties result from the private sector’s failure to meet those benchmarks?**

**Energy Utilization**
The project agreement is heavily redacted; energy utilization could not be discerned.

**Operations Components**
The concessionaire is responsible for preparing annual and rolling five-year operating and maintenance plans to TransLink. TransLink is entitled to credits against its performance payments for the concessionaire’s failure to meet quality standards.

Performance payments are made to the concessionaire every 28 days. Each payment is made on the basis of availability, quality of service, and ridership numbers; availability and quality of service constitute the majority of the performance considerations.

Concerning availability, the concessionaire must meet the requirements of its agreed service plan. If the concessionaire fails to provide a scheduled train, it does not receive a payment for that train. Quality of service entails considerations of train and station safety, passenger comfort, and cleanliness of the vehicles and stations, among others.

Ridership forecasts were established at the commencement of service in the first year and then two years later. Forecasts are subsequently established for five-year operation periods but may be adjusted annually in response to considerations that could materially affect ridership (e.g. increases in fare levels, changes in TransLink policy).

**Maintenance**
See “Operations Components” above.

**Turnback**
The project agreement is heavily redacted; turnback provisions could not be discerned.
Outcomes

To what extent did the RFP process focus on general outcomes rather than specific alignments and design?

The alignment was specified prior to the release of the RFP, whereas significant portions of design (e.g. vertical configuration of the line and rolling stock) were left to the respondents to provide their best solutions and proposals. TransLink included maximum travel times and headways, but it was up to the respondents to determine how to achieve those requirements based on system design and technology employed.

To what extent did the articulation of project objectives include broad community goals—e.g. improved access to jobs for low-income communities, revitalization of distressed communities—in addition to specific transportation goals?

A significant reason that the concessionaire was selected was that it proposed an underground segment all the way from 63rd Avenue to the Waterfront station as an Alternative Technical Concept (ATC). This design choice for sections of the line that the RFP assumed would be at grade or trenched ensured that there would be minimal community and environmental impacts on the Cambie Heritage Boulevard in Vancouver, including no net loss of green space.
Alignment & Design

How much alignment and design work did the procuring agency complete before issuing a Request for Proposals?

TransLink selected an alignment and took design to approximately the 10 percent level prior to issuing the RFP. The selected alignment and early design work were included in the RFP as reference materials. The RFP noted which segments of the line were prescriptive (e.g. elevated) and which were left to the proponents to provide in their proposal (e.g. at grade, elevated, or underground). TransLink provided locations along the line for stations (as well as future stations) but did not determine or prescribe their design, which was left to the proponents. Please see Appendix 2 for the Reference Alignment provided by TransLink.

How much of that alignment and design work was influenced by an initial budget and assumptions as to how the project would be delivered (e.g. P3 or traditional design-bid-build)?

The alignment and design were procurement-neutral, but there was an underlying expectation that the project would be procured as PBI. (The provincial government said it would only contribute funding to a PBI procurement.)

To what extent did the project’s ultimate alignment and design evolve during the course of the procurement, as competing proponents responded to the project goals differently?

In terms of vertical configuration, the alignment and design evolved significantly over the course of the procurement. While TransLink prescribed particular vertical configurations along some portions of the line, the vertical profile of other segments was left to proponents to best suit the technology and service plan being proposed. This resulted in various proposals of at grade, elevated, and underground segments. The concessionaire’s proposal included an ATC featuring a cut and cover tunnel along a portion of the line that the RFP did not prescribe as tunneled. See Appendix 2 for a comparison of the vertical profiles of RFP’s reference alignment and the project as constructed.

In terms of horizontal configuration, some streamlining resulted in changes to the alignment and design. While the original assumption was that the entire line would be double tracked, the airport and Richmond segments ultimately became single track lines.
TransLink provided proponents with station locations in the RFP’s Reference Alignment, including initial and future stops. Ultimately, the stations are where TransLink specified, with some minor variations.³

_Did the environmental approval process require all potentially different alignments/structures (e.g. at grade, elevated, below grade) to go through public review?_

Provincial and federal environmental assessment processes were not triggered by design choices and ATCs proposed by proponents, as the final alignment remained within the secured right-of-way. An amendment to the environmental approval process was required, but it did not delay or adversely impact delivery of the project.

