REQUEST FOR PROPOSALS

# CO-DEVELOPMENT, MULTI-MODAL I-70 MOUNTAIN CORRIDOR PROJECT

## PART 1 – TECHNICAL PROPOSAL

August 15, 2012

*Submitted to*

CDOT
DEPARTMENT OF TRANSPORTATION

**CONFIDENTIAL**

*Submitted by*

PARSONS

# TABLE OF CONTENTS


## PART 1 – TECHNICAL PROPOSAL

### COVER LETTER

*FORM B – Receipt of Addenda/Clarifications*

### 1. QUALIFICATIONS OF KEY PERSONNEL

1.1 KEY PERSONNEL ..... 4

*FORM A – Resume Form*

### 2. PROJECT TECHNICAL PLAN - HIGHWAY AND TRANSIT

2.1 PROJECT PLAN COMPONENTS ..... 8
2.2 TIER 2 NEPA ..... 20

### 3. PROJECT AND RISK MANAGEMENT

3.1 CO-DEVELOPMENT MANAGEMENT RELATIONSHIP ..... 25
3.2 PROJECT BUDGET MANAGEMENT ..... 27
3.3 PROJECT PHASING, SEQUENCING, AND SCHEDULING ..... 28
3.4 RISK MANAGEMENT ..... 32

*EXHIBIT C – Risk Register*

### 4. PROJECT FINANCIAL PLAN

4.1 SKETCH LEVEL TRAFFIC AND REVENUE STUDIES ..... 33
4.2 LEVEL 2 TRAFFIC AND REVENUE APPROACH ..... 36
4.3 SKETCH FEASIBILITY ANALYSIS ..... 40
4.4 EXPRESS LANE TOLLING STRATEGIES ..... 42
4.5 PRIVATE INVESTMENT AND DEBT SOURCES ..... 43
4.6 FINANCIAL PLAN ELEMENTS ..... 46
4.7 STRATEGY FOR OBTAINING A P3 CONCESSIONAIRE ..... 48

## PART 2 – COST AND RISK SHARING PROPOSAL *(Under Separate Cover)*

### 5. COST AND RISK SHARING STRATEGIES

5.1 MINIMIZING CDOT FINANCIAL RESOURCES ..... 1
5.2 SHARING RISKS ..... 2
5.3 RECOUPMENT OF DEFERRED COSTS ..... 3
5.4 OPTION WITHOUT CONSTRUCTION MANAGEMENT SERVICES ..... 4

### 6. COST OF SERVICES

6.1 COST OF SERVICES BY MAJOR PHASES OF THE PROJECT ..... 5
6.2 CDOT RESOURCES ..... 10

## PART 1 – TECHNICAL APPENDIX

*Exhibit 1* *Critical Locations - Typical Sections*
*Exhibit 2* *Concept Design at Critical Locations*
*Exhibit 3* *Concept Design at Idaho Springs*
*Exhibit 4* *Base Case Compatibility*
*Exhibit 5* *Twin Tunnel Options*
*Exhibit 6* *Cost Estimate Build-Up - Capital and O&M*
*Exhibit 7* *Critical Challenges*
*Exhibit 8* *BRT Concepts*
*Exhibit 9* *Express Lane Access/Egress Weave Movement*
*Exhibit 10* *I-70 Co-Development Schedule*
*Exhibit 11* *Budget Tracking and Reporting Systems*
*Exhibit 12* *Traffic Forecast Comparison, Sketch Level Traffic Forecast and Comparable Toll Rates*
*Exhibit 13* *Parsons Revenue Forecasting*
*Exhibit 14* *Key Differences: 2004 CTE Preliminary Traffic Study vs. Parsons Sketch Level Traffic and Revenue Study*

# COVER LETTER

**PARSONS**

1776 Lincoln Street, Suite 600 • Denve r, CO 80203 • (303) 831-8100 • Fax: (303) 831-8208 • ww w.parsons.com

August 15, 2012

Ms. Jill Sweeney, Contracting Officer
Agreements Program
Colorado Department of Transportation
4201 E. Arkansas Avenue, 4th Floor – Central
Denver, CO 80222

**Re: Proposal for Co-development, Multi-Modal, I-70 Mountain Corridor Project**
**Project No. 18958**

Dear Ms. Sweeney:

**Parsons Transportation Group Inc. (Parsons)** is pleased to submit eight copies of our proposal to the Colorado Department of Transportation (CDOT) for the co-development of a multi-modal solution for the I-70 Mountain Corridor. Parsons has a successful history of providing transportation services in Colorado. We have operated a Colorado office for more than 30 years and have demonstrated our commitment and capabilities to CDOT through participation on some of your largest projects and programs. We have established ourselves as trustworthy partners, dedicated to solving the most difficult challenges.

CDOT has been exploring solutions for I-70 for more than 15 years. Through several administrations and numerous consultant efforts, CDOT accomplished a Tier 1 EIS Record of Decision (ROD) in 2011. What was lacking at the conclusion of the EIS was a funding plan to implement the preferred alternative, as prescribed. Construction will take years to accomplish, while congestion in the corridor continues to worsen and approaches untenable levels. Parsons recognized that an innovative approach was needed to advance needed improvements and deliver tangible results.

***Parsons responded.*** In early 2010, Parsons formed an internal task force of engineering, construction, environmental, finance, and public-private partnership (P3) experts to perform a thorough study of the corridor. Our goal was to determine if a new and unbiased examination would render a funding and delivery solution that could assist CDOT in meeting its I-70 Mountain Corridor goals. Parsons task force conducted technical and financial studies and developed a multi-modal project concept aligned with the corridor-preferred alternative and compatible with the I-70 Mountain Corridor ROD.

Parsons envisions utilizing a P3 approach to design, build, finance, operate, and maintain (DBFOM) the initial stage of highway and transit improvements along the I-70 Mountain Corridor through a long-term concession agreement. Central to our concept, Parsons will provide project development services on an accelerated schedule. Our ideas include a strategy to deliver the project using an innovative, co-development project delivery model that balances private- and public-sector cost and risk, significantly motivates our team to deliver, and provides an organizational framework that maximizes collaboration and partnership. We presented the results of our extensive efforts to the Enterprise and CDOT in our Unsolicited Proposal on July 15, 2011, as the Parsons Plan. Since that time, we have refined and improved our plan with input we have received from your comprehensive evaluation.

The Parsons team will support this critical project, providing strategic leadership and management of environmental processes; highway, tunnel, and transit design; P3 procurement; and construction management services. We have carefully considered the requisite expertise in program management, P3 development, transit, and project finance; and have assembled a comprehensive team of national

firms and Colorado-based project delivery professionals, capable and prepared to deliver on our commitments.

Our team's major participants and their project roles include the following:

| Major Participant | Primary Project Role |
|---|---|
| Parsons Transportation Group Inc. | Co-Developer/Program Management |
| Wilson & Company, Inc. Engineers & Architects | Environmental Services |
| Stantec, Inc. | Traffic and Revenue Studies |
| Public Financial Management, Inc. (PFM) | Financial Advisor |
| IBI Group | Transit and Toll Systems |
| Kaplan Kirsch & Rockwell, LLP (KKR) | Legal Advisor/P3 Contract Development |
| InterMountain Public Affairs, LLC | Public Outreach |
| Peter Webb Public Relations, Inc., dba Webb PR | Public Outreach |

The Parsons Plan, tailored specifically for the I-70 Mountain Corridor project, offers a solution that is fully aligned with, and will completely satisfy CDOT's project goals. In fact, we anticipated these goals during our concept development and they have served as guiding principles for our team since the beginning of our studies, more than two years ago.

***What sets the Parsons team apart as the best choice for CDOT to develop the I-70 Mountain Corridor Project, which is so important to the future of Colorado?***

***The Parsons team initiated the concept*** to deliver an innovative, creative mobility solution to this complex and critically needed project expeditiously. We have significantly vested our entire team in the delivery of a multi-modal mobility solution within the corridor, in partnership with CDOT.

***As you review our proposal, you will see that no other team has independently developed such a well-conceived, comprehensive plan*** that offers congestion relief, job creation, a viable financing plan, a multi-modal solution, and a process that ensures that stakeholder concerns will be addressed. Equally important, the Parsons Plan delivers a substantial initial phase for the corridor that greatly reduces CDOT, the Enterprise, federal, or any public funding requirements.

***The Parsons team is prepared to deliver.*** We have dedicated more than two years evaluating and refining our plan, blended the best Colorado firms with national experts that have decades of experience in delivering P3 projects of this magnitude and have versed them in the one-team approach to collaborative execution. In Parsons, you have a co-development partner that is ready to roll up its sleeves with your staff. ***We don't approach challenges by assuming that something necessary can't be done; we provide solutions that deliver.***

If you have any questions or require additional information regarding our submittal, please contact our single point of contact, Steve Smith, at 1776 Lincoln St., Suite 600, Denver, CO, 80290, (P) 303-748-4596, (F) 303-831-8208, or by email at steven.smith@parsons.com.

Sincerely,

Thomas E. Barron
President
Parsons Transportation Group Inc.

Steven P. Smith, PE
Vice President, Parsons Director
Parsons Transportation Group Inc.

# Form B – Receipt of Addenda/Clarification

# FORM B
# RECEIPT OF ADDENDA/CLARIFICATIONS

Submitter's Name: Parsons Transportation Group Inc.

The Undersigned Acknowledges receipt of the addenda to the RFP as indicated below.

**ADDENDA**

Addendum/Clarification No. Final Revised RFP Dated 7/26/2012

Addendum/Clarification No. Q&A Dated 7/27/2012

Addendum/Clarification No. _____ Dated _____

Addendum/Clarification No. _____ Dated _____

Addendum/Clarification No. _____ Dated _____

Addendum/Clarification No. _____ Dated _____

Failure to acknowledge receipt of all addenda may cause the RFP to be considered non-responsive to the solicitation. Acknowledged receipt of each addendum must be clearly established and included with responses to the RFP.

By: _____ Print Name: Steven P. Smith, PE

Title: Vice President Date: August 14, 2012

# 1 Qualifications of Key Personnel

# 1 Qualifications of Key Personnel

## THE PARSONS TEAM

Parsons has assembled a team of industry leaders and innovators to provide CDOT with the requisite specialized expertise in traffic and revenue (T&R) studies, financial services, NEPA, and public-private partnership (P3) procurement. We will bring our significant experience in alternative project delivery throughout the United States, Canada, and the world, including design-build and P3 procurements, to support the Co-Development, Multi-Modal I-70 Mountain Corridor Project.

We will staff a majority of the project positions with our Denver-based personnel and integrate them with CDOT staff in a blended team environment. Exhibit 1 summarizes Parsons' project team and highlights the anticipated project development role of major participants. Parsons will serve as the sole prime consultant for this precedent-setting project. We have extensive and proven experience in program management; alternative project delivery, including P3; environmental clearances; stakeholder engagement; and design, construction, and maintenance and operations of major highway, tunnel, transit, and toll systems.

We have secured several specialized Emerging Small Business (ESB) and Disadvantaged Business Enterprise (DBE) subconsultants that will serve in significant roles during the project development and construction phases to ensure our ability to exceed the 13 percent DBE goal established for the Project. Parsons is committed to provide additional opportunities for local and Colorado-based business participation.

***Exhibit 1.1 – Major Participants of the Parsons Team***

| Major Participant | Primary Project Role |
|---|---|
| Parsons Transportation Group Inc. | Co-Developer/Program Management |
| Wilson & Company, Inc. Engineers & Architects (Wilson) | Environmental |
| Stantec, Inc. | Traffic and Revenue |
| Public Financial Management, Inc. (PFM) | Financial Advisor |
| IBI Group | Transit and Toll Systems |
| Kaplan Kirsch & Rockwell, LLP (KKR) | Legal Advisor/P3 Procurement |
| InterMountain Public Affairs, LLC (InterMountain) | Public Outreach |
| Peter Webb Public Relations, Inc., dba Webb PR | Public Outreach |

### ADDITIONAL TEAM MEMBERS

*Parsons has secured an exclusive team of specialty and DBE subconsultants. Each firm will have a significant role in the development and delivery of the I-70 Mountain Corridor Project.*

- ***Apex Design**** – Traffic/ITS
- ***Ayres Associates*** – Hydrology/Hydraulics
- ***Clanton & Associates, Inc.**** – Lighting
- ***Development Research Partners*** – Economic Research
- ***Goodbee & Associates, Inc.**** – Utilities
- ***H.C. Peck & Associates, Inc.**** – Right-of-Way
- ***L.S. Gallegos Associates, Inc.**** – Toll Advisor and Construction Management
- ***Loughlin Enterprises, LLC*** – P3 Development Advisor
- ***RESPEC*** – Water Quality
- ***San Engineering, LLC**** – Roadway Design
- ***Shannon & Wilson, Inc.*** – Geotechnical/Tunnel Design
- ***Webb Group International*** – Government Relations
- ***Yeh & Associates, Inc.**** – Geotechnical/Construction Management

***DBE firm***

## 1.1 KEY PERSONNEL

Parsons core management team of seasoned professionals has extensive knowledge of the I-70 Mountain Corridor and will work collaboratively with CDOT to establish the overall strategy and address issues proactively. Our team includes experts in mountain corridor design and construction, public and private finance, tolling and toll systems, P3 procurement, NEPA and consensus building, tunnel engineering, geotechnical engineering, transit planning, and all civil design aspects. Our impressive team of industry-recognized experts is ***ready to deliver.***

**Steve Smith, PE, will serve as Parsons' Director.** Steve led the Parsons team in the development of our project concept, The Parsons Plan, and through the evaluation of our unsolicited proposal by the High Performance Transportation Enterprise (the Enterprise) and CDOT. Steve has assembled the best possible team to deliver tangible results for CDOT and is committed to the project's success.

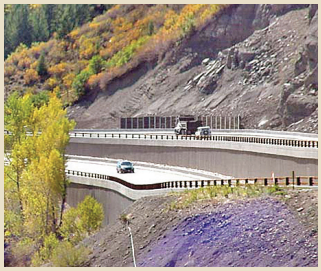
Our **Project Manager, Ralph Trapani, PE**, has more than 36 years of Colorado transportation experience. He served as program manager on CDOT's I-70 Glenwood Canyon and SH 82 Corridor projects. These award-winning projects are two of Colorado's most significant mountain corridor expansion projects and are exceptional examples of projects delivered through construction utilizing Context Sensitive Solutions (CSS) principles. Ralph has hand-selected his management and technical team, many of whom have supported him successfully on past projects.

**Del Walker, PE** will serve as the Engineering Manager through project development stages and as the Construction Manager, should CDOT choose to utilize Parsons services to support construction oversight. Del was integral in the initial development of our project concept and unsolicited proposal and has recently rejoined Parsons. His leadership in the development, procurement and execution of CDOT's I-25 Southeast Corridor (T-REX), RTD's Eagle P3 and most recently the procurement of the I-225 LRT P3 projects, are highly relevant to the delivery of major multi-modal improvements along the I-70 Mountain Corridor.

**Phil Armstrong, PE** completed the preliminary T&R study and analysis that is the basis of our financial plan and will continue to lead the financial planning activities, with support from Stantec and PFM. Phil is a recognized expert in P3 development and innovative contract financing. He served as the project bid manager on several multi-billion dollar P3 efforts including the SH 121 Turnpike in Texas and the Trans Texas Corridor.

**Jeff Bingham** will lead NEPA and environmental clearance activities. Jeff has more than 30 years of experience managing NEPA documents for major multi-modal transportation projects in the western United States and was formerly the Chief of Environmental Planning for Caltrans District 7. Jeff is Parsons' Principal Environmental Manager and has successfully completed environmental planning and project development assignments including U.S. 93 Hoover Dam Bypass EIS for FHWA, and the Van Ness Avenue (U.S. 101) BRT EIS in San Francisco. Jeff brings a fresh perspective to environmental issues along the I-70 Mountain Corridor and an impressive track record of project delivery to complement our Colorado NEPA team, which includes **Larry Sly**. **Mary Gray** will assist Jeff and the Parsons team in fine-tuning the process and gaining consensus on our NEPA clearance strategy. Mary recently joined Parsons after 20 years with the FHWA as a national lead for integration of planning and environment, endangered species consultation, ecological connectivity, and wildlife habitat enhancements.

*Parsons' core management team has led the development and delivery of CDOT's most challenging projects.*



*SH 82 Corridor*

*I-25 T-REX Design-Build*

*I-70 through Glenwood Canyon*

**Exhibit 1.2** illustrates Parsons' project organization, identifying key personnel and our blended team approach. We have developed a management structure that includes CDOT management and technical discipline leads. With your input, we will refine our organization to involve CDOT staff in additional roles to implement a fully-integrated co-development team. **Exhibit 1.3,** details our key management and technical staff's qualifications and experience. At the end of the section, Form A - Resumes, are included for each individual identified in Exhibit 1.3.

*Exhibit 1.2 – Parsons' Project Organization*

## PROJECT MANAGEMENT TEAM

- **Region 1 Director** – Tony DeVito, PE
- **Corridor Manager** – James Bemelen, PE
- **Parsons Director** – *Steve Smith, PE*
- **Project Manager** – *Ralph Trapani, PE*

## Executive Oversight Committee

DOT, Colorado HPTE, PARSONS

## Project Advisors

| | | |
|---|---|---|
| **CSS** David Carlson | **Tolling** Matt McDole, PE (4) | **Legal** *Steve Kaplan, Esq. (15)* |
| **P3 Development** Peter Loughlin (16) | **Financing** *Ruth McMorrow* | **Government Relations** Wellington Webb (19) |

## Legend

| | | | | | |
|---|---|---|---|---|---|
| 1 | Wilson & Company, Inc. Engineers & Architects | 8 | Clanton & Associates, Inc. | 15 | Kaplan Kirsch & Rockwell, LLP |
| 2 | Public Financial Management, Inc. (PFM) | 9 | H.C. Peck & Associates, Inc. | 16 | Loughlin Enterprises, LLC |
| 3 | Stantec, Inc. | 10 | Apex Design | 17 | RESPEC |
| 4 | L.S. Gallegos & Associates, Inc. | 11 | Peter Webb Public Relations, Inc. | 18 | Ayres Associates |
| 5 | IBI Group | 12 | InterMountain Public Affairs, LLC | 19 | Webb Group International |
| 6 | Shannon & Wilson, Inc. | 13 | San Engineering, LLC | 20 | Development Research Partners |
| 7 | Yeh & Associates, Inc. | 14 | Goodbee & Associates, Inc. | | |

**Key Management Personnel Listed in Exhibit 2*

## TECHNICAL DISCIPLINE CO-LEADS

- **Public Relations** – Stacey Stegman
- **Public Outreach** – *Dan Hopkins (11)*, *Tom Schilling (12)*
- **Safety** – Kenneth Coke
- **Finance Manager** – Ben Stein
- **Environmental Manager** – David Singer
- **Engineering Team**
  - Roadway
  - Structures
  - Traffic
  - Landscaping
  - Geotech
  - Drainage
  - ROW
- **Corridor Operations Division**
- **Region 1 Tunnel Superintendent** – Mike Salamon
- **Region 1 Mainenance Superintendent** – Mike DeLong
- **Contracts Manager**

### Financial Plan Manager – *Phil Armstrong, PE*

**T&R Studies** – *Gerry Nielsten, PE (3)*
**Financial Advisor** – *Robert Rich (2)*
**Financial Modeling** – Craig Hoshijima (2)
**P3 Delivery/Procurement** – Tom Morsch (2)
**Economics** – Patty Silverstein (20)

### NEPA – *Jeff Bingham*

**Tier 1 Re-Evaluation/ Tier 2 EIS** – *Larry Sly, AICP (1)*, Mary Gray
**Natural Resources/ Permitting** – Amber Brenzikofer, Robert Belford (1)
**Legal Sufficiency** – *John Putnam, Esq. (15)*
**Social Resources** – Mark Jennings (1)
**Section 4(f)** – Doug Eberhart (1)
**Agency Coordination** – Amber Josephson
**Floodplains** – John Hunt, PE (18)
**Water Quality** – Rick Moser, PE (17)
**Cultural Resources/Section 106** – Seth Wilcher
**Visual Quality** – Jeff Lormand, RLA
**Noise and Air Quality** – Areg Gharabegian, PE; Doug Eberhart (1)

### Engineering Manager – *Del Walker, PE*

#### Design Lead – *Brad Doyle, PE*

**Roadway** – Carl Cushnie, PE; Eduardo San, PE (13)
**Constructability** – John Crowder
**Drainage** – James Colbert, PE
**Specifications** – Joe Kracum, PE
**Tunnels** – *Doug Slakey, PE*; Red Robinson, PE (6)
**Landscape Aesthetics** – Jeff Lormand, RLA
**Geotechnical** – Rick Andrew, PG (7); Mark Vessely, PE (6)
**MOT** – Barry Erlandson, PE
**Utilities** – Deb Wiedenhoeft, PE; Lisa Goodbee, PE (14)
**Structures** – Tom Stelmack, PE
**Survey** – Scott Crowshaw, PLS (1)
**Traffic** – Steve Gomez, PE (1)

#### Right-of-Way Lead – John Dutch, SR/WA (1)

**Appraisal** – Mike Anders, SR/WA (9)
**Acquisition and Relocation** – Eric Norwood, PE (1)
**Property Management** – Bernie Krebs (1)

#### Systems Lead – *Bart Cima, PE (5)*

**Tolling** – Usha Elyatamby (5)
**ITS** – Scott Thomas (10); Jim Paral (5)
**Communications** – Adrian Pearmine (5); Carl-Henry Piel (5)

#### Transit Lead – *Phil Hoffmann, AICP*

**Stations and Facilities** – Peter Zurawel (5)
**Vehicles** – Chris Prentice (5)
**BRT/AGS Planning** – Bill Byrne (5); Lee Sims (5)
**BRT/Transit Operations and Maintenance** – Tom Ryden, PE; Derek McGill

### Quality Manager – Hilla Lynch, PE

### Operations and Maintenance – *Kevin Thibault, PE*

**Life-Cycle Planning** – Kyle Nicholson; Gibran Hadj-Chikh
**Toll and Express Lane Operations** – Stephen Mayer, PhD, PE; Joe Harake
**Transit Operations** – Thomas Gray; Tom Ryden, PE

### P3 Procurement – *Robert Ostermiller, PE, CCM*

**Document Preparation** – Randy Ross, PE
**Legal Advisor** – *Steve Kaplan, Esq. (15)*
**Financial Advisor** – Tom Morsch (2)
**Contract Development** – Greg Gharib

### Project Controls Manager – Brian Hard

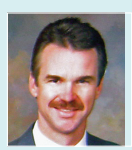
**Scheduling** – Kyle Knudson, EIT
**Document Control** – Susan Patterson
**Cost Estimating** – Michael Nader
**Cost Control** – Courtney Smith

## Risk Assessment Lead – Rick Chapman, PE

- **Environmental** – Mary Gray
- **Technical** – Jim Klemz, PE; Phil Colton
- **Financial** – Craig Hoshijima (2)
- **Public Involvement** – Dan Hopkins (11)
- **Cost Validation** – Kyle Knudson, EIT

| Key Management Personnel | | Experience Profile | Relevant Roles and Project Experience |
|---|---|---|---|
| PARSONS | *Steve Smith, PE*<br>*Parsons Director*<br>*24 years of experience* | Steve Smith has worked for CDOT as an employee and consultant for more than 20 years. He has served as project manager or principal on more than 10 CDOT contracts. Steve has extensive experience overseeing the successful delivery of design-build and P3 transportation and infrastructure projects throughout the United States and Canada. He will participate in critical project and management meetings and maintain communication with CDOT to ensure expectations are always met. Steve possesses statewide CDOT knowledge and is committed to ensuring that quality staff and resources are available to the I-70 Mountain Corridor project. ***(Percent Committed: 100%)*** | ▪ SH 119 Corridor Management, CO - Project Principal<br>▪ Northwest Anthony Henday Drive P3, Canada - Project Principal<br>▪ Northeast Stoney Trail P3, Canada - Project Principal<br>*Relevance to I-70 Mountain Corridor:* 1 4 6 8 |
| PARSONS | *Ralph Trapani, PE*<br>*Project Manager*<br>*36 years of experience* | Ralph Trapani is a nationally recognized transportation specialist with a passion to bring complex transportation projects to successful completion. His prior experience includes leading the efforts to complete the environmental clearance, planning, design, and construction of the challenging I-70 through Glenwood Canyon and SH 82 Corridor projects. He managed the design and construction of the Reverse Curve Tunnel and Hanging Lake Tunnel. Ralph is Parsons' project manager on our CDOT Tunnel Engineering NPS contract and has a comprehensive understanding of CDOT tunnel operations and systems. His proven project leadership skills, successful record of consensus building, and unique knowledge and experience in the I-70 Mountain Corridor will ensure successful delivery of this project. ***(Percent Committed: 100%)*** | ▪ I-70 through Glenwood Canyon, CO - Project Manager<br>▪ SH 82 Multi-modal Corridor, CO - Program Manager<br>▪ CDOT Statewide Tunnel Engineering NPS, CO - Project Manager<br>*Relevance to I-70 Mountain Corridor:* 1 2 4 6 |
| PARSONS | *Phil Armstrong, PE*<br>*Financial Plan Manager*<br>*34 years of experience* | Phil Armstrong has 34 years of experience in the design, management, and financing of major tollways, urban freeways, and multilevel interchanges. His experience includes vast knowledge of toll road design, financing, and operations. An accomplished highway project manager, he has managed or designed more than $1 billion in major highway improvements for various DOTs and toll authorities. Phil has spent a good portion of his career in the toll road industry and in the development of innovative P3 concepts for major transportation improvements. He has a special understanding of the P3 concession business and major project financial concepts since he formerly served as senior vice president for Skanska ID, a major international concessionaire. His relevant project experience includes having served as the project bid manager on several multibillion-dollar P3 projects. ***(Percent Committed: 100%)*** | ▪ SH 121 Turnpike (Sam Rayburn Tollway), TX - Concession Bid Manager<br>▪ Trans Texas Corridor – 35, TX - Concession Bid Manager<br>▪ I-10 and I-15 Program Management Services, CA - Financial Advisor<br>*Relevance to I-70 Mountain Corridor:* 1 2 3 5 7 8 |
| PARSONS | *Del Walker, PE*<br>*Engineering Manager*<br>*25 years of experience* | Del Walker has more than 25 years of progressive experience in the planning, design, and construction of highway and transit facilities. His most recent program delivery experience was as RTD's Implementation Manager for the $6.8 billion FasTracks light rail and commuter rail network program, which included leading the procurement of the Eagle P3 and I-225 P3 LRT projects. Del served as the Deputy Project Director for CDOT on the I-25 T-REX multi-modal design-build project. His involvement on the T-REX project began during the project conception and concluded at project completion for the awarding winning project. Del served as the Design Manager for the Pioneer Crossing Design-Build project in the Salt Lake area, which included six miles of urban arterial along a new alignment, and the design and reconstruction of the I-15 interchange at American Fork, a first of its kind in Utah, a diverging diamond interchange design. ***(Percent Committed: 100%)*** | ▪ RTD FasTracks Program, CO - Deputy AGM, Capital Programs<br>▪ CDOT I-25 T-REX Design-Build, CO - Deputy Project Director<br>▪ I-15 Pioneer Crossing Design-Build, UT - Design Manager<br>*Relevance to I-70 Mountain Corridor:* 1 2 6 8 |
| PARSONS | *Jeff Bingham*<br>*NEPA*<br>*30 years of experience* | Jeff Bingham has more than 30 years of experience working in environmental planning and impact assessment. He has been involved in the preparation of innumerable EISs, EAs, findings of no significant impact, categorical exclusions, and mitigation monitoring/reporting plans adhering to NEPA and FHWA requirements. Jeff has managed five major EISs and EAs, and related technical studies, for transportation projects in just the last four years. He is renowned as a specialist in Sections 4(f) and 106 consultations and for managing large multidisciplinary teams, intergovernmental agency coordination, and public involvement through environmental document approval and construction. ***(Percent Committed: 100% during NEPA)*** | ▪ U.S. Route 93 Hoover Dam Bypass EIS, NV - Project Manager<br>▪ I-15 and MLK Connector (Project NEON) EIS, NV - Env. Manager<br>▪ U.S. Highway 101 (Van Ness Avenue) BRT EIS, CA - Project Manager<br>*Relevance to I-70 Mountain Corridor:* 1 2 3 4 6 |
| PARSONS | *Kevin Thibault, PE*<br>*Operation and Maintenance*<br>*25 years of experience* | Kevin Thibault is a seasoned transportation professional with progressive experience in providing leadership to both public- and private-sector organizations. He is experienced in the planning, design, and project/program management of various transportation modes and projects, ranging from roadways to toll roads to interstates, transit systems to high-speed rail, and parking facilities to parking garages. Kevin formerly served as the chief engineer as well as the interim executive director of Florida's Turnpike Enterprise, the state's largest toll entity, with more than 460 miles of toll roads and revenues in excess of $600 million annually. He provided executive leadership in the transition from current toll collection methods to all electronic toll collection and utilized previous turnpike and toll road experience to develop innovative approaches to solving the transportation needs of the state within economic constraints. ***(Percent Committed: 50%)*** | ▪ Ohio River Bridges GEC, IN/KY - Operations & Maintenance Technical Advisor<br>▪ Florida DOT - Florida's Turnpike Enterprise - Chief Executive Officer<br>▪ Florida DOT - Assistant Secretary of Engineering and Operations<br>*Relevance to I-70 Mountain Corridor:* 1 2 4 5 6 7 8 |
| PARSONS | *Ruth McMorrow*<br>*Financing*<br>*33 years of experience* | Ruth McMorrow leads Parsons' equity project investment initiatives for P3s focused on North America. She has extensive experience in global infrastructure and U.S. municipal finance markets and has specialized in providing financial advisory services and debt arrangement for major transportation programs throughout the world. Prior to joining Parsons, Ruth spearheaded Scotia Capital's global infrastructure expansion into the United States, Europe, and Asia Pacific — focusing on financial advisory services, debt arrangement, and equity sourcing and sales. She has extensive expertise and understanding of the U.S. infrastructure market, including innovative financing structures such as TIFIA, Build America Bonds, and Private Activity Bonds, as well as detailed understanding of U.S. municipal government credit quality. ***(Percent Committed: 10%)*** | ▪ Golden Ears Bridge, Canada - Mandated Lead Arranger<br>▪ Northwest Anthony Henday Drive P3, Canada - Mandated Lead Arranger<br>▪ Port Mann/Highway 1 Corridor, Canada - Financial Advisor/Debt Arranger<br>*Relevance to I-70 Mountain Corridor:* 3 7 8 |
| PFM | *Robert Rich*<br>*Financial Advisor*<br>*25 years of experience* | Robert Rich is a transportation specialist who has worked on more than $40 billion in financing with various transportation agencies and authorities nationwide. As an investment banker and financial advisor, he has been affiliated with an number of public/private financing initiatives throughout the United States, including SANDAG's acquisition of SR 125, advising the Commonwealth of Pennsylvania on the concession sale of its Turnpike, Trip II's advisor on an equity restructuring of the Dulles Greenway, as advisor to the Alameda Corridor Transportation Authority, working with the San Joaquin Hills Transportation Agency and the Foothill-Eastern Transportation Corridor Agency on a pre-TIFIA credit facility and the first contractor-purchased Project Revenue Certificates, and the Delaware and Ohio DOTs on their P3 programs. He has also worked with various toll agencies. ***(Percent Committed: 50% through project validation)*** | ▪ Tacoma Narrows Bridge, WA - Investment Banker<br>▪ Safe and Sound Bridge Program, Statewide, MO - Financial Advisor<br>▪ Bay Area Toll Authority Bridge Retrofit Program, CA - Financial Advisor<br>*Relevance to I-70 Mountain Corridor:* 3 7 8 |
| Stantec | *Gerry Nielsten, PE*<br>*T&R Studies*<br>*40 years of experience* | Gerry Nielsten is the senior principal-in-charge of many of the firm's transportation and traffic planning, economic feasibility, and environmental studies. He has 40 years of experience in traffic and revenue forecasting. He is well qualified for this assignment having acted in this role for the firm's ongoing traffic and revenue consultant agreements for numerous toll assignments throughout the United States, including in the Denver area. He has specialized skills in the review and development of forecasts for HOT lanes, having served as principal-in-charge for multiple projects. ***(Percent Committed: 50% through project validation)*** | ▪ E-470 Tollway, CO - Principal-in-Charge<br>▪ I-25 HOT Lanes, CO - Principal-in-Charge<br>▪ SR 91 Express Lanes Extension, CA - Principal-in-Charge<br>*Relevance to I-70 Mountain Corridor:* 3 5 |

1 Highway and Tunneling Design, Construction, Maintenance, and Operations
2 Transit Design and Operations
3 Traffic and Revenue and Sensitivity Analyses
4 EIS Development and Clearances
5 Tolling and Market Penetration Strategies
6 Stakeholder Outreach and Concensus Building
7 Financial Master-Plan Development – Alternate Financing Options
8 P3 Concession Procurement

| Key Management Personnel | | Experience Profile | Relevant Roles and Project Experience |
|---|---|---|---|
| | *Steve Kaplan, Esq.*<br>*Legal Advisor*<br>*39 years of experience* | Steve Kaplan participates in the negotiation of complicated P3 transactions. He has a strong record of public service, having served as the general counsel of the U.S. DOT, the city attorney for Denver, and as an assistant attorney general for the state of Colorado. Steven was actively involved in negotiations that led to the development of the Eagle P3 project for RTD, the Denver Union Station site and the FasTracks transit hub, the new Denver International Airport, the redevelopment of Stapleton, the Colorado Convention Center, and the governance structure and financing for Denver's Major League Baseball stadium. ***(Percent Committed: 50%)*** | ▪ RTD Eagle P3 Project, CO - Legal Counsel<br>▪ Denver Union Station Site Redevelopment, CO - Legal Counsel<br>▪ Denver International Airport, CO - Legal Counsel<br>*Relevance to I-70 Mountain Corridor:* 2 6 7 8 |
| | *Tom Schilling*<br>*Public Outreach*<br>*35 years of experience* | Tom Schilling has more than 35 years of combined experience in journalism, government service, and public affairs management. His client work has focused on high-profile and often controversial transportation development projects for CDOT and RTD, including the FasTracks rapid transit program and major planning projects along the I-70 Mountain Corridor and I-25. In the past 15 years, Tom's work has resulted in four NEPA decision documents, including three RODs for major transportation corridor projects. Tom has managed seven public involvement and information campaigns along the I-70 Mountain Corridor for CDOT. ***(Percent Committed: 75%)*** | ▪ I-70 Mountain Corridor CSS, CO - Principal-in-Charge<br>▪ I-70 Silverthorne/Dillon Interchange Feasibility Study, CO - PI Manager<br>▪ Twin Tunnels Environmental Assessment, CO - PI Consultant<br>*Relevance to I-70 Mountain Corridor:* 4 6 |
| | *Dan Hopkins*<br>*Public Outreach*<br>*31 years of experience* | Dan Hopkins served as director of communications and deputy chief of staff for Colorado Gov. Bill Owens and was involved in the strategic messaging and planning for the governor for six years during events such as the Platte Canyon High School shooting in 2006, the 2004 presidential election campaign, and the forest fires of 2002. He was directly responsible for daily media relations and the handling of the governor's public events, interviews, and scheduling. Prior to joining the governor's office, Dan was director of public information for CDOT, and was appointed commission secretary. Dan's previous experience included positions as director of public relations for the Rocky Mountain AAA Auto Club and a radio news reporter. ***(Percent Committed: 75%)*** | ▪ Colorado Gov. Bill Owens - Director of Communications and Deputy Chief of Staff for State<br>▪ CDOT - Director of Public Information<br>▪ CDOT - Transportation Commission Secretary<br>*Relevance to I-70 Mountain Corridor:* 6 |
| | *Larry Sly, AICP*<br>*Tier 1 Re-Evaluation/*<br>*Tier 2 EIS*<br>*19 years of experience* | Larry Sly has 19 years of experience in project management, planning, and environmental compliance and delivery of a wide range of infrastructure projects. His expertise includes NEPA studies; environmental clearance and compliance; project scheduling and controls; feasibility and prioritization studies; cost and benefit analysis; traffic noise and operations; and the facilitation of public and agency involvement. He has led numerous local and regional efforts in Colorado, California, Utah, Arizona, New Mexico, Nevada, Montana, and Florida. He finds common ground between stakeholders and forms focused teams that deliver win-win results. ***(Percent Committed: 100% during NEPA)*** | ▪ US. 50 Corridor East Tier 1 EIS, CO - Project Manager<br>▪ I-70 Twin Tunnels EA, CO - Environmental Manager<br>▪ Statewide Environmental Engineering Services, CO - Project Manager<br>*Relevance to I-70 Mountain Corridor:* 4 6 7 |
| | *John Putnam, Esq.*<br>*NEPA - Legal*<br>*Sufficiency*<br>*19 years of experience* | John Putnam's experience has focused on litigation and regulatory counseling for public and private entities on complex transportation projects. He has extensive experience providing clients with strategic advice regarding NEPA and other compliance for controversial projects, including airports, highways, transit, and other infrastructure projects throughout the country. John also represents clients in litigation regarding infrastructure project approvals in federal and state courts. He has drafted, litigated, and advised clients regarding Colorado HB 1041 regulations and their application to transportation projects. ***(Percent Committed: 25%)*** | ▪ Over the River Corp. – NEPA Compliance, CO - Legal Counsel<br>▪ LAWA – NEPA Compliance/Re-Eval of ROD, CA - Legal Counsel<br>▪ Sound Transit East Link – NEPA/4(f) Compliance, WA - Legal Counsel<br>*Relevance to I-70 Mountain Corridor:* 4 6 |
| | *Brad Doyle, PE*<br>*Design Lead*<br>*13 years of experience* | Brad Doyle has worked exclusively on CDOT projects since starting his career with Parsons. He has comprehensive experience in design, project management, and construction management. Brad has extensive CDOT project development experience having led multidisciplinary teams to develop plans for roadway, tunnel, and bridge projects. Brad worked on the SH 82 Corridor for six years, and has supported CDOT Region 1 on six I-70 Mountain Corridor projects. He most recently served as the deputy project manager on the SH 119 Corridor Management project. Brad has participated in numerous successful public outreach processes in Colorado. ***(Percent Committed: 100%)*** | ▪ SH 82 Snowmass Canyon, CO - Construction Engineer<br>▪ SH 119 Corridor Management, CO - Design Manager<br>▪ CDOT Statewide Tunnel Engineering NPS, CO - Task Manager<br>▪ CDOT Region 1 Construction Management NPS, CO - Project Manager<br>*Relevance to I-70 Mountain Corridor:* 1 2 6 |
|  | *Robert Ostermiller, PE, CCM*<br>*P3 Procurement*<br>*28 years of experience* | Robert Ostermiller has broad experience in project and program management, including construction and design activities. Prior to his current assignment in Maryland on the Intercounty Connector, he was project manager for the general engineering consultant on the multi-modal I-25 T-REX project. He has also provided project management services for a total of six years in Colorado on the North I-25 Corridor project and the I-70 Glenwood Canyon Project. In addition to these assignments in United States, he has worked for nine years in the Middle East and Asia. While he has mainly worked as a consultant to governments, his experience includes three years with the Asian Development Bank (ADB), where he traveled on diplomatic assignment to oversee large infrastructure programs. ***(Percent Committed: 100% during P3 procurement)*** | ▪ Intercounty Connector (ICC), MD - Executive Program Manager<br>▪ I-25 T-REX Design-Build, CO - Project Manager and Contracts Manager<br>▪ I-70 through Glenwood Canyon, CO - Assistant Project Manager<br>*Relevance to I-70 Mountain Corridor:* 1 2 4 6 7 |
| | *Bart Cima, PE*<br>*Systems Lead*<br>*34 years of experience* | Bart Cima has more than 34 years of experience in the planning, design, deployment, operation, and evaluation of transportation technology and toll collection projects and programs across North America. He is particularly versed in working with clients and stakeholders to define true project requirements as a sound basis for developing and implementing appropriate and feasible solutions. Bart is expert in industry best practices for ITS and evolving toll technology and ensuring long term operations and preventative maintenance considerations are incorporated into design. ***(Percent Committed: 75%)*** | ▪ I-25 T-REX Design-Build, CO - ITS Manager<br>▪ SR 520,Floating Bridge/Landing Replacement WA - ITS/Tolling Manager<br>▪ Los Angeles County Express Lane Project, CA - ITS/Tolling Manager<br>*Relevance to I-70 Mountain Corridor:* 1 3 5 6 8 |
| | *Phil Hoffmann, AICP*<br>*Transit Lead*<br>*37 years of experience* | Phil Hoffmann has 37 years of broad experience, including overall project management, long-range transportation planning, bus and rail transit planning, operations and facility design, travel demand forecasting and traffic studies, conceptual roadway and interchange design, corridor studies and alternatives analysis, railroad studies, freight movement studies, parking studies and facility design, environmental assessments and environmental impact statements, pedestrian and bicycle facilities planning and design, site planning and urban design, agency coordination and public involvement, and formal presentation and documentation of technical studies. Phil has worked as a consultant for state and local governments in transportation planning and design. ***(Percent Committed: 75%)*** | ▪ I-70 Mountain Corridor Alternatives Analysis - Project Director<br>▪ I-70 Mountain Corridor Programmatic EIS and Prelim Design - Project Dir.<br>▪ El Camino BRT Conceptual Engineering, CA - Planning Manager<br>▪ E Street Corridor BRT, San Bernardino, CA - Deputy Project Manager<br>*Relevance to I-70 Mountain Corridor:* 1 2 3 4 6 7 |
| | *Doug Slakey, PE*<br>*Tunnels*<br>*35 years of experience* | Doug Slakey has 35 years of experience in planning, engineering, design, and construction management of civil infrastructure projects, with specific expertise in tunnel, highway and transit projects. His project experience includes highway, railroad, and mass transit tunnels; urban and rural highways; urban metro systems; sanitary sewer, ocean outfall, and water conveyance structures; and bridges. Doug has extensive experience in systems engineering, design, and project management, which includes tunnel, mechanical, and electrical systems; SCADA systems; tunnel traffic operations and control systems; data communications; and highway traffic operations systems. Doug was responsible for the design and construction management of the Hanging Lake Tunnel and Reverse Curve Tunnel on I-70 through Glenwood Canyon. ***(Percent Committed: 75%)*** | ▪ I-70 through Glenwood Canyon Tunnels, CO - Project Manager<br>▪ Caldecott Tunnel, CA - Site Civil and Tunnel Systems Lead<br>▪ I-580 HOV Lanes ED/PR Livermore Valley, CA - Project Manager<br>*Relevance to I-70 Mountain Corridor:* 1 4 6 8 |

# Form A – Resume Form

*Form A - Resume Form*

PARSONS

# STEVEN SMITH, PE

## Parsons Director

### Education

Master of Science, Civil Engineering, University of Colorado, 1993
Bachelor of Science, Geotechnical Engineering, Colorado School of Mines, 1987

### Years of Experience

With this firm: 8
With other firms: 16
In role as stated for project: 8

### Registrations

1993, Professional Engineer, PE-28834, CO

### Certifications

Certified Project Manager

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**SH 119 Corridor Management | Blackhawk, CO | Principle-in-Charge**. The project involves full corridor management services, including development of corridor strategies, preparation of designs, management of design and environmental activities, preparation of grants, assisting with managing other consultants, and stakeholder coordination. Steve worked with the Project Manager to ensure client project expectations were met, tasks were appropriately resourced and completed as required, and quality audits were performed.