³ The Reference Alignment included five stops on the airport segment, while the final alignment only included three. The Reference Alignment included four stops on the Richmond segment, while the final alignment only included three.
Innovation

Did the RFP process present procuring agencies with significantly different design and construction choices?

The RFP process resulted in multiple different design and construction choices given the non-prescriptive nature of the procurement process. For example:

- TransLink received proposals for entirely different vehicle systems (e.g. light rail versus third rail). Please see “Other Project Information” for additional details on this aspect.

- Proponents provided different proposals related to the vertical configuration of the line in multiple segments.

- Proponents were required to supply the cars for the line, but the cars themselves did not have requirements beyond general ones such as minimum passenger capacity and space to accommodate luggage. The preferred proponent proposed cars that featured additional space, were faster, and were considered more comfortable than those of other proponents.

- The preferred proponent incorporated the ability to extend station platform length at a later time into its proposal. It determined how many cars were needed to meet initial capacity requirements and designed station platforms to a length appropriate to meet that need. The platforms can be extended over the course of the agreement to accommodate additional cars and additional passengers.

- Station design was left entirely to the proponents, which resulted in a number of different design choices. TransLink noted that one proponent had lavish stations that looked attractive but did not materially impact ridership numbers. The preferred proponent’s more utilitarian station designs did not have the same aesthetic appeal.

A report from the Ryerson Institute for Infrastructure Innovation identified additional innovations associated with the Canada Line, as suggested by a variety of interviewees:4

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4 X.-X. Yuan & J. Zhang – Understanding the Effect of Public-Private Partnerships on Innovation in Canadian Infrastructure Projects
• An alignment decision that avoided the relocation of a culvert
• An extradosed bridge design instead of a segmental haunched box girder
• Use of modified piles for a liquefiable sand/silt ground
• Use of construction joints in guideway tunnels to eliminate the need of preloading the site
• Center platform station design, rather than a side platform design
• Relocating the guideway of Number 3 Road in Richmond
Cost

Did the RFP process result in proposals with significantly different life cycle costs?

Yes, the RFP process resulted in proposals with significantly different life cycle costs. The preferred proponent’s proposal was lower cost than the other proponent participating in the Best and Final Offer stage.

Were these costs compared with a hypothetical traditional procurement approach to determine the best value for the public? If yes, what value was provided?

Yes, the costs were compared to a public sector comparator (PSC), which provides a baseline by comparing the expected life cycle cost of the PBI procurement to the expected life cycle cost of the project if it were procured traditionally by the public sector owner. The life cycle cost of the PBI project was reported as $92 million less (net present value) than the life cycle cost of the PSC. The PBI project also included higher expected ridership revenue than the PSC (attributed to elements such as station design, train design, and headways).
**Stakeholder Relations**

*How did the procuring agencies discuss procurement options with key stakeholders: e.g. its employees and the general public?*

Discussions and consultations were conducted primarily for public funders rather than the general public. The agency developed a business case for the PBI procurement and held extensive conversations with funders.

There was resistance from public unions concerning the inclusion of private operations as part of the project delivery method. A justification used for the private operation of the system is that the Canada Line, while providing access to other lines in Vancouver’s SkyTrain system, does not physically interact with the adjacent system, which is operated by unionized public employees. This effectively meant that the Canada Line was an entirely new system within Vancouver’s greater transit network.

*Were explanations of PBI included in efforts to obtain project funding sources, whether from legislatures or direct popular votes?*

Yes. While Vancouver and British Columbia had experience in procuring projects as PBI, project representatives spent significant time working with the federal government concerning policy development for PBI procurement in order to secure federal funding.
Funding

What are the public funding sources that enabled the project’s financing?

All numbers are in Canadian dollars (CAD).

- $29 million contribution from City of Vancouver
- $252 million contribution from Province of British Columbia
- $259 million contribution from Vancouver International Airport Authority
- $343 million contribution from TransLink
- $450 million contribution from the Federal Government of Canada

Total public funding: $1.33 billion (CAD)
Financing

What role does privately-obtained debt and equity play in the project’s financing?

All numbers are in Canadian dollars (CAD).

Concessionaire is responsible for:
- $600 million in loans
- $120 million equity component

Total private financing: $720 million (CAD)

At what point in the design process did the sponsoring agency decide upon public and/or private financing options? How did that analysis affect design considerations?