**Northwest Anthony Henday Drive (Edmonton Ring Road), P3 | Alberta, Canada | Principal-in-Charge**. Parsons, in joint venture with Flatiron and Graham Infrastructure, completed the design and construction of the northwest leg of Anthony Henday Drive, a new ring road being developed in Edmonton, Alberta. Commissioned by the Province of Alberta, the new 21 km, $1 billion, phase of the ring road extends from Yellowhead Trail (Highway 16) to the Manning Drive Freeway (Highway 15). The new roadway, which includes 9 interchanges and a total of 29 bridge structures, provides a four- to six-lane, fully grade-separated freeway. As a member of the P3 consortium and design-build joint venture, Parsons was responsible for the overall design management and coordination, including overseeing the design and construction quality. Steve served as the principal for this project and was responsible for concession and contract negotiations, interaction with the executive oversight committee, working the Parsons project manager for contract and deliverable compliance, and interaction with the client to make sure the project was completed per specifications.

**Northeast Stoney Trail (Calgary Ring Road) P3 | Alberta, Canada | Principal-in-Charge.** As a member of a joint venture, Parsons designed and constructed the northeast leg of Stoney Trail, a new ring road being developed in Calgary. The new 14-mile, $400 million, phase of the ring road included seven interchanges and a total of 24 bridge structures and provides a four- to six-lane, fully grade-separated freeway. Parsons provided overall design management and coordination and managed the design and construction quality. Steve served as the principal for this project and was responsible for concession and contract negotiations, interaction with the executive oversight committee, working the Parsons project manager for contract and deliverable compliance, and interaction with the client to ensure all expectations were met.

**I-15 Pioneer Crossing East/West Connector Design-Build | Utah County, UT | Executive Sponsor**. This large-scale project involve the design and construction of 5.75 miles of a five-lane urban arterial on a new alignment through American Fork, Lehi City, and Saratoga Springs in Northern Utah County. In addition, the project includes a new diverging diamond interchange (DDI) for I-15 and American Fork Main Street. Steve served as principal for this project and was responsible for working with the Parsons team, the client, and the owner to finalize contracts, oversee project completion, oversee and execute change orders, and ensure contract compliance.

*Form A - Resume Form*

PARSONS

# RALPH TRAPANI, PE
## Project Manager

### Education
Bachelor of Science, Architectural Engineering, University of Colorado, 1974

### Years of Experience
With this firm: 9
With other firms: 28
In role as stated for project: 32

### Registrations
1979, Professional Engineer, PE-16670, CO

### Certifications
Certified Project Manager

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**I-70 through Glenwood Canyon, CO | Glenwood Springs, CO | Project Manager.** The project involved completion of construction on the 12-mile-long corridor of I-70. As contract administrator, Ralph's responsibilities included supervision of all consultant activities for the award-winning $500 million highway project. He led the multi-disciplinary design team through final design. Ralph also managed construction projects; coordinated with citizen groups, public agencies, utilities, and adjacent landowners; supervised the project scheduling, contract packaging, and budgeting for the entire project; administered consultant selection, scoping, review and approval of consultant cost proposals; and handled public relations and media contacts. Ralph managed the preparation of a Supplemental EIS and led a successful strategy to move the project forward through litigation in Federal Court.

**SH 82 Multi-modal Corridor | Pitkin County, CO | Project Manager.** The project involved widening SH 82 from 2 to 4 lanes between Basalt and Aspen and included significant multi-modal elements. Ralph managed and expedited the completion of the controversial Basalt to Buttermilk EIS by resolving critical stakeholder issues that stalled the process. Once complete, he lead a team of consultant and CDOT designers to complete preliminary and final design, ROW acquisition, public outreach, and construction of over 8 separate projects totaling $250 million. The final segment through Snowmass Canyon, being the most challenging, was completed as one of the 7th Pot projects, received a majority of funding from the sales of the TRANs Bonds. Ralph went on to manage the completion of the Entrance to Aspen EIS, the design of the Maroon Creek Bridge, design of the dedicated bus lanes, and public outreach for the award winning RFTA BRT project.

**CDOT Statewide Tunnel Engineering Non-Project Specific Contract | Statewide, CO | Project Manager.** As part of a three-year CDOT non-project specific (NPS) contract, Parsons was responsible for providing on-call tunnel and engineering services. Under an early task order, Parsons completed the first-ever complete structural inspection of the I-70 Eisenhower/Johnson Tunnels (EJMT), including inspection of two 9,000 ft. long two-lane tunnels and both ventilation buildings. Other tasks included inspection of the Hanging Lake Tunnels (HLT), emergency repairs in HLT, wall panel replacement through the eastbound bore of EJMT and 2400V and 480V motor control center (MCC) and Switchgear upgrades at EJMT. Ralph served as the overall program manager for the contract. He lead a team of multi-talented task managers and subconsultants in a variety of tunnel engineering activities, as requested by CDOT, covering concept design, inspection, final design, and construction inspection.

**SH 119/U.S. 6 Corridor Management | Black Hawk, CO |Project Manager.** The project involves full corridor management services, including development of corridor strategies, preparation of designs, management of design and environmental activities, assisting with managing other consultants, and stakeholder coordination. Ralph was responsible for providing project management and oversight. Ralph was actively engaged in project coordination activities with stakeholders including the Silver Dollar Metropolitan District, CDPHE, EPA, COE, DOW, Blackhawk Sanitation, and local citizens and other environmental agencies. Critical to the success of this project was the need construct a widened highway that could be leveraged to also cleanup a century of damage to the North Fork of Clear Creek from mining activities.

*Form A - Resume Form*

PARSONS

# PHILLIP ARMSTRONG, PE
## Financial Plan Manager

### Education
Bachelor of Science, Civil Engineering, University of Kansas, 1978

### Years of Experience
With this firm: 3
With other firms: 31
In role as stated for project: 10

### Registrations
1983, Professional Engineer, 54068, TX

### Certifications
N/A

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**SH 121 (Sam Rayburn Tollway) | Denton and Collin Counties, TX | Concessionaire Bid Manager.** Phil developed the original concept and the unsolicited proposal for this major, multi-billion dollar concession project in Texas. This was the first full toll-risk concession-type highway project in Texas. Phil was the bid manager for the Skanska Infrastructure Development team. His involvement included negotiating the comprehensive development agreement bid and contract documents with the Texas Department of Transportation (TxDOT); supervising the development of the Level 3 traffic and revenue study; coordinating with banks and their advisors, with the USDOT TIFIA office and with rating agencies, insurance companies, legal advisors, monolines, and other entities in order to submit Skanska's bid. Although Skanska ID was unsuccessful in their bid, this project was one of the largest green field concession projects thus far developed in the United States. Phil's creativity in creating the project concept allowed this critically-needed project to be constructed more than 20 years ahead of what available public funding would have allowed.

**Trans Texas Corridor – 35 (TTC-35) | Laredo to North of Dallas along Interstate 35 | Concessionaire Bid Manager.** Phil served as the lead program and bid manager for the Skanska Infrastructure Development team for this major P3 pursuit in Texas. The TTC-35 was one of the largest and most significant P3 projects thus far in the United States. TxDOT solicited qualified teams for a type of P3 project called a Pre-Development Agreement (PDA). TTC-35 is a multi-modal development of a 500-mile corridor through the central portion of Texas. Phil led the team's pursuit and was primarily involved with the team's financial and technical approach to the project. He developed innovative financial and technical concepts that were later used by TxDOT. His main responsibilities included preliminary toll road feasibility analysis, route studies, negotiation of the procurement and contract documents with TxDOT and the complete financial development of the team's bid.

**I-10 and I-15 Program Management Services | San Bernardino Associated Governments (SANBAG) San Bernardino County, CA | Financial Advisor to SANBAG.** Phil is currently assisting SANBAG as a financial advisor and financial team leader for the I-10 and I-15 express lane projects. These projects are currently in the planning and development stage and are currently planned to be constructed as multi-billion dollar P3 projects. I-10 & I-15 through San Bernardino County are two heavily-congested freeways where Phil has helped to develop various concepts for express lanes to meet future traffic demands. Phil also was involved in selecting the traffic and revenue consultant to perform Level 2 traffic and revenue studies and is currently supervising this work.

*Form A - Resume Form*

PARSONS

# DELBREATH WALKER, PE
## Engineering Manager

### Education
Bachelor of Science, Civil Engineering, University of Colorado, 1995

### Years of Experience
With this firm: 2
With other firms: 26
In role as stated for project: 15

### Registrations
1996, Professional Engineer, PE-31398, CO

### Certifications
2010, Certified Manager of Quality and Organizational Excellence, ASQ
Certified Project Manager

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**Regional Transportation District (RTD) | Denver, CO | Deputy AGM, Capital Programs.** Del served as the RTD senior representative responsible for the overall implementation of all planning, design and construction work for the $6.8 billion FasTracks program. Del was responsible for the organization and direction of assigned RTD and program support consultant staff to carry out the Fastracks' mission. Del was heavily involved in RTD's management and implementation of the P3 Concessionaire for the Eagle P3 project and initiation of procurement document preparation for the I-225 P3 project.

**I-25 T-REX Design-Build | Denver, CO | Deputy Project Director/ Construction Manager/Deputy Construction Manager.** The expansion project involved reconstruction of 17 miles of I-25/I-225, including 12 interchanges, a new 19-mile light rail extension, and stations and parking facilities, all within a tightly constrained urban transportation corridor. The budget for the project was $1.2 billion, with yearly expenditures of approximately $300 million. As the deputy project director, Del provided leadership and direction to a project team of approximately 90 CDOT, RTD, and consultant employees for the day-to-day management of the T-REX Program. He co-chaired the T-REX Project Management Team meetings, defined project priorities, determined project assignments, and assured that the project goals were achieved relative to schedule, budget, quality, and with minimal impact to the public. Prior to his role as deputy project director, Del served as CDOT's Construction Manager/Deputy Construction Manager. In this capacity, he developed, implemented, and provided an oversight program that assured efficient and effective construction management of the T-REX project. Del represented T-REX and the Department on multi-modal transportation issues with the Colorado Transportation Commission, the Denver metro area local cities and counties, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), the Regional Transportation District (RTD), the Colorado Department of Public Health and Environment (CDPHE), and other Department Regions and Branches.

**I-15 Pioneer Crossing Design-Build | Lehi/American Fork, UT | Design Manager.** The project involved the design and construction of 5.75 miles of a five-lane urban arterial on a new alignment through American Fork, Lehi City, and Saratoga Springs in Northern Utah County. In addition, the project included a new diverging diamond interchange (DDI) for I-15 and American Fork Main Street. Del was responsible for design and design management of the $172 million project. He was directly responsibility for meeting the aggressive schedule for production of early construction and final design plans, quality control, allocation of resources and schedule compliance. Del interfaced directly with the contractor, owner, and local jurisdictions. Peak staffing level included over 80 Parsons and subconsultant staff.

**Colorado Department of Transportation (CDOT) | Denver, CO | Director of Staff Branches.** Del provided leadership and direction to a staff of 284 employees, which included the branches of maintenance and operations, business and technical support, project development, intelligent transportation systems, materials and geotechnical, safety and traffic engineering, contracts and market analysis, bridge design and management, and innovative contracting. He also supported the six transportation regions and their program delivery functions.

*Form A - Resume Form*

PARSONS

# JEFFERY BINGHAM
# NEPA

## Education
Master of Science, Environmental Studies, California State University, 1989
Bachelor of Arts, Anthropology, California State University, 1974

## Years of Experience
With this firm: 9
With other firms: 26
In role as stated for project: 35

## Registrations
N/A

## Certifications
N/A

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**U.S. 93 Hoover Dam Bypass Environmental Impact Statement | Nevada and Arizona | Project Manager.** The project involved preparation of the draft and final EIS and ROD for the $240 million highway and bridge project at Hoover Dam, a National Historic Landmark. Jeff managed all aspects of the EIS, including definition of purpose and need, alternatives analysis, cumulative impact analysis, and Section 7 and Section 106 compliance. The Section 106 process involved the Nevada and Arizona State Historic Preservation Offices, the Advisory Council on Historic Preservation, and 12 Native American tribes, with 21 signatories on the Programmatic Agreement. His responsibilities included the coordination of an extensive interagency project management team that consisted of representatives from the Federal Highway Administration, Bureau of Reclamation, National Park Service, Western Area Power Administration, Nevada Department of Transportation, and Arizona Department of Transportation. The project also included an innovative web-based public involvement program, including newsletters and a project website with the EIS, ROD, email box, and project information maintained online. Jeff was the project manager responsible for leading consultant team preparing the EIS for FHWA Central Federal Lands Highway Division.

**I-15 and MLK Connector (Project NEON) Environmental Impact Statement | Las Vegas, NV | Environmental Manager.** Termed for its location in the neon-lit heart of Las Vegas, the project involved reconstructing the I-15 and U.S. 95 freeways and adjacent arterials to meet the 2030 traffic demand for the area. The project work included the design of complex interchanges, collector-distributor roads, highway-occupancy-vehicle (HOV) lanes, overpasses and underpasses, a railroad crossing, the connection of two major arterial streets over the I-15 freeway, and realignment of arterial streets. Jeff was the environmental manager responsible for preparation of the EIS, which involved development of over twenty-eight freeway and local street alternative variations that attempted to meet the purpose and need of the project. These alternatives were narrowed and two build alternatives were selected to carry forward through the NEPA process. Key issues analyzed for the EIS included relocation impacts, environmental justice, noise and air quality, cultural resources and visual impacts/aesthetics. The project included an extensive public outreach program and a unique business and residential survey to document relocation impacts.

**U.S. Highway 101 (Van Ness Avenue) Bus Rapid Transit Environmental Impact Statement | San Francisco, CA | Project Manager.** The project proposes to implement a bus rapid transit (BRT) system along Van Ness Avenue in the heart of San Francisco. Van Ness Avenue is a six-lane arterial of major cultural and regional significance. Four alternatives have been defined, including the no-build alternative and three build alternatives. Parsons has completed scoping and an alternatives analysis (AA), and is currently preparing environmental technical studies, preliminary engineering, and an EIS. Following selection of a locally preferred alternative (LPA), Parsons will prepare the 30 percent preliminary engineering submittals. Jeff is the project manager for preparation of the Environmental Impact Statement/ Environmental Impact Report (EIS/ EIR) and Preliminary Engineering for this Bus Rapid Transit (BRT) on Van Ness Avenue between Mission and Lombard Streets for the San Francisco County Transportation Authority. Includes public outreach and coordination with SFMTA and other San Francisco public agencies, the Federal Transit Administration, and Caltrans.

*Form A - Resume Form*

PARSONS

# KEVIN THIBAULT, PE
## Operations & Maintenance

### Education
Bachelor of Science, Civil Engineering, University of Massachusetts, 1984

### Years of Experience
With this firm: 1
With other firms: 26
In role as stated for project: 22

### Registrations
1991, Civil Engineer, 44787, FL

### Certifications
N/A

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**Ohio River Bridges GEC (INDOT) | Indianapolis, Indiana | Operation and Maintenance Technical Advisor.** Kevin played a key assignment in Parsons' role as Technical Advisor to the Indiana Department of Transportation for its $1.2 billion Ohio River Bridges project in southern Indiana. He assisted in the development of Operations & Maintenance standards and criteria to be used in the implementation of this long-term availability payment project. Kevin also has been responsible in providing support to the state in all toll aspects of the project – from developing toll policies to incorporating toll system criteria in the Public-Private Partnership procurement.

**Florida Department of Transportation (FDOT), Florida's Turnpike Enterprise | Tallahassee, FL**

**Interim Executive Director.** Having spent most of his career with the Florida Department of Transportation, Kevin served in relevant lead positions, including assistant secretary for engineering and operations, executive director of the Florida Rail Enterprise and Interim Executive Director of the Florida Turnpike Enterprise.

As interim executive director of Florida's Turnpike Enterprise, Kevin served as interim chief executive of the state's largest toll entity, with over 460 miles of toll roads and revenues in excess of $600 million annually. He provided executive leadership in the transition from current toll collection methods to all electronic toll collection and utilized previous turnpike and toll road experience to develop innovative approaches to solving the transportation needs of the state within economic constraints.

**Assistant Secretary for Engineering and Operations.** For over six years Kevin served as assistant secretary for engineering and operations. His primary role was chief operating officer of an agency with more than 7,100 employees and an annual budget of $6-7 billion. Kevin provided oversight over all operations, maintenance and engineering aspects of the agency; coordinated the agency's legislative program with the Governor's office and the legislature; provided day-to-day leadership of the department's seven districts and Florida's Turnpike; and served as executive in charge of the Port of Miami Tunnel and executive team member for the I-595 Express project. Within his responsibility as assistant secretary, Kevin provided leadership to an agency migrating to increased privatization of its operations & maintenance program, with over 80% contracted to outside sources.

**FDOT, Florida Rail Enterprise | Tallahassee, FL | Executive Director**

Kevin served as the first executive director of the newly created Florida Rail Enterprise, a unit within the Florida Department of Transportation (FDOT), and was responsible for implementation of the state's high-speed rail program. He was responsible for coordinating the department's entire passenger rail initiatives, including light rail and commuter rail. Kevin was successful in securing over $2 billion in federal funds towards implementation of the state's high-speed rail program, led the staff support to the Florida Statewide Passenger Rail Commission, and provided strong coordination and communication with local stakeholders on the development of the high-speed rail program.

*Form A - Resume Form*

PARSONS

# RUTH McMORROW

## Financing

### Education

Master of Public Administration, State and Local Finance, Maxwell School of Citizenship and Public Affairs, Syracuse University, New York, 1979

Bachelor of Arts, Political Science, Public Administration, Montclair State College, New Jersey, 1978

### Years of Experience

With this firm: 1

With other firms: 33

In role as stated for project: 34

### Registrations

N/A

### Certifications

N/A

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**Golden Ears Bridge | British Columbia, Canada | Mandated Lead Arranger/Interest Rate and Inflation Swap Provider.** Ruth structured and provided a long-term credit-enhanced bank financing to Golden Crossing Group for the design, construction, finance and maintenance of Golden Ears Bridge project. The project included the design and construction of a new, six-lane bridge across Fraser River and an associated network of access and approach roads just east of Vancouver, British Columbia, Canada. The financing program was developed to provide a customized financing solution tailored to the government client's anticipated toll revenues. A C$1 billion long-term bank facility was credit-enhanced and swapped to a fixed rate. While inflation protection for the government payment stream was arranged through a Canadian inflation-index swap.

**Northwest Anthony Henday Drive | Alberta, Canada | Structuring Bank/Mandated Lead Arranger/ Swap Provider.** Ruth was responsible for negotiating and executing an innovative financing program for Northwest Connect, a consortium led by Bilfinger Berger Project Investments (BBPI). BBPI had bid and was awarded a 30 year concession to design, build, finance and maintain a segment of Anthony Henday Drive, a ring road around the City of Edmonton, Alberta. The financing program paired long-term bank debt (swapped to fixed) with a long-term fixed rate bond offering to provide cost-efficient project funding. This new 21 km phase of the ring road will extend from Yellowhead Trail (Highway 16) to the Manning Drive Freeway (Highway 15). The new roadway will include 9 interchanges and a total of 29 bridge structures, and will provide a four- to six-lane, fully grade-separated freeway.

**Port Mann/Highway 1 Corridor | British Columbia, Canada | Financial Advisor/Debt Arranger.** Ruth led the financial advisory team for the Highway 1 Transportation Group, comprised of Transurban USA and Bilfinger Berger Project Investments. The project was to include the construction of a new Port Mann Bridge or a new span over the Fraser River in Vancouver, British Columbia with enhancements to the TransCanada Highway. A competitive financing package for design and construction of this $2 billion project was fully-committed. The project was awarded to a competing consortium and eventually procured under design-build contract.

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# ROBERT RICH
## Financial Advisor

### Education
Juris Doctor, Law, Rutgers Law School, 1985
Master of Public Administration, Finance, Columbia University, 1981
Bachelor of Arts, Political Science, Brown University, 1977

### Years of Experience
With this firm: 11
With other firms: 17
In role as stated for project: 28

### Registrations
1985, Attorney Registration #019261985, NJ
1985, Attroney Registration #2043057, NY
1985, Attorney Registration #404067, DC

### Certifications
N/A

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**Safe and Sound Bridge Program | Statewide, MO | Financial Advisor.** Robert structured the private financing package and advised on the eventual public financing of the $500 million project to rebuild and replace 802 deficient bridges in the State of Missouri.

**Bay Area Toll Authority Bridge Retrofit Program | San Francisco, CA | Financial Advisor.** Robert continues as advisor on all aspects of $10 billion seismic retrofit of 7 bridges in the San Francisco Bay Area including the $6 billion replacement of the Bay Bridge and the $2 billion funding of local transportation and transit projects.

**Transportation Corridor Agencies | CA | Investment Banker.** $1.2 billion project for San Joaquin Hills toll road and lead banker on the $1.5 billion Foothill Eastern toll road, responsible for structuring, rating and marketing the nation's first greenfield toll facilities.

**Tacoma Narrows Bridge | Tacoma, WA | Investment Banker.** Robert structured the non-recourse financing plan for the Bechtel consortium on the $700 million replacement of the then Tacoma Narrows Bridge. The State of Washington eventually funded the Bridge without private financing, paying the Bechtel Consortium a fee for development and financing work.

**Commonwealth of Pennsylvania | PA | Advisor to the Governor.** The 75-year $12.8 billion concession sale of the Pennsylvania Turnpike involved developing marketing strategies, working with prospective bidders, developing bid documents and selecting the winning bidder. The legislature opted to continue to fund Commonwealth Transportation needs through the on-going operations of the Pennsylvania Turnpike so focus switched to developing a 50-year, $80 billion financing plan for the Commission.

**San Diego Association of Governments (SANDAG) | San Diego, CA | Financial Advisor to SANDAG.** $350 million acquisition of the Southbay Expressway (SR-125) Toll Facility.

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# GERALD NIELSTEN, PE, PP
## Traffic and Revenue Studies

### Education
Bachelor of Arts, Engineering Science, Dartmouth College, 1971
Bachelor of Engineering, Transportation Design, Planning, and Policy, Thayer School of Engineering, Dartmouth College, 1972

### Years of Experience
With this firm: 40
With other firms: 0
In role as stated for project: 30

### Registrations
1980, Professional Engineer, 057561-1, NY
1990, Professional Planner, 33LI00499800, NJ

### Certifications
N/A

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**Denver E-470 Project | Denver, CO | Principal-in-Charge.** Gerry was the principal-in-charge of the investment study for the 34-mile beltway section around Denver, responsible for completion of the study and acceptance by the authority. This "first of a kind" project, created by the passing of the Public Highway Authority Act, provided beltway access to the fastest growing area of Denver as well as to the new Denver International Airport. Gerry tested various alternative scenarios and presented project findings to rating agencies for financing this venture. Project has been operating with great success since it was opened.

**I-25 HOT Lanes | Denver, CO | Principal-in-Charge.** Gerry was the principal-in-charge, responsible for managing Stantec's completion of preliminary traffic and revenue forecasts for the proposed I-25 HOT Lanes in Denver. Stantec developed a preliminary toll schedule by time of day to estimate traffic use in the corridor. Using sketch plan model outputs from the Denver Regional Council of Governments (DRCOG) and existing traffic data, Stantec formulated a series of toll diversion algorithms, focusing on the relationship of HOT market share versus travel time and corridor congestion by time of day. The final result was a likely future revenue stream for the project. Gerry led his team in the development of the data and reports to support this highly successful project, with actual revenues exceeding projected.

**SR 91 Express Lanes | Riverside County, CA | Principal-in-Charge.** Stantec completed a Traffic and Revenue study for this 10 mile section of SR 91 for the Riverside County Transportation Agency (RCTC). Work included extensive new source data collection, regional model development and micro-simulation modeling to support an Investment Grade study. As the principal-in-charge of this effort, successfully Gerry led his team to develop the necessary data for this bid.

**I-5 HOT Lanes | San Diego, CA | Principal-in-Charge.** For the I-5 Managed Lanes in San Diego, CA, Stantec completed a Value Pricing Planning Study to determine potential traffic and revenue levels assuming the existing I-5 is expanded and the HOV lanes are converted to HOT lanes. Stantec conducted a detailed analysis of the I-15 Managed Lanes and was able to compare their tolling and congestion levels to that on the SR-91 Express Lanes. The future I-5 network was modeled to generate peak volumes by vehicle occupancy. Using this output, Stantec developed an hourly directional model at various points along the I-5 HOT lane corridor to determine the split between HOT lane users and general lane users to generate potential revenues. Gerry again led his team to successful develop the direction model for the facility to prove the project viability.

# STEVE KAPLAN, ESQ.
## Legal Advisor

### Education
Juris Doctor, Law, Public Law, Transportation and Infrastructure Financing, Harvard Law School, 1973
Bachelor of Arts, Pre-Law, Harvard University, 1969

### Years of Experience
With this firm: 9
With other firms: 30
In role as stated for project: 39

### Registrations
1976, Attorney Registration #7826, CO

### Certifications
N/A

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**RTD Eagle P3 Project | Denver, CO | Legal Counsel.** Served as part of the legal team representing RTD on the Eagle P3 procurement, including local and state issues such as tax issues, TABOR, public contracts, real estate structure, certain bid documents, and final contract documents. This $2 billion project is the first successful P3 transit procurement in the United States. Structuring the procurement, and eventually the agreements, addressing the proposers needs for certainty in the availability payments and for payments upon a termination event required a major team effort to restructure the financing approach. The contracting issues for construction and operation presented new issues under Federal and State law that had to be addressed. During procurement, one of the primary goals was to have at least two competitive, qualified teams proposing, which was achieved. Related work for RTD includes corridor acquisition from the BNSF and the UPRR.

**Denver Union Station Site Redevelopment | Denver, CO | Legal Counsel.** Represent the master developer selected to redevelop the site, and assist in structuring the overall transaction with RTD and then with DUSPA (currently on the DUSPA Board as representative of the metropolitan district). The Denver Union Station transportation project created a new financing approach for using both TIFIA and RRIF loans, and Downtown Development District with TIF financing, and development-generated proceeds, including land sale proceeds. The overall structure and negotiations involved Denver, CDOT, RTD, and DRCOG, as well as the master developer, USNC. To date, the development is ahead of schedule, with three of the five parcels having been taken down by the master developer.

**Denver International Airport | Denver, CO | Legal Counsel.** Represented Denver as City Attorney in the planning and financing of DIA, and currently represent DIA on several issues related to airline lease negotiations, FAA issues, and development on and around DIA. Relevant issues include transportation infrastructure issues such as Pena Boulevard and major corridors for neighboring communities.

**Redevelopment of Stapleton International Airport | Denver, CO | Legal Counsel.** Represent Forest City as the master developer, and involved in all core documents, including TIF and metropolitan district financing of what will be over $650 million in infrastructure, as well as real estate and environmental issues. This ongoing, long-term project has required long-term strategic planning in terms of the transaction documents.

*Form A - Resume Form*

INTERMOUNTAIN PUBLIC AFFAIRS, LLC

# THOMAS SCHILLING
## Public Outreach

### Education
Bachelor of Arts, Journalism, University of Oregon, 1975

### Years of Experience
With this firm: 20
With other firms: 14
In role as stated for project: 16

### Registrations
N/A

### Certifications
1986, Banking and Finance, American Bankers Association/University of Wisconsin
1991, Data Analysis for Public Policy Decisions, The Governors Center/Duke University
1992, Colorado Policy and Public Engagement Leadership, Colorado Institute for Leadership Training

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**I-70 Mountain Corridor Context-Sensitive Solutions Project | CO | Principal-in-Charge.** The Project Management Team oversaw the creation and development of the official CSS guidance for the I-70 Mountain Corridor. Specific roles included:

- Developing guidance, strategies and tactics for engaging local communities and elected officials;
- Establishing the six-step process and best practices for decision-making;
- Creating standards and practices for effective public information;
- Overseeing the design and content development of the website, including scripting and shooting instructional videos.
- Engaging the public and elected officials in developing the guidance, context statement and corridor values.

**I-70 Silverthorne/Dillon Interchange Feasibility | Silverthorne, CO | Consultant Director of Public Involvement.** Oversaw the first process to use the new I-70 Mountain Corridor CSS guidance. The study, which is evaluating alternatives for improving the interchange at I-70 and U.S. 6/S.H. 9, developed a streamlined CSS approach, designed to enhance the delivery schedule while increasing public awareness and understanding of how the process, criteria and recommendations were influenced by input and involvement. The project has presented its recommended alternatives, which were well received by the public and elected officials. Additionally, oversaw the public information, including media relations, advertising and website development.

**Twin Tunnels Environmental Assessment | Idaho Springs, CO | Public Information Consultant.** Oversaw the development of messaging, outreach materials, advertising, website and news releases, employing guidance and principles from the I-70 Mountain Corridor CSS guidance. Additionally, provided insight on engagement of public and elected officials in the PLT and Technical Team process. Assisted in the outreach process for the frontage road categorical exclusion.

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WEBB PR

# DAN HOPKINS
## Public Outreach

### Education
Bachelor of Arts, Mass Communications, University of Denver, 1968

### Years of Experience
With this firm: 5
With other firms: 35
In role as stated for project: 40

### Registrations
N/A

### Certifications
N/A

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**Director of Communications and Deputy Chief of Staff for State of Colorado Gov. Bill Owens.** Responsibilities included serving as Gov. Owens' Press Secretary, speaking on behalf of the Governor and coordinating media relations for the Governor. Interacted daily with the Capitol press corps, as well as statewide and national media. Oversaw all major events involving the Governor, including the annual State of the State address. Coordinated the Governor's media and public outreach with state agencies. Managed crisis communications for the Governor. Supervised staff and activities in the Governor's Press Office, including the Citizens' Advocate Office. Served as a member of the Governor's Senior Staff advising the Governor on major state issues including transportation and the TREX design/build project – one of Gov. Owens' highest priorities. While serving with the Governor, was honored to be selected as Communicator of the Year (2004) by the International Association of Business Communicators, Colorado chapter.

**Colorado Department of Transportation | Denver, CO | Director of Public Information.** As CDOT's Director of Public Information. he developed CDOT's first crisis communications plan and directed communications during emergencies. Dan also coordinated various communications activities with Planning and Environmental staff at the CDOT regions and headquarters. He managed communications for numerous projects including the original reconstruction of the Mousetrap (I-25 and I-70); Glenwood Canyon – I-70's Final Link; TREX during the developmental preconstruction stages; and I-25 north (North 40) and south of Denver (COSMIX). He initiated quarterly outreach meetings with traffic reporters and transportation writers to provide in-depth media communications and worked in partnership with Region 6 traffic to establish the initial CDOT traffic operations center.

**Colorado Department of Transportation | Denver, CO | Transportation Commission Secretary for the Colorado Transportation Commission.** Dan served as Secretary for the Colorado Transportation Commission, a position appointed by the Commission. In that role, Dan oversaw the Commission's public outreach and communications. Dan's awards earned while in this role include the Public Service Award for "exceptional leadership and service in the field of public information" from the National Highway Traffic Safety Administration and the Excellence in Government Award from the Federal Executive Board. Dan also received the American Association of State Highway and Transportation Official's (AASHTO) Scoop Award – the highest award for excellence in the field of transportation public relations. That award was for originating CDOT's first large-scale public outreach communications effort – the New I-25, Making Life Easier Down the Road – for the reconstruction of the Mousetrap.

*Form A - Resume Form*

WILSON & COMPANY ENGINEERS & ARCHITECTS

# LAWRENCE SLY, AICP
## Tier 1 Re-Evaluation/Tier 2 EIS

### Education
Bachelor of Science, Finance/Economics, Florida State University, 1987

### Years of Experience
With this firm: 4
With other firms: 15
In role as stated for project: 16

### Registrations
N/A

### Certifications
2002, American Institute of Certified Planners, 017932

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**I-70 Twin Tunnels Environmental Assessment | Denver, CO | Environmental Manager.** Lawrence was the environmental manager for the Air Quality, Water Quality, Terrestrial Wildlife, Wetlands and Noise resource evaluations required for the development of the Twin Tunnels EA. Coordination with USFWS, USACE, CDPHE, SWEEP, ALIVE and the local communities to complete the evaluations and develop adaptive mitigation. Completed environmental resource evaluations, technical memorandums, sections of the EA and permitting.

**US 50 Corridor East Tier 1 EIS | Pueblo, CO | Project Manager.**
Lawrence was responsible for the development and delivery of 150-mile Tier 1 Programmatic EIS corridor traversing four counties and ten municipalities. Mr. Sly provided extensive coordination with local, state, and federal agencies to develop process agreements resulting in: Agency Charter and Community Momorandum of Agreement clarifing key milestones, approval process, and schedule; Section 106 Programmatic Agreement with State Historic Preservation Officer (SHPO); NEPA/404 merger with the U.S. Army Corps of Engineers (USACE); Colorado's first wetland and riparian functional assessment with long-term "Bio-logical" mitigation strategies. Key project issues included level of environmental detail for decision making, socioeconomics, farmland impacts, wetlands, riparian areas, historic resources, corrridor preservation and phasing of safety improvements within the ultimate footprint.

**Statewide Environmental Engineering Services | Statewide, CO | Project Manager.** Lawrence was the project manager for a multi-faceted team of environmental and engineering professionals working on projects in five Colorado Department of Transportation regions across the state. Projects range from various levels of NEPA documentation and reviews, to individual environmental resource investigations and issue specific engineering support. Recent projects include: I-25 EA Reevaluation, I-25 Ilex Bridges Phase 1 EA, US 24 Black Squirrel Creek 404 permitting, SH 115 Improvements at Ft. Carson Gate 6 permitting, Teller County Museum in Florissant Categorical Exclusion, SH 7 Categorical Exclusion, West LaJunta Outfall Categorical Exclusion, I-25 South Academy On-ramp Extension, Jefferson Parkway Facilitation, US 160 Wetland delineation and Finding Report, US 24 Rainbow Falls overview and evaluation, and representing CDOT environmental staff on various local agency projects.

**Tampa Interstate EIS | Tampa, FL | Project Planner.** Lawrence was the project planner for Phase II of this major four-phase transportation improvement program for the Florida Department of Transportation District 7. Phase II produced the EIS and ROD for the reconstruction of Tampa's 37-mile-long interstate to a multi-modal, four-roadway system. This project included an extensive public involvement program, numerous agency and community advisory committees, development of the state's first urban design guidelines, and extensive mitigation alternatives as a part of the Sections 106, 4(f) and environmental justice processes. Mr. Sly also assisted with the development and coordination of the preliminary engineering report and long-range estimates; he also provided continuous support in the project's economic and financial aspects.

# JOHN PUTNAM, ESQ.
## NEPA Legal Sufficiency

### Education
Juris Doctor, Law, University of Chicago, 1993
Bachelor of Arts, Political Economy, Williams College, 1990

### Years of Experience
With this firm: 9
With other firms: 10
In role as stated for project: 17

### Registrations
1993, Attorney Registration #23353, CO

### Certifications
N/A

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**Over the River Corporation, NEPA Compliance | Canon City, CO | Legal Counsel.** John represents the Over the River Corporation in litigation associated with state and federal approval of a complex art installation along U.S. 50 between Salida and Canon City. The project is designed to display around 6 miles of artwork over 40 miles of the Arkansas River and includes construction of support structures, assembly of the art for the 2 week exhibition, removal of installed items, and mitigation. The project required an extensive EIS be completed by the Bureau of Land Management (BLM), as well as approvals by State agencies and the two Colorado counties in which the project would be located. Mr. Putnam advised the client regarding strategies associated with NEPA review and is currently representing the client in separate litigation matters defending BLM's record of decision and approval by the Colorado Department of Parks and Wildlife. The BLM record of decision was recently challenged on NEPA and other grounds by separate parties in front of the Interior Board of Land Appeals and the United States District Court for the District of Colorado. The suit against the Department of Parks and Wildlife is pending before in state district court.

**Los Angeles World Airports, NEPA Compliance/Re-evaluation of Record of Decision | Los Angeles, CA | Legal Counsel.** John represents Los Angeles World Airports in the development of NEPA and Clean Air Act strategies and documentation associated with the implementation of the Los Angeles International Airport ("LAX") Master Plan. The LAX Master Plan is a comprehensive program of improvements to modernize LAX's four-runway airfield, extensive terminal facilities, international cargo facilities and multi-modal connections to the region's freeways and light-rail. The project and airport have faced consistent opposition, and operated in the most difficult clean air and state environmental review environment in the country. Mr. Putnam was involved both with the NEPA and conformity compliance of the original Master Plan NEPA decisions, and also with subsequent NEPA, Clean Air Act and other issues that have arisen as the Master Plan has evolved from the originally approved in the Record of Decision due to changes in the aviation market, economy and safety/security considerations. This has included development of written re-evaluation documents and negotiation with agencies for changes to elements approved in the Master Plan Record of Decision.

**Sound Transit East Link, NEPA/4(f) Compliance | Seattle, WA | Legal Counsel.** John provided strategic counsel and edited NEPA and Section 4(f) documentation relating to a controversial light rail extension that affected park and historic Section 4(f) resources. The Sound Transit East Link project is a light-rail line that will connect Seattle to its eastern suburbs, through a number of regional urban centers. The East Link line had multiple alternatives that would go through historic developed areas and/or parks, and faced municipal objections to some of the alternatives. Mr. Putnam assisted Sound Transit in addressing Section 4(f) issues in this complex environment, including how to balance impacts to different 4(f) resources in different alternatives. Sound Transit received the Record of Decision sought from the FTA in 2012.

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PARSONS

# BRADLEY DOYLE, PE

## Design Lead

### Education

Master of Science, Engineering Systems Management, Texas A&M University, 2010

Bachelor of Science, Geotechnical Engineering, Colorado School of Mines, 2000

### Years of Experience

With this firm: 13

With other firms: 0

In role as stated for project: 7

### Registrations

2005, Professional Engineer, PE-39746, CO

### Certifications

N/A

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**SH 82 Snowmass Canyon | Snowmass, CO | Construction Engineer.** The project involved reconstruction of SH 82 through Snowmass Canyon and included the construction of 6 bridges, 42 retaining walls and 3.5 miles of 4 lane divided highway. All work was done within the narrow confines of a steep mountain valley and next to gold medal trout waters. Brad was responsible for inspection oversight and a majority of the required field modifications to the design, associated change orders, and all coordination between the contractor and project designers.

**SH 119 Corridor Management |Blackhawk, CO | Design Manager.** The project involves full corridor management services, including development of corridor strategies, preparation of designs, management of design and environmental activities, assisting with managing other consultants, and stakeholder coordination. Brad was responsible for managing the design, survey, and field reconnaissance efforts which included both concept and final plan preparation for various projects in the corridor. Brad led the design team providing several plan packages, project visualizations for both CDOT and stakeholders use, project specifications, and NEPA Cat-Ex documentation.

**CDOT Statewide Tunnel Engineering Non-Project Specific Contract | Statewide CO | Task Manager and Lead Designer.** As part of a three-year CDOT non-project specific (NPS) contract, Parsons was responsible for providing on-call tunnel and engineering services. Under an early task order, Parsons completed the first-ever complete structural inspection of the I-70 Eisenhower/Johnson Tunnels, including inspection of two 9,000 ft. long two-lane tunnels and both ventilation buildings. Other tasks included inspection of the Hanging Lake Tunnels, emergency repairs in HLT, and facility and electrical upgrades at EJMT. Brad managed delivery of specific tasks for this contract from project scoping through completion and closeout. He has participated in design tasks, led the construction inspection of tunnel upgrades, and the structural inspections.

**CDOT Region 1 Construction Management Non-Project Specific Contract | CDOT Region 1 | Project Manager.** The On-Call Construction Management Services contract for CDOT Region 1 included construction engineering, inspection, and materials testing. The project required providing experienced staff to support all types of highway construction activities in multiple areas of the state. Brad was the Project Manager for Parsons, responsible for working with CDOT to identify project needs and requirements, executing task orders to perform the work, overseeing completion of the inspection activities, ensuring project needs were met and performed quality reviews. Five task orders were completed for work including support on Highway 119 safety improvements, U.S. 50 widening and safety project, SH 16 and I-25 Interchange reconstruction, I-70 Eisenhower Tunnel to Bakerville maintenance upgrades, and Hwy 72 overlay north of Golden. Parsons inspectors self performed many of these tasks and utilized our partners for materials testing as required by the project. Brad made certain that all projects were completed as specified and within the budgets established.

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PARSONS

# ROBERT OSTERMILLER, JR., P.E., CCM

## P3 Procurement

### Education

Master of Science, Business Administration, Southern Oregon State University, 1984
Bachelor of Science, Civil Engineering, Oregon Institute of Technology, 1983

### Years of Experience

With this firm: Starting September, 2012
With other firms: 27
In role as stated for project: 10

### Registrations

1990, Professional Engineer, 27702, CO
2007, Professional Engineer, 34796, MD

### Certifications

2011, Certified Construction Manager
2007, Certified Design-Build Professional
1992, Design Build Institute of America
1992, Practice of Negotiation, Alternative Disputes Resolution, Arbitration, Mediation
1987, Construction Law
1986, Construction Management and Construction Scheduling

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**Intercounty Connector (ICC) | Maryland State Highway Administration | Executive Program Manager/Construction Manager.** This $2.4 billion, 18-mile toll road project is being constructed in an environmentally sensitive area just north of Washington D.C. The project owner/operator will be the Maryland Tolling Authority. The Maryland Transit Authority will also operate bus routes on the corridor. Robert has served as Construction Manager, and then as Executive Program Manager for the total program of works. His responsibilities include Procurement management, general oversight, and technical direction for the program and construction operations of the project. This includes construction safety, traffic operations, quality assurance oversight, materials certification and quality verification, change negotiations and management, payment processing, scheduling, and partnering issues. Robert is also responsible for providing management advice on matters related to public outreach, disadvantaged business enterprises, environmental mitigation efforts, program budget, interagency coordination, audit processes and personnel matters.

**I-25 T-REX Design Build | Denver, CO | Project Manager and Contracts Manager.** This award winning $1.7 billion multi-modal light rail and highway project was primarily constructed using design-build procurement. The project was overseen and funded in part by FHWA and FTA, and was cited as an example of the ability for the two agencies to collaborate on projects. As Project Manager for the consulting team that provided program management services ($74 million contract) to CDOT and the Regional Transit District (RTD), responsibilities included client interface, project finances, subconsultant management, and personnel issues. As Contracts Manager, responsibilities included all matters related to contract changes, dispute resolution, contractual advice to project team members, preparation and review of correspondence for contractual accuracy, developing business processes, and managing the configuration management process for the project.

**I-70 through Glenwood Canyon | Glenwood Canyon, CO | Assistant Project Manager.** Provided program management assistance and coordinated the consulting efforts for the $500-million, multiple award-winning project which involved the construction of a 12-mile, four-lane highway through a steep river canyon. Pre-construction responsibilities included: consultant contract review and coordination; preliminary scheduling and estimating for the 19 construction projects; plan and specifications review, generation, and coordination; constructability analyses for heavy equipment access and operations; communication and coordination with numerous governmental and private agencies; and preparation of special studies to meet immediate project needs. Construction responsibilities included: review and analysis of contractor correspondence related to claims issues; preparation of recommendations on construction claims; critical path schedule analysis; and preparation of estimates, schedules, correspondence, and other documentation for defense of construction claims.

*Form A - Resume Form*

IBI GROUP

# BART CIMA, PE
## Systems Lead

### Education
Master of Science, Transportation Engineering, Northwestern University, 1976
Bachelor of Science, Civil Engineering, Northwestern University, 1974

### Years of Experience
With this firm: 14
With other firms: 23
In role as stated for project: 25

### Registrations
1998, Professional Engineer, 31566, WA
2008, Professional Engineer, 7558880, NY
2008, Professional Engineer, 6201055781, MI

### Certifications
N/A

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**I-25 T-REX Design-Build | Denver, CO | ITS Manager.** The $1.6 billion T-REX Project improved 17 miles of two interstates (I-25 and I-225) and added 19 miles of new Light Rail Transit in the southwest Denver Metropolitan area. IBI Group was responsible for the ITS element of this joint Colorado DOT and Regional Transportation District (RTD) project. As ITS Lead, Mr. Cima led development of the design-build specifications for nearly $90 million in improvements that include real-time transit information, parking facility management, transit signal priority, ramp metering, CCTV cameras, dynamic message signs, traffic detectors, and communications infrastructure. IBI Group provided technical oversight of the design-build team.

**SR 520 Evergreen Point Floating Bridge and Landing Replacement Design-Build | Seattle, WA | ITS, Toll & Communications Infrastructure Lead Designer.** This $600 million construction project will build a new, six-lane floating bridge across Lake Washington including two general-purpose lanes and one new transit/HOV lane in each direction. The SR 520 Bridge Replacement and HOV Program will enhance safety by replacing the aging floating bridge and keep the region moving with vital transit and roadway improvements throughout the corridor. Mr. Cima is the engineer of record for the tolling, ITS and communications components on the design build team. IBI is responsible for the design of the tolling infrastructure, fiber communications, and ITS components including advance traffic management signage, cameras, data stations, and variable message signs.

**SR 167 HOT Lanes Pilot Project | WA | ITS, Toll & Communications Infrastructure Lead Designer.** Responsible for developing PS&E documents for the ITS, tolling, and communications infrastructure; toll collection system specifications; and RFP for the first HOT lane pilot project in Washington. Provided oversight for the implementation and testing of the toll collection system vendor. Participated in the development of the dynamic pricing scheme.

**Los Angeles County Express Lane Pilot Project | Los Angeles, CA | ITS, Toll & Communications Requirements Lead.** Lead the development of the ITS, tolling, communication and electrical design and system requirements including tolling point equipment, variable toll rate signs, sensors, CCTV cameras and fiber optic network for the introduction of HOT Lanes along I-10 and I-110 in Los Angeles. Developed toll collection software and customer service functional requirements. Recommended the business rule that all managed lane users are required to have a transponder to encourage carpooling and improve enforcement.

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PARSONS

# PHILLIP HOFFMANN

## Transit Lead

### Education

Masters of Urban and Regional Planning, Urban and Regional Planning, University of Colorado, 1979
Bachelor of Science, Transportation and Management, University of Colorado, 1976

### Years of Experience

With this firm: 11
With other firms: 26
In role as stated for project: 25

### Registrations

N/A

### Certifications

Certificate in Management, University of Denver, 1986

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**I-70 Mountain Corridor Alternatives Analysis | CO | Project Director.** Phil served as project director of analysis of alternative highway improvements along this key interstate corridor between Floyd Hill and Empire Junction. The planning/design/engineering analysis included: freeway and interchange traffic operations, roadway alignment, environmental and cost issues, the US 6 interchange and ten additional interchanges, substandard horizontal curves, as well as evaluation of possible improvements such as for HOV and general purpose lanes, transit connections and transfer centers. Phil was responsible for overall management and technical analysis.

**I-70 Mountain Corridor Programmatic Environmental Impact Statement and Preliminary Design | CO | Project Director.** Phil served as project director for analysis of alternative transit improvements between C-470 and Glenwood Springs. The planning/design/engineering analysis included consideration of rubber tire transit alternatives, fixed guideway transit alternatives including bus rapid transit (BRT), HOV lanes, and the highway interfaces and facilities to accommodate both, as well as the potential environmental impacts associated with the alternatives. The project also included preliminary engineering of a fixed guideway transit alignment to determine its feasibility. Phil was responsible for overall management and technical analysis.

**El Camino Bus Rapid Transit Conceptual Engineering | Santa Clara County, CA | Planning Manager.** Parsons is responsible for the development of an alternatives analysis and conceptual engineering plans for the 17.4-mile SR 82 corridor from San Jose to Palo Alto, California, including 10 miles of exclusive, center-running BRT lanes, eight miles of side-running mixed-flow lanes, and 16 stations. The project involved evaluation of the project's competitiveness for FTA Small Starts funding along with application and financial plan submittal; travel demand/ridership forecasting; analysis of bus and traffic operations; traffic and parking analysis; guideway layout and plan development; and station layout and urban design. Tasks included project management, operational analysis, traffic analysis, development of design standards, and conceptual design for station and landscape architecture, systems, lighting, right-of-way (ROW), utilities, and roadway improvements. Phil was responsible for all of the planning, transit and traffic technical analysis.

**E Street Corridor Bus Rapid Transit | San Bernardino, CA | Deputy Project Manager.** The $192 million E Street Corridor BRT project involves improvements to the 15.7-mile-long transit system, which connects the northern portion of the city of San Bernardino with the city of Loma Linda, California. The BRT route includes 5.4 miles of exclusive bus lanes, transit signal priority, 16 upgraded stations, real-time bus information, and 4 park-and-ride facilities for 600 vehicles. Phil was responsible for project management oversight through PE/EA, and provided technical analysis including development of a refined locally preferred alternative, system wide plan update, and project financial plan in support of a successful Federal Transit Administration Small Starts grant.

*Form A - Resume Form*

PARSONS

# DOUG SLAKEY, PE

## Tunnels

### Education

Bachelor of Science, Engineering, Massachusetts Institute of Technology, 1976

Master of Science, Civil Engineering, Harvey Mudd College, 1977

### Years of Experience

With this firm: 5

With other firms: 30

In role as stated for project: 25

### Registrations

1981, Professional Engineer, PE-18636, CO

### Certifications

Certified Project Manager

## EXPERIENCE AND QUALIFICATIONS RELEVENT TO THE PROPOSED PROJECT:

**I-70 through Glenwood Canyon Tunnels | Glenwood Springs, CA | Project Manager.** The project involved providing preliminary engineering services, final design, and construction management for a multi-million dollar tunneling effort through the scenic and environmentally sensitive Glenwood Canyon area on I-70. As part of a 12-mile, four-lane final link in I-70, the project consisted of three elements, a 3,625 ft. long exploratory tunnel; the two-lane, twin-bore, 4,000 ft. long Hanging Lake Tunnel carrying eastbound and westbound traffic; and the 640 ft. long Reverse Curve Tunnel, which takes two westbound lanes adjacent to the eastbound lanes. Doug Slakey served as the project manager for the final design and construction management phases of this project. He was responsible for project performance, including schedule conformance, technical accuracy of the work, and quality and cost control. He also managed a multi-office team, subcontractors' activities, and engineering support during the construction phase of the project.

**Caldecott Tunnel | Contra Costa and Alameda Counties, CA | Site Civil and Tunnel Systems Lead.** As part of an integrated project team, consisting of resources from the California Department of Transportation (Caltrans), the Contra Costa Transportation Authority, and a consultant team, Parsons is responsible for managing and coordinating consultant services for the major project. The project involves the design of a new fourth bore for the Caldecott Tunnel on Highway 24, between Contra Costa and Alameda counties. The project work includes the technical design and final plans, specifications, and estimates (PS&E) for the new fourth bore tunnel structures; an operations and maintenance center; tunnel traffic control and security systems; ventilation and fire suppression; and electrical substations. Doug was responsible for the tunnel systems design portion of the project and led a team a team of systems design engineers in the preparation of the tunnel traffic control PS&E, which included all mechanical and electrical equipment in the tunnel and a complete traffic monitoring and control system for the tunnel, including the design of a high-speed data communications system, traffic control and monitoring devices, and field communications.

**Alameda Corridor Interstate 580, ED/PR | Livermore Valley, CA | Project Manager.** The Alameda County Congestion Management Agency (ACCMA) retained Parsons to provide environmental and engineering services for the preparation of the NEPA/CEQA environmental documents and the project report for the eastbound I-580 HOV project in Livermore Valley, California. Project elements included (1) widening of I-580 with the construction of eastbound and westbound HOV lanes between Vasco Road and Tassajara Road, (2) ramp modifications, (3) installation of ramp metering hardware, (4) possible noise barrier relocation and new noise barrier construction, (5) widening of six bridges, and (6) new retaining walls. Doug served as Project Manager, responsible for project completion and delivery of the final environmental document.

# 2 Project Technical Plan – Highway and Transit

# 2 Project Technical Plan – Highway and Transit

Parsons has developed an innovative implementation plan that provides a phased delivery solution to address congestion and introduce transit along the I-70 Mountain Corridor. Current projections by CDOT, based on conventional project delivery and identified funding sources, indicate that completion of significant improvements could take decades to achieve. The Parsons Plan is financially viable, based on early analysis, and provides a multi-modal solution that will significantly improve mobility within the corridor on an accelerated schedule.

## 2.1 PROJECT PLAN COMPONENTS

The initial phase of the Parsons Plan will construct a two- or three-lane, reversible, express lane facility, and will improve existing general purpose lanes for approximately 53 miles between C-470 and Silverthorne. The plan will construct new bores at the Eisenhower-Johnson Memorial Tunnel (EJMT) and the Twin Tunnels and will, predominantly, construct the express lanes in the existing median to minimize right-of-way (ROW) requirements. Both the express lanes and new tunnel bores will be tolled to finance the improvements and provide funding for a bus rapid transit (BRT) system between C-470 and Vail. BRT will travel in the new express lanes and in mixed traffic in existing general purpose lanes from Silverthorne to Vail. BRT stations, transit systems, and transit support facilities will be constructed during this initial phase. **Exhibit 2.1** illustrates a typical section for Phase 1 and potential future improvements. ***The Parsons Plan will deliver an initial phase of the I-70 Mountain Corridor at approximately one-quarter of the cost predicted and at least 15 years to 20 years earlier than using conventional project delivery and financing mechanisms.***

*The Parsons Plan was developed as a 3-lane express facility option. We envision that the third lane will serve as a dedicated bus guideway and allow trucks to utilize the express lanes and improve safety without adversely impacting traffic flow or BRT performance. Our preliminary financial plan, detailed in Section 4, and cost estimates assume the 3-lane alternative. During project development, we will evaluate both 2 and 3 lane options, and additional alternatives, allowing CDOT to decide, with stakeholders input, which best meets the I-70 Mountain Corridor needs.*

### 2.1.1 HIGHWAY AND TUNNEL

#### 2.1.1.1 EXISTING AND PROPOSED ELEMENTS

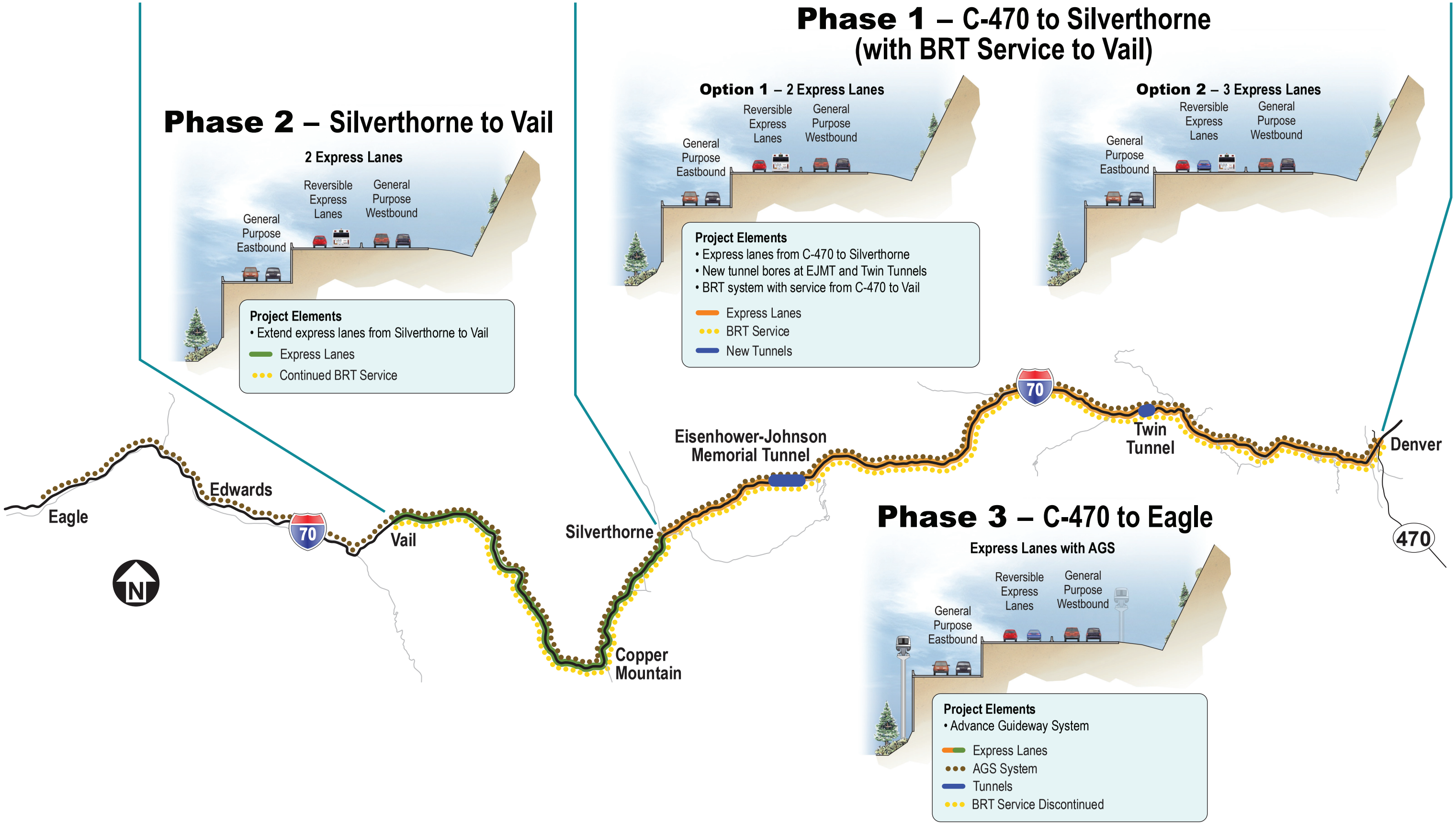
Phase 1 of the Parsons Plan constructs the express lanes from C-470 to Silverthorne, currently the segment with the highest traffic congestion. The new lanes will generally be constructed in the median and will incorporate short median walls where grade differentials are required. **Technical Appendix, Exhibit 1,** shows characteristic typical sections, plan views at various locations, and the relationship with the existing I-70 alignment. Additionally, CDOT may construct additional, future improvements using a similar delivery model. For example, Phase 2 could extend the express lanes to Vail, and Phase 3 could implement corridor wide AGS.

#### 2.1.1.2 SCOPING LEVEL ALIGNMENT DATA

**Corridor Wide Concept Design**

Parsons has completed a corridor wide conceptual design of our Phase 1 improvements. This design was accomplished using existing topographic, aerial, and environmental data from the PEIS. We developed a horizontal and vertical alignment from C-470 to Silverthorne, incorporated optimized typical sections, and produced a 3D model of the concept. This was necessary to establish material quantities and develop a refined

*Exhibit 2.1 – The Parsons Plan*



construction cost estimate to support our preliminary financial plan. The model was used to determine capital costs, assess constructability in critical locations, and determine limits of impacts and ROW requirements.

Areas of special concern were studied in detail to evaluate constructability and compatibility with Context Sensitive Solutions (CSS) guidelines. In critical areas, such as from Floyd Hill through the Twin Tunnels, Idaho Springs, Georgetown Hill, and the approaches to the Eisenhower tunnel, multiple alternatives were considered and developed. Design speeds of both 55 mph and 65 mph were considered. A 65-mph alignment is possible throughout the corridor, but will require special structures and major realignment in the areas east of the Twin Tunnels and Fall River Road. Parsons will refine the design during project development through interaction with CDOT and the I-70 stakeholders to select a preferred alignment, incorporate CSS design and aesthetic guidelines, and apply value engineering principles to reduce impacts and quantities further. **Technical Appendix, Exhibits 2 and 3**, illustrates Parsons' conceptual design and technical considerations at select, critical locations along the corridor. Impacts to ROW along the corridor are minimal except at interchanges. Compact interchange designs will be used to minimize impacts, but ROW takes will be required to upgrade these locations to current design criteria. Impacts to major utilities are limited to over-head electrical and CDOT's ITS. We have avoided impacts to the Georgetown Loop rail line and major transmission lines in our design.

### Design Variances

Design variances are common in the type of challenging terrain and geology encountered along I-70. Steep grades and wintertime icing conditions must be carefully considered to maintain overall safety and balanced with cost and environmental benefits. **Exhibit 2.2** provides several anticipated design variances identified in the development of our conceptual design.

***Exhibit 2.2 – Design Variances***

| Variance | Justification | Impacts and Mitigation |
|---|---|---|
| **Reduced Shoulder Widths** | Reduced shoulder widths in express lanes in some locations may be appropriate to reduce cut and fill heights and environmental impacts. | One 10-foot minimum shoulder will be sufficient to provide safe breakdown areas. The concessionaire will be required to monitor lanes and clear stopped vehicles. |
| **Design Speed Reduction** | At this point, design speed variances are not anticipated. However, if impacts are determined too severe in critical areas, the design team may consider a speed variance on an isolated curve. | Cautionary speed reductions are common along I-70, but create a safety issue for travelers not familiar with the corridor. This option will be avoided where practical, and, if required, will include adequate signing. |
| **Stopping Sight Distance (SSD)** | Lower stopping sight distance will allow reduced curve radius and impacts of construction. | Barriers can reduce stopping sight distance, particularly on the inside lane with narrow shoulders. Downhill grades require additional SSD, adding to the variance requirements. |
| **Construction of Express Lanes in Median** | Does not violate American Association of State Highway and Transportation Official's (AASHTO) criteria, but is inconsistent with I-70 CSS design guidelines. Widening to the outside increases the highway footprint and affects higher quality environments. | Water quality and wildlife refuge functions in the median will be mitigated. |

### 2.1.1.3 Compatibility of the Highway Portion with Base Case

Parsons evaluated the Base Case prior to developing our unsolicited proposal and concluded that implementation — as prescribed in the Record of Decision (ROD) — is not financially attainable in the near future and that an implementable solution is required before congestion along the corridor reached untenable levels. Critical congestion levels are rapidly being approached.

The Base Case includes the Minimum Program of Improvements, the phased implementation of an AGS, new bores at the EJMT and Twin Tunnels, and the Maximum Program of Improvements to add highway capacity. Our plan will provide many of the elements and all functionality envisioned in the Base Case within the Phase 1 limits and an interim BRT system as a first step toward AGS implementation. However, the ROD requires that the Adaptive Management Approach be followed to allow highway capacity improvements, that otherwise

cannot be considered unless (1) the Minimum Program of Improvements has been constructed and (2) AGS is either implemented or shown to be unfeasible.

The Minimum Program of Improvements as defined, ***not including AGS***, approaches $1.3 billion ($1.9 billion in year of expenditure [YOE]) in construction value. CDOT has suggested only $1.2 billion in state and federal funding sources are available over the next 25 years. Highway improvements envisioned include discontinuous auxiliary lanes, capacity improvements, interchanges, and other safety improvements. Construction of the Minimum Program, if state and federal funding allows, will take decades to construct and will provide only modest incremental improvements to congestion and mobility issues.

AGS capital costs will be approximately $20 billion YOE and operations and maintenance (O&M) will likely exceed fare revenues, requiring a substantial public subsidy. If the project meets Federal Transit Administration (FTA) cost effectiveness standards and federal funding is forthcoming, Colorado voters will still need to approve a large, long-term tax increase to provide the required state match. Given recent challenges with transportation tax ballot measures in Colorado, it is not certain that an increase of the magnitude required will be approved.

We have concluded that the only effective, timely way to fund improvements to address I-70 mobility and congestion is through mileage-based user fees or tolls, which requires a continuous express lane system. The Parsons Plan accomplishes this by developing a first phase that constructs improvements proposed in the Minimum and Maximum program, while introducing a transit system that can ultimately lead to the AGS. ***If current funding projections for the Minimum Program remain unchanged and AGS feasibility conclusions — with respect to funding — are unfavorable, CDOT and the Collaborate Effort (CE) will be well justified to consider the triggers to allow capacity improvements and the comprehensive, financeable mobility solution.***

**CDOT'S 2030 TRANSPORTATION PLAN STATES:**

*"By 2025, travel time along westbound I-70 is expected to increase on a Saturday in the winter by almost two hours, making the trip from Denver to Vail a four-hour journey. Eastbound travel time is anticipated to increase even more on a Sunday in the summer – by 2 ½ hours – making for a six-hour trip from Vail back to Denver. Travel demand is expected to grow another 67.5 percent by 2030, resulting in daily congestion conditions comparable to current holiday or ski weekend stop-and-go traffic."*

**Technical Appendix, Exhibit 4,** illustrates the elements of the Minimum and Maximum Program of Improvements and demonstrates that the Parsons Plan is fundamentally consistent.

## Conforming to the Tier 1 EIS and ROD

We propose conducting a Tier 1 EIS Re-evaluation to conform the Parsons Plan, as refined during the project validation stage to the Tier 1 EIS and ROD. Our project validation and financial analysis will provide sufficient information for CDOT to determine optimal express lane termini, independent utility, project phasing, and lane configuration and to seek concurrence from the CE to advance the project through the Adaptive Management Approach. Variations from the Base Case that may be advanced and will be addressed in the Re-evaluation are included in **Exhibit 2.3.**

***Exhibit 2.3 – Variations of the Base Case to be Addressed in the Tier 1 ROD Re-Evaluation***

| Project Element | How Variations Better Meet Project Goals |
|---|---|
| Tolling | Mileage-based user fees or tolling is the only feasible way to fund major corridor improvements. |
| Reversible Lanes | A reversible express lane configuration provides additional and needed capacity in the peak traffic direction. |
| Lane Configuration | Subject to CDOT's decision, following traffic and revenue (T&R) studies and financial evaluation, a third express lane provides a dedicated BRT lane, which accommodates commercial vehicles, and improved express lane safety. |
| Project Termini – East | Extension of capacity improvements will include the segment from C-470 to the top of Floyd Hill, which allows for continuity of the express lane system to the metropolitan area for both connectivity to the I-70 user base and transit. |
| Project Termini – West | Extension of capacity improvements will include the segment from EJMT to Silverthorne, which allows for a logical termini and independent utility in a major community along the corridor and improved incident management on the west approach to the EJMT. |

### 2.1.1.4 COMPATIBILITY WITH TWIN TUNNELS IMPROVEMENTS

Parsons participated in the CDOT Twin Tunnels Visioning Study and has monitored the development of plans to initiate localized improvements to be completed by late 2013. We understand there is a need for immediate improvements to the I-70 Mountain Corridor in this area and **Technical Appendix, Exhibit 5,** illustrates several potential express lane configurations at the Twin Tunnels and demonstrates compatibility of the Parsons Plan.

The plan to widen the east bound bore of the Twin Tunnels and add a third eastbound lane in the vicinity is proceeding, with CDOT seeking to clear the project through an environmental assessment (EA) and construction with a Construction Manager/General Contractor (CM/GC) delivery method. The recent public hearing speaks to the successful relationship CDOT has developed on this project. Should the Twin Tunnels development process stall, congestion near the Twin Tunnels can be addressed in our proposed plan as an early phase.

### 2.1.1.5 PROPOSED PHASING/SCHEDULING AND CONSTRUCTION DELIVERY METHOD(S)

We envision the Phase 1 project as a single design, build, finance, operate, and maintain (DBFOM) project that will ultimately be awarded to a single concessionaire. However, project phasing decisions will be made by CDOT during project development. The intent of the co-development agreement is to work with CDOT and all stakeholders to determine the best project that meets the needs and objectives of the corridor. If alternate funding can be identified, it may be valuable to advance high revenue segments or tunnels as early design-build projects that can be put into revenue service early and that will ultimately be incorporated into the corridor wide concession. For example, the tunnels can be built off-line with minimal traffic impacts and will attract different contractors than will be attracted to corridor wide highway and structure work.

### 2.1.1.6 SCOPING LEVEL COST ESTIMATES – PHASE 1

Parsons has developed a preliminary cost estimate for the design and construction of express lanes and new tunnels, the BRT system, and O&M costs for the planned tolled facilities. We have also estimated cost for procurement administration, administration of concession contract, and construction management activities. Each of these cost categories is summarized in **Exhibit 2.4**. Our cost estimate build-up is presented in **Technical Appendix, Exhibit 6.**

***Exhibit 2.4 – Scoping Level Estimate Summary of Project Cost by Year and Phase***

| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | *Total* |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Project Development** | | | | | | | | | | | |
| **CDOT Internal** | $0.4 | $1.5 | $1.5 | $2.2 | $1.3 | | | | | | *$6.9* |
| **Program Management** | $0.4 | $1.7 | $1.7 | $1.6 | $1.4 | | | | | | *$6.8* |
| **Project Feasibility** | $4.6 | $7.9 | | | | | | | | | *$12.5* |
| **NEPA Clearance** | $0.3 | $2.9 | $8.0 | $1.8 | | | | | | | *$13.0* |
| **P3 Procurement** | | | $1.4 | $15.9 | $4.4 | | | | | | *$21.7* |
| **DBFOM – Design-Build Phase** | | | | | | | | | | | |
| **Construction Oversight** | | | | | | $46.0 | $46.0 | $46.0 | $46.0 | $46.0 | *$230.0* |
| **DBFOM Design** | | | | | | $76.0 | $76.0 | $76.0 | $76.0 | $76.0 | *$380.0* |
| **DBFOM Construction** | | | | | | $537.3 | $537.3 | $537.3 | $537.3 | $537.3 | *$2,686.5* |
| **BRT** | | | | | | $27.0 | $27.0 | $27.0 | $27.0 | $27.0 | *$135.0* |
| ***TOTAL (millions)*** | ***$5.7*** | ***$14.0*** | ***$12.6*** | ***$21.5*** | ***$7.1*** | ***$686.3*** | ***$686.3*** | ***$686.3*** | ***$686.3*** | ***$686.3*** | ***$3,493.0*** |

### 2.1.1.7 EXPRESS LANE TOLL COLLECTION FACILITIES/SYSTEMS

The funding for this project is based on the cost effective ability to collect a toll for the use of the reversible, express lanes. The concept of all electronic tolling using transponders and license plate identification is already a working reality along E-470 and for the reversible portion of the I-25 express lanes. This project will build upon these proven technologies, and ensure interoperability with other Colorado toll roads — as required by state law and nationally by 2016, per the MAP-21 transportation bill. The concessionaire will install non-stop electronic toll collection points just after the access points to the reversible lanes and at the tunnels. The express lane users will be informed of the toll by variable toll rate signs placed before each access point. The concessionaire will dynamically adjust toll rates to ensure an uncongested drive. Drivers will be given the option to pay tolls or exit to the free general purpose lanes. The tolls will be charged to existing accounts or invoiced by a local toll authority, who will serve as the back office and customer service vendor to the concessionaire. This contractual relationship mirrors current regional operations and is working in Texas for toll concessions.

Managed from a 24/7 operations center, traffic will flow in the direction of greatest anticipated volume — westbound on Friday and Saturday and eastbound on Sunday and Monday. Express lane access will be controlled directly with gates, variable message signs, cameras, wrong direction vehicle detection, and possibly wrong way vehicle safety nets. The traffic direction in express lanes can be adjusted for special events, maintenance, and emergencies. CDOT will have the option to rent the express lanes for I-70 general purpose construction and maintenance activities. Emergency vehicles responding to incidents will always have access to the express lanes provided they are currently running in the needed direction.