Financing options were determined early in the procurement process. The provincial government informed TransLink that it would not contribute its portion of funding unless the project were procured as PBI. From the outset, private financing was envisioned as the mechanism that would close the gap between the cost of the system and available public funding.

The financial analysis played a significant role in terms of system design. TransLink believed that, in addition to its own policies and marketing, the design of the system itself would influence ridership and thus the expected farebox revenues. In leaving much of the design work to the discretion of the proponents, TransLink emphasized to the teams the importance of designing the line to optimize ridership.
Other Project Information

Procurement Process Insights
David Calver, an interviewee for the Canada Line report, provided the unique perspective of someone who currently works for the concessionaire and also participated on one of the unsuccessful proposal teams (Fluor Corporation). Mr. Calver stated that one of the reasons that Fluor’s team was not selected to advance to the Best and Final Offer stage was that it followed the RFP too closely. Fluor’s team proposed a light rail system running at grade because, having read the RFP closely, it felt confident that TransLink was calling for a light rail system.

Mr. Calver stated that SNC-Lavalin’s selection as the preferred proponent was due largely in part to its willingness to think outside of the RFP’s assumptions and instructions. Rather than proposing an at-grade light rail system, as strongly implied by the RFP documents, the SNC team proposed a third rail system with no at-grade crossings. This required SNC to propose a rail line that was almost entirely underground or elevated and provided opportunities for innovations and improvements in terms of car design and system performance. The rail cars proposed by SNC were found to provide additional passenger comfort and allowed for faster end-to-end service time by avoiding at-grade crossings.

5 There is a portion of the airport segment that is at grade.
## Appendix 1 – Risk Allocation

<table>
<thead>
<tr>
<th>Risk</th>
<th>Allocation</th>
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<tbody>
<tr>
<td>Municipal and regulatory permitting, delay</td>
<td>Concessionaire</td>
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<tr>
<td>Cost of design build packages</td>
<td>Concessionaire</td>
</tr>
<tr>
<td>Cost of construction</td>
<td>Concessionaire</td>
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<tr>
<td>Construction inflation (labor, steel, etc.)</td>
<td>Concessionaire</td>
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<tr>
<td>Construction delay</td>
<td>Concessionaire</td>
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<tr>
<td>Changed ground condition (tunnels and foundations)</td>
<td>Concessionaire</td>
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<tr>
<td>Design integration</td>
<td>Concessionaire</td>
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<tr>
<td>Integration between civil works and systems</td>
<td>Concessionaire</td>
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<tr>
<td>Condition of civil assets (over the 35-year term)</td>
<td>Concessionaire</td>
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<tr>
<td>Operating performance (over the 35-year term)</td>
<td>Concessionaire</td>
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<tr>
<td>Operating costs (over the 35-year term)</td>
<td>Concessionaire</td>
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<tr>
<td>Maintenance costs (over the 35-year term)</td>
<td>Concessionaire</td>
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<tr>
<td>Useful life of trains and other systems</td>
<td>Concessionaire</td>
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<tr>
<td>Land acquisition cost and schedule</td>
<td>TransLink</td>
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<tr>
<td>Undisclosed environmental or archaeological liabilities</td>
<td>TransLink</td>
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<tr>
<td>Public protest, legal action, embargo or blockade</td>
<td>TransLink</td>
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<tr>
<td>Reasonableness of behavior of Agencies and Cities</td>
<td>TransLink</td>
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<tr>
<td>Ridership revenues</td>
<td>TransLink</td>
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<tr>
<td>Municipal and regulatory permitting, cost</td>
<td>Shared</td>
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<td>Utility relocation cost / delay</td>
<td>Shared</td>
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<tr>
<td>Force Majeure</td>
<td>Shared</td>
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<tr>
<td>Insurance costs</td>
<td>Shared</td>
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</tbody>
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(Source: Partnerships BC – [Canada Line Final Project Report](#))
Canada Line Reference Alignment

(Source: Request for Proposals – Appendix 1: Reference Alignment)
Appendix 2 – Canada Line Reference & Final Alignments

Canada Line Final Alignment

(Source: Canada Line, British Columbia – 2009 Gold Award for Infrastructure)