### 2.1.1.8 ESTIMATED OPERATION, MAINTENANCE, AND CAPITAL REPLACEMENT COSTS

O&M and rehabilitation costs for the public-private partnership (P3) concessionaire have been estimated over the 50-year concession term and considered in our preliminary financial model. These costs will be funded prior to debt service. Additionally, an O&M reserve fund will be established to ensure that these activities are properly capitalized. The P3 concessionaire's O&M responsibilities will include the express lanes; toll collection systems; the new bored tunnels, which can be shared with CDOT, who maintains the existing tunnels; and the BRT system. A summary of the O&M costs are included in **Exhibit 2.5.**

***Exhibit 2.5 – Phase 1 O&M and Rehabilitation Costs***

| Operations and Maintenance | Annual Cost for Express Lanes (2017) | Net Present Value to Concessionaire |
|---|---|---|
| Snow Removal | $ 5.0 million | |
| Routine Maintenance | $ 6.9 million | |
| Pavement Rehabilitation | $ 3.1 million | |
| Long Term Capital Replacement | $ 5.3 million | |
| *Contingency* | *$ 0.9 million* | |
| Total Roadway Maintenance | $ 21.2 million | $370.2 million |
| Tunnels (third bores at EJMT and Twin Tunnels) | $7.0 million | $122.2 million |
| *TOTAL – Maintenance for Express Lanes (2017 dollars)* | *$28.2 million* | *$492.5 million* |
| *TOTAL – Toll and Operation Costs (NPV 2017 dollars)* | | *$541.1 million* |

Parsons determined express lane annual maintenance costs using published CDOT rates for major maintenance, resurfacing, and snow removal. We then estimated tunnel annual maintenance costs based upon actual costs expended for the EJMT and Twin Tunnels. Our plan escalated costs for inflation over the concession term, limiting rehabilitation to regular pavement resurfacing. A preventative maintenance program and life-cycle costing strategy, including proactive pavement maintenance and extended design life criteria for bridges and structures, will manage capital replacement costs. We have built capital replacement costs for other replacement items during the concession period into our O&M costs shown above.

### 2.1.1.9 CRITICAL CHALLENGES

The I-70 Mountain Corridor contains technically challenging terrain throughout the project limits. Complicated geologic conditions, difficult geometrics, ROW constraints, and sensitive environments present challenges in design and construction. Parsons has assembled a proven team to efficiently tackle these challenges and provide effective solutions and mitigation strategies to address. **Technical Appendix, Exhibit 7** presents a summary of critical challenges along the corridor.

### 2.1.1.10 ITS MANAGEMENT CONCEPTS

A robust ITS and active traffic and demand management (ATDM) is critical to the operation of the new express lanes and existing I-70 to ensure smooth traffic flow of both systems with optimized performance. The ITS and ATDM concepts we propose include additional road weather information system (RWIS) stations with deicing/anti-icing system deployed on key bridges, ramps, and overpasses that experience hazardous conditions; variable toll message signs and other variable signing to maximize operational efficiency of the new express lane corridor; lane-use signals and variable speed limit signing to alert drivers of real-time conditions; enhanced traffic flow detection for the whole corridor to inform operators and travelers of real-time conditions; computer-aided dispatch (CAD) and automatic vehicle location (AVL) systems to monitor bus fleet locations and status, and disseminate next bus information to travelers; expansion of other ITS elements, as needed, for corridor wide efficiencies; enhancements of real-time traveler information dissemination, including COTRIP; and a new traffic operations center (TOC) control room compatible with the operational requirements of the express lanes with central system enhancements to assist operators with expert decision-making tools and maintenance management support.

As part of the overall mitigation measures deployed during construction, our design will preserve and maintain the operations of existing ITS elements during construction. ITS deployment will be phased to minimize disruptions, especially to the existing fiber-optic backbone, and immediately implement new elements. Construction will be phased to preserve the existing ITS line until the new line is ready for service.

### 2.1.1.11 TRAFFIC MAINTENANCE AND CONTROL STRATEGIES DURING CONSTRUCTION

Parsons will develop a comprehensive performance specification for managing and maintaining traffic that the concessionaire will be required to adhere to during construction. Region 1's I-70 Lane Closure Strategy will form the base of the traffic management performance specification. During the construction, close monitoring of the execution of the maintenance of traffic (MOT) will ensure that requirements and restrictions for traffic delay times, lane closure periods, no work periods, and other MOT and safety elements are complied with and mobility for the corridor users is maintained. It is critical to minimize postponement of trips, and diversions to other corridors to ensure the economic viability of the local communities and resorts during construction. Current capacity during peak travel times and access to local towns and businesses will be maintained during construction; a minimum of two-lanes will be maintained in each direction during peak periods.

An effective MOT management plan will ensure that CDOT requirements are conveyed to the design-build teams, accurately accounted for in their bids, and constructed according to local expectations. Local communities will be assured that traffic will not be adversely affected by the construction activities.

The traffic management performance specification will cover the following requirements at a minimum:

| | |
|---|---|
| ▪ Development of the traffic management plan (TMP) | ▪ Interstate commercial and tourism travel |
| ▪ Coordination between CDOT construction contracts | ▪ Interchange and public access impacts |
| ▪ Sequencing and scheduling of construction activities | ▪ Design parameters for temporary configurations |
| ▪ Public information and communication | ▪ Material hauling and staging |
| ▪ Lane closure restrictions for various operations | ▪ Work zone access and worker parking |
| ▪ Local travel between destinations along the corridor | ▪ Incident management and courtesy patrols |
| ▪ Regional travel to mountain destinations | ▪ Early implementation of BRT |

CDOT plans to establish a Corridor Operations Division in 2013 to meet the goal of improving mobility, reliability, and safety statewide by providing real-time operations management of congested highways. We will engage this new entity as part of the co-development team to ensure alliance for the TOC, express lane operations, construction lane closures, incident response, and traveler information along the I-70 Mountain Corridor.

### 2.1.1.12 STRATEGIES FOR MAINTAINING CRITICAL EMERGENCY RESPONSE

The safety of the traveling public and local residents is of primary consideration to the Parsons team and is a corridor core value. With the final completion of the project, emergency response will be greatly improved due to uncongested express lanes, and the ability for local emergency services to utilize those lanes for response and transport. For operations during construction, the existing I-70 Mountain Corridor Incident Management plan will be reviewed, and updated, to respond to project needs. Additionally, a task force of emergency providers, Colorado State Patrol (CSP), the project team, and local law enforcement will convene regularly to monitor and improve the plan as situations demand. Requirements of this team will be incorporated into the project TMP, discussed previously.

Under adaptive traffic control and full corridor construction traffic management, it is expected that response times will greatly decrease over those during unmanaged traffic operations. Prior experiences in mountain corridor construction projects under adaptive traffic control — such as the I-70 through Glenwood Canyon project — have shown that to be the case. Additionally, emergency helicopter landing zones (LZ) will be developed in several locations along the project. These LZs will be for the safe use of rotary-wing medical evacuation by air, and will provide enhanced life safety for local residents and travelers.

### 2.1.1.13 COMPATIBILITY WITH AGS AND OTHER FUTURE PROJECT IMPROVEMENTS

The Parsons Plan proposes a BRT system as a first step toward implementing a corridor wide AGS. CDOT has initiated a study to determine the feasibility and viability of an AGS, which is a commitment in the ROD. Parsons is a rail and transit industry leader and will adjust our plan to co-develop the AGS, if its feasibility is confirmed, as a number of the activities are similar to either option and includes environmental clearances, alignment design, and P3 procurement.

If the results of the AGS study are unfavorable regarding its immediate construction, it may be constructed at a later date with excess revenues realized from the express lane system and potential public subsidies that may become available. Express lane design development will include concept-level AGS alignments and ensure future AGS implementation is accommodated. The Parsons Plan provides benefits that will make the ultimate construction of an AGS more likely in the future. It develops the infrastructure and ridership by means of an interim and transformative BRT system. It creates a commercial relationship between CDOT and a concessionaire, who will be incentivized to deliver AGS. We envision requiring the selected concessionaire to provide an AGS implementation plan utilizing elements of the BRT system in its P3 proposal and develop a business case for extension of its concession and construction of AGS prior to end of the concession period.

### 2.1.1.14 PUBLIC INFORMATION/OUTREACH STRATEGIES

A comprehensive public outreach program will use high-tech and personal communications tactics to give corridor stakeholders and the affected public the information they need to understand the benefits of the I-70 improvements, and the ensuing construction impacts. This information will minimize inconvenience and create awareness of how to get any concerns addressed once construction begins. Proactive public information effort will ensure that the corridor's many constituencies are provided with the information that they need to cope with construction. To accomplish this, a blended team of CDOT, consultant, and concessionaire staff will collaborate during construction to ensure the following:

- Establish and maintain an excellent working relationship so that all public information issues are quickly and successfully resolved.
- Participate in construction planning and coordination meetings to guarantee the accuracy of any information disseminated on the project's progress and traffic coping measures.
- Engage and elicit feedback from local community leaders, starting with the I-70 Coalition.
- Maintain open lines of communication with critical stakeholder groups, including municipal officials, project area property and business owners, commercial vehicle operators, commuters and transit riders, emergency responders, tourism and recreation interests, and others.
- Use multiple communications channels to deliver reliable, timely project information and contact people regularly so that we continuously improve two-way communication during construction.
- Partner with local information and news outlets to maximize the project's positive media exposure and provide the public with access to real-time project information.
- Carry out crisis communications efforts to address unanticipated events that present project-related emergencies.

### 2.1.1.15 IMPROVEMENT TO FACILITIES IN THE CORRIDOR

The Parsons Plan provides opportunities for numerous improvements to the existing highway and in the adjacent environment and communities. ***Our preliminary design and financial plans include approximately $360 million in improvements to general purpose lanes.*** Through the development of this project, we will work to optimize these improvements, achieve mitigation commitments, and restore previously impacted resources — while staying mindful to project goals and budgetary constraints. Improvements already identified include the following:

- Existing lanes along I-70 will be moved or rebuilt as part of the project. This will require many of the existing bridges along I-70 and most of the overpasses to be reconstructed. All existing drainage structures will be impacted and replaced, which will include upgrades to improve water quality.
- New and existing cut and fill slopes will be evaluated for slope stability, existing erosion issues, and desired vegetation. Additional slope mitigation will be provided to improve overall safety to the corridor and stabilize already failing slopes.
- New wildlife crossings and sound walls will enhance local environments.
- Local enhancements may include recreational trails, stream access for water sports, and public parking.
- BRT transit stations can also be added where local communities have space for parking, pedestrian shelters, and bus loading and unloading zones.
- Reconstructed ITS system, including upgrades to the most modern devices.
- A final resurfacing at the end of construction for all of the express lanes and existing general purpose lanes will provide CDOT a new riding surface throughout the project length.

## 2.1.2 TRANSIT – BUS

This BRT transit component, to be operated by the concessionaire, is included in the Phase 1 project implementation. The eastern terminus of the system is the Jefferson County West Corridor Light Rail Transit (LRT) station in Golden with the western terminus in Vail. **Technical Appendix, Exhibit 8** illustrates our initial plan for station locations and station concepts. The intent of the BRT implementation is as follows:

- Incorporate an early, low-cost multi-modal component to the I-70 Mountain Corridor solution.
- Provide an equitable economical option for transit users to take advantage of the express lanes and reduced travel times.
- Maximize transit ridership along the corridor to support future AGS feasibility.

*Parsons has completed more than 20 BRT projects including system plans, corridor studies, alternatives analysis, environmental clearance, operations plans, preliminary engineering, financial plans, and final design.*

- Existing feeder and collector transit systems, including the Regional Transportation District (RTD), Summit Stage, Eagle County (ECO) Transit, and the Town of Vail Shuttle, will connect the BRT system to local origins and destinations.
- Transit stations provide an opportunity for private-sector development of amenities and community enhancement.

BRT speeds will be similar to vehicular speeds experienced in the express lanes providing competitive travel times to passenger vehicles. ***In fact, a reliable BRT system is only practical if implemented with express lanes that provide reliable travel times and service.*** With the incorporation of well-designed BRT access and egress, compatible platform heights for the BRT vehicles, off-board fare collection, and other user-friendly features, station dwell times will be minimized.

### 2.1.2.1 EXISTING AND PROPOSED ELEMENTS

The Parsons Plan provides for a BRT system that can be constructed and be operational at a greatly reduced capital expenditure when compared to the AGS system. This is a new public transit system that can be easily integrated with existing systems, which will function as the collector and feeder system, providing necessary ridership to make the BRT successful. On the east end, RTD's West Corridor LRT, bus lines, and the Hogback Park-n-Ride and other RTD lots in Evergreen will provide many trip origins, destined for Colorado resorts. Expansion of existing park-n-rides and other RTD lots may be required to handle the additional BRT demand.

Transit Cooperative Research Program BRT planning guidelines will be utilized in the development of operation plans to optimize system performance. If approved by CDOT, and confirmed through adaptive management and the EIS process, the BRT will operate in a third express lane, improving travel time reliability and overall speed. This third, dedicated BRT lane will also accommodate commercial vehicles in the express lanes. Density of truck volume will be controlled at the entrance by the dynamically priced toll.

### 2.1.2.2 TRANSIT OPERATIONAL STRATEGY

From the Jefferson County Government Center LRT station to Silverthorne, the BRT vehicles will operate in the express lanes with speeds comparable to passenger vehicles. Access to and from the express lanes will be at the same locations for BRT vehicles as for passenger vehicles; for example, by means of weaving or direct connection. As shown in **Technical Appendix, Exhibit 9,** an extended weave movement is provided to minimize weave conflicts and improve traffic flow. During Phase 1, the BRT vehicles will operate in mixed-flow lanes from Silverthorne to Vail, with minimal delay because the traffic volumes are lower in this segment.

BRT service will be provided seven days per week and 20 hours per day. They will operate on approximate 20-minute headways during peak hours and on 60-minute headways during off-peak hours daily. The BRT vehicles will operate at an average speed of 50 mph to 55 mph in the express lanes with five-minute dwell times per station. Adjustments can be made to operational parameters based on ridership demand and operations experience during different times of the year and in different weather and traffic conditions to produce the most cost effective results.

Important to drawing users to the BRT system is setting fares at a level to maximize ridership. BRT fares will be set lower than the comparable toll for using the express lanes, thus BRT users get the benefit of the express lane facility at a discounted price, considering comparable toll rate plus cost of operating their own vehicle. This will increase the overall user count in the express lane facility, providing a benefit to people who may not otherwise use the lanes.

### 2.1.2.3 STRATEGY FOR COORDINATION WITH LOCAL TRANSIT AGENCIES

This BRT transit component represents an early low-cost multi-modal component to the I-70 Mountain Corridor solution. It will utilize the existing feeder and collector transit systems, including RTD, Summit Stage, ECO Transit, and the Town of Vail Shuttle, to connect the BRT spine system to regional origins and destinations.

To coordinate with local transit, BRT schedules and local transit schedules will be conformed to minimize waits at ride stops. Agreements will be developed to allow for fare box sharing, or a separate fare will be charged for

the local transit system. In some cases, resorts and other private-sector entities may choose to provide free local transit connections to the BRT system to enhance travel demand management and parking strategies.

Stations will be developed and marked to provide easy way-finding between the BRT vehicles and the local transit vehicles. An example of this type of design already occurs at interfaces between the ECO Transit and the Town of Vail systems, at selected locations. Parking, transit-oriented development (TOD), and other ride-stop amenities will be included at the BRT and local transit interfaces — based on needs, and financed by local governments and private development.

### 2.1.2.4 OPERATING AND GOVERNANCE CONCEPT

CDOT has authority, under state law, to own and operate a transit system. We envision that the BRT system will be operated by the concessionaire to meet specific performance and level of service requirements and ridership goals established by CDOT, with penalties for non-attainment. This allows for aligned management of the BRT and express lanes system and optimization of aggregate financial performance. Other models will be explored during the project development phase.

### 2.1.2.5 REVENUE SOURCE TO FUND TRANSIT COMPONENTS

Our initial view is that the express lanes will generate excess revenues that can be used to subsidize the capital and operational costs of the BRT. The fare box will generate revenues to offset operating cost partially but will likely not be sufficient to fund the operation fully. Parsons will explore other sources of funds for the BRT using existing CDOT and FTA programs. Additionally, private entities, including ski resorts, may choose to supplement BRT fares for their patrons, similar to what is currently being done on the U.S. 6/Hwy 119 corridor with the buses that serve the casinos in Blackhawk and Central City. TOD opportunities may exist in the vicinity of some stations, which could add to potential BRT revenues.

### 2.1.2.6 TRANSIT PERFORMANCE EXPECTATIONS AND GOALS

The BRT is expected to develop in the following two distinguishable stages: an initial stage beginning when the express lanes are available for use, until the ridership and performance reach a level consistent with the vision for transit along the corridor; and a transitional stage during which the general objectives of an ultimate AGS have been achieved and economies of scale make it realistic to begin planning for its implementation.

Benchmarks for the BRT performance during the initial stage of operation will ensure the following:

- ***Travel time.*** The BRT should offer end-to-end travel times less than or equal to automobile travel in the general purpose lanes.
- ***Quality of service.*** Ride comfort, on-time performance, and reliability should be benchmarked against successful intercity common carrier services.
- ***Optimum connectivity.*** The service should present a reasonable amount of choice of travel times for longer-distance commutation, including weekday work travel; accommodate late-evening connections; and provide service no less than one hour apart at any time.
- ***The level of operating cost recovery from fare revenues.*** The net operating subsidy for the system should be sustainable by revenues from the express lanes.
- ***The likely level of greenhouse gas emissions per passenger-mile traveled.*** This should not exceed the corresponding level for automobile traffic in the express lanes.

As the BRT system matures, and the scale of operations reaches the point where AGS may be contemplated, continued attention must be paid to travel time and quality of service — as described above.

### 2.1.2.7 RELATIONSHIP BETWEEN ROAD TOLLS AND TRANSIT FARES

The BRT fare structure will be set to incentive users to utilize the transit system and maximize transit rideshare. The BRT will cost less than driving a passenger vehicle in the general purpose lane and the base toll paid by a driver in the express lanes. The following are two main considerations for setting fares for BRT service in relationship to tolls charged in the express lanes:

- ***The effect of fares on travel choices.*** Fares for BRT will inevitably be compared with charges for the express lanes, especially at the peak times that both commuters and recreational travelers use them.
- ***The extent to which revenues can be relied on to cover the operations and maintenance costs of the BRT.*** This basic question can drive many choices with respect to the BRT operating plan, including frequency of service. For benchmarking in this regard, it is more appropriate to look at per-passenger-mile fares and the cost-recovery ratios of other transit operators.

Ultimately, attention will turn to the feasibility of a transition to AGS along the corridor. Because of its significant capital costs, it will be important to establish the ridership level and fare revenues at which this transition can be managed.

### 2.1.2.8 RIDERSHIP TRIGGERS OF BUS TRANSIT SERVICE

The stated goal in the ROD is to increase transit service along the I-70 Mountain Corridor. We propose a BRT system as an initial transit phase to develop ridership sufficient to support the ultimate implementation of a corridor wide AGS. BRT service, including headways, dwell times, and fare structures, will be established for both peak and off-peak service, and defined in the performance specifications in the P3 procurement.

This proposal includes assumptions for initial BRT service levels, as defined in Section 2.1.2.2, Transit Operational Strategy. These assumptions were used as a basis for estimating both the capital and the O&M costs for the system. During project validation and development, the operating strategy assumptions will be refined and capital and O&M costs adjusted accordingly. The BRT system has the flexibility, through adding buses, to adjust headways and load factors to respond to conditions encountered during the startup and early timeline of providing the transit service. Further, to meet the stated goal for transit along the corridor, strategies will be developed — in partnership with local communities, resorts, and other businesses — to entice additional ridership.

As the BRT system matures, service requirements may need to be altered to meet demand. These changes will be based on certain thresholds related to ridership, as established in the P3 concession agreement. These thresholds will include operating the system within a defined set of load factors. However, load factors will not exceed 0.85, or a certain percentage of fare box recovery — for example, fare box recovery could be a minimum of 30 percent of operating costs, as used by RTD. Alternative service patterns, such as short-turns and limited-stop operation, can be considered — if they can improve productivity or efficiency to respond to changes in ridership.

While it is understood that BRT operations allows a high degree of flexibility with respect to an operating plan, Parsons recognizes that modifications to the plan to accommodate ridership triggers brings a potential of unknown cost risk to the concessionaire. This risk, and possible mitigation ideas, will be considered during the project development and validation processes.

### 2.1.2.9 SCOPING LEVEL CAPITAL, OPERATIONAL, AND MAINTENANCE COSTS

Scoping level capital costs include purchase costs for BRT vehicles, stations, and bus maintenance and storage facilities. To develop 20-minute headways, over the 82-mile route from C-470 to Vail, approximately 20 buses, including a 20 percent spare ratio, will be necessary. The BRT vehicles will need to be heavy-duty, over-the-road alpine highway coaches, with a high level of passenger comfort, including interior lighting and climate control; and amenities, such as restrooms and WiFi; and advanced on-board systems for AVL and passenger information.

Parsons foresees the need for 12 stations, which includes three major intermodal centers, to service the Phase 1 BRT system. Locations of these facilities are shown on **Technical Appendix, Exhibit 8**. The intermodal centers will allow intermodal transfers and provide parking. The capital costs of the express lanes for BRT operations, connections from mainline I-70 to stations, and facilities to operate the express lanes are included in the capital cost for the roadway development. A new maintenance and storage facility for this size of fleet is estimated to be $12 million. The concessionaire has the option to lease a maintenance facility or use a private contractor, or one of the local transit agencies, to provide maintenance and storage — rather than build and staff its own facility.

For scoping purposes, the capital costs related to the BRT operation are shown in **Exhibit 2.6.** Vehicles are approximately 10 percent of the total, based on the notional fleet requirements discussed in conjunction with O&M costs. Stations will also have a high level of passenger amenities and a distinct, signature appearance.

***Exhibit 2.6 – Scoping-Level Capital Costs for BRT***

| Item | Unit | Unit Cost | Quantity | Impacts and Mitigations |
|---|---|---|---|---|
| Vehicles | Each | $ 1.2 million | 20 | $ 24.0 million |
| Stations | Each | $ 3.0 million | 9 | $ 27.0 million |
| C-470/Silverthorne/Vail Multi-modal Facilities | Each | $ 15.0 million | 3 | $ 45.0 million |
| Maintenance and Storage Facility | Each | $ 12.0 million | 1 | $ 12.0 million |
| Contingency | Percent of Extended Amount | 25% | N/A | $ 27.0 million |
| *TOTAL* | | | | *$135.0 million* |

The annual BRT O&M costs, including vehicle operations, vehicle maintenance, and station and facility maintenance, is approximately $18 million for the initially required service levels.

### 2.1.2.10 COMPATIBILITY OF THE BUS TRANSIT TO THE BASE CASE

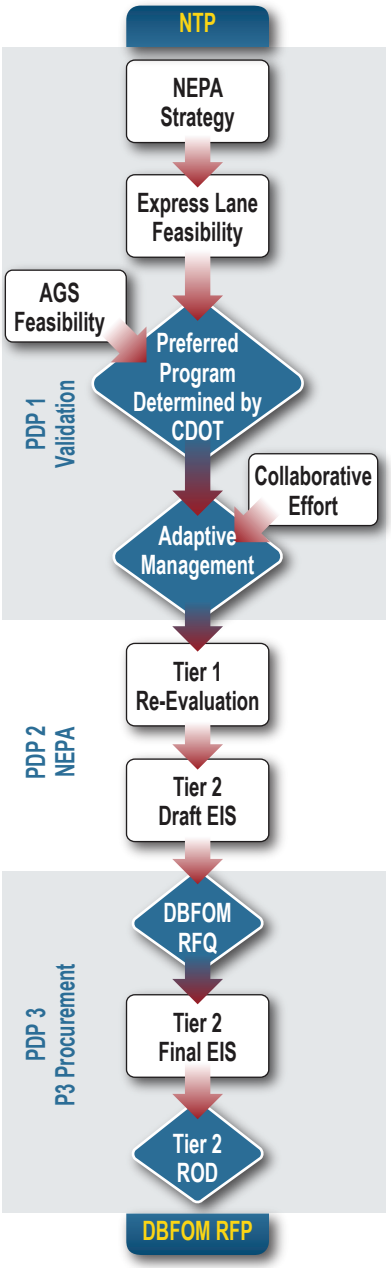
Bus transit in mixed traffic is included in the preferred alternative, non-infrastructure related components, and will not require additional work beyond the Tier 1 clearance — per the ROD. Non-infrastructure related components can include bus, van, or shuttle service in mixed traffic. BRT has a high capacity with modest investment, compared to AGS, and can be implemented immediately to start providing relief and improved mobility along the corridor.

As a part of the Tier 2 EIS, Parsons will incorporate station locations into the process. The Tier 1 PEIS does not fully address this issue, which will require further development in the Tier 2 process and input from community stakeholders.

## 2.2 TIER 2 NEPA

Parsons describes a comprehensive project development plan (PDP) in detail in Section 3. Project stages include project feasibility and validation (PDP1), National Environmental Policy Act (NEPA) (PDP2), and P3 procurement (PDP3). Each stage represents a major phase of development with clear objectives and deliverables, critical processes, and decisions to allow progression to subsequent stages of development. During the PDP1, environmental related activities will include environmental analysis to inform the refinement of the highway, bridge, and transit designs, and to develop a NEPA strategy to proceed with a Tier 1 Re-evaluation of the express lanes and BRT, or Tier 2 clearance for construction of the AGS. The NEPA strategy analysis will also support refinement of cost estimates and constructability analyses. Additionally, utility locations and ROW needs will be further analyzed and assessed to streamline the initiation of a Tier 2 EIS.

After the completion of the express lanes financial plan and AGS feasibility study, the CE will be reconvened and the adaptive management approach applied to request concurrence to advance a recommended plan of improvements. As directed by CDOT, Parsons will initiate the NEPA processes necessary to clear construction of either the Parsons Plan for express lanes and BRT, or the AGS. This process may initially include a NEPA Tier 1 Re-evaluation to resolve



variations from the preferred alternative and to evaluate the express lanes or the AGS concept in the context of the Tier 1 EIS and ROD, in terms of meeting the project's overall purpose and need, demonstrating the alternative's logical termini and independent utility, and conforming to impact and mitigation parameters. This will be followed by the Tier 2 EIS and Section 4(f) evaluation in PDP2. These processes will proceed using an intensive, accelerated process based on the extensive and exhaustive studies conducted on the Tier 1 EIS, PDP1 planning activities, and the Re-evaluation to conform the updated information to the Tier 1 EIS and ROD and enable CDOT and the Federal Highway Administration (FHWA) to make a determination that the Tier 1 EIS and ROD remains valid or if a revised ROD is required. The Tier 2 EIS process will continue to engage the CE and follow the I-70 Mountain Corridor CSS process through a newly formed project leadership team (PLT).

P3 Procurement (PDP3) activities will commence following completion of the draft Tier 2 EIS, and the completion of the final Tier 2 EIS will align with the development of the draft request for proposals (RFP) for P3 concessionaires. The P3 RFP will be issued to short-listed consortiums after completion of the Final Tier 2 EIS and concurrent with signing of the ROD.

## 2.2.1 COLLABORATIVE EFFORT AND OTHER CONSENSUS BUILDING STRATEGIES

Parsons is dedicated and committed to upholding the principles, core values, and context of CSS throughout the life of the project. We envision working with the PLT, CE group, and corridor stakeholders from day one to deliver a corridor vision that will serve as the national standard of excellence in collaboration, partnership, innovation, and environmental sustainability while delivering a multi-modal transportation solution that maintains the significance and vitality of the region. Stakeholder participation is critical to building support for a project and successfully clearing the NEPA process. Parsons recognizes the importance of maintaining these relationships and honoring the CE process. The Parsons Plan draws on the deep understanding and experience of the team with the corridor to address — both in substance and process — core needs, issues, and concerns of these critical stakeholders. We also recognize that the I-70 Mountain Corridor solutions affect the mobility of a wide cross-section of users. Active participation from all agencies, including local, state, and federal governments, is necessary to deliver the project successfully.

A unique characteristic of the CSS process is the creation of a new, corridor wide PLT to oversee all major components of the project. In partnership with the project staff, this PLT will be the platform for ongoing collaboration and communication with the corridor communities. As the process continues, individual projects with multiple issues and stakeholders may require technical teams. Technical teams of multidisciplinary experts will be formed to ensure that corridor core values are being met. When a single or focused issue arises during a project, an issue task force may be required.

| | |
|---|---|
| 1 | Step 1 – Define desired outcomes and actions |
| 2 | Step 2 – Endorse the Process |
| 3 | Step 3 – Establish Criteria |
| 4 | Step 4 – Develop Alternatives or Options |
| 5 | Step 5 – Evaluate, Select, and Refine Alternative or Option |
| 6 | Step 6 – Finalize Documentation and Evaluate Process |

*Parsons will embrace the CSS 6-step collaboration process and utilize this critical tool to ensure stakeholder input and consensus to deliver tangible results.*

## 2.2.2 PLANNED STUDIES TO SUPPORT ADAPTIVE MANAGEMENT APPROACH

An adaptive management approach is included in the ROD to allow CDOT and the CE to evaluate new approaches to respond to changing needs or new technologies. Parsons proposes that the adaptive management approach be utilized to initiate the planned improvements and communicate changes to the CE group.

Critical to successful execution of the Tier 1 EIS and ROD Re-evaluation and the Tier 2 NEPA clearances will be building consensus with the PLT and corridor stakeholders, effective communication on the recommended project plan, and using the developed CSS process as a tool to develop a quality project that is acceptable to the communities through which it passes. Success in these collaborative efforts will expedite agency approvals, reduce opposition, and ensure a defensible process.

Following the completion of the PDP1 activities, CDOT will discuss with the CE group a resolution of the triggers to allow capacity improvements and a comprehensive, financeable mobility solution or implementation of AGS. Following this adaptive management process, an early action in The Parsons Plan is to complete a written Re-evaluation of the Tier 1 EIS and ROD. This approach is established under NEPA regulations (23CFR771.129[c]) and will allow CDOT and the FHWA to deliver consistency, provide a defensible process, address conflicts early, and determine validity of the Tier 1 EIS and ROD for the recommended alternative or conclusion of the adaptive management approach. Also necessary are changes to respond to the results of the AGS study and the technical and financial summary report (TFSR). It also needs to respond to changes in project phasing and project limits necessary for implementation of the recommended plan. Following the approval of the Re-evaluation, Parsons will initiate the NEPA Tier 2 clearance and P3 development activities. The NEPA processes will use an intensive and accelerated delivery process. If CDOT priorities and activities require an early action project, or projects, within the limits of our Phase 1 of the P3 project, Parsons and CDOT can develop separate environmental documents, such as categorical exclusions (Cat-Ex) or EAs to document independent utility and clear construction.

## 2.2.3 TIER 2 CLEARANCES FOR MINOR IMPROVEMENTS

The Tier 1 ROD includes a range of improvement options from a Minimum Program of Improvements to a Maximum Program of Improvements. Specific highway improvements and the other highway projects included in the ROD will require varying degrees of Tier 2 NEPA studies and project clearances. Minor safety and operational improvements may be completed with a Cat-Ex. More substantial improvement projects may require EAs similar to what was done with the Twin Tunnels improvements project. All of these efforts can be completed prior to, or simultaneously with, the corridor wide Tier 2 EIS.

The Tier 2 draft EIS and Section 4(f) evaluation developed during PDP2 will precede a defensible Tier 2 final EIS and ROD that follows NEPA, SWEEP, ALIVE, CEQ regulations; FHWA requirements; and allows construction and implementation of the Phase 1 project. The EIS will engage the CE group and follow the I-70 Mountain Corridor CSS process through interactions with the PLT.

## 2.2.4 PLAN AND TIMELINE FOR TIER 2 CLEARANCES

The Parsons team has management, engineering, and environmental resource capacity to deliver simultaneous Tier 2 projects — as identified in the non-Infrastructure related components, including specific highway improvements and the other highway projects. Our NEPA plan and timeline for the corridor wide project that we envision is shown in **Exhibit 2.7** in Section 2.3. This summarizes the Parsons team's suggested approach to the project development, and demonstrates the interaction of all NEPA activities within the confines of the overall process.

## 2.2.5 ENVIRONMENTAL TECHNICAL STUDIES

Parsons, working in a blended team environment with CDOT resource specialists, the FHWA, the FTA, the U.S. Army Corps of Engineers (USACE), and other appropriate agencies will develop resource (natural and built) methodologies clarifying subject area, study area, and relevant data and information sources; regulatory guidance and requirements; preliminary PEIS guidance and commitments, including the ALIVE, SWEEP, and Section 106 programmatic agreement (PA); key issues; additional data collection strategies; impact determination process; and deliverables. These methodologies will follow the CE and CSS process and provide a transparent and consistent approach to all resource evaluations and guide the environmental review process.

Based on the resource methodologies, specialists will conduct the appropriate literature and field research to develop a complete existing conditions assessment for each resource. These existing conditions reports,

including detailed geographic information system (GIS) files will inform the management and design team assisting with avoidance and minimization of impacts to environmental resources. Concept plans and footprints developed in Step 5 of the CSS process will be provided to the resource specialists for evaluation. The resource specialists will follow the environmental methodologies to develop their analysis and technical memorandum. Each technical memorandum report will be peer reviewed internally before submittal to CDOT staff and the PLT. The following technical reports will be prepared:

| | | |
|---|---|---|
| ▪ Air Quality | ▪ Floodplains | ▪ Threatened/Endangered Species |
| ▪ Bicycle and Pedestrian Facilities | ▪ Geologic Resources and Soil | ▪ Transportation Resources |
| ▪ Biological Assessment | ▪ Hazardous Materials | ▪ Utilities and Railroads |
| ▪ Biological Evaluation | ▪ Historic/Archaeological/Paleontological | ▪ Vegetation and Noxious Weeds |
| ▪ Climate Change | ▪ Land Use | ▪ Visual Resources/Aesthetics |
| ▪ Cumulative Impacts | ▪ Noise | ▪ Water Quality |
| ▪ Energy | ▪ Residential/Business/ROW Relocation | ▪ Wetlands/Waters of the U.S. |
| ▪ Economic Resources | ▪ Section 4(f) | ▪ Fish and Wildlife (Aquatic & Terrestrial) |
| ▪ Environmental Justice | ▪ Section 6(f) | ▪ Social Resources |

## 2.2.6 REQUIRED PERMITS AND ENVIRONMENTAL APPROVALS

The project team will also coordinate CDOT's NEPA approach with its strategy for addressing Areas and Activities of Statewide Interest regulations (HB 1041 regulations) in place along the corridor. Local entities along the I-70 Corridor, including Clear Creek County and Idaho Springs, have promulgated HB 1041 regulations addressing the site selection of arterial highways. Further, the Colorado Court of Appeals has held that CDOT is subject to such regulations, but left open the question of how far local entities can go in their implementation of the regulations. Because HB 1041 is likely to be a tool for county or city entities that may be concerned about the project, it will be critical to incorporate and integrate planning for HB 1041 into the CE and CSS effort, public outreach efforts, NEPA document development, and other critical steps to reduce the risk of litigation.

It is also understood that a myriad of local permits will be necessary. Examples of these permits include local building permits for transit stops and local approvals for changes to access. An important element of the NEPA strategy that occurs during the PDP1 stage includes a complete inventory, with proposed procedures and timelines, for gaining these local permits. This will provide stabilization of the process to gain these permits, a blueprint for consideration by the PLT, to lessen the risk of delays and cost overruns during the PDP3 and PDP4 stages.

## 2.2.7 COMMUNICATION AND OUTREACH STRATEGY

Parsons recognizes it is critical to establish and operate an extensive public information program throughout the life of the project, from the initial announcement of the selected co-developer team through completion of construction. Primary goals of the public information program include establishing a full public understanding of the scope and benefits of the entire project, including highway reconstruction, express lanes, and transit solutions.

Along with providing information related to planning and implementing the I-70 Mountain Corridor project, we also will play an advocacy role in emphasizing to the statewide business community and the traveling public the economic benefits that result from a revitalized I-70.

The objective of the public information campaign is to develop and maintain a high level of communications, resulting in an informed and supportive public. In many ways, the I-70 Mountain Corridor project has communications needs and demands that exceed the I-25 Southeast Corridor (T-REX) or any other CDOT project. The length of the project encompasses numerous cities, counties, and governmental entities. The users of the project come from a much greater distance, demanding extensive Front Range and Western Colorado communications.

Strategies will accomplish effective two-way communications with corridor residents, corridor users, media, elected and appointed officials, the CE group, the PLT, decision-makers, and interest groups.

This will be accomplished through the following crucial strategies:

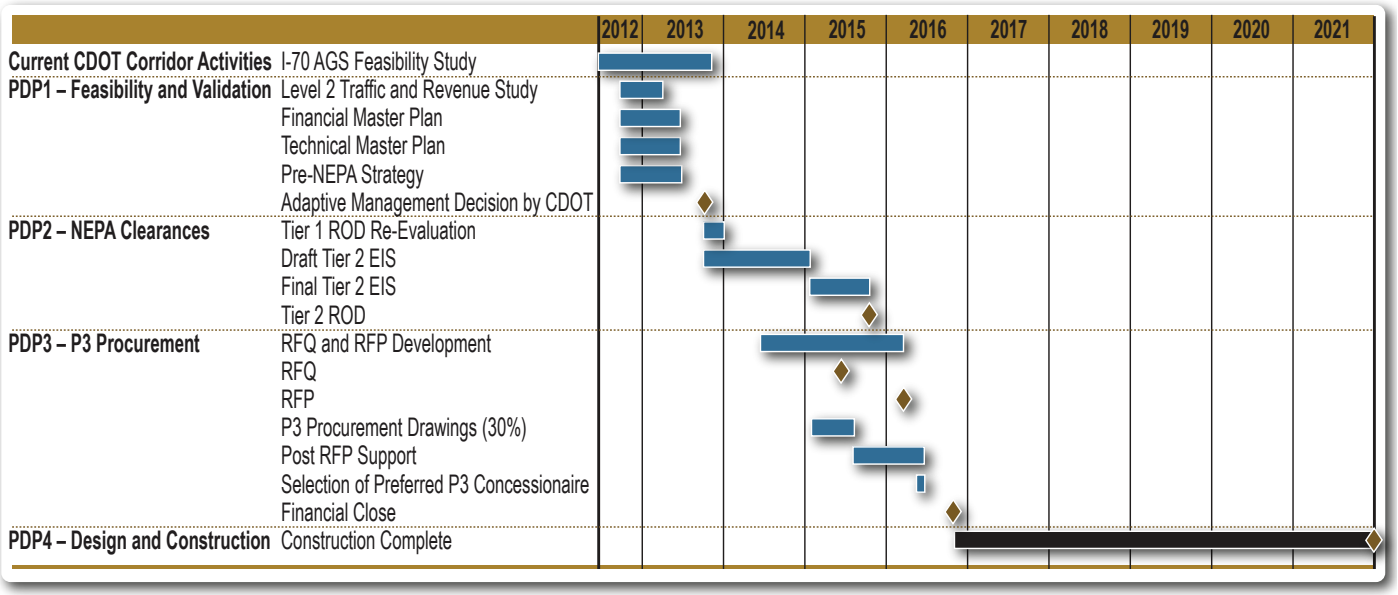
- ***Effective and Impactful Use of Social Media*** – The team will effectively use social media to communicate project goals and information to residents and the traveling public.
- ***Project Branding*** – The project team must dictate what the project will be called, before the public or media decide on a brand. This positive identity will be maintained throughout all phases.
- ***Telephone Town Halls*** – To aid the project in reaching a large segment of I-70 users that have not previously been involved in the public process, our team proposes using telephone town halls.
- ***Website*** – A highly interactive information portal, providing information to the public and a mechanism for communication with the project team, will be expanded during PDP2.
- ***Media Outreach*** – Traditional media still plays an important role in creating positive public attitudes of a project. Media outreach will range from the larger Front Range media to the smaller media all along the corridor.
- ***Attitudinal Surveys*** – External polling of user groups and internal polling of constituent groups are important throughout the project. Initial attitudinal surveys will establish a baseline of the public's knowledge and concerns related to the project.

A key advantage is that the Parsons' communications team understands the territory, not only physically but also philosophically. Team members have extensive experience with CDOT and stakeholders along the I-70 Mountain Corridor and in developing and implementing successful communications strategies for large-scale construction projects from beginning to end. The team has the essential contacts with media, stakeholder groups, and political entities to guide the project throughout all of its phases.

## 2.3 IMPLEMENTATION SCHEDULE

Parsons has a prepared a detailed, resource- and cost-loaded P6 schedule aligned with our work breakdown structure (WBS) and detailed draft scope of work. A Level 2 roll-up schedule is provided in **Technical Appendix, Exhibit 10**. **Exhibit 2.7** below provides a summary level project development schedule.

***Exhibit 2.7 – Phase 1 Development and Delivery Schedule***



# 3 Project and Risk Management Approach

# 3 Project and Risk Management Assessment

Parsons has organized and resourced our I-70 Mountain Corridor Project approach to accomplish the four following key development stages: project feasibility and validation, National Environmental Policy Act (NEPA), public-private partnership (P3) procurement, and design and construction oversight. Our project development plan (PDP) presents a thorough, systematic, and flexible roadmap to success that will bring CDOT and Parsons together to reduce cost and manage risks through each stage, which will uniquely incentivize the team to deliver ***efficiently and effectively.***

Our PDP establishes a dedicated organization and allocates resources to meet CDOT's primary goal — the expedited delivery of a multi-modal solution to chronic and worsening congestion and mobility issues. Our approach is designed to accomplish CDOT's goals and provides an ***elegant solution*** that addresses safety and mobility in a timeframe not previously envisioned.

Our team organizational chart in Section 1 presents the talented individuals that will remain actively involved through the P3 concession award. We will utilize technical experts on a responsive, as-needed basis. These experts will remain fully committed to the Project during each critical activity in which they are involved. Additionally, our core management team and technical leads can be dedicated to continue supporting the project through construction if CDOT desires.

## 3.1 CO-DEVELOPMENT MANAGEMENT RELATIONSHIP

Parsons conceived the co-development approach as a new contractual model, tailored specifically to address the challenges and risks along the I-70 Mountain Corridor. This approach provides the combined benefits of a traditional program management contract and a P3 pre-development agreement (PDA), where a concessionaire contributes to project development costs at-risk. We presented this new model as a core element in our unsolicited proposal.

A major concept of our co-development approach is the incorporation of a series of seven Off Ramps to manage risk during project development. These intermediate decision points are key milestones that will be established for each stage and will provide an opportunity for CDOT and Parsons to confirm decisions to proceed before major expenditures are made or to take the project in a different direction, should further study confirm a more attractive alternate path. Off Ramp milestones are described in **Exhibit 3.1** and illustrated in **Exhibit 3.2**.

***Exhibit 3.1 – Off Ramp Legend***

| | | |
|---|---|---|
| 1 | **T&R Early Review** | Do the preliminary traffic and revenue (T&R) studies results indicate likelihood of financial viability? |
| 2 | **TFSR** | Does the Technical and Financial Summary Report (TFSR) verify viability of a P3 concession? |
| 3 | **Adaptive Management** | Does Collaborative Effort (CE) concur with CDOT's recommendations and decisions for the corridor based on findings of the TFSR and AGS feasibility study? |
| 4 | **Tier 1 Re-Evaluation** | Can the recommended project be conformed to the Tier 1 Record of Decision (ROD)? |
| 5 | **Draft Tier 2 EIS** | Will stakeholders accept environmental impacts and mitigation strategies? |
| 6 | **Final Tier 2 EIS** | Can the Tier 2 ROD be obtained? |
| 7 | **DBFOM Bid** | Can a preferred proponent be awarded the project and reach financial close? |

***Co-development is a collaborative approach that will allow CDOT and Parsons to share costs and risks through all the development phases*** required to initiate and accomplish the selection of a concessionaire. While only a small percentage of the total project value, the activities necessary to develop a P3 project will be a significant investment. Co-development will enhance the collaborative process, ensure the stakeholders' concerns are considered, and ensure project alignment with public policy. While this approach is in many ways a partnership, we understand that our role is to support you in accomplishing project goals and our mission is to be responsive to CDOT's leadership.

## 3.1.1 KEY CO-DEVELOPMENT STAFF COORDINATION AND COLLABORATION

Parsons intends to employ, with CDOT's concurrence, a number of proven strategies to optimize team coordination and collaboration. We propose an organizational framework and collaborative processes that will instill accountability among co-development partners and staff and will create a single-purpose delivery team, focused on achieving project goals.

**PARSONS' AND CDOT'S CORE VALUES**

*When owner and consultant core values are aligned, true integration and collaboration is attained, successful project delivery is assured.*

### Team Integration

Our experience on major Colorado transportation programs, such as the I-25 Southeast Corridor (T-REX) and I-70 through Glenwood Canyon projects, suggests an integrated owner and consultant team is the best structure to ensure success. Once tasked, we will work closely with CDOT to integrate the team to fulfill all program functions within each developmental phase. This will serve to maximize team effectiveness. The CDOT Corridor Manager, along with Parsons' Project Manager, will identify critical activities in each development stage and evaluate the expertise, experience, staff resources, and management structure required to accomplish each task. Our objective is to create a highly motivated, blended team that will mitigate risks and accomplish the project goals by placing the proper resource in the optimal position, regardless of organizational affiliation.

### Project Management Team

The Project Management Team (PMT) will oversee project leadership, team coordination, scope control, sequencing of activities, budget tracking, and schedule management. The CDOT Region 1 Director will lead the PMT, which will include the CDOT Corridor Manager, Parsons' Director, and Parsons' Project Manager. To ensure executive representation in decisions related to project direction, Parsons' Director will remain fully committed to the Project through P3 award, as warranted for a project of this magnitude and importance to both CDOT and Parsons. The PMT will meet weekly to review project status and major and developing project issues. The PMT will also coordinate with related corridor initiatives, including the Twin Tunnels Construction Manager/General Contractor (CM/GC), and the AGS Feasibility Study and Interregional Connectivity Study.

### Executive Oversight Committee

We will also form an Executive Oversight Committee (EOC) consisting of executive managers from CDOT, FHWA and Parsons. The EOC will provide strategic direction, assure that adequate resources are provided, and support the team with respect to regional and national stakeholders, including the Project Leadership Team (PLT). EOC meetings will be held bi-monthly to review project status, evaluate outstanding project policy issues, and provide general guidance and specific policy direction. These meetings may be held more frequently, particularly during early and critical project stages. The PMT will develop an agenda and status report in advance of each EOC meeting that will brief the EOC on current major activities and issues, and also addresses requested topics from the EOC. Members of the PMT will attend this meeting, as well as other technical experts, project staff, and PLT members, as requested.

### Co-leads of Technical Disciplines

Key consultant personnel have been selected from Parsons and our team of support consultants, to fill technical discipline lead positions in major areas of activity. CDOT will provide co-leads in critical technical disciplines that will be jointly responsible to manage their assigned tasks and deliverables. This structure ensures collaboration with timely information transfer and decisions made at appropriate levels. FHWA personnel should be participants, not so much as an oversight organization, but as direct team members participating in the day-to-day decision making process.

### Co-Location

Co-location of key personnel during critical stages is an essential part of a fast-paced project like the I-70 Mountain Corridor Project. We anticipate robust interaction and co-location limited to key management through the early stages leading to project financial validation. Full team co-location during later stages will ensure the communication necessary for team success to complete design development, NEPA, P3 procurement, and oversight during project execution. Parsons has experienced tremendous benefits by having all team members located together. These benefits include enhanced communications at all levels and rapid assimilation of team members and coordinating agencies' staff to ensure efficient decision-making and collaborative issue resolution.

*Optimal project collaboration will be achieved through integration of executive, management, and technical leadership.*

### Team Building and Training

The creation of an integrated and dedicated organization that consists of CDOT, Parsons, and program support staff will be the foundation of a single-purpose team that is motivated to deliver. This foundation will be reinforced through a partnering charter that memorializes the project goals and shared vision of co-development partners. The PMT will coordinate upfront and recurring training and team building activities to ensure a dynamic, committed I-70 Mountain Corridor team; an overriding commitment by the team to the attainment of the project goals; a focused understanding of program priorities; and accountability and empowerment at all levels to make appropriate decisions to deliver the solution.

## 3.2 PROJECT BUDGET MANAGEMENT

To manage a large, multi-year, multi-phased, complex program successfully, such as the I-70 Mountain Corridor, a robust project control system is vital. Parsons has developed PAR-LINK™, a web-based program management solution that can manage the planning, design, construction, and operation and maintenance of large programs and projects. Developed by Parsons' program managers, PAR-LINK™ efficiently delivers the critical processes and management information, funding, cost, and schedule data through the use of dashboards that create online current status reports tailored to the specific informational needs of our client. We will implement this system on the I-70 Mountain Corridor Project to deliver current program information.

### 3.2.1 SUMMARY OF PROPOSED BUDGET CONTROLS AND MANAGEMENT INTERACTION WITH CDOT

Parsons has already developed a detailed scope of work and ***Primavera P6*** cost and resource-loaded schedule that we will use as the basis to expedite a master contract negotiation. This schedule contains a detailed work breakdown structure (WBS) that breaks development activities into discrete work elements that we can manage and track. Once finalized by Parsons and CDOT and notice to proceed (NTP) is provided, we will load the WBS into Parsons in-house project finance system, ***PRISM***, which will track budget and costs. This establishes the project baseline for both CDOT's and Parsons' costs and cash flow to which monthly actual expenditures can be checked.

A dedicated project controls team, led by a full-time project controls manager will manage the PAR-LINK™ system, data input, and report output to communicate the current status and look-ahead for the schedule and budget, as well as maintain the document control system successfully. The project controls manager will use

Parsons' ***Project Status Tool*** (PST) and ***Project Controls Tool*** (PCT) to develop the forecast at completion and the percent complete by WBS as the job progresses each month. Data for the PCT and PST input is obtained from the discipline leads and compared against the P6 schedule monthly. These systems automatically load the data into PRISM at the close of each month. The summary data can then be output through project-specific summary reports the following week. Working with the discipline leads and the output data from PRISM, the project scheduler will update the P6 schedule and present a chart of earned value by the various WBS levels to quickly show project status, including cost performance (CPI) and schedule performance (SPI) indices. At this point, the scheduler will also pull in data from CDOT that will include CDOT's monthly project charges and those of third parties and vendors that are being paid out of CDOT's budget.

Reports generated by PAR-LINK™ will serve as the base for joint decision making by the PMT to provide direction to discipline managers on budgets and schedules. The project controls manager will flag variances from planned levels early, so that recommendations can be made to the PMT with a choice of actions to maintain milestones and the delivery dates while managing budgets. The inter-relation of budget tracking tools and processes, and monthly coordination and communication with CDOT through the PMT is illustrated in the **Technical Appendix, Exhibit 11.**

## 3.3 PROJECT PHASING, SEQUENCING, AND SCHEDULING

Our PDP defines our proposed project management approach and the sequencing of major development activities. It is described below and is presented in an integrated flow chart in **Exhibit 3.2**. We will initially conduct refined studies to verify technical and financial viability of The Parsons Plan and select alternative configurations. We have adjusted the sequencing of environmental studies from our previous submittals to follow the project feasibility analysis stage and determination of AGS feasibility. As Off Ramps are passed, and a decision is made to advance the project, the CDOT/Parsons co-development team will initiate NEPA activities leading to a Tier 2 Environmental Impact Statement (EIS) and ROD and the procurement of a design, build, finance, operate, and maintain (DBFOM) concession agreement for the I-70 Mountain Corridor Project.

### PROJECT FEASIBILITY AND VALIDATION – PDP STAGE 1

PDP Stage 1 (PDP1) is intended to be an initial phase where technical and financial viability of the preferred transit and express lanes concept is confirmed and stakeholder support is gained through initiation of Context Sensitive Solutions (CSS), the formation of a PLT, and coordination with the CE group. The main activities of PDP1 envision Parsons, in collaboration with CDOT, performing Level 2 T&R studies, developing technical and financial master plans and analyses, evaluating project risks, and developing strategies to obtain necessary NEPA clearances in subsequent stages.

Confirming the technical and financial viability will provide a solid indicator of the potential investment interest of private P3 concessionaires; thereby, creating a healthy competitive environment for the project. Our financial team will also conduct studies to ensure that all options for project financing are considered. The T&R studies, master plans, and other data developed during PDP1 will serve as a foundation for the project development process to follow. PDP1 will include the following deliverables:

- ***Level 2 T&R Studies*** – To provide a market-ready analysis, the team will develop a Level 2 T&R study to confirm the assumptions and revenue projections made in our unsolicited proposal and assess alternative configurations. We will also further develop tolling and operations strategies. The team will evaluate Off Ramp 1 (T&R Early Review) at the mid-point of this study as an early sounding regarding feasibility.
- ***Technical Master Plan*** – During this initial project development stage, Parsons will develop the Technical Master Plan (TMP), which will include alternatives evaluation and conceptual design for highway and transit improvements, typical sections, estimates of design and construction costs, toll system plans, preliminary tunnel plans, risk analysis, and other information — as required, to provide a comprehensive overview of the design and construction effort. Additionally, the TMP will include plans, details, ridership surveys, and cost estimates to implement the bus rapid transit (BRT) component and operations and maintenance (O&M). We will also estimate capital replacement costs for the future express lane facility.

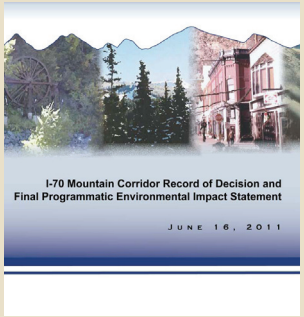
Finally, we will revisit our strategy for obtaining necessary NEPA clearances and will develop a plan for advancing NEPA.

- ***Financial Master Plan*** – The purpose of the financial master plan (FMP) is to validate preliminary financial concepts and the project's attractiveness as an investment to private concessionaires and financial markets. The FMP seeks to use information from the T&R and toll rate studies to provide a reasonable expectation of financial viability and demonstrate that a consolidated capital structure can be implemented to support financing of the Phase 1 project.
- ***Technical and Financial Summary Report*** – The TFSR will present the findings of PDP1. It will elaborate on the project feasibility and the circumstances in which the private concession industry will be most attracted to the project. It will also provide project schedule and construction phasing recommendations. Parsons will provide clear recommendations regarding conditions necessary to proceed to Stage 2 – NEPA, and Stage 3 – P3 Procurement. Further, we will submit a summary of conditions and requirements defining how to deliver best value and mitigate potential risks. A comparison of costs and benefits of various P3 alternatives and public funding strategies will be provided. We will also include discussion of opportunities to use excess revenues to pursue future project phases. Specific attention will be given in the TFSR to ensure optimal conditions and timing for realizing AGS in the corridor.

Upon completion of PDP1, the project team will consider Off Ramp 2 (TFSR) and CDOT will decide whether to reconvene the CE group to evaluate the TFSR and AGS feasibility study findings and request concurrence to move forward to initiate PDP Stage 2 (PDP2) and complete environmental clearances. Input from the CE group will be considered in evaluating Off Ramp 3 (Adaptive Management).

## NEPA – PDP STAGE 2

CDOT has completed the PEIS (Tier 1) and ROD. Tier 2 clearances will be necessary for corridorwide improvements. During PDP2, Parsons will focus on the requirement to complete the NEPA documentation and environmental clearances. This will include a Tier 2 EIS for major project elements, and possibly other NEPA clearances for minor projects that may involve environmental assessments (EAs) or categorical exclusions (Cat-Ex). This process will initially include a Tier 1 Re-evaluation.




*Parsons will efficiently manage the Tier 1 Re-evaluation and achieve consensus to move ahead with a Tier 2 EIS.*

- ***Tier 1 Re-evaluation*** – PDP2 will include a NEPA Re-evaluation to resolve the adaptive management approach (while adhering to the CE process) to conform details of the express lane alternative or the AGS to the Tier 1 EIS. The decision for Off Ramp 4 (Tier 1 Re-evaluation), will be made prior to advancing Tier 2 EIS studies.
- ***Draft Tier 2 EIS*** – After successful completion of the Tier 1 Re-evaluation we will engage the PLT and initiate processes to develop the draft Tier 2 EIS. We recommend at this stage, that the co-development team (CDOT, Parsons, and cooperating agencies) co-locate to a project office within the corridor to optimize coordination. The initial activity in this stage will resolve internal review comments and prepare the draft Tier 2 EIS for public release. An emphasis on continued stakeholder outreach will be maintained in this crucial stage. We will release a draft Tier 2 EIS on an accelerated schedule. Prior to starting P3 procurement activities, CDOT will want a level of confidence that the preferred alternative will align with the P3 project envisioned and a ROD is achievable. The project team will evaluate Off Ramp 5 (Draft Tier 2 EIS) following completion of the draft Tier 2 EIS.
- ***Tier 2 Final EIS and ROD*** – Preparation of the final Tier 2 EIS will occur concurrently with P3 procurement activities, with the objective of achieving a ROD in parallel with issuance of a final request for proposals (RFP) to the short-list concessionaire proponents. We will finalize the Tier 2 EIS based on the additional, well-supported environmental documentation and conclusions provided to CDOT by the Parsons team. It is assumed that the PLT will indicate its support of the document and be instrumental in securing acceptance by local governments during the public comment periods. This strategy will accelerate procurement and

minimize concessionaire risk; pushing the bulk of the proposal costs until after NEPA clearance. At the conclusion of this process, Off Ramp 6 (Final Tier 2 EIS) will be considered.

## P3 PROCUREMENT – PDP STAGE 3

Parsons will expeditiously execute PDP Stage 3 (PDP3). The co-development team (CDOT and Parsons) will continue co-location at the project office to optimize coordination. The main purpose of PDP3 will include the following:

- Execute the necessary steps to manage a successful P3 concessionaire procurement with its associated procurement documents and contract preparation.
- Develop design documents, details, and specifications that will be required for the concessionaire to bid and complete the project.
- Engage the PLT and the technical teams to participate in the final EIS process and CSS development.
- Complete the final Tier 2 EIS process and ROD and continue stakeholder outreach.
- Select the P3 concessionaire team that provides CDOT the best value for the DBFOM project.
- Complete negotiations and enter into a contract with the winning concessionaire.
- Support CDOT and the concessionaire to secure project financial close.

PDP3 will also include the following major activities to select the P3 concessionaire that will provide CDOT the best value for the DBFOM project:

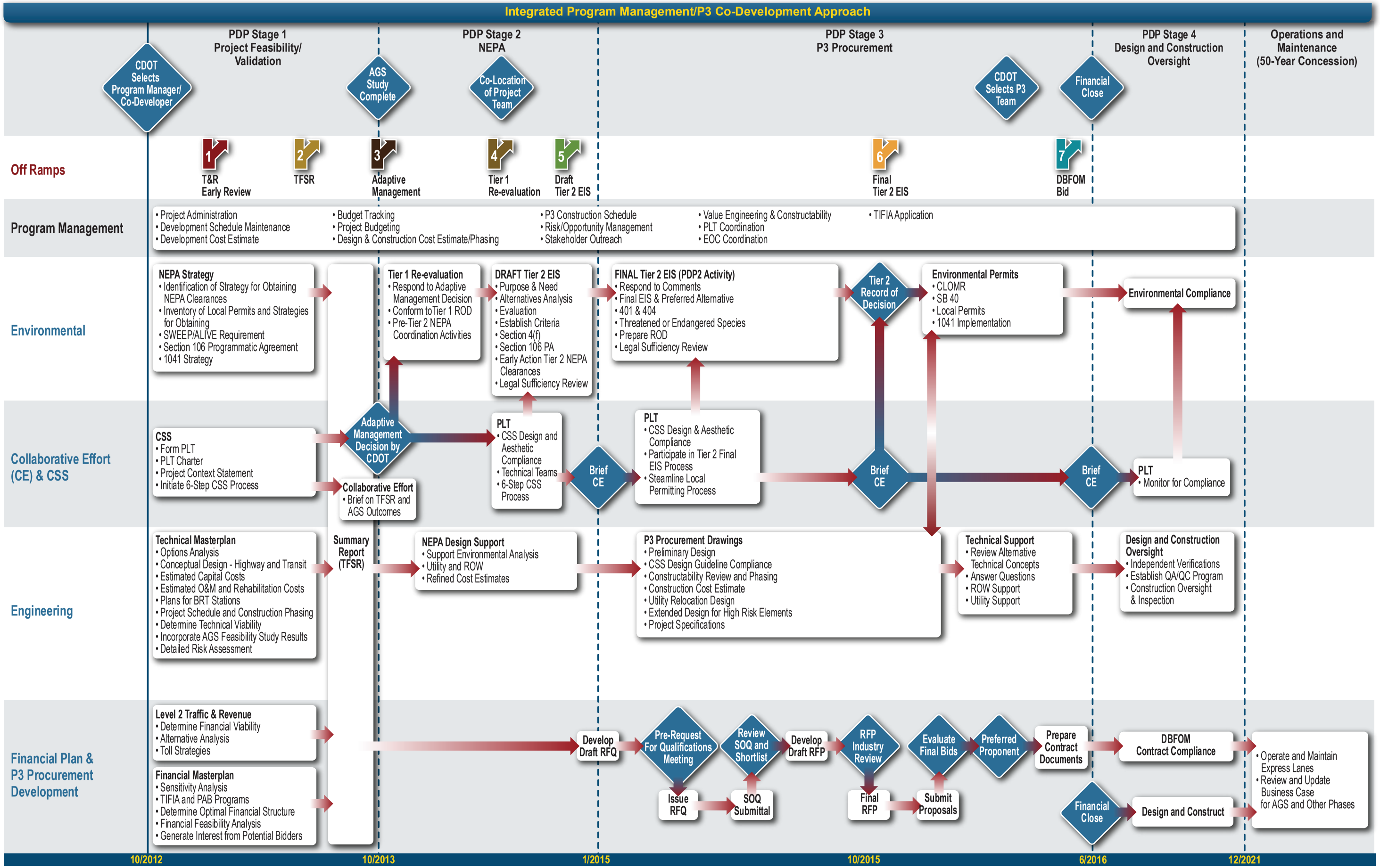
- ***P3 Concessionaire Procurement*** – To provide best value to CDOT and the Enterprise, the co-development team must properly prepare and educate the P3 concessionaire industry on the potential attractiveness of the project investment. We will release a portion of the information that was developed for PDP1 and PDP2. Parsons will prepare a plan in collaboration with CDOT and the Enterprise to solicit for a P3 concessionaire that will perform the DBFOM project.
- ***Selection of Preferred P3 Concessionaire*** – Parsons will support CDOT with review and evaluation of bids. CDOT will encounter Off Ramp 7 (DBFOM Bid) and decide whether or not to select a proponent for the project and award a concession agreement. CDOT is not obligated to enter into a contract unless it is satisfied with the results of the bidding process and final proposals. Assuming a satisfactory result is achieved, all of the necessary state and federal approvals will be gathered to enter into the contract.
- ***Financial Close*** – The final step in the procurement process is the financial close, where the selected proponent completes all of its financial arrangements for securing debt to develop the project. Typically, financial close constitutes the beginning of the concession term and initiates construction activities.

## DESIGN AND CONSTRUCTION – PDP STAGE 4

The responsibility for construction oversight and quality assurance (QA) rests with CDOT, which has the option of using the blended CDOT/Parsons co-development team for these services for continuity and efficiency. Construction management for the project will be the responsibility of the design-build contractor, as selected by the concessionaire. If requested by CDOT, Parsons can support program management activities, including construction inspection and QA, project controls, monitoring of disadvantaged business enterprise (DBE) and small business enterprise (SBE) programs and environmental compliance, performing engineering and design audits and public information functions, ensuring contract compliance, project documentation, and contractor's performance. Parsons' key discipline leads supporting project development will remain engaged through construction.

If directed, Parsons will work collaboratively with CDOT to establish an integrated construction oversight team. Key activities of this team include design review, construction QA, environmental compliance, and monitoring the impacts of maintenance of traffic (MOT) during construction. A critical responsibility of the concessionaire, through the design-build contractor, is the completed design. During the project development phase, Parsons will establish attainable, constructible requirements that are consistent with the CSS guidelines that will be carried forward by the concessionaire. The PLT will remain engaged to monitor compliance and

*Exhibit 3.2 – I-70 Mountain Corridor Project Development Plan*



the co-development team will oversee the design development, check the design against the project goals, and ensure the design and its intent is being carried forward to construction. All project improvements will be approved prior to construction.

## 3.4 RISK MANAGEMENT

Our risk management approach for the I-70 Mountain Corridor project will effectively balance risk to achieve a successful, biddable project for CDOT. Parson has evaluated risks and opportunities associated with the delivery of improvements along the corridor for several years. We prepared a risk register as part of our involvement in the PEIS cost validation process and our assessment of the project risk profile was a major consideration in developing our project concept, delivery approach, and co-development model. Risk management for the I-70 Mountain Corridor Project will commence early in the program development process and continue as the program evolves and information increases in quantity and quality.

**RISK REGISTER**

- Critical
- High
- Low
- None

*Risks are presented in Form C by project stage to best reflect the shift in risk severity, nature of risks, and transfer as the project develops.*

Our strategy for mitigating risk includes the use of a framework of risk analysis categories that includes the following four key components: ***Environmental Risk Assessment; Technical Risk Assessment,*** including cost validation; ***Financial Risk Assessment;*** and ***Public Involvement Risk Assessment***. P3 industry risks will be considered in all categories.

We will utilize a proven, probability-based process for managing risk specifically tailored to the I-70 Mountain Corridor. We will engage our team of risk assessment experts with CDOT and major stakeholders in a workshop atmosphere and will adhere to the following five-step risk assessment process:

1. Identify each risk.
2. Determine the probability of the risk occurring.
3. Determine the value of the risk.
4. Perform Monte Carlo simulation to model risk impacts to schedule and costs.
5. Determine mitigation strategies.

This process allows the team to easily identify and prioritize risks that warrant their attention. We will conduct risk register updates workshops at the conclusion of each PDP stage to identify new risks, update current risks, and retire outdated risks; and conduct risk audits to examine and document the effectiveness of risk responses in dealing with identified risks and their root causes, as well as the effectiveness of the risk management process. At the initiation of P3 procurement activities (PDP3), the co-development team will allocate the risk in the contract to the party best able to manage those risks. We have performed a preliminary risk assessment and identified many potential mitigation measures which have been provided in Form C at the end of Section 2.

# Exhibit C – Risk Register

# PDP1 – Project Feasibility Phase

# EXHIBIT C – RISK REGISTER (PDP1 Project Feasibility Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1 – 5) | Impact (1 – 5) | Risk Score (1 – 25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Technical | Adherence to safety and design standards | Unsafe conditions could lead to public safety concern with built environment. Substandard design output may lead to substandard infrastructure impacting safety, reliability, and life cycle of the facility. | CDOT/Co-developer | 2 | 3 | 6 | The criteria for both RFQ and RFP should strongly support safety and quality capabilities of the selected teams as a significant part of the selection scoring criteria. Development of a robust quality oversight program that ensures that safety, design, and construction take into account applicable design, construction, and safety standards. Elements of concessionaire submitted plans should be monitored and audited to ensure compliance on a routine basis. |
| | Alignment and construction constraints | Development of construction documents and built infrastructure that does not conform to right-of-way established for the project. | CDOT/Co-developer | 3 | 2 | 6 | The Parsons' plan, working closely with CDOT, will refine the concept design to develop a conservative horizontal and vertical alignment that could be optimized through the concessionaire's design-build efforts. Any necessary additional ROW would be at the concessionaires risk. Incentive for the concessionaire is that through optimization, costs and schedule improvements could be realized while fully addressing NEPA mitigation requirements. Our plan adheres to locations where CSS commitments to minimize changes have been established. |
| | Differing site or geologic conditions (esp. tunnels) | Site or geologic/tunnel conditions do not match project definition of the site. Condition could lead to cost overruns and schedule impacts. | CDOT/Co-developer | 3 | 4 | 12 | Parsons' plan calls for early geotechnical investigative efforts to confirm basis of construction estimate and to assess risk factors as the project moves to the NEPA clearance stage. Efforts are intended to provide confidence in cost basis for financial model. |
| | Long-term highway/transit operational requirements | Lack of balance in highway/transit operational requirements could lead to breakdown in level of service of both elements, reducing efficiency, increasing travel time, and minimizing revenue that could fund improvements within the corridor. | CDOT/Co-developer | 3 | 3 | 9 | Parsons' plan details and communicates active traffic and demand management (ATDM) strategies early within the feasibility effort, which offers an opportunity to highlight the benefits of dynamic pricing, congestion mitigation, transit performance, travel reliability, and capacity optimization that will enhance mobility not only during construction but also for long-term mobility goals. |
| | MOT during construction | The inability to adequately describe MOT strategies and corridor operational expectations during the feasibility stage could have a negative impact on public perception of the project and the severe impacts to businesses and the public due to poor strategy and communication. | CDOT/Co-developer | 2 | 4 | 8 | The Parsons' plan recognizes one of CDOT's primary goals to minimize inconvenience to the traveling public and corridor communities and has included significant support to MOT and strategies that come from our experiences on a number of high-profile major infrastructure projects throughout the nation. Mitigation strategies include maintaining current number peak hour mainline lanes throughout construction. Discussions with stakeholders will ensure that we are sufficiently prepared to tackle the challenges of corridor congestion during the construction phase. |
| | Scope, timing, and approval of AGS transit plan | Delay to AGS transit plan approval would extend timeframe for delivery of mobility solutions to the corridor. Current economic conditions that make Parsons' plan appealing to investors could be lost, leaving the project unfeasible or more costly than anticipated. | CDOT | 4 | 4 | 16 | Parsons' plan monitors and establishes a strong commitment to support an expedited AGS path forward within the CDOT process of AGS feasibility. Parsons will provide any necessary support to minimize overlap or redundancy in alignment, station definition or location, ROW needs, etc. |
| | Stormwater runoff | Poor stormwater management runoff may be cause for project stop work notice by CDPHE, and/or notice of violation, which caries a stiff financial penalty. | CDOT/Co-developer | 1 | 3 | 3 | Parsons' plan calls for monitoring regulatory requirements, working within the framework of the SWEEP MOU and ALIVE documents, and working with CDPHE guidance in this area. Early efforts are going to reinforce the concept of transfer of construction risk to the concessionaire and need for local and state resource agencies to focus on informing the contractor of its need to react effectively to minimize impacts to waters of the state. |
| | Scope changes and plan revisions during validation phase | Has the potential to increase or decrease project cost and schedule impacts. Increased scope has the potential to reduce revenue upon completion, rendering the project unfeasible, or require additional public subsidy. Reduced scope items may enhance project profile, attracting greater interest from Industry. | CDOT/Co-developer | 4 | 3 | 12 | Parsons' plan calls for a rigorous value engineering exercise during the validation phase to ensure that the project is right-sized and will emphasize minimization of costs to facilitate increased revenue potential. Cost specifically attributable to purpose and need as well as anticipated required mitigation. |

# EXHIBIT C – RISK REGISTER (PDP1 Project Feasibility Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1 – 5) | Impact (1 – 5) | Risk Score (1 – 25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Technical | Utility and railroad coordination | Utility and railroad coordination have the potential to adversely affect schedule and budget, if not managed correctly, or applied to the right party. | CDOT/Co-developer | 2 | 3 | 6 | Parsons' plan identifies the known utilities within the corridor, performs potholing and subsurface utility engineering (SUE) to identify, quantify, and track these potential conflict. Working to optimize the alignment and profile to reduce or eliminate conflicts. We also will work with utility owners earlier within the process to obtain necessary permits and agreements to minimize impacts to the project during subsequent phases. |
| | ROW acquisition requirements | Failure to secure ROW in a timely manner has the potential to create significant schedule delays and cost impacts. | CDOT/Co-developer | 2 | 4 | 8 | Parsons' plan identifies ROW and the management of the process as a key to project success. Our plan works to identify parcels and legal descriptions as we refine the preliminary design documents during the feasibility stage. Strategies will be employed to reduce ROW acquisitions to the extent possible, taking advantage of information contained within the current final PEIS. Concepts will continue to be refined to address NEPA clearance and P3 procurement phase concerns. |
| | Changing regulations | Regulatory changes during the project life cycle can have a significant impact on project costs and potentially schedule. | CDOT/Co-developer | 3 | 3 | 9 | Parsons' plan envisions the incorporation of recently enacted regulatory changes as a result of MAP-21 legislation, as well as any other adopted regulation changes to ensure that we have the most up-to-date information to minimize impacts beyond the feasibility study efforts. Parsons will work with CDOT to monitor regulations for pending changes and conduct appropriate measures to mitigate or incorporate into our plan. |
| | CDOT, resource agencies, and local balancing and aligning of interests | Inadequate balancing and aligning of resource interests can lead to schedule and cost impacts that could derail the project. | CDOT/Co-developer | 5 | 4 | 20 | Parsons' plan utilizes the formed programmatic support teams within the corridor, to include the I-70 context-sensitive solution (CSS) representation, already in place to assist in the balancing and alignment of key resource agencies and local stakeholders. |
| Financial | Reliability of cost estimates | Underestimation of project costs could lead to higher expectation of return on investment than can be supported through tolls, potentially creating an unsubstantiated need for public subsidy that would jeopardize implementation. Conversely, over-estimation of project costs could lead to lower expectation of return on investment, forcing industry to abandon the project. | Co-developer/CDOT | 2 | 3 | 6 | Parsons' plan has, to date, taken a conservative approach to cost estimation. As the project is developed further and design is refined, active program management will include monitoring of quantities, unit prices, and anticipated materials availability. Costs will be updated and changes will be made to mitigate any potential cost increases. During the phase, independent cost estimates will be performed and differences will be reconciled to confirm reliability. |
| | Traffic and revenue support of costs, preprocurement | CDOT and concessionaire must agree to a revenue sharing mechanism that adequately compensates the parties. Ability of an agency to value its assets is a challenge. If revenues are under estimated in the preprocurement phase, underperformance could lead to unfeasibility, or require public subsidies beyond what was previously assumed. If revenues are over estimated in the preprocurement, the project will have troubles reaching financial close. | Co-developer/CDOT | 2 | 5 | 10 | Parsons' plan calls for an early toll valuation study to confirm viability prior to incurring costs for subsequent phases. Off Ramps have been built in at critical milestones along the way to assess and reassess the validity of the Parsons' financial plan as well as traffic and revenue studies. |
| | Availability of financing resources (federal, state, etc.) | The availability of TIFIA and PABs are an important function of our plan; failure to secure or unavailability of these types of financial mechanisms would render the project unfeasible. | CDOT/Co-developer | 1 | 5 | 5 | Current economic market conditions suggest a good climate for Parsons' plan to be successful. We will continue to monitor the markets, and adjust strategies to maximize opportunities to take advantage of any changing conditions. |
| | Approval of tolling authority | The Enterprise already has tolling authority, federal partners are currently in alignment with our approach. | None | 1 | 2 | 2 | Colorado Revised Statute 43-4-806 recognizes the Enterprise as the appropriate governing body for tolling of highway facilities within Colorado. |

# EXHIBIT C – RISK REGISTER (PDP1 Project Feasibility Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1 – 5) | Impact (1 – 5) | Risk Score (1 – 25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Financial | Public support for tolling | Lack of support for tolling could lead to an outcome that precludes tolling as an alternative. Additionally, low support could mean modification to utilization projections and the project is rendered unfeasible. | CDOT/Co-developer | 2 | 3 | 6 | Use the collaborative effort and corridor PLT as partners in the process and gain their support to alternatives consideration. Understanding that there are limited state and federal funds, the project will likely be unfeasible without tolling. |
| | AGS/ICS studies and decisions | Risk in potential delay or abandonment relative to an AGS decision trigger or AGS/ICS becomes the preferred alternative without adequate funding to deliver. | CDOT/Co-developer | 3 | 5 | 15 | Parsons' plan includes BRT as a long-term or interim strategy to build transit share within the corridor that could make AGS/ICS outcomes more favorable as a second phase. |
| | Significant shift in interest rates | This could change the financial feasibility of the project. | CDOT/Co-developer | 2 | 3 | 6 | Parsons' plan monitors interest rates during this phase and works to adjust scope and/or costs to best align the project for full feasibility. |
| | Capital or O&M cost escalation during design development | Cost escalation at design development stage could render the project unfeasible or necessitate additional public subsidy to make the project viable. | CDOT/Co-developer | 2 | 3 | 6 | Parsons' plan embraces value engineering, cost containment, realistic and conservative estimates, and has the ability to prioritize most productive segments, if necessary, until markets shift more favorably for remaining program. |
| | Trucking and commerce impacts | Trucking industry may resist the project and their voice creates issues with the project moving forward. | CDOT/Co-developer | 3 | 3 | 9 | Parsons will begin the dialogue with trucking and commerce stakeholders during this phase to ensure that they remain engaged and partner with the team throughout the process. EJMT third bore is being designed to facilitate hazardous materials passage, cutting trucking costs and travel time. Utilize the trucking industry's expertise and talents to develop effective MOT and public outreach strategies during this phase. |
| Environmental | Multi-modal solution does not meet requirements of ROD | Potential to render the project unfeasible, or delay implementation beyond a reasonable timeframe. | CDOT/Co-developer | 2 | 5 | 10 | Parsons' plan clearly communicates actions to be taken during project feasibility, identifies a mobility solution that advances the roadway improvements, provides for a long-term or interim transit component, and preserves the future of AGS. Each of these elements form a strong connection to the RODs documented need for a multi-modal solution that provides congestion relief and honors the tenets of CSS, CE, and stakeholder engagement in the process. |
| | Co-developer commitment to CSS approach | Failure of the co-developer to fully commit to the CSS process could potentially extend the project timeframe or render the project unfeasible, if differences remain unresolved. | CDOT/Co-developer | 1 | 5 | 5 | Parsons' plan includes commitment to all tenets of CSS approach to address safety, mobility, and the preservation of scenic, aesthetic, historical, environmental, and community values, working in collaboration with the community to be part of the process. We are poised to capitalize on the successes of CDOT and the collaborative effort in reaching a mutually beneficial solution to the challenges within the I-70 Mountain Corridor. Through acceptance of the project goals, we are bound to CSS and will follow through on past commitments. |
| | Stakeholder engagement process | Failure to adequately engage stakeholders early within the process has the potential to undermine stakeholder confidence, erode public support, and render the project unfeasible. | CDOT/Co-developer | 2 | 4 | 8 | Parsons' plan takes advantage of the great work done by CDOT in it's efforts to engage corridor stakeholders through CSS and the CE. Our plan continues the path taken and embraces the cooperative relationships that have been built, works to further enhance those relationships, and crafts an active management of processes, to deliver transportation solutions that can be adopted with the support of the stakeholders. The PLT will serve an integral role in assisting in stakeholder engagement, and their support is pivotal to corridor success. |
| Public Involvement | Public outreach | Failure to fully and properly engage the public, throughout the life of the project, could jeopardize public support, create uncertainty to P3 industry, create confidence gap in CDOT/Co-developer team, and erode political support for the project | CDOT/Co-developer | 2 | 3 | 6 | Parsons' outreach strategy includes the hosting of workshops, interviews, focus group meetings, open house meetings, telephone town halls, and the assembling of small groups to engage the public in the process of understanding and capture of their comments and interests in all project phases. The development and implementation of a project website that informs and distributes information relative to activities and additional opportunities to engage the public, organizations, committees, and interest groups will be a key asset for our team. We will utilize all available tools in this effort to obtain and maintain connectedness to the public. |

# EXHIBIT C – RISK REGISTER (PDP1 Project Feasibility Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1 – 5) | Impact (1 – 5) | Risk Score (1 – 25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Public Involvement | Stakeholder consensus and support | Failure to secure stakeholder consensus, throughout the life of the project, could jeopardize stakeholder support, create uncertainty to P3 industry, create confidence gap in CDOT/Co-developer team, render the project unobtainable. | CDOT/Co-developer | 3 | 4 | 12 | Reengagement of the CE team is both a requirement of the ROD and key to bringing consensus for transportation solutions within the corridor. Working with CDOT, FHWA, and the CE team to establish an agreed to vision for transportation solutions, as well as integration with other key stakeholders for this shared vision, ensures that we will meet the challenges and milestones for NEPA approval and movement to the next steps in delivery. Early engagement and interaction is critical to ensuring that stakeholder consensus can be achieved. |
| | Aligned and balanced interests between local stakeholders and CDOT | Delays NEPA processes and procurement of concessionaire, loss of credibility. | CDOT/Co-developer | 3 | 4 | 12 | The CE team is comprised of all of the necessary participants to objectively evaluate and balance the needs of the corridor, as long as the dialogue is truly open and reasoned effectively. The Parsons team looks to this group to assist in the alignment of interest between all stakeholders in ultimately representing a recommendation that most effectively serves the citizens, businesses, and affected community for the long term. |
| | Corridor and wider political support | Delays NEPA processes and procurement of concessionaire, loss of credibility. | CDOT/Co-developer | 2 | 4 | 8 | Maintain close communication with U.S. DOT, congressional delegation, state legislature, and the governor's office. |
| P3 industry Interest | Economic or market conditions | Lack of interest from industry for the project would render it unfeasible. | CDOT/Co-developer | 1 | 1 | 1 | Parsons' plan incorporates ongoing outreach activities throughout the life of the project to maintain engagement of the P3 industry. Current market conditions are extremely favorable related to interest costs and construction industry margins. |

# PDP2 – NEPA Clearance Phase

# EXHIBIT C – RISK REGISTER (PDP2 NEPA Clearance Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Technical | Adherence to safety and design standards | Unsafe conditions could lead to public safety concerns with built environment. Substandard design output may lead to substandard infrastructure impacting safety, reliability, and life cycle of the facility. | CDOT/Co-developer | 2 | 3 | 6 | The Parsons' plan cultivates a management philosophy where safety is a key component of project success. Our process incorporates an interdisciplinary coordination review (IDR) that reviews documents for interferences and compatibility between disciplines. Safety and adherence to design standards are important functions of the IDR process. This set of activities will be done at every stage of project development to provide confidence in our mitigation efforts. |
| | Alignment and construction constraints | Development of construction documents and built infrastructure that does not conform to right-of-way established for the project. | CDOT/Co-developer | 3 | 2 | 6 | Parsons' plan, working closely with CDOT, will refine the concept design to develop a conservative horizontal and vertical alignment that could be optimized through the concessionaire's design-build efforts. Any necessary additional ROW would be at the concessionaires risk. Incentive for the concessionaire is that through optimization, costs and schedule improvements could be realized while fully addressing NEPA mitigation requirements. Our plan adheres to locations where CSS commitments can minimize changes. |
| | Long-term highway and transit operational requirements | Lack of balance in highway and transit operational requirements could lead to breakdown in level of service of both elements, reducing efficiency, increasing travel time, and minimizing revenue that could fund improvements within the corridor. | CDOT/Co-developer | 3 | 3 | 9 | The Parsons' plan details, communicates, and incorporates active traffic and demand management (ATDM) strategies early within the feasibility effort offers an opportunity to highlight the benefits of dynamic pricing, congestion mitigation, transit performance, travel reliability, and capacity optimization that will enhance mobility not only during construction, but also long-term mobility goals. |
| | MOT during construction | Failure to appropriately address MOT during construction has the potential to reduce mobility, create unsafe conditions, limit emergency service effectiveness, limit business access, and negatively impact public perception of the project. | CDOT/Co-developer | 2 | 4 | 8 | Parsons' MOT plan is the backbone of successful project implementation, addressing safety, access, emergency services, travel demand management, and mobility during the construction phase. NEPA efforts will be primarily focused on operational concerns to mitigate adverse impacts during the construction phase. More detail is available in Part 1,Technical Proposal, Section 2.1.1.11, Traffic Maintenance and Control Strategies During Construction. |
| | Hazardous materials, Paleontological findings | Encountering known or unknown hazardous substances may impact both schedule and costs. | CDOT/Co-developer | 5 | 3 | 15 | NEPA efforts will focus on identification of locations where hazardous substances may be encountered so that site-specific HASPs can be developed and costs refined for the allowance portion of the project costs. |
| | Stormwater runoff | Poor stormwater management runoff may be cause for project notice of violation (NOV) or stop work notice by CDPHE or notice of violation, which caries a stiff financial penalty | CDOT/Co-developer | 1 | 3 | 3 | During the NEPA phase, analysis will be performed to ensure the capture of relevant cost impacts to be carried forward to the P3 procurement phase. Specific risk assessment and analysis will be performed to determine the best entity to take on the challenges, as well as anticipated mitigation efforts, regardless of entity selected. |
| | Utility and railroad coordination | Utility and railroad coordination have the potential to adversely affect schedule and budget, if not managed correctly, or applied to the right party. | CDOT/Co-developer | 2 | 3 | 6 | During NEPA, the Parsons' plan expands on corridor understanding and location of known utility impacts and railroad issues. Risk analysis will be performed to determine the depth and scope of priority potholing and subsurface utility engineering (SUE) to best minimize risks in future phases of the project. Specific and detailed interaction with utility owners within the corridor limits will ease the process of obtaining necessary permits, agreements, and sign-off acceptance processes of the conflict relocation or replacement. |
| | ROW acquisition requirements | Failure to secure ROW in a timely manner has the potential to create significant schedule delays and cost impacts. | CDOT/Co-developer | 2 | 4 | 8 | Through the NEPA process, The Parsons' plan continues to focus on ROW, and the management of the process as a key to project success. Our plan defines the specific, direct infrastructure impacts; the construction easement zone; and the specific sensitivity zones beyond the construction limits. Property impacts will be minimized to the extent possible, with CSS and sustainability as key core values to be upheld. |

# EXHIBIT C – RISK REGISTER (PDP2 NEPA Clearance Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Technical | Changing regulations | Regulatory changes during the project life cycle can have a significant affect on NEPA evaluation and could require periodic updates due to outdated references. | CDOT/Co-developer | 3 | 4 | 12 | The Parsons' plan envisions the incorporation of recently enacted regulatory changes as a result of MAP-21 legislation to ensure that we have the most up-to-date information to minimize impacts beyond the feasibility study efforts. |
| | CDOT, resource agencies, and local balancing and aligning of interests | Inadequate balancing and aligning of resource interests can lead to additional time to respond to the multitude of comments where misalignment would lead to more significant comments than anticipated. | CDOT/Co-developer | 3 | 5 | 15 | The Parsons' plan utilizes current programmatic streamlining agreements and expectations, such as CE and the I-70 Mountain Corridor PLT, with resource agencies, and local interests, for specific issues, which has the capability of decreasing the volume of comments received from the individual resource entities. |
| | Level and scope of preliminary design activities | Inadequate preliminary design activities could lead to proposed actions that have unknown engineering complexity. This would lead to cost uncertainty. | CDOT/Co-developer | 2 | 3 | 6 | The Parsons' plan incorporates best practices relative to coordination and collaboration within and between team members to ensure that neither the NEPA specialists nor the technical/engineering specialists dominate project development decision making. We have developed a bottoms-up estimate of staffing resources to deliver a program that adequately assesses needs and accounts for each discipline's successful completion of tasks assigned. |
| Financial | Reliability of cost estimates | Underestimation of project costs could lead to higher expectation of return on investment than can be supported through tolls, potentially creating an unsubstantiated need for public subsidy that would jeopardize implementation. Conversely, over-estimation of project costs could lead to lower expectation of return on investment, forcing industry to abandon the project. | CDOT/Co-developer | 2 | 3 | 6 | The Parsons' plan has taken a conservative approach to cost estimation. Throughout the NEPA process, we will further refine the design to reduce risks in our financial plan. Active program management will include monitoring of quantities, unit prices, and materials availability. Changes will be made to mitigate any potential cost increases. |
| | Traffic and revenue support of costs, preprocurement | Scope creep and cost escalation could change the financial viability of the project. If costs increase is too great, the project could tip over the financing limit, requiring CDOT to contribute additional funds. | CDOT/Co-developer | 2 | 5 | 10 | The Parsons' plan calls for a risk-based design estimation process during NEPA to confirm project costs prior to incurring costs for subsequent phases. Off Ramps are built in at critical milestones along the way to assess and reassess the viability of, and compatibility with Parsons' financial analysis. |
| | Availability of financing resources (federal, state, etc.) | The availability of TIFIA and PABs are an important function of our plan, failure to secure, or availability of these types of financial mechanisms would render the project unfeasible. | CDOT/Co-developer | 1 | 5 | 5 | The Parsons' plan looks at all potentially available financing options that may bring capability to deliver the project. Parsons is poised to quickly react to current economic market conditions and leverage available funding to secure and improve the project. Parsons also maintains support staffing that has been successful in delivering major TIFIA loans over the past number of years. We will continue to monitor the markets, and adjust strategies to maximize opportunities to take advantage of any changing market conditions. |
| | Public support and authority for tolling | Lack of support for tolling could lead to a NEPA outcome that precludes tolling as a preferred alternative. Additionally, low support could mean ridership projections are not achieved rendering the project unfeasible. | CDOT/Co-developer | 2 | 5 | 10 | Use the collaborative effort and corridor PLT as partners in the process and gain their support to alternatives considered. Public involvement plans will be enacted early in the process to ensure information is shared continuously during all phases of the project. |
| | Capital or O&M cost escalation during design development | Cost escalation at design development stage could render the project unfeasible or necessitate additional public subsidy to make the project viable. | CDOT/Co-developer | 2 | 3 | 6 | Parsons' efforts during the NEPA process will insure that realistic cost estimates are obtained to determine the relative costs of improvements, without the need to rescope the project at a later stage due to inaccuracies or misaligned program elements. |

# EXHIBIT C – RISK REGISTER (PDP2 NEPA Clearance Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Financial | Trucking and commerce impacts | Trucking industry may resist the project and its voice creates issues with the project moving forward. Our belief is that this could only occur during NEPA stage. | CDOT/Co-developer | 3 | 3 | 9 | NEPA processes will focus on identifying travel patterns and working to minimize and mitigate impacts to commercial trucking operations, which serve a vital role within the corridor. Our program includes specific outreach to ensure the trucking community is, and remains, engaged throughout the process. |
| Environmental | NEPA Tier 1 reopening | Looked on as an opportunity by Parsons. Reopening could only come as a result of CDOT, FHWA, and the CE through adaptive management, coming to agreement that the Parsons' plan requires a revised ROD. | CDOT/Co-developer | 3 | 4 | 12 | The Parsons' plan contains components in near alignment with the current ROD, but with some modification. Our NEPA efforts will reinforce areas of alignment, as well as present opportunities that had not previously been considered. Our plan comprehensively addresses process risk factors and mitigation efforts that will lead to a successful project implementation in a timeframe not previously anticipated by all parties. |
| | NEPA Tier 2 process or multiple NEPA processes | Looked on as an opportunity by Parsons. Tier-2 is where we can resolve the outstanding questions and move forward. | CDOT/Co-developer | 3 | 4 | 12 | Parsons' plan anticipates the potential for multiple processes and timely decision making required of the CDOT/Co-developer team and the resource agencies as we navigate through NEPA. Our team understands, and is ready for, these challenges and supports CSS stakeholder involvement. We are focused on the I-70 Corridor goals, first and foremost, and intend to build stronger relationships with the community through the process. |
| | Multi-modal solution does not meet requirements of ROD | This could lead to the reopening of the ROD and a reevaluation of the Tier-1 document. This has the potential of either accelerating or delaying the project. | CDOT/Co-developer | 3 | 3 | 9 | Parsons recognizes that a reevaluation of the ROD is required and some supplemental studies will be needed before moving forward with Tier 2. Our work scope has already captured this and can certainly develop, manage, and implement the project, should the financial plan be sound. |
| | Legal challenge to solution outside the ROD/EIS | Could stall progress on our concept while the team focuses on the legal challenge. | CDOT/Co-developer | 3 | 3 | 9 | Parsons' plans to assist in the development and implementation of a risk review related to legal sufficiency, anticipating the support and assistance of the experienced FHWA and CDOT's attorney general's office staff to develop a strong administrative record, following laws and established processes. Parsons has added firms to our team that are ready to assist CDOT through these NEPA processes. |
| | Design consistency with ROD and Tier 2 clearances | Violation of the ROD would have serious potential legal consequences, placing the project in jeopardy of being stopped. | CDOT/Co-developer | 2 | 5 | 10 | Parsons is prepared to deliver a best practices mitigation and commitment tracking tool that addresses all commitments and their associated delivery schedule, tied to the NEPA documents. A qualified Environmental Manager will implement these practices with cradle-to-grave responsibilities to track, monitor, evaluate, and close commitments upon completion. |
| | Commitment to CSS approach | Failure of the Co-developer team to commit to CSS jeopardizes project success in obtaining support of corridor stakeholders. Conversely, full commitment to CSS could result in expedited decision making and strong support of corridor stakeholders. | CDOT/Co-developer | 1 | 5 | 5 | Parsons is dedicated and committed to upholding the principles, values, and context of CSS throughout the life of the project. We envision working with the corridor stakeholders from day one to deliver a corridor vision that will serve as the national standard of excellence in collaboration, partnership, innovation, and environmental sustainability while delivering a multi-modal transportation solution that maintains the significance and vitality of the region beyond the NEPA process. |
| | Obtaining necessary approvals and permits | Failure to present reasonable strategies and action plans for approvals could lead to slowdowns in all phases of the project and potential to halt progress on procurement. | CDOT/Co-developer | 3 | 3 | 9 | Parsons' NEPA permit strategy is to obtain the permits that would, from a risk management perspective, be most advantageous for the CDOT/Co-developer team to obtain. These permits include, but are not limited to, 404/401 USACE, CLOMR, dewatering permits, Forest Service permits, and special use permits. Much of the strategy for managing and incorporation of mitigation measures from these permits will be transferred to the eventual concessionaire. Our Tier 2 NEPA efforts will fully clarify specific responsibilities maintained by CDOT and those transferred to the concessionaire. |

# EXHIBIT C – RISK REGISTER (PDP2 NEPA Clearance Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Environmental | Resource agency decision making | Potential to slow delivery of completed documents and subsequent construction start point, may also be delays due to availability of agency decision makers when workload includes outside activities. | CDOT/Co-developer | 3 | 4 | 12 | The Parsons' plan includes co-location of the primary team where FHWA and potentially FTA would be present and have appropriate decision-making staff on-site to facilitate timely response. We intend to develop agreements with permitting agencies, early within the NEPA process, to partner with these resource agencies, including USACE, Forest Service, Parks and Wildlife, Colorado Department of Natural Resources, etc. |
| | Stakeholder engagement process | Failure to engage stakeholders appropriately during this phase could jeopardize the entire process or create delays to the processes and procurement of a concessionaire. | CDOT/Co-developer | 2 | 5 | 10 | The Parsons' plan during the NEPA processes provides for a robust stakeholder information and involvement program that informs and engages members of the public, agencies, and stakeholders in the NEPA process. We intend to draw form all populations, including specific reach out to low-income and minority populations, solicitation for public input, including comments received into NEPA documentation, revising the documents to incorporate changes from that input throughout completion of all NEPA documentation. |
| Public Involvement | Public outreach | Failure to fully and properly engage the public, throughout the life of the project, could jeopardize public support, create uncertainty to P3 industry, create confidence gap in CDOT/Co-developer team, and erode political support for the project. | CDOT/Co-developer | 2 | 3 | 6 | Parsons outreach strategy includes hosting workshops, interviews, focus group meetings, open house meetings, telephone town halls, and assembling small groups to engage the public and capturing its comments and interests in all project efforts. The development and implementation of a project website that also informs and distributes information relative to activities and additional opportunities to engage the general public, organizations, committees, and interest groups will be a key asset for our team. All available tools will be utilized in this effort to obtain and maintain connectedness to the public throughout our efforts. |
| | Stakeholder consensus and support | Failure to secure stakeholder consensus, throughout the life of the project, could jeopardize stakeholder support, create uncertainty to P3 industry, create confidence gap in CDOT/Co-developer team, render the project unobtainable. | CDOT/Co-developer | 2 | 4 | 8 | Reengagement of the previously formed membership agencies and stakeholders comprising the CE team is both a requirement of the ROD and key to bringing consensus for transportation solutions within the corridor. Working with CDOT, the FHWA, and the CE team to establish an agreed to vision for transportation solutions, as well as interaction with other key stakeholders for this shared vision, ensure that we will meet the challenges and milestones for NEPA approval and movement to the next steps in delivery. Our team is focused on responsive and adaptive management of issues and concerns to meet the timetable and goals of establishing a long-term transportation solution that meets the purpose and need through a consensus recommendation that can be embraced by all. |
| | Aligned and balanced interests between local stakeholders and CDOT | Delays NEPA processes and procurement of concessionaire, loss of credibility. | CDOT/Co-developer | 3 | 4 | 12 | NEPA involves the review and consideration of multiple alternatives in any decision to move forward with one approach to providing transportation solutions within a corridor. The realistic consideration and discussion of these alternatives serves as the basis of alignment and balancing of interests, as long as the membership of reviewers are willing to participate openly in the selection process. The CE team is comprised of all of the necessary participants to objectively evaluate and balance the needs of the corridor, as long as the dialogue is truly open and reasoned effectively. The Parsons team looks to this group to assist in the alignment of interest between all stakeholders in ultimately representing a recommendation that most effectively serves the citizens, businesses, and affected community for the long term. |
| | Local jurisdiction coordination and approval, including HB 1041 | Delays NEPA processes and procurement of concessionaire. | CDOT/Co-developer | 4 | 4 | 16 | The Parsons' plan adheres to all requirements of the HB 1041 process. At milestones within the NEPA process, we will monitor commitments required with regard to HB 1041. Clear and concise documentation and preparation of notice and public hearing materials is all embedded within the Parsons' plan. Currently, Clear Creek County has a well-defined HB 1041 process that will have to be a component of the process to clear the project. |

# EXHIBIT C – RISK REGISTER (PDP2 NEPA Clearance Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Public Involvement | Corridor and wider political support | Delays NEPA processes and procurement of concessionaire, loss of credibility. | CDOT/Co-developer | 2 | 4 | 8 | The Parsons' plan maintains a transparent and open relationship with all stakeholders about the status and disposition of project efforts, these stakeholders include local government, state government, the governor's office, and congressional delegation officials, as well as the U.S. DOT. Many outreach mechanisms established for the general public, such as the project website, and project newsletters, will also serve as tools to inform and remain engaged with public officials. Their support is critical to the success of an effort of this magnitude, and we intend to use all means necessary to keep them engaged and on our team. |
| P3 industry Interest | Economic or market conditions | Project would be rendered unfeasible if economic conditions deteriorate. | CDOT/Co-developer | 1 | 5 | 5 | Parsons' plan incorporates ongoing outreach activities throughout the life of the project to maintain engagement of the P3 industry. Current market conditions are extremely favorable related to interest costs and construction industry margins. |
| | Perceived NEPA clearance is unachievable or overly problematic | P3 concessionaires lose interest if environmental clearance is not dealt with in a timely manner, or public support appears to be weak. | CDOT/Co-developer | 2 | 4 | 8 | Strongly support timely conclusion to environmental efforts. Engage the P3 industry only when there appears to be a clear path to NEPA closure. |

# PDP3 – P3 Procurement Phase

# EXHIBIT C – RISK REGISTER (PDP3 P3 Procurement Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Technical | Adherence to safety and design standards | Unsafe conditions could lead to public safety concern with built environment. Substandard design output may lead to substandard infrastructure impacting safety, reliability, and life cycle of the facility. | CDOT/Co-developer | 2 | 3 | 6 | Parsons' plan incorporates a risk-based approach to the level of effort for pre-bid design scope. Safety is a significant factor in the risk analysis and pre-bid efforts will focus on insurance of safety and design standard adherence. During this phase, we will begin the risk transfer process, describing specific performance-based specifications, citing design standards and life-cycle parameters that will serve as the basis of the concession project's requirements. Additionally, we will develop the quality management approach to ensure that facilities meet contract requirements and steps that CDOT and the Co-developer team will take in quality monitoring/auditing oversight activities to confirm compliance with the requirements. |
| | Alignment and construction constraints | Development of construction documents and built infrastructure that does not conform to right-of-way established for the project. | CDOT/Co-developer | 1 | 4 | 4 | Parsons' plan identifies a contractual, basic configuration for vertical and horizontal alignment that is subject to minor modification within specific limits. Deviations beyond those established limits will require approval by CDOT/Co-developer management. Risk of approval outside of the basic configuration will lie with the Concessionaire, as well as any additional ROW required to implement the change. Modifications that require environmental reevaluation will be a risk that the concessionaire will bear. Should the change have significant cost savings, those savings will come back to the project in terms of greater revenue potential. |
| | Differing site or geologic conditions (esp. tunnels) | Site or geologic/tunnel conditions do not match project definition of the site. Condition could lead to cost overruns and schedule impacts. | All parties are at risk | 3 | 4 | 12 | The Parsons' plan incorporates an extensive risk-based boring program, designed to minimize concessionaire bid contingency and eliminating bidder pre-bid exploration. Tunnel/geotechnical concerns are a significant factor in the project risk analysis and our pre-bid efforts will focus on minimizing risks to all parties to ensure both safety and minimization of concessionaire contingency. During this phase, we will begin the risk transfer process, describing specific performance-based specifications as well as accepting ownership and risk for the accuracy of our tunnel/geotechnical data, but assigning risk to the concessionaire for all subsurface conditions outside of the locations where we have represented data. Additionally, we will begin development of the quality management approach that will provide confidence that the constructed infrastructure meets life-cycle standards. |
| | Long-term highway/transit operational requirements | Lack of balance in highway/transit operational requirements could lead to breakdown in level of service of both elements, reducing efficiency, increasing travel time, and minimizing revenue that could fund improvements within the corridor. | CDOT/Co-developer | 2 | 5 | 10 | Parsons' plan is to implement a corridor operations program that integrates operational traffic management on a real-time basis to responsively ensure that incidents, lane closures, and highway bottlenecks are actively managed from a long-term strategic perspective to reduce congestion throughout the system. Our use of active traffic and demand management (ATDM) strategies ensures optimized system performance in both the express and general-purpose lanes. This approach is consistent with and complimentary to CDOT's intentions to invoke a Corridor Operations Division to initiate similar strategies that enhance operations statewide. Our plan includes drawing upon CDOT's Corridor Operations Division to ensure alliance in development of strategies for traffic operations centers, managed lane operations and congestion pricing, construction lane closures, incident response, and traveler information along the I-70 Mountain Corridor. |
| | MOT during construction | Failure to appropriately address MOT during construction has the potential to reduce mobility, create unsafe conditions, limit emergency service effectiveness, limit business access, and negatively impact public perception of the project. | CDOT/Co-developer | 2 | 4 | 8 | The Parsons MOT strategies during construction are risk-based and have been devised to coordinate and minimize inconvenience to the traveling public and corridor communities through the use of ATDM addressing safety, access, emergency services, travel demand management, and mobility during the construction phase. Our set of contractual requirements and disincentives for not maintaining a certain level of incident response during the construction phase have a proven record of success. More detail is available in Part 1, Technical Proposal, Section 2.1.1.11, Traffic Maintenance and Control Strategies During Construction. |
| | Availability of materials, labor, and industry resources | Due to materials, labor, and industry resource shortages, project would potentially suffer increased cost and/or schedule during design-build phase, which could impact revenue service dates. | CDOT/Co-developer | 2 | 4 | 8 | Parsons' plan identifies elements during the P3 procurement phase to be considered in the concession contract as force majeure items. Labor shortages, materials availability, and industry resources are not anticipated to meet the requirements to be considered force majeure. During our risk assessment and analysis, we will analyze further, but currently intend to have the concessionaire accept these risks in preparation of its bid for the DBFOM. |

# EXHIBIT C – RISK REGISTER (PDP3 P3 Procurement Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Technical | Permit requirements during construction | Local, state, or federal permits, if not obtained within a reasonable time may affect schedule, budget, and project feasibility | CDOT/Co-developer | 2 | 5 | 10 | Parsons' plan will utilize our risk assessment and analysis to determine the best suited entity to take on certain permitting functions. Historically permits such as the USACE 404 permit and Forest Service permits would remain the responsibility of the CDOT/Co-developer team, with most other permits required to be obtained by the concessionaire team. List of owner-responsible permits will be further refined early during the validation process. |
| | Hazardous materials, Paleontological findings | Encountering known or unknown hazardous substances may impact both schedule and costs. | CDOT/Co-developer | 5 | 3 | 15 | Previous risk assessment and analysis performed on projects of this magnitude have recognized hazardous substances as a risk factor that can create significant contingency in concessionaire bidding, if not allocated appropriately. During this phase, the Parsons team will closely analyze this risk to ensure appropriate allocation. Historically to mitigate this risk, the owner has created a hazardous substance allowance commensurate with the likelihood of encountering, requiring the concessionaire to mitigate to federal, state, or local standards for any encounter, not directly caused by concessionaire negligence. |
| | Stormwater runoff | Poor stormwater management runoff may be cause for project stop work notice by CDPHE, and/or notice of violation, which caries a stiff financial penalty. | CDOT/Co-developer | 2 | 4 | 8 | The Parsons-led risk assessment and analysis will be performed during the P3 procurement phase to determine the best party to assign the risk to. Previous assessments of this risk have called for the concessionaire to accept risk of permitting and compliance to stormwater runoff requirements and stormwater mitigation plan preparation, approval, and adherence. Significant quality oversight monitoring and auditing requirements will observed by the CDOT/Co-developer team to ensure compliance. Failure to comply with requirements will subject the concessionaire to corrective and preventative action. Penalties will be assessed for non-complaint work or discharges and corrective actions required to bring the project into compliance with regulatory requirements. |
| | Scope changes and plan revisions-post validation, pre-Design-Build concession contract | Potential to increase or decrease project cost and schedule impacts. Increased scope has the potential to reduce revenue upon completion, rendering the project unfeasible, or require additional public subsidy. Reduced scope items may enhance project profile, attracting greater interest from the industry. | CDOT/Co-developer | 2 | 4 | 8 | During the preparation of the P3 procurement documents, Parsons' plan includes the freezing of design once all relevant commitments have been incorporated into the reference or contract drawings, ensuring that, regardless of scope impact, concessionaire will be bidding-in all required mitigation to fulfill environmental compliance obligations. Any scope changes that may come as the result of local stakeholder requests for enhancements or betterments will only be included if the requesting stakeholder provides the required funding for the elements. Provisions will be written into the concession contract that allow for the inclusion of enhancements or betterments, that do not impact revenue schedule, should the requesting entity provide the funding necessary to implement the change and associated acceleration costs to remain on the original revenue schedule. |
| | Utility and railroad coordination | Utility and railroad coordination have the potential to adversely affect schedule and budget, if not managed correctly, or applied to the right party. | Concessionaire | 2 | 3 | 6 | Parsons' plan identifies the known utilities within the corridor, performs potholing and subsurface utility engineering (SUE) to identify, quantify, and track these potential conflicts. Information obtained will be added to the P3 procurement documents to minimize contingent applied by bidders. Utility relocation agreements (URAs) will be executed with utility owners for all known conflicts, to minimize impacts to the concessionaire. Upon award, risk is transferred to the concessionaire to coordinate with affected utility companies in the design, construction, and sign-off acceptance of the conflict relocation or replacement. |
| | ROW acquisition requirements | Failure to secure ROW in a timely manner has the potential to create significant schedule delays and cost impacts. | All parties are at risk | 4 | 4 | 16 | Parsons' plan identifies ROW, and the management of the process as a key to project success. Our plan works closely with the ROW staff as we go through the NEPA process to identify anticipated parcel acquisitions, and developing parcel legal descriptions. Construction easements will remain the responsibility of the concessionaire. Upon award of the concession contract, we plan to turnover all available information, and responsibility for acquisition, to the concession team to secure the ROW and easements necessary to execute the project. Any parcel that requires imminent domain proceedings will be returned to CDOT/Co-developer for processing through the legal proceedings. Any and all costs or delay impacts of ROW acquisition are the responsibility of the concessionaire. |

# EXHIBIT C – RISK REGISTER (PDP3 P3 Procurement Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Technical | Changing regulations | Regulatory changes during the project life cycle can have a significant affect on NEPA evaluation and could require periodic updates due to outdated references. | CDOT/Co-developer | 3 | 3 | 9 | Parsons' plan incorporates all recently enacted regulatory changes as a result of any federal, state, or local legislation to ensure that we have the most up-to-date information to minimize impacts to the P3 concessionaire. Risk strategies for legal/regulatory changes after the proposal due date will contractually be considered force majeure events, similar to projects such as T-REX, whereby the CDOT/Co-developer team accept the risk of such an event when it materially and adversely affects the concessionaire scope of work or specifically targets the project or concessionaire. |
| | O&M responsibility assignment within the corridor | Inadequate alignment of roles and responsibilities with regard to maintenance and operations could lead to confusion or overlap of resources that creates cost impacts to each party, or requires P3 concessionaire to price in excessive contingency. | CDOT/Co-developer | 2 | 5 | 10 | In partnership with CDOT Corridor O&M personnel, Parsons' plan incorporates contractually specific strategies to assess and assign risks to the appropriate parties, taking identified concerns and potential interface points and aligning contract provisions to utilize best suited party to manage. Snow and ice control is an example of potential assignment transfer, fence-to fence, that will be assessed. Contractual penalties will be assigned to the concessionaire for failure to obtain a minimum level of service in any MPA the would be transferred. |
| | CDOT, resource agencies, and local balancing and aligning of interests | Inadequate balancing and aligning of resource interests can lead to additional time to respond to the multitude of comments where misalignment would lead to more significant comments than anticipated. | CDOT/Co-developer | 3 | 5 | 15 | In partnership with the project staff, the PLT will serve as the platform for ongoing collaboration and communication, as committed to in the context-sensitive solutions process. Our plan utilizes current programmatic streamlining agreements and expectations, including CE, the I-70 Mountain Corridor PLT, and CSS, with resource agencies, and local interests, for specific issues, remaining engaged as the P3 procurement documents are being prepared, to satisfy the balancing and aligning of interests as the project reaches execution. |
| Financial | Reliability of cost estimates | Underestimation of project costs could lead to higher expectation of return on investment than can be supported through tolls, potentially creating an unsubstantiated need for public subsidy that would jeopardize implementation. Conversely, over-estimation of project costs could lead to lower expectation of return on investment, forcing industry to abandon the project. | CDOT/Co-developer | 3 | 4 | 12 | The P3 procurement financial plan will require cost estimates that can be relied upon to deliver expected outcomes. The Parsons' plan, during this phase, places a high level of risk-based efforts to confirming cost estimates. Our active program management, as proposal plans and scope are being developed, including the monitoring of quantities, unit prices, and materials availability, will be pivotal in showing the concessionaire teams our capability to mitigate potential cost increases through the development stages. |
| | Traffic and revenue support of costs, preprocurement | Traffic and revenue estimates, if too robust, CDOT and concessionaire must agree to a revenue sharing mechanism that adequately compensates the parties. Ability of an agency to value their assets is a challenge. On the downside, if revenues are not realized in the preprocurement phase; underperformance could lead to unfeasible, or require public subsidies beyond previously assumed. | CDOT/Co-developer | 2 | 4 | 8 | Parsons' plan calls for continued independent toll valuation by Stantec to confirm viability prior to release of the P3 procurement documents. From feasibility to NEPA clearance and through the P3 procurement, our efforts will progress the refinement of traffic and revenue support to ensure a smooth transition to concession award. Off Ramps are built in at critical milestones along each step of the process to assess and reassess the validity of Parsons' financial plan. |
| | Availability of financing resources (federal, state, etc.) | The availability of TIFIA and PABs are an important function of our plan, failure to secure, or availability of these types of financial mechanisms would render the project unfeasible. | CDOT/Co-developer | 3 | 5 | 15 | During this stage, market conditions will be reassessed to confirm the viability of the Parsons' plan. Until concession award, our financial team intends to work to adjust market strategies to optimize opportunities to take advantage of any changing conditions. |
| | Public support and authority for tolling | Governing body that may be established as a function of completion of the NEPA and CSS/CE process would have to be agreeable to our concept or the project might become unfeasible. | CDOT/Co-developer | 1 | 4 | 4 | Concurrent activities for both NEPA clearance and P3 procurement allow for continuous communication and information sharing with stakeholders and the public through Parsons' outreach strategy. Our close interaction with project stakeholders through the CE, PLT, and CSS help to ensure alignment of thought and direction towards support of the P3 procurement and execution to deliver a multi-modal transportation solution for the corridor. |

# EXHIBIT C – RISK REGISTER (PDP3 P3 Procurement Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Financial | Failure to achieve financial close | If, for any reason, the project fails to get to financial close with a concessionaire, the project would be deemed unfeasible. | CDOT/Co-developer | 2 | 5 | 10 | Although all efforts and means have been undertaken by our team to ensure that financial close could be obtained, should there be a market condition, between the time of P3 procurement concession award and financial close, where markets shifted significantly, alternatives do exist to maintain a path forward. A contractual bid-bond will be established to ensure that, should the project not achieve financial close, the concessionaire forfeits the bid-bond. For a project of this magnitude, this value could exceed $10 million to $20 million, which would become the property of the owner. Specific contractual language will also be established to allow for approaching the second best value proposer to attempt to reach financial close, or the ability to enter into BAFO negotiations to reduce scope to enhance the project risk profile. Parsons' risk assessment and analysis team intends to explore this during this phase. |
| | Significant shift in interest rates | This could change the financial feasibility of the project. | CDOT/Co-developer | 3 | 5 | 15 | Should economic conditions shift interest rates significantly, between award and financial close, the contract provisions require that the concessionaire take on that risk, holding the CDOT/Co-developer team harmless. Should this condition lead to the concessionaires inability to reach financial close, the concessionaire would forfeit their bid bond to the owner, which will be set sufficiently to offset CDOT's development costs. |
| | Capital or O&M cost escalation during design development | Cost escalation at design development stage could render the project unfeasible or necessitate additional public subsidy to make the project viable. | CDOT/Co-developer | 2 | 5 | 10 | Parsons' efforts during the P3 procurement phase continues to focus on insuring that realistic cost estimates are obtained to determine the relative costs of improvements, without the need to rescope the project at the frozen design stage due to inaccuracies or misaligned program elements. |
| | Third-party enhancements, including scope creep | Strictly preprocurement. Third parties request for enhancements create cost and schedule impacts for concessionaire that may delay project or increase budget. | CDOT/Co-developer | 4 | 4 | 16 | Parsons' plan requires that any scope changes that may come as the result of local stakeholder requests for enhancements or betterments will only be included if the requesting stakeholder provides the required funding for the elements. Provisions will be written into the concession contract that allow for the inclusion of enhancements or betterments, that do not impact revenue schedule, should the requesting entity provide the funding necessary to implement the change and associated acceleration costs to remain on the original revenue schedule. |
| | Trucking and commerce impacts | Trucking industry may resist the project and its voice creates issues with the project moving forward. Our belief is that this could only occur during NEPA stage. | CDOT/Co-developer | 2 | 3 | 6 | Parsons' plan focuses on identifying travel patterns and working to minimize inconvenience to the traveling public and corridor communities, which include mitigation of impacts to commercial trucking operations that serve a vital role within the corridor. Our program includes corridor operations strategies and active traffic and demand management that optimizes traffic flow throughout the life of the project. Specific performance criteria will be established to maintain traffic flow and incident responsiveness, with disincentives should the concessionaire fail to achieve objectives. Additionally, our communications matrix and communications plan provides detailed response mechanisms for dealing with any incidents that adversely affect stakeholders in an effort to fully mitigate any impacts that are discovered. |
| Environmental | Legal challenge to solution outside the ROD/EIS | Could have the effect of slowing project implementation, if not forcing the plan to be considered unfeasible | CDOT/Co-developer | 4 | 5 | 20 | Parsons' plan provides for proactive review and analysis related to legal sufficiency of documents, and review and analysis of external parties that may seek to delay or stop the project and provide appropriate defense strategy and tactics. Coordination with, and assistance of, experienced FHWA and CDOT's attorney general's office staff to develop a strong administrative record, following laws, and established processes early to avoid injunctions and lawsuits. |
| | Commitment to CSS approach | Failure of the Co-developer team to adopt and commit to CSS jeopardizes project success in obtaining support of corridor stakeholder. Conversely, full commitment to CSS could result in expedited decision making and strong support of corridor stakeholder. | CDOT/Co-developer | 1 | 3 | 3 | Parsons is dedicated and committed to upholding the principles, values, and context of CSS throughout the life of the project. We envision working with the corridor stakeholder from day-one to deliver a corridor vision that will serve as the national standard of excellence in collaboration, partnership, innovation, and environmental sustainability while delivering a multi-modal transportation solution that maintains the significance and vitality of the region beyond the NEPA process. Specific P3 procurement language will be established to transfer responsibility to the concessionaire, in the event that they make changes to basic CSS guidelines, or after decisions of the PLT or CE team. |

# EXHIBIT C – RISK REGISTER (PDP3 P3 Procurement Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Environmental | Obtaining necessary approvals and permits | Failure to present reasonable contractual mechanisms for approvals could lead to low interest from P3 industry, potentially jeopardizing the project. | CDOT/Co-developer | 3 | 5 | 15 | Parsons NEPA permit strategy is to obtain the permits that would, from a risk management perspective, be most advantageous for the CDOT/Co-developer team to obtain. These permits include, but are not limited to, 404/401 USACE, CLOMR, dewatering permits, Forest Service permits, and special use permits. Contractual responsibility for remaining permits will be transferred to the eventual concessionaire. |
| | Resource agency decision making | Potential to slow delivery of completed documents and subsequent construction start point, may also be delays due to availability of agency decision makers when workload includes outside activities. | CDOT/Co-developer | 2 | 5 | 10 | Parsons' plan includes clear, contractual, delineation of concessionaire and CDOT/Co-developer responsibility with regard to resource agency decision making and which entity will perform which function. Clarity in this area will allow for reduced bid-contingency from the P3 industry and assure an affordable project. |
| Public Involvement | Stakeholder engagement process | Need for continuous engagement of stakeholders throughout the project may create uncertainty in P3 industry, potentially causing industry to abandon project. | CDOT/Co-developer | 2 | 3 | 6 | Parsons' plan includes clear, contractual, delineation of concessionaire and CDOT/Co-developer responsibility with regard to the stakeholder engagement process. Management of stakeholder engagement is transferred to the concessionaire at P3 award. CDOT/Co-developer team remain in the loop of contact and participation, assisting in dispute resolution processes. |
| | Public outreach | Failure to fully and properly engage the public, throughout the life of the project, could jeopardize public support, create uncertainty to P3 industry, create confidence gap in CDOT/Co-developer team, and erode political support for the project. | CDOT/Co-developer | 2 | 3 | 6 | Parsons P3 procurement strategy includes co-leadership with the P3 concessionaire to develop a teamed approach to public outreach, information, and coordination. The development and implementation of a project website that also informs and distributes information relative to activities and additional opportunities to engage the general public, organizations, committees, and interest groups will be a key asset for our team, and will become the task of the concessionaire to update and ensure it's effectiveness at providing relevant, useful, and correct up-to-date information about the project. All available tools will be utilized in this effort to obtain and maintain connectedness to the public throughout our efforts. |
| | Stakeholder consensus and support | Failure to secure stakeholder consensus, throughout the life of the project, could jeopardize stakeholder support, create uncertainty to P3 industry, create confidence gap in CDOT/Co-developer team, render the project unobtainable. | CDOT/Co-developer | 2 | 3 | 6 | The P3 procurement documents will be crafted to provide for the concessionaire to follow all consensus recommendations, and to re-engage the stakeholder consensus process, in the event that changes have been enacted that need to be reevaluated for approval. |
| | Aligned and balanced interests between local stakeholders and CDOT | Delays P3 implementation processes and procurement of concessionaire, loss of credibility. | CDOT/Co-developer | 1 | 3 | 3 | Parsons' plan includes specific contractual requirements to uphold CSS, CE, and PLT decisions as contractual commitments. Changes will require reengagement and reapproval for those changes, potentially reopening environmental decision documents, depending on the significance of the change, and resource agency review and approval processes. |
| | Local jurisdiction coordination and approval, including HB 1041 | Delays P3 implementation processes and procurement of concessionaire, loss of credibility. | CDOT/Co-developer | 4 | 5 | 20 | Parsons' plan includes specific contractual requirements to uphold HB 1041 decisions and permitting as contractual commitments. Changes will require reengagement and reapproval for those changes, potentially reopening environmental decision documents, depending on the significance of the change, and local agency jurisdictional review and approval processes. |
| | Corridor and wider political support | Delays P3 implementation processes and procurement of concessionaire, loss of credibility. | CDOT/Co-developer | 1 | 4 | 4 | Parsons' plan maintains a transparent and open relationship with all stakeholders about the status and disposition of project efforts, these stakeholders include local government, state government, the governor's office, and congressional delegation officials, as well as the U.S. DOT. Many outreach mechanisms established for the general public, such as the project website, and project newsletters, will also serve as tools to inform and remain engaged with public officials. Their support is critical to the success of an effort of this magnitude, and we intend to use all means necessary to keep them engaged and on our team. |

# EXHIBIT C – RISK REGISTER (PDP3 P3 Procurement Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| P3 Industry Interest | Project scope, cost, and financing approach of concessionaires | Scope is of a magnitude, either low or high, that doesn't garner the necessary interest in the project, which renders the project unfeasible. | CDOT/Co-developer | 2 | 5 | 10 | The P3 procurement schedule, to the extent practicable, has been structured to mitigate concerns that industry may have related to scope. |
| | Economic or market conditions | Project would be rendered unfeasible if economic conditions deteriorate. | CDOT/Co-developer | 3 | 4 | 12 | During the P3 procurement stage, The Parson Plan incorporates continuous outreach and information sharing with the P3 industry to keep them informed and engaged. Market conditions will be monitored and reported monthly, steps will be taken to maintain favorable conditions related to interest costs and construction industry margins. |
| | Perceived NEPA clearance is unachievable or overly problematic | P3 concessionaires lose interest if environmental clearance is not dealt with in a timely manner, or public support appears to be weak. | CDOT/Co-developer | 1 | 4 | 4 | Strongly support timely conclusion to environmental efforts. Engage the P3 industry only when there appears to be a clear path to NEPA closure. |
| | Appropriate risk allocation and agreement terms and conditions | Risk allocations perceived by P3 industry to be so unbalanced that the entire industry fails to respond. | CDOT/Co-developer | 3 | 5 | 15 | Utilize industry forum and one-on-one meetings to openly discuss merits of and adjustments required to make the risks more balanced. |

# PDP4 – Design-Build Phase

# EXHIBIT C – RISK REGISTER (PDP4 Design-Build Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project* | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Technical | Adherence to safety and design standards | Unsafe conditions could lead to public safety concern with built environment. Substandard design output may lead to substandard infrastructure impacting safety, reliability, and life cycle of the facility. | Concessionaire | 2 | 5 | 10 | The criteria for both RFQ and RFP should strongly support safety and quality capabilities of the selected teams as a significant part of the selection scoring criteria. Development of a robust quality oversight program that ensures that safety, design, and construction take into account applicable design, construction, and safety standards. Elements of concessionaire submitted plans should be monitored and audited to ensure compliance on a routine basis. |
| | Alignment and construction constraints | Development of construction documents and built infrastructure that does not conform to right-of-way established for the project. | Concessionaire | 3 | 4 | 12 | Parsons' plan, working closely with CDOT, defines a conservative horizontal and vertical alignment that could be optimized through the concessionaire's design-build efforts. Any necessary additional ROW would be at the concessionaires risk. Incentive for the concessionaire is that through optimization, costs, and schedule improvements could be realized to increase revenue while fully addressing NEPA mitigation requirements. |
| | Differing site or geologic conditions (esp. tunnels) | Site or geologic/tunnel conditions do not match project definition of the site. Condition could lead to cost overruns and schedule impacts. | CDOT/Co-developer and Concessionaire | 5 | 3 | 15 | Parsons' plan calls for CDOT/Co-developer to accept risk for bore locations and data only where specific data was provided. P3 concessionaire accepts risks for anything else. Any cost or schedule impacts related to more significant geologic issues than anticipated, rest solely with the concessionaire, outside of the parameters described previously. Schedule impacts require mitigation to allow for original revenue service date to achieve financial goals. Specific penalties for not achieving original revenue service date. |
| | Construction phase highway/transit operational requirements | Poor operational requirements during construction would lead to reduced level of service for roadway users, create inconvenience to users and businesses, and have a negative impact on tourism and the economic vitality of the region. | Concessionaire | 5 | 2 | 10 | Parsons' plan transfers risk to the P3 concessionaire at project execution. CDOT/Co-developer maintain quality oversight of MOT implementation and adherence to operational requirements, with specific minimum level of service for mainline, express lanes, and BRT frequencies, ensuring the minimization of impacts to the traveling public, businesses and community. Travel demand management strategies include incentives for early BRT implementation, maintenance of existing ITS infrastructure, and proactive public information outreach to ensure inconvenience to affected communities, road users, and businesses during the construction phase is minimized. |
| | Long-term highway/transit operational requirements | Lack of balance in highway/transit operational requirements could lead to breakdown in level of service of both elements, reducing efficiency, increasing travel time, and minimizing revenue that could fund improvements within the corridor. | Concessionaire | 4 | 4 | 16 | Specific guidance provided to P3 concessionaire as part of contractual requirements for ATDM strategies, dynamic pricing within the express lanes. Specific requirements with respect to level of service minimums for mainline lanes, express lanes, BRT service frequency, and travel times. Contractual disincentives for failure to meet expected outcomes. |
| | MOT during construction | Failure to appropriately address MOT during construction has the potential to reduce mobility, create unsafe conditions, limit emergency service effectiveness, limit business access, and negatively impact public perception of the project. | Concessionaire | 4 | 5 | 20 | Parsons' MOT plan is the backbone of successful project implementation, addressing safety, access, emergency services, travel demand management, and mobility during the construction phase. Our set of contractual requirements and incentives for maintenance of level of service during the construction phase have a proven record of success. More detail is available in Part 1, Technical Proposal, Section 2.1.1.11, Traffic Maintenance and Control Strategies During Construction. |
| | Availability of materials, labor, industry resources | Due to materials, labor, and industry resource shortages, project would potentially suffer increased cost and/or schedule during design-build phase, which could impact revenue service dates. | Concessionaire | 3 | 5 | 15 | Parsons' plan identifies elements to be considered in the concession contract to be considered force majeure. Labor shortages, materials availability, and industry resources all do not meet the requirements to be considered force majeure. We intend to have the concessionaire accept these risks in preparation of their bid for the DBFOM. |
| | Permit requirements during construction | Local, state, or federal permits, if not obtained within a reasonable time may affect schedule, budget, and project feasibility. | Concessionaire | 3 | 4 | 12 | To the extent practicable, the concessionaire is best suited to perform this function, and will be required to do so with the exception of items such as a USACE 404 Permit. List of owner responsible permits will be further refined during the validation process. |
| | Hazardous materials, paleontological findings | Encountering known or unknown hazardous substances may impact both schedule and costs. | CDOT/Concessionaire | 5 | 2 | 10 | Hazardous substances will be managed through the concession contract as owner responsible items whereby a hazardous substance allowance will be set aside to mitigate any encounter, not directly caused by concessionaire negligence. |

# EXHIBIT C – RISK REGISTER (PDP4 Design-Build Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project* | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Technical | Stormwater runoff | Poor stormwater management runoff may be cause for project stop work notice by CDPHE, and/or notice of violation, which caries a stiff financial penalty. | Concessionaire | 3 | 4 | 12 | Parsons' plan calls for the concessionaire to maintain risk of compliance to stormwater runoff requirements and stormwater mitigation plan preparation, SWEEP MOU approval, and adherence. Failure to comply with requirements will subject the concessionaire to corrective and preventative action. Payment for work performed would be withheld until corrective actions are deemed to have brought the project into compliance with regulatory requirements. |
| | Scope changes and plan revisions, post concession contract award | Potential to increase or decrease project cost and schedule impacts. Increased scope has the potential to reduce revenue upon completion, placing the project at risk of default. Reduced scope items may enhance project profile, attracting greater interest from industry. | Concessionaire | 2 | 4 | 8 | Parsons' plan allows for changes to scope and plan revisions that do not alter the design intent, or violate any contractual specifications, may take the form of field design changes or major design changes, as long as they are approved by CDOT and have no cost or schedule impact. |
| | Utility and railroad coordination | Utility and railroad coordination have the potential to adversely affect schedule and budget, if not managed correctly, or applied to the right party. | Concessionaire | 4 | 3 | 12 | Parsons' plan identifies the known utilities within the corridor, performs potholing and subsurface utility engineering (SUE) to identify, quantify, and track these potential conflict. We also will work with utility owners earlier within the process to obtain necessary permits and agreements to minimize impacts to the concessionaire. Upon award, the concessionaire obtains the responsibility to coordinate with affected utility companies in the design, construction, and sign-off acceptance of the conflict relocation or replacement. |
| | ROW acquisition requirements | Failure to secure ROW in a timely manner has the potential to create significant schedule delays and cost impacts. | Concessionaire | 2 | 5 | 10 | Parsons' plan identifies ROW, and the management of the process as a key to project success. Our plan works closely with the ROW staff as we go through the NEPA process to identify anticipated parcel acquisitions, and developing parcel legal descriptions. Construction easements will remain the responsibility of the concessionaire. Upon award of the concession contract, we plan to turnover all available information, and responsibility for acquisition, to the concession team to secure the ROW and easements necessary to execute the project. Any parcel that requires imminent domain proceedings will be returned to CDOT/Co-developer for processing through the legal proceedings. Any and all costs or delay impacts of ROW acquisition are the responsibility of the concessionaire. |
| | Changing regulations | Regulatory changes during the project life cycle can have the potential to have a significant affect on scope and project costs. | CDOT/Co-developer | 3 | 3 | 9 | Parsons' plan incorporates all recently enacted regulatory changes as a result of any federal, state, or local legislation to ensure that we have the most up-to-date information to minimize impacts to the P3 concessionaire. Risk strategies for legal/regulatory changes after the proposal due date will contractually be considered force majeure events, similar to projects such as T-REX, whereby the CDOT/Co-developer team accept the risk of such an event when it materially and adversely affects the concessionaire scope of work or specifically targets the project or concessionaire. |
| | O&M responsibility assignment within the corridor | Inadequate alignment of roles and responsibilities with regard to maintenance and operations could lead to confusion or overlap of resources and poor performance during the design-build, or long-term operation phase. | Concessionaire | 2 | 4 | 8 | In partnership with CDOT's Corridor O&M personnel, the CDOT/Co-developer team provides adequate oversight to ensure that responsibly transferred maintenance program areas (MPAs), are performed to the minimum levels of service indicated in the contract, or specific penalties are assessed the concessionaire. It is anticipated that snow and ice control will be contractually transferred as a concessionaire responsible item, fence-to-fence, and failure to adequately maintain level of service (A) will be cause for significant penalty. |
| | CDOT, resource agencies, and local balancing and aligning of interests | Inadequate balancing and aligning of resource interests can lead to additional time to respond to the multitude of comments where misalignment would lead to more significant comments than anticipated. | CDOT/Co-developer | 2 | 3 | 6 | In partnership with the project staff, the PLT will serve as the platform for ongoing collaboration and communication, as committed to in the context-sensitive solutions process. Our plan utilizes current programmatic streamlining agreements and expectations, including CE, the I-70 Mountain Corridor PLT, and CSS, with resource agencies, and local interests, for specific issues, remaining engaged during the design-build phase to satisfy the balancing and aligning of interests throughout project execution. |

# EXHIBIT C – RISK REGISTER (PDP4 Design-Build Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project* | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Financial | Reliability of cost estimates | Underestimation of project costs could lead to higher expectation of return on investment than can be supported through tolls, potentially creating an unsubstantiated need for public subsidy that would jeopardize implementation. Conversely, over-estimation of project costs could lead to lower expectation of return on investment, forcing industry to abandon the project. | Concessionaire | 3 | 3 | 9 | Beyond award, P3 concessionaire maintains all relevant risk for costs to come within assigned budgets. Specific contractual measures will be in place, providing penalties for not meeting financial objectives during project execution. Both revenue service dates and minimum financial outcomes will be maintained. CDOT/Co-developer oversight activities will include monitoring and reporting of objective attainment to ensure the project remains on course. |
| | Traffic and revenue support of costs, post-procurement | Traffic and revenue estimates, if too robust, CDOT and concessionaire must agree to a revenue sharing mechanism that adequately compensates the parties. Ability of an agency to value their assets is a challenge. On the downside, if revenues are not realized in the post-procurement phase, underperformance could lead to default, with risk entirely on concessionaire. | Concessionaire | 3 | 3 | 9 | P3 post-award risk lies solely with the concessionaire with regard to T&R estimates. |
| | Availability of financing resources (federal, state, etc.) | The availability of TIFIA and PABs are an important function of our plan, failure to secure, or availability of these types of financial mechanisms would render the project unfeasible. | Concessionaire | 3 | 4 | 12 | Financial close should adequately address financing for the project. Risk between project award and financial close is solely concessionaire risk. |
| | Public support and authority for tolling | Governing body that established as a function of completion of the NEPA and CSS/CE process would have to be agreeable to our concept or the project might become unfeasible. | CDOT/Co-developer and Concessionaire | 1 | 5 | 5 | Concessionaire contractually required to provide continuous communication and information sharing with stakeholders and the public through the project outreach strategy. Our close interaction with project stakeholders through the CE, PLT, and CSS help to ensure alignment of thought and direction towards support of the concession and execution to deliver a multi-modal transportation solution for the corridor. |
| | Capital or O&M cost escalation during design development | Cost escalation at design development stage could render the project unfeasible or necessitate additional public subsidy to make the project viable. | Concessionaire | 3 | 4 | 12 | Concessionaire contractually accepts responsibility post-award. |
| | Trucking and commerce impacts | Trucking industry may resist the project and their voice creates issues with the project moving forward. Our belief is that this could only occur during NEPA stage. | Concessionaire | 2 | 1 | 2 | Concessionaire contractually required to identifying travel patterns and working to minimize inconvenience to the traveling public and corridor communities, which include mitigation of impacts to commercial trucking operations, which serve a vital role within the corridor. Our program includes corridor operations strategies and active traffic and demand management that optimizes traffic flow throughout the life of the project. Specific performance criteria established to maintain traffic flow and Incident responsiveness, with disincentives should the concessionaire fail to achieve objectives. Additionally, our communications matrix and communications plan provides detailed response mechanisms for dealing with any incidents that adversely affect stakeholders in an effort to fully mitigate any impacts that are discovered. |

# EXHIBIT C – RISK REGISTER (PDP4 Design-Build Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project* | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Environmental | Commitment to CSS approach | Failure of the concessionaire team to implement CSS jeopardizes project success in obtaining support of corridor stakeholder. Conversely, full commitment to CSS could result in expedited decision making and strong support of corridor stakeholder. | CDOT/Co-developer and Concessionaire | 4 | 3 | 12 | Concessionaire contractually committed to upholding the principles, values, and context of CSS throughout the life of the project. The Parsons team envisions working closely with the concessionaire team and corridor stakeholders, preparing CSS workshops to facilitate concessionaire understanding and adherence to CSS principles to deliver a corridor vision that will serve as the national standard of excellence in collaboration, partnership, innovation, and environmental sustainability while delivering a multi-modal transportation solution that maintains the significance and vitality of the region beyond the NEPA process. Specific P3 procurement language will be established to transfer responsibility to the concessionaire, in the event that they make changes to basic CSS guidelines, or after decisions of the PLT or CE team. |
| Environmental | Obtaining necessary approvals and permits | Failure to present reasonable contractual mechanisms for approvals could lead to low interest from P3 industry, potentially jeopardizing the project. | CDOT/Co-developer and Concessionaire | 3 | 3 | 9 | Parsons permit strategy is to obtain the permits that would, from a risk management perspective, be most advantageous for the CDOT/Co-developer team to obtain. These permits include, but are not limited to, 404/401 USACE, CLOMR, dewatering permits, Forest Service permits, and special use permits. Contractual responsibility for remaining permits is transferred to the concessionaire. Any failure to obtain necessary permits, beyond those described as owner responsible, is noncompensable. |
| | Resource agency decision making | Potential to slow delivery of completed documents and subsequent construction start point, may also be delays due to availability of agency decision makers when workload includes outside activities. | CDOT/Co-developer and Concessionaire | 2 | 3 | 6 | Parsons' plan includes clear, contractual, delineation of concessionaire and CDOT/Co-developer responsibility with regard to resource agency decision making and which entity will perform which function. Risk for reevaluation, caused by concessionaire changes, remains the responsibility of concessionaire. Third-party changes that require reengagement of resource agency review and approvals are the responsibility of the third party. Cost and time impacts are addressed similarly. |
| | Stakeholder engagement process | Need for continuous engagement of stakeholders throughout the project may create uncertainty in P3 industry, potentially causing Industry to abandon project. | CDOT/Co-developer and Concessionaire | 2 | 3 | 6 | Parsons' plan includes clear, contractual, delineation of concessionaire and CDOT/Co-developer responsibility with regard to the stakeholder engagement process. Management of stakeholder engagement is transferred to the concessionaire at P3 award. CDOT/Co-developer team remain in the loop of contact and participation, assisting in dispute resolution processes. |
| Public Involvement | Public outreach | Potential to minimize support of public for the project. Poor outreach during project execution could lead to project failure, loss of credibility of all parties. | CDOT/Co-developer and Concessionaire | 3 | 4 | 12 | Co-leadership with the P3 concessionaire, with shared responsibility, to develop a teamed approach to public outreach, information, and coordination. The development and implementation of a project website that also informs and distributes information relative to activities and additional opportunities to engage the general public, organizations, committees, and interest groups will be a key asset for our team, and will become the task of the concessionaire to update and ensure its effectiveness at providing relevant, useful, and correct up-to-date information about the project. All available tools will be utilized in this effort to obtain and maintain connectedness to the public throughout our efforts. |
| | Stakeholder consensus and support | Delays P3 implementation processes and procurement of concessionaire, loss of credibility. | Concessionaire | 3 | 4 | 12 | Concessionaire contractually required to follow all consensus recommendations, and to reengage the stakeholder consensus process, in the event that changes have been enacted that need to be reevaluated for approval. |
| | Aligned and balanced interests between local stakeholders and CDOT | Delays implementation processes and procurement of concessionaire, loss of credibility. | CDOT/Co-developer | 2 | 4 | 8 | Parsons' plan includes specific contractual requirements to uphold CSS, CE, and PLT decisions as contractual commitments. Changes will require reengagement and reapproval for those changes, potentially reopening environmental decision documents, depending on the significance of the change, and resource agency review and approval processes. |
| | Local jurisdiction coordination and approval, including HB 1041 | Delays implementation processes and procurement of concessionaire | Concessionaire | 3 | 5 | 15 | Parsons' plan includes specific contractual requirements to uphold HB 1041 decisions and permitting as contractual commitments. Changes will require reengagement and reapproval for those changes, potentially reopening environmental decision documents, depending on the significance of the change, and local agency jurisdictional review and approval processes. |

# EXHIBIT C – RISK REGISTER (PDP4 Design-Build Phase)

| General Risk Categories | Risk/Opportunity | Potential Consequence to the Project* | Assignment (CDOT, Co-Developer, Concessionaire) | Probability (1-5) | Impact (1-5) | Risk Score (1-25) | Comments/Action to Mitigate/Manage |
|---|---|---|---|---|---|---|---|
| Public Involvement | Corridor and wider political support | Delays P3 implementation processes and procurement of concessionaire, loss of credibility. | CDOT/Co-developer | 1 | 3 | 3 | Parsons' plan maintains a transparent and open relationship with all stakeholders about the status and disposition of project efforts, these stakeholders include local government, state government, the governor's office, and congressional delegation officials, as well as the U.S. DOT. Many outreach mechanisms established for the general public, such as the project website, and project newsletters, will also serve as tools to inform and remain engaged with public officials. Their support is critical to the success of an effort of this magnitude, and we intend to use all means necessary to keep them engaged and on our team. |
| P3 industry Interest | Project scope, cost and financing approach of concessionaires | Scope is of a low and high magnitude that doesn't garner the necessary interest in the project, which renders the project unfeasible. | Concessionaire | 2 | 3 | 6 | As a function of P3 project award, concessionaire has obtained necessary financing for the project. Scope and cost variance from financial plan become the responsibility of the concessionaire post-award. |
| | Economic or market conditions | Project would be rendered unfeasible if economic conditions deteriorate. | CDOT/Co-developer and Concessionaire | 3 | 3 | 9 | P3 project will maintain a high-profile with transparent reporting, detailed monitoring requirements, and continuous outreach to the public, industry, and governmental officials. Project will serve as a visible commitment to effective P3 execution for Colorado and the nation. |
| | Appropriate risk allocation and agreement terms and conditions | Risk allocations perceived by P3 industry to be so unbalanced that the entire industry fails to respond. | CDOT/Co-developer and Concessionaire | 3 | 3 | 9 | Project will serve as a lessons learned effort, taking the best of the project and providing feedback to other DOTs, the P3 industry, and general public about our successes to further the implementation of successful strategic partnerships to deliver multi-modal transportation solutions. |

# 4 Project Financial Plan

# 4 Project Financial Plan

The Parsons team has developed our Financial Plan using available information provided by CDOT, Parsons' sketch level analysis of traffic and revenue (T&R); and the resources of Public Financial Management, Inc. (PFM), one of the nation's leading financial advisors for transportation projects. The overall plan incorporates conservative but realistic and market-tested assumptions. Parsons' Financial Plan has evolved since our unsolicited proposal and incorporates changes provided by the recently enacted Moving Ahead for Progress in the 21st Century (MAP-21) transportation bill, particularly revisions related to the increased funding to the Transportation Infrastructure Finance and Innovation Act (TIFIA) loan program.

## 4.1 SKETCH LEVEL TRAFFIC AND REVENUE STUDIES

Parsons developed a sketch level (Level 1) T&R analysis prior to submittal of our Unsolicited Proposal in July 2011 and we have determined that the Project offers promising prospects for financial viability. Parsons utilized data and made certain adjustments to previous T&R studies, specifically the *2004 Colorado Tolling Enterprise (CTE) Preliminary Traffic and Revenue Study* performed by Wilbur Smith Associates (WSA), to develop a more accurate and up-to-date sketch level analysis of the potential traffic volumes and toll revenues for the Project. Although the *2004 CTE Preliminary Traffic and Revenue Study* did not precisely match our Phase 1 construction plan, sufficient data has been utilized and further developed in a manner that provides reasonable support for Parsons' preliminary express lane forecasts. Parsons' sketch level T&R forecasts for a 50-year concession term, as shown in the **Technical Appendix, Exhibits 12 and 13**, have been thoroughly reviewed and accepted during the Unsolicited Proposal evaluation period. For clarification, there are three primary levels of T&R studies recognized in the industry today that we have described further in the table below.

| | Sketch Level T&R Study – Level 1 | Intermediate Level T&R Study – Level 2 | Investment Grade T&R Study – Level 3 |
|---|---|---|---|
| **Objective** | A broad-brush fatal flaw investigation into constructability and implementation opportunities. This level of study provides evidence to support additional study. | Develop a better understanding of the pricing factors and develop more accurate estimates of the revenue stream of various toll alternatives. | Develop detailed traffic and toll analysis for toll revenue financing and to implement the project. Often presented to banks and other funding sources. |
| **T&R Approach** | Early order of magnitude analysis – off-model investigation based on existing data sources, traffic counts, travel conditions and times, and competing routes. | Works with existing travel demand models and acquires new traffic counts, speed, and delay studies; socioeconomic review; value of time and toll sensitivity studies; and total corridor demand. | Extensive modifications to existing travel demand models, origin-destination and stated preference surveys, operational analysis, toll sensitivities, and other sensitivity tests. |

### 4.1.1 TRAFFIC CHARACTERISTICS A ND HISTORICAL TRENDS

The I-70 Mountain Corridor has unique characteristics that are not often seen on typical commuter highways. I-70 is better characterized as a recreation-use corridor with dramatically different travel characteristics and user profiles that indicate toll revenues sufficient to support a viable express lane solution. The heaviest traffic occurs between Fridays and Sundays throughout the year. During summer months, Sunday bi-directional traffic volumes can reach 70,000 vehicles per day (vpd), or more, compared to the average annual daily of approximately 40,000. Thursday through late Saturday, the traffic flow is predominantly in the westbound direction. From early Sunday morning through Monday, the eastbound flow is higher. ***Heavy congestion occurs during peak periods year-round and conditions are expected to continue to deteriorate; by 2025 travel from Vail to Denver on a summer Sunday will take as long as six hours.***

## 4.1.2 SEASONAL FACTORS

To understand the seasonal factors along I-70 better, our team analyzed hourly traffic counts provided on CDOT's website for each day for a number of prior years. We confirmed, from our investigations, that congestion in the corridor occurs throughout the year. Consistent with industry practice for sketch level T&R studies, no special seasonal factors were employed as a byproduct of the traffic forecasts. The early analysis simply worked with an annual average of daily traffic volume. We will carefully study seasonal factors during our Level 2 T&R studies to optimize express lanes and bus rapid transit (BRT) operations.

## 4.1.3 SEGMENTATION OF TRAVEL DEMAND

A critical part of the sketch level analysis was to identify peak and off-peak travel periods correctly. By utilizing traffic data, including hourly traffic volumes throughout each year, from CDOT's website, our team determined that the weekend periods of Friday through Sunday have far heavier demand than weekday periods and that weekends are not limited to Saturdays and Sundays — as assumed in previous studies. Friday traffic has actually proven to be as busy as the other weekend days; and, in future forecast years, Monday traffic will also approach weekend levels. We have incorporated an accurate consideration of peak travel periods in our Level 1 T&R analysis for the express lanes.

Because the I-70 express lanes will be reversible, we further studied the optimum operational direction for each day of the week. For our sketch level study, we assumed that the express lane facility will be operational in the eastbound direction from Sunday until Tuesday and westbound from Wednesday until Saturday. We will examine directional flows in more detail during our Level 2 T&R studies. Considering the segmentation by type of user, Parsons' sketch level study only subdivided the users between car and truck users. No attempt was made in our early study to determine the volume of BRT, enforcement, or other non-revenue vehicles. We will include these additional user types in our Level 2 analysis.

## 4.1.4 DEMAND GROWTH RATES

The corridor's predominant recreational-use and the fact that the current traffic conditions are often extremely congested during weekend travel times, makes it challenging to know how much pent-up demand exists and how quickly traffic volumes with additional capacity will grow. Parsons used the best data available from CDOT's website to estimate growth rates. We found that the average growth rate anticipated between 2010 and 2020 is approximately 2.7 percent; however, this data does not assume any increase in additional traffic volume due to pent-up demand. Our analysis expects that traffic volume growth rates will actually be higher after the express lanes are opened to service. This is due to the added lane capacity and the fact that current demand volumes are already suppressed due to extreme traffic congestion and unstable travel times during periods of peak congestion on the corridor.

**I-70 DEMAND GROWTH RATES**

| | |
|---|---|
| Pre-Operation | 2.70% |
| Years 1-5 | 4.0% |
| Years 6-10 | 3.0% |
| Years 11-50 | 2.70% |

*Parsons demand growth rate assumptions are based on historic data with reasonable increases for pent-up demand during the ramp up period.*

## 4.1.5 TOLL RATE

To provide a reasonable estimate of express lane and tunnel revenues, the Parsons team has conducted a careful analysis pertaining to reasonable and appropriate toll rates. The I-70 Mountain Corridor express lanes will be dynamically priced, with tolls based on real-time traffic demand, to ensure consistent service and reliable travel times.

- ***Express Lanes and Dynamic Pricing*** – Because a real-time dynamic-pricing regimen will be used, the toll rates will be reasonably raised, as necessary, to maintain a constant free-flow speed of at least 55 mph. We have made modest assumptions and built them into our preliminary financial model for the effect of dynamic pricing. The new tunnel bores at the Twin Tunnels and Eisenhower/Johnson Memorial Tunnels (EJMT) will each have a separate, independent tunnel toll in addition to the express lane toll. During the next phase of study, the Parsons team will examine a number of varying toll options.

- ***Toll Rates*** – Market-competitive toll rates were determined based on comparable express lane and major bridge and tunnel facilities throughout the United States (for more information refer to **Technical Appendix, Exhibit 12**). This information was used to develop early estimates of reasonable base toll rates for the I-70 Mountain Corridor express lanes and tunnels. The base toll rates for the express lanes, not including additional charges for congestion or dynamic pricing, varies from $0.10 per mile to $0.25 per mile (2012 dollars) based on the time or day of travel. Base tolls for commercial vehicles are three times greater than passenger vehicles. Base toll rates are adjusted annually for inflation at a rate of 3.0 percent.

Another important factor in estimating market-competitive toll rates is recognizing that the I-70 Mountain Corridor is not a typical commuter corridor, but one of the nation's busiest recreation corridors. Motorists place a higher value on their time when traveling to a recreational or vacation destination and are willing to pay a higher toll for any transportation mode that can reduce their travel time.

### 4.1.6 SKETCH LEVEL TRAFFIC AND REVENUE FORECAST METHODOLOGY

For any tolled facility financial plan, the T&R forecasting methodology is paramount in the determination of a project's feasibility. Parsons utilized previous T&R studies making certain adjustments, to develop a more precise sketch level view of the potential traffic volumes and toll revenues for the Parsons Plan. As discussed above, we have modified previous traffic studies to fit the Phase 1 scenario accurately.

- ***Previous Traffic Forecasts*** – The most comprehensive sketch level T&R study that was completed prior to our studies was the *2004 CTE Preliminary Traffic and Revenue Study* developed by WSA. Its purpose was to consider a number of potential toll projects throughout Colorado, which included the I-70 Mountain Corridor and provided a number of different I-70 scenarios. A two-lane, reversible, express lane toll option, called Scenario 1, is addressed in the report. This scenario represented a development plan that is reasonably consistent with Parsons' Phase 1 plan because it also assumed new bores at the EJMT and Twin Tunnels.
- ***Adjustments to CTE Preliminary T&R Study*** – Parsons reviewed the traffic analyses presented for Scenario 1 and used this data, specifically the 2010 base-year traffic forecast, as a starting point for the development of our traffic forecasts and revenue calculations. Several important revisions have been made to the data taken from the *CTE Preliminary Traffic and Revenue Study* to improve and refine Parsons' analysis of express lane operations. Differences in key assumptions used in the *2004 CTE Preliminary Traffic and Revenue Study* and the Parsons' sketch level analysis are shown in **Technical Appendix, Exhibit 14.**
- ***Parsons' Traffic Analysis Utilized Prior CTE 2010 Forecast Data*** – The *CTE Preliminary Traffic and Revenue Study*, established 2010 as the base forecasting year for its study. To develop reasonably accurate sketch level traffic forecasts, we utilized the CTE study's traffic projections for the general purpose and express lanes for the 2010 base year. The CTE study's 2010 traffic projections for total traffic volumes have proven to be reasonably accurate when compared with actual traffic counts taken during 2010 by CDOT. **Technical Appendix, Exhibit 12,** shows a comparison between the 2010 traffic data taken from the CTE study and the baseline traffic volumes used in our analysis.
- ***Parsons' Traffic Forecast Methodology*** – Parsons built future-year traffic forecasts using modest growth rate assumptions from the 2010 base traffic year. This forecast methodology used the growth rates outlined in Section 4.1.4. The four periods of growth during the Project revenue period are from (1) the years prior to the expected opening of the Phase 1 express lanes; (2) the first five years of revenue service, characterized by an increase in corridor traffic growth as a result of pent-up demand; (3) years six to 10 when traffic continues solid growth post ramp-up; and (4) year 11 and beyond when growth returns to typical long-term growth levels. Parsons' sketch level traffic forecast for the express lanes during the concession period is shown in **Technical Appendix, Exhibit 12**. Parsons' sketch level revenue estimates are based on conservative assumptions at this early stage of development. There are a number of potential upsides to these estimates that will be investigated during project development plan (PDP) Stage 1 (PDP1). These potential upsides to the sketch level estimates are shown in the **Technical Appendix, Exhibit 13.**

### 4.1.7 TIME SAVING AND TOLL DIVERSION ASSUMPTIONS

Our studies indicate that the travel-time savings for express lane users versus using the general purpose lanes during peak travel periods will be between two and three hours by 2025. More detailed analysis on travel-time savings and the value of time for each vehicle classification are normally a topic of Level 2 T&R analysis. The value of time is a key determinant in setting toll rates especially for dynamically priced express lanes. Detailed studies for capture and diversion rates were not part of Parsons' sketch level studies, but will be considered during the Level 2 studies.

### 4.1.8 TRUCK PERCENTAGE ASSUMPTIONS

Based on traffic volume information retrieved from CDOT's website, the percentage of trucks that use the I-70 Mountain Corridor is roughly 10 percent. Although, this percentage varies depending on the location and time of day, we used this same truck volume percentage in the general purpose and express lanes for our early sketch level analysis. However, we plan to analyze different truck classifications more carefully during our Level 2 study. Ten percent is conservative for early revenue estimates because the new tunnels may actually increase the volume of truck traffic due to the enhanced safety and the incorporation of a more robust tunnel control systems, which will allow use by additional classifications of trucks.

*Commercial vehicles that choose to use express lanes will considerably reduce their travel times during peak periods through the Corridor. Trucks carrying hazardous materials that use the new tunnel at EJMT will avoid hazardous conditions on Loveland Pass and further reduce travel times by as much as one hour.*

### 4.1.9 REVENUE REDUCTION FACTOR ASSUMPTIONS

On typical tolled highway facilities, there is a three- to five-year ramp-up period to reach the level anticipated in the T&R studies. This is the time required for the driver to become aware of the benefits of the new facility and develop a greater willingness to pay tolls. Express lane facilities normally experience a much shorter ramp-up period due to the immediately recognized time savings in utilizing these lanes when adjacent general purpose lanes are experiencing poor levels of service and attraction to new users that previously avoided the corridor, which is the pent-up demand. The I-70 Mountain Corridor is an established corridor with the need for added capacity and we expect that the traveling public will begin to utilize express lanes shortly after they become available.

There are other revenue reduction factors, such as toll collection leakage and other administrative costs, that are not normally considered during sketch level studies. These factors will be more carefully analyzed during the Level 2 T&R studies.

### 4.1.10 BUS RAPID TRANSIT

Parsons' sketch level T&R analysis did not include a detailed study of how the BRT vehicles can affect traffic in the express lanes; however, our early assessment is that the number of transit vehicles in the corridor will initially represent a small percentage of the overall traffic flow in the express lanes and grow over time. By allowing BRT to operate in the express lanes, with a dedicated lane, we will provide a high level of service and competitive travel times. The BRT system along I-70 will be designed to provide a high level of service at a low-fare cost to the user. As part of the Level 2 T&R analysis, our team will study the relationship between the express lane tolls and the BRT fares so that we can meet the financial goals for the overall project. The BRT system operation requirements will incentivize transit share along the corridor by providing the transit and express lane users equivalent travel times.

## 4.2 LEVEL 2 TRAFFIC AND REVENUE APPROACH

Parsons developed an innovative concept for I-70 based on at-risk investigative work that was done to develop sketch level traffic and revenue data. As a result of our findings, we developed a phased implementation plan for the I-70 Mountain Corridor Project. The sketch level T&R studies are a necessary first step. To move this project forward, the previous data must be confirmed by a more detailed analysis, our Level 2 T&R study.

We will use the regional and I-70 travel models to develop overall volumes and assignments for sections of the proposed project for various time periods. Multiple express lane concepts will be coded and assignments will be produced for a range of toll levels for various time periods. Variation in express lane configuration, tunnel tolling strategies, and other issues will require coding alternative scenarios.

The model will be updated to future-year forecasts using the socioeconomic projections of future land use activity supplemented by the economic review of the potential growth of the recreational users in the mountain resort communities. The team will conduct analyses of the project for a minimum of two years, which will include the base year in which the travel demand model was validated; the opening year of the Project; and in the chosen horizon year for the project. It will be necessary to extend these forecasts through the concession period using extrapolation techniques based on conservative judgments regarding long-term growth potential.

## 4.2.1 AREAS OF SPECIAL ATTENTION FOR LEVEL 2 STUDIES

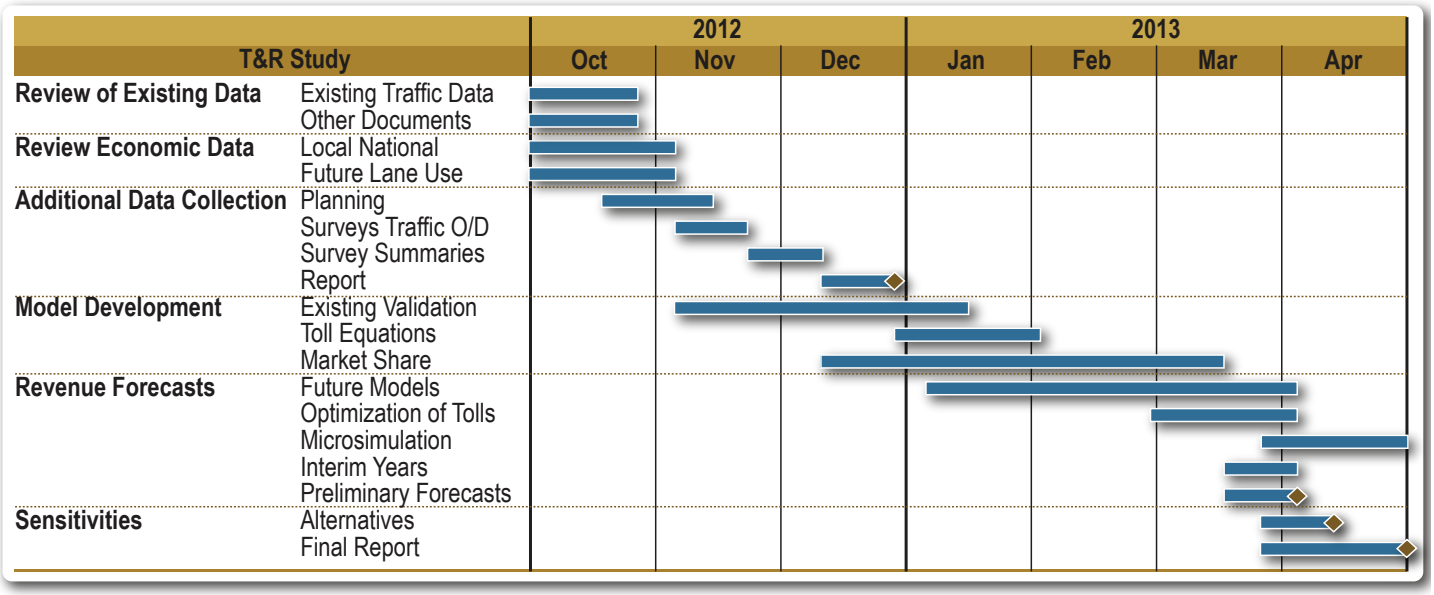
During the development of our sketch level T&R studies, we recognize that additional, detailed analysis will be required during the Level 2 T&R studies. The principle areas requiring special and more detailed attention during the Level 2 T&R studies include the following:

- ***Reversible Express Lane Options*** – In the sketch level study, Parsons made some early assumptions relating to how the number of lanes and reversible express lanes will operate. Detailed studies will identify hourly traffic flows throughout the year to determine optimal express lanes operations.
- ***Value of Time*** – Due to the unique, recreation-travel characteristics along the I-70 corridor, it will be important to perform more detailed studies for the value of time for the users of the express lanes. This will lead to studies on toll-rate elasticity and a carefully evaluated toll rate policy.
- ***Dynamic Pricing Impacts*** – The impact of dynamic pricing is important to model the 50-year anticipated stream of revenues accurately. Our traffic team will model dynamic pricing to a higher degree of accuracy during the Level 2 T&R studies.
- ***Impacts of BRT and Trucks*** – The potential impact of BRT, AGS, other potential free users, and anticipated truck volumes will require special attention during Level 2 T&R studies.

## 4.2.2 PROPOSED TASKS AND SCHEDULE

The proposed tasks fit into the following four major categories: existing conditions, economic review, model development, and revenue forecasts**. Exhibit 4.1** is a proposed schedule of activities and milestones.

***Exhibit 4.1 – Proposed Project Activities and Milestones***



## 4.2.3 DATA COLLECTION PLAN

The Parsons team will organize and execute a data collection plan to validate the modeling processes to be used to forecast T&R appropriately for the Project. Before developing the plan, we will obtain recent, available data from the State, county, and/or local jurisdictions. This data collection may include traffic volume and classification studies, roadway configuration and traffic control device inventories, and travel time and congestion or delay studies. Based upon the seasonal nature of traffic demand for the project, it is important that counts and travel time runs be undertaken in the summer and winter months, the two principal demand periods.

***Exhibit 4.2 – Preliminary Data Collection Plan***

| | |
|---|---|
| **Hourly Counts** | Hourly traffic counts will be necessary at some mainline locations and major parallel and feeder routes to calibrate detailed hour-by-hour simulation models for peak periods. Wavetronic, or radar, counts are proposed at the interstate locations and provide classification data and speeds at the count location. |
| **Travel Time** | We will conduct travel time runs along I-70 and its parallel routes for weekdays and weekends using GPS geo-loggers to track a vehicle's movement through a corridor. We will use the speed data collected via the geo-logger technology to validate the traffic count data and the travel demand and micro-simulation models. |
| **Vehicle Classification** | We will supplement available vehicle classification data with surveys at several spot counts, categorizing vehicles during the peak and midday periods during the weekdays and weekends. |
| **User Characteristics and Origin Destination** | Traditional methods of collection, including postcard surveys or license plate surveys, that track vehicles through the study area will be employed. By videotaping license plates at the eastern end of the study area and then at key segments to the west, we can easily identify long-distance trips or through-trips. |
| **Stated Preference Surveys** | The Parsons team will use these surveys to supplement information regarding travel patterns and localized views on value of time. We will also focus surveys in key recreation areas. |

Additionally, the Parsons team will prepare a technical memorandum of traffic data collection that will provide an inventory of traffic volume, vehicle classification, vehicle occupancy, speed, and roadway geometry along the I-70 Mountain Corridor.

## 4.2.4 SOCIOECONOMIC ANALYSIS

The Parsons team will review official demographic projections prepared by government agencies to determine an appropriate conservative forecast level for projecting toll revenue with acceptable risk to investors. These projections must consider state, national, and international economic trends; and the anticipated lifestyle choices of current and future populations over many decades. The study area is somewhat unique in that it represents the edge and beyond of the Denver Regional Council of Governments (DRCOG) region, and therefore does not have the usual rigorous base upon which to predict future growth patterns. Additionally, much of the future activity in the corridor is not related to general regional growth but to the potential reflected in the mountain area resorts. The Parsons team will document the end product of this task in an economic forecast technical memorandum that recommends rational economic development patterns for evaluating project alternatives and operating scenarios.

*Development Research Partners, an exclusive Parsons subconsultant, brings extensive and unique knowledge of Colorado and I-70 Mountain Corridor economic considerations having completed the 2007 I-70 congestion impacts study for the Denver Metro Chamber of Commerce.*

## 4.2.5 PRELIMINARY MARKET SEGMENTATION

During our Level 2 study, Parsons will develop market segmentation information, which will focus on the recreational user and will determine how each market segment will use the project. Expectations from other studies indicate that infrequent recreational users have an extremely high value of time.

The regional traffic demand has an assumed value of time incorporated into its overall highway assignment process and is focused on the average value of time throughout the region. Our experience on the SR-91 project in southern California, primarily through the use of calibrated micro-simulation models, has shown that the value of time for express lane users can be two to four times greater than the average value of time, reflecting both travel time sensitivity and reliability contributions to the incidental value of time. This is the case for the I-70 Mountain Corridor Project because express lane users are typically not five-day-a-week

commuters, but may use the facility two to three times per week, as the value of time for the purpose on that day may be higher than average. For example the user may be heading to the airport, trying to get to a ski or camping area on the weekend, or making an extra call on a client.

## 4.2.6 TRAVEL DEMAND MODEL DEVELOPMENT STRATEGY

Our team will begin with the most recent edition of the CDOT regional and DRCOG models and modify them to account for project-specific needs. We will refine the calibration, focusing specifically upon the model's calibration by time of day. The regional model will be used to develop overall volumes and assignments for sections of the proposed project for various time periods. Various express lane concepts representing the corridor will be coded and assignments will be produced for a range of toll levels along the express lanes for various time periods. Alternative lane configuration, tunnel tolling strategies, and other physical and geographic issues will also be evaluated.

Refinements to the network will include examination of existing ramps, frontage roads, and connections between facilities. These changes will also affect the coding of the transit networks, which will also be examined. Model forecasts will take into consideration the impact of local- and through-traffic flows. One or more select link traffic assignments will be conducted along the corridor to identify the portion of traffic that is internal to the study area, destined for another location outside the area, or traveling through the model study area. The patterns will be compared against field survey results.

## 4.2.7 WILLINGNESS TO PAY AND TOLL DIVERSION METHODOLOGY

The team will apply the methods and algorithms used on other express lanes projects, such as the Toll Diversion Coefficients used in the Capital Beltway express lane study, for incorporating toll facility modeling into the subject travel demand model.

The team will develop a market-share analysis for the project. We have assembled a substantial database of express lane usage and revenue potential under a range of traffic and toll conditions. From this data, a series of market-share curves denoting splits between tolled express lanes and adjacent general purpose lanes has been calculated. A market-share analysis of slices of the corridor will be run using the global general purpose and express lane volumes along the corridor at that location. This information is particularly helpful in the preliminary testing of alternative toll concepts and in the preliminary evaluation of related operating policies, as it gives a reasonableness check to the model results that are based on real-world results and observed behavior at varying volume and capacity ratios and toll rates.

- ***Competing Travel Modes*** – BRT and AGS services can also compete with long-distance toll trips. Each of these modal options will be addressed as part of the modeling process.
- ***Micro-simulation Corridor Operations Models*** – The team will develop a micro-simulation corridor operations model to demonstrate the operational integrity of the tolled express lane corridor, including lane configuration and appropriate connections to adjacent facilities. If deficiencies in access and egress results in capacity constraints, or other operational problems, these deficiencies will be reported so that project concepts can be modified.

## 4.2.8 ALTERNATIVE ANALYSIS

Alternative scenarios and potential improvements to the project design will be evaluated as part of our Level 2 T&R analysis for reasonableness and to examine options for maximizing revenues and improving traffic flows. A few of the alternatives to be examined include the following:

- Two and three express lane configurations.
- Various access and egress alternatives between the express and general purpose lanes.
- Study various options where the express lanes may operate differently. Reversible flow may be eastbound in the morning and westbound in the afternoon from east of the Twin Tunnels to C-470 during daily commutes.
- Examine various alternatives to determine the optimum handling of truck traffic.

### 4.2.9 SENSITIVITY ANALYSIS

The Parsons team will conduct sensitivity tests that will provide additional information on how to maximize revenue and traffic throughput. The sensitivity analysis will include the following:

- A range of toll rates to determine toll elasticity; the optimum toll rate for revenue generation will be used for comparison of alternatives.
- Variable growth rates and ramp-up scenarios.
- Potential impact of BRT and AGS to express-lane volumes.

### 4.2.10 BRT LEVEL OF SERVICE

An important part of the Level 2 T&R analysis will involve ensuring a high level of service for the BRT system. The Level 2 T&R studies will investigate traffic levels of service by time of day for various toll scenarios along the express lanes. The efficient operation of the express lanes is an important factor in providing a high quality of service for the BRT system. In the Parsons Plan, the BRT system and trucks will have a dedicated lane. This will provide the opportunity to evaluate the level of available capacity for buses to fit into the system without travel time delay, or conversely indicate how toll rates should be changed to accommodate transit needs.

## 4.3 SKETCH FEASIBILITY ANALYSIS

The Parsons team has developed a financial plan that indicates a financially viable solution to congestion and mobility issues along I-70. The results of our updated financial feasibility analyses, which we have updated from both our Unsolicited Proposal and the statement of interest (SOI) due to MAP-21 impacts, for both the public-private partnership (P3) concession option and the publicly financed option are shown in detail in Section 4.6. Parsons' financial plan has been developed based on early input data from sketch level T&R studies, reasonable financial assumptions, and attempting to simulate how a P3 concessionaire can develop such a bid based on previous P3 project experience. Our team has also investigated a second option financed by CDOT or the High Performance Transportation Enterprise (the Enterprise).

As mentioned previously, Parsons' sketch level T&R forecast is shown in the **Technical Appendix, Exhibits 12 and 13.** Parsons has also conducted detailed cost studies for capital costs, toll operations, and maintenance — as well as capital replacement costs.

### 4.3.1 PHASE 1 CAPITAL COSTS

Parsons has conducted detailed cost studies for the planned improvements for Phase 1 of the Parsons Plan. These studies include preliminary engineering designs that have led to construction cost estimates for the express lanes and new tunnels and select improvements to general purpose lanes, the BRT system, and operations and maintenance (O&M) costs for the planned tolled facilities. Each of these cost categories is discussed below.

- ***Express Lane and Tunnel Capital Costs*** – To establish the capital costs and determine feasibility relative to toll revenues, we drew upon our previous knowledge of the I-70 Mountain Corridor project developed in the I-70 Cost Validation Study, which we conducted for CDOT in 2006. Parsons used the base cost estimate methodology that we developed with CDOT for this effort as a starting point for our express lane capital cost estimate. Costs were updated to 2012 amounts and contingency factors were adjusted, where appropriate.

  The capital costs shown include many improvements to the existing free lanes for the majority of the I-70 Mountain Corridor. This is necessary because the new express lanes, for the most part, will be located between the existing I-70 free lanes; thus, the existing lanes may be realigned along with the new express lanes. The conceptual design and quantity takeoffs include a final pavement overlay of the entire length of the existing I-70.

- ***BRT System Costs*** – We also completed a preliminary estimate of capital costs for the BRT system implementation. As part of Phase 1, the BRT will be put into service from C-470 to Vail. Assumptions include 12 BRT stations located at strategic junctions. The total estimated capital cost of the BRT system, including a reasonable contingency, is $130 million. This is based on a more rigorous analysis than what was presented in our prior submittals.

The anticipated capital cost estimates for the design, construction, and right-of-way (ROW) for Phase 1 through financial close are shown in **Exhibit 4.3**. The total capital cost for Phase 1 is currently estimated at approximately $3.5 billion (2012 dollars).

***Exhibit 4.3 – Phase 1 Capital Cost Summary***

| Capital Cost Items (2012 Costs) | Design/Construction/ROW Costs | PM/CM Costs (Including Development) | Total |
|---|---|---|---|
| I-70 Reconstruction and Express Lanes | $1,723,000,000 | $166,000,000 | $1,889,000,000 |
| Eisenhower Tunnel –Third Bore | $920,000,000 | $89,000,000 | $1,009,000,000 |
| Twin Tunnels – Third Bore and Viaduct | $420,000,000 | $40,000,000 | $460,000,000 |
| Bus Rapid Transit System | $130,000,000 | $5,000,000 | $135,000,000 |
| ***TOTALS*** | ***$3,193,000,000*** | ***$300,000,000*** | ***$3,493,000,000*** |

## 4.3.2 TOLL COLLECTION COSTS

In Parsons' sketch level analysis, we recognized that there are still many unknowns regarding the type of toll collection and system infrastructure that will be necessary for the express lanes and tunnels. Our team estimated the toll collection costs based on a typical percentage of gross revenues for each year of the concession period utilizing data from previous concession projects. At this early juncture, this is a more reliable method than attempting to estimate these costs based on the number of transactions. Because little is yet known on the access and egress points, estimating the number of transactions will likely be inaccurate. We recognize that our operations and toll collections costs are conservative at this stage and detailed investigations may provide lower projections. Our current estimate is that the toll collection costs for a 50-year concession term will be $541 million (2017 net present value).

## 4.3.3 HIGHWAY MAINTENANCE COSTS

O&M costs assuming a P3 concessionaire model have been estimated over a 50-year concession term. These costs, shown in more detail in Section 2.1.1.7, will be funded prior to debt service. Additionally, an O&M reserve fund will be established within the financing to ensure that this activity is properly capitalized. The P3 concessionaire's O&M responsibilities will include the express lane facility; the new tunnel bores, which may be shared with CDOT, who maintains the existing tunnels, and it will be discussed during the P3 procurement period; and the BRT system. We have estimated the annual maintenance cost for express lanes to be $300,000 per mile and the new tunnels at EJMT and Twin Tunnels to be $7 million, annually.

## 4.3.4 POTENTIAL ANCILLARY SOURCES OF REVENUE

There are a number of potential sources of ancillary revenue that may enhance the financial viability of the I-70 Mountain Corridor Project. Our sketch feasibility analysis was conservative, and therefore, did not take into account some of these additional sources for potential revenues that may provide further flexibility to the overall financial plan. During the next phase of project development, our team will thoroughly investigate each of these potential funding sources and make recommendations to CDOT on those revenue sources that are reasonable, publicly acceptable, and will lead to a viable financing structure. Potential ancillary revenues sources include the following.

| | |
|---|---|
| ▪ BRT fares | ▪ Truck plazas and staging areas |
| ▪ Concessions and parking at BRT Stations | ▪ Additional hotel or rental car fees |
| ▪ Commercial development | ▪ Tourist fees |

### 4.3.5 PROJECT DELIVERY SCHEDULE

During PDP1, the Parsons team will develop a detailed project-phasing plan in coordination with CDOT. It is possible that the overall Phase 1 construction will be split into two or three separate projects, depending upon financial and technical viability and the ability to receive timely environmental clearances. Our team will examine a number of different delivery schedules before deciding which plan will provide the best value to CDOT. Our current plan suggests the Phase 1 construction period to begin in late 2016. The opening of the express lanes to toll operation is expected to begin in phases as the construction of certain sections is completed. All Phase 1 express lanes and tunnels will be open to traffic by 2021. For additional information, please see the schedule in Section 2.3.

### 4.3.6 BUS RAPID TRANSIT OPERATING AND MAINTENANCE COSTS

Due to limited BRT system definition at this early stage, and for the sake of conservatism, our team has not estimated potential revenues due to BRT fare box collection. We have estimated annual O&M costs to be approximately $18 million for the initial service level. We assume the excess toll revenues will subsidize the BRT O&M costs. Both the BRT revenues and O&M expenses will be estimated in more detail during PDP1, after we can better define the BRT system, but at this early juncture both were determined to be of a low order of magnitude in comparison with much greater revenues and costs for the express lane facility.

## 4.4 EXPRESS LANE TOLLING STRATEGIES

Parsons considered a number of various alternatives in developing our tolling strategy for the sketch level T&R analysis. Because the completed work thus far only reflects a preliminary analysis, we anticipate a detailed collaboration with our co-developer partner, CDOT, to develop these strategies further while our team performs the Level 2 T&R studies. In the sketch level T&R analysis, we had two primary goals. First, we wanted to utilize reasonable toll rates, similar to those of other express lane facilities in the United States. In the **Technical Appendix – Exhibit 12,** we show a comparative toll rates for express lanes and tunnels for other U.S. projects. Second, we wanted to develop a tolling regimen that will produce sufficient revenues to finance a substantial portion of the project.

### 4.4.1 TOLLING STRATEGY FOR SKETCH LEVEL TRAFFIC AND REVENUE ANALYSIS

The level of complexity for the tolling strategy for a sketch level analysis is less than what will be expected in the more detailed Level 2 or 3 T&R studies. We have made reasonable tolling decisions, consistent with other express lane facilities. The following concepts guided our tolling strategy for our sketch level T&R analysis.

- ***Reversible Express Lanes*** – Due to the heavy directional splits between I-70 east- and westbound traffic, depending on the time of the week, our team believes that a reversible scheme is the most optimal form of express lanes for I-70. In our early analysis, we assumed that the express lanes will operate in the westbound direction between mid-week until Sunday morning and in the eastbound direction for the remaining days of each week. We will perform a more detailed analysis during the Level 2 T&R analysis, particularly on the east end of the project where there is a much higher predominance of daily commuter traffic that is contra-flow to recreational traffic. Additionally, varying toll charges will be used for the different vehicle classifications.
- ***Tolling both Express Lanes and Tunnels*** – During our early analysis, we independently toll the express lanes and the new tunnels at EJMT and the Twin Tunnels. Capital costs for these tunnels represent a large

percentage of the project's total construction cost and therefore, to cover their capital costs, we propose tolling separately. During Level 2 T&R studies, we will investigate other tolling options for the tunnels and express lanes.

- ***Dynamic Pricing*** – The express lanes will utilize dynamic pricing, a toll strategy where pricing varies based on real-time feedback from the system. We will develop a toll algorithm and apply it to the project, whereby tolls are raised in response to current traffic demand.
- ***Bus Rapid Transit*** – The BRT system is an important component to the Parsons Plan. The BRT users will have access to the express lane facility at a substantial discount to other vehicles and allow the traveling public a transit mobility choice that will be low cost and will realize time savings over using the general purpose lanes. The BRT system will provide competitive travel times with private vehicles in the express lanes. The resulting fare for a BRT user will be a fraction of the cost paid by a vehicle in the express lanes. One of the important purposes of the express lanes is to build up transit ridership over time as a precursor to the implementation of AGS.

### 4.4.2 REVENUE MAXIMIZATION VERSUS FACILITY UTILIZATION

In our sketch level T&R studies, we attempted to balance revenue maximization versus facility utilization by setting the following preliminary goals:

- A revenue regimen that can pay for project debt
- Optimizing throughput during peak periods
- Establishing predictable and reasonable rates for customers

### 4.4.3 REFLECTING THE COMPLEXITY OF I-70 USERS

Toll collections will undoubtedly be the greatest on Friday through Sunday, generated by recreational customers moving between the Denver metropolitan area and the recreation destinations along the corridor. These customers have the highest value of time, and therefore are the principal focus of the tolling scheme. However, there is a need to be sensitive to frequent use local residents and commuters, without upsetting the tolling regime. Locals have a need to move within and out of the region daily. Additionally, out of state, interstate, and Western Slope visitors will traverse the area any day of the week. Some will have destinations within the corridor while others will want to pass through to reach their destination beyond. Commercial users have a need along the corridor, primarily during weekdays, to make important deliveries within the communities. Because a major portion of the future customer base for the I-70 Mountain Corridor project will be recreation-based users, it will be necessary to use license plate readers to capture all tolls fully, while giving a discount to Colorado residents who use electronic toll collection tags. Collection of out of state user tolls will be most challenging, as it will require cooperation from multiple DMV jurisdictions to request and receive tag owner identification. A discount may be offered to those who voluntarily report their ID after using the facility. The idea is to maximize the ease of use of the facility and to communicate how to use, and the cost of the system, clearly.

## 4.5 PRIVATE INVESTMENT AND DEBT SOURCES

The value of the I-70 Mountain Corridor Project is likely to present both opportunities and challenges and the project financial plan will need to consider the full range of equity and debt sources to make the project a reality. Staging or phasing of the project may be required to attract the capital mix that will generate investor interest, lower cost, and enhance the value of the concession. Colorado has a positive record of success in the P3 arena with the Denver Union Station, Eagle P3, and most recently, your U.S. 36 P3 project. In addition to the I-70 Mountain Corridor project attributes, this record of success is important in attracting P3 concessionaires to the State, as these investors look globally for project investment opportunities.

Most recent projects of similar scope and size are being financed under a P3 concession model to provide the project sponsor the greatest flexibility with respect to both the type and timing of equity and debt. Each has

a mix of revenue sources, including user fees, federal grants, and local sales or other taxes, combined with equity and a variety of debt from commercial, TIFIA, taxable, and tax-exempt sources. Under a P3 concession model, bidders will seek to formulate a finance plan that has the lowest cost of financing and provides the best value to the state. Parsons' financial plan, discussed fully in Section 4.6, is structured to do the same.

The following identifies our view of the principal opportunities for the various investment and debt sources, and when decisions need to be made with respect to the viability of these various sources.

## TIFIA Loans

Given the project's characteristics, a TIFIA loan, if awarded, will likely represent the lowest cost-financing component for the project. The Parsons team has extensive experience with federal funding programs that can be used as part of a toll facility funding mix having participated as far back as pre-TIFIA loans and most recently with applications in other states.

TIFIA loans have become a vital component for express lane projects throughout the United States and have been utilized for such projects with a P3 concession model. The flexibility and low interest rates afforded through the TIFIA program provide a significant benefit to the capital structure of any toll facility project. Additionally, utilization of a P3 concession model is an important criterion for award of TIFIA loans, as 20 percent of the evaluation criteria is based on the ability of the project to attract private debt or equity.

Other advantages of the program include the ability for secured loans to be structured with deferred debt service; capitalized interest; and ascending principal, within 35 years from the project's date of substantial completion — which makes them ideal for the expected revenue profile of new toll facility projects. As the interest rate on a TIFIA loan is tied to the U.S. Treasury rates, a TIFIA loan will provide low-cost financing, particularly when compared to other debt alternatives. Given current market conditions, the TIFIA loan interest rate is near historical lows, at just more than 2.6 percent.

The TIFIA program has historically been competitive with project awards determined by the availability of funds and a project's overall impact on regional transportation. Secured loans are assessed a credit charge that is paid by the TIFIA program or, in limited cases, the borrower at closing and is in part based on the size of the loan, the credit strength of the repayment mechanism, and the interest rate of the loan. Prior to MAP-21, TIFIA had limited funding and was substantially oversubscribed. However, the TIFIA program funding will be greatly increased as part of the MAP-21 reauthorization of the federal transportation funding program. MAP-21 has increased TIFIA's estimated funding capacity to $7.5 billion in FY13 and $10 billion in FY14, which is nearly a 10-fold increase in the program. Perhaps the most important new feature is that TIFIA can now fund up to 49 percent of a project's cost. This new guideline, assuming it remains the same when I-70 reaches financial close, will likely have a favorable impact on the feasibility of the project. We recommend that the co-development team, CDOT, and Parsons, take the steps necessary to indicate an early interest to the TIFIA Credit Office in applying for a TIFIA loan, which can now be awarded on a first-come, first-served basis, so it is important to apply as soon as criteria can be met.

> *"PTG has supported RCTC's financial team and our federal loan requests through diligent work providing capital costs, operations and maintenance costs, a comprehensive project schedule, and federal loan request preparation. PTG understands the big picture financing aspects and the necessary components of successful project financing."*
>
> **– Michael Blomquist, SR 91 Toll Program Director, Riverside County Transportation Commission**

There is also significant lag time to secure a TIFIA loan and, as a result, we will recommend that CDOT begin the application process when the project approaches project readiness, as defined in the statute. Given the uncertainty of receiving a TIFIA loan, we will recommend that CDOT also pursue other financing alternatives during the application process. Financial modeling should include scenarios using TIFIA as well as market-based alternatives. Our team will work with the project team to submit a TIFIA letter of interest (LOI) and application for the TIFIA loan, with the goal of obtaining credit approval from the U.S. Department of Transportation (USDOT) and developing a TIFIA loan agreement. We expect that the letter will be submitted once the Phase 1 financial feasibility has been completed and the results are favorable.

## Private Activity Bonds

Private activity bonds (PABs) are securities issued by — or on behalf of — a governmental entity to provide debt financing for a project used most often by or that benefits a private entity. PABs provide private developers and operators access to tax-exempt interest rates, significantly lowering the cost of long-term financing when compared to a taxable funding rate. Interest on the bonds is not subject to federal income taxes, but is included as a preference under the alternative minimum tax. In a P3 concession, the project owner — and project financial feasibility — will benefit from the lower interest rate on private activity bonds, in addition to the ability to use equity in the capital structure.

In 2005, Section 11143 of Title XI of SAFETEA-LU amended Section 142 of the Internal Revenue Code to add highway and freight transfer facilities to the types of privately developed and operated projects for which PABs may be issued. This change allows private activity on projects like the I-70 Mountain Corridor project. The law limits the total amount of such bonds to $15 billion nationally, of which approximately one-half has been utilized and allocation is not subject to the state volume caps. In order that the project can qualify for private activity bonds, the borrower must receive an allocation from the Secretary of Transportation.

## Private Equity

Nearly all P3 concession projects of similar size and scope have included a significant percentage of concessionaire equity, especially when used to leverage PABs, TIFIA loans, or other forms of commercial debt. Equity ratios as a percentage of the capital mix have increased since 2008, in part due to the need for additional coverage margins for public and bank debt. However, the recent increase in the TIFIA-funding percentage to 49 percent could reduce the amount of private equity and thereby lower financing costs.

**LEGAL CONSIDERATIONS**

*The impacts of TABOR will depend on how funding is structured, if a publically financed option is selected. HPTE, as an enterprise, is exempt from TABOR. However CDOT is not.*

Several factors, including the competitive environment, competing projects, and the size and type of revenue streams available to support the project, will influence the amount, timing, and return expectation of equity investors. Given the growing number of state DOTs that are pursuing the P3 delivery method, investors are watching projects closely and choosing projects not only based on their financial viability but also on their timing, likelihood of closing, political support, and additional factors. Since the early 1990s toll road financings in California, contractor obligations have been used as part of the funding mix. Rating agencies and other investors have found comfort in knowing that the contractor continues to carry risk beyond the construction period.

The prospective investors in this project will include both financial and strategic investors. Financial investors include banks, fund managers, and pension funds while strategic investors include global construction and design firms that are often required to provide equity alongside their design, construction, operations, or maintenance expertise.

According to industry sources, more than $140 billion of private equity has been raised by the top 30 infrastructure funds in the past five years. In order for CDOT to attract the most competitive equity to the project, the Parsons team recommends that we cultivate private equity investors early in the process and build their interest in the project. Already a number of strategic investors are tracking the project and we expect the interest to grow as CDOT continues the project planning effort.

## Commercial Debt

The commitment of commercial banks to non-recourse infrastructure lending has changed dramatically due in part to credit factors and in part to the regulatory environment regarding risk. Several toll projects have underperformed and resulted in either heightened risk or workout situations for commercial banks. As a result, leverage ratios for projects have changed significantly to the point where the equity component could represent as high as 50 percent of the capital structure, if debt alternatives such as PABs and TIFIA loans are not available. United States banks have not been significant participants in infrastructure lending as foreign banks, with more of a global record, have dominated the global project finance lending arena. Often these

financial institutions have been paired with construction firms, the strategic investors mentioned in the equity discussion above, to present a financing package. The financial crisis in Europe continues to unfold and the eventual impact on global financial institutions, as well as the potential implementation of Basel III rules, could significantly affect the participation of this sector.

While we will not expect to exclude the use of commercial debt in the funding mix in the P3 procurement, we do expect that any private financing plan will first demonstrate financial feasibility using primarily TIFIA, non-recourse PABs, and a reasonable amount of equity financing. Should those sources of funding be unavailable or reduced, commercial debt will serve as the primary remaining debt option. Commercial bank lenders may require additional terms and conditions that the project team will need to assess against the terms and conditions outlined in the P3 procurement.

## 4.6 FINANCIAL PLAN ELEMENTS

The basic concept of Parsons' financial plan is that Phase 1 design, construction, O&M reserves, and other expenses will be financed so that the project debt will be non-recourse to CDOT, the Enterprise, or any other governmental agency. The principal source of repayment for the cost of Phase 1 will be the long-term, or 50-year concession term assumed, revenue stream from the tolled express lanes and the new tolled tunnel lanes. Additional revenue will also be available from anticipated fares for the BRT system and other potential ancillary revenue sources. Initial studies provide a reasonable expectation of financial viability based on current market expectations, even when adjusted for moderate interest rate increases prior to financial close.

The viability of the finance plan will be determined by the ability of the toll revenues, net of expenses, to provide the sufficient financing proceeds to build the project, fund reserves, and provide monies to meet ongoing operations, maintenance, and long-term capital expenditures. Projected costs, revenues, and potential funding options must all be based upon reasonable assumptions, well grounded in market experience. The basis of the financial plan during the development stage will be the Level 2 T&R forecast and the life-cycle cost estimates. These forecasts and projections will identify the amount of net revenues that can be pledged to the project financing to cover capital and O&M costs, financing expenses, and any future major capital replacement, maintenance or emergency reserves.

Each element of the capital structure, whether it is traditional debt, federal or bank loans, or equity, will have certain risk characteristics, which will be reflected in the interest cost or rate of return for that instrument. The interest rate and return assumptions are critical in optimizing the capital structure and to determine the amount that can be generated from the particular obligation. Our team has developed a comprehensive financial model and the results, based on preliminary information, are promising.

The financial plan will develop comparable information under various financing approaches, including government-owned public financing, P3 concession, and other hybrid project delivery approaches, which will result in the lowest cost of financing for each delivery model. A preliminary list of major elements of the financial plan includes the following:

- Modeling detailed cash flows. Balancing between credit rating and cost of capital. Optimizing the capital structure by analyzing non-traditional financing approaches. Running sensitivity analysis to demonstrate viability under reduced revenue scenarios or changes to the funding mix.
- Comparing design-build and P3 structures that provide full revenue risk transfer, availability payments, or hybrid models for construction, financing, or operation — and their associated costs and benefits.
- Providing a project value for money (VFM) analysis that evaluates the potential benefits and risks of a P3 concession in comparison to the publicly financed option.

### P3 CONCESSION FEASIBILITY ANALYSIS

The primary financing plan elements under a P3 concession will likely include PABs, a TIFIA loan, and private equity. Our co-development team will develop a TIFIA strategy early in the development process to heighten the probability of securing this critical funding. Fortunately, as noted earlier, the TIFIA program is now much better funded and capable of selecting far more projects than in past years. A financial summary of the P3 Concession Analysis is shown in the **Technical Appendix, Exhibit 13.**

The Parsons team has prepared an updated, project financial plan for the express lanes and tunnels under a non-recourse, 50-year, P3 concession approach. Interest rates are assumed at current market rates plus, on average, 150 basis points for conservatism. The debt structure summarized below contains PABs; TIFIA at 49 percent of project costs, payable solely from project tolls and interest earnings; and an equity contribution from the concessionaire equal to 25 percent of the project costs. Parsons' financial plan for Phase 1 of the I-70 Mountain Corridor project does not require a contribution or ongoing support from CDOT. **Exhibit 4.4** shows sources and uses of funds for the P3 concession option based on the current debt structure in Parsons' financial model.

***Exhibit 4.4 – P3 Concession Financing - Source and Use of Funds (2017)***

| | Express Lanes/BRT | Tunnels | Total |
|---|---|---|---|
| **Sources of Funds** | | | |
| Private Activity Bonds (PABs) | $ 662,305,000 | $ 487,719,000 | $ 1,150,024,000 |
| TIFIA Loan | $ 1,211,036,000 | $ 886,030,000 | $ 2,097,066,000 |
| Private Equity | $ 572,493,000 | $ 415,510,000 | $ 988,003,000 |
| Construction Fund Earnings | $ 30,502,000 | $ 22,487,000 | $ 52,989,000 |
| ***TOTAL*** | ***$2,476,336,000*** | ***$1,811,746,000*** | ***$4,288,082,000*** |
| **Use of Funds** | | | |
| Design/Construction Costs | $ 2,289,970,000 | $ 1,662,039,000 | $ 3,952,009,000 |
| Capitalized Interest | $ 113,802,000 | $ 95,914,000 | $ 209,716,000 |
| Debt Service Reserve Fund | $ 66,231,000 | $ 48,772,000 | $ 115,003,000 |
| Contingencies and Expenses | $ 6,333,000 | $ 5,021,000 | $ 11,354,000 |
| ***TOTAL*** | ***$2,476,336,000*** | ***$1,811,746,000*** | ***$4,288,082,000*** |

The projected net revenues repay the PABs over an assumed 30-year term and the subordinated TIFIA loan by 2057, which is 35 years after substantial project completion — the maximum term allowed under TIFIA guidelines. ***The results of our updated financial model show that net toll revenues are more than two times greater than total project and concession costs.*** The Parsons Plan presents an attractive financial plan to concessionaires, investors, and CDOT. Surplus cash flow collected from higher than expected toll revenues, in addition to what is paid to CDOT as a concession fee, will be shared under contractual terms made between CDOT and the concessionaire. The amount of an up-front payment by the concessionaire will depend on a number of factors, including the required after-tax rate of return to the concessionaire, the potential that toll revenues will be higher than the base case projection, and any construction or life-cycle cost savings that the concessionaire develops during this bid.

While Parsons' financial plan anticipates project feasibility, key credit, and structuring factors will be re-evaluated during PDP1, and specifically upon the completion of Level 2 T&R and cost studies. The plan will also need to continue to balance the amount and interest cost of PABs that can be sold as Convertible Capital Appreciation Bonds, Capital Appreciation Bonds, and Current Interest Bonds — depending on investor appetite for these securities, and the amount and cost of capitalized interest.

*The toll revenues collected by the concessionaire, after payment of capital costs, O&M, debt service, and reserve funds, appear sufficient to produce a return that could result in a substantial upfront payment — concession fee — from the concessionaire to CDOT. In the current market, CDOT could expect a concession fee exceeding $500 million.*

## PUBLICLY FINANCED FEASIBILITY ANALYSIS

Like the P3 concession, a publicly financed structure will include stand-alone, non-recourse toll revenue bonds, which include tax-exempt and not private activity, which may have a lower interest cost compared to PABs, to minimize the financial impact to the State. However, there will be a greater reliance on toll revenue bonds in the absence of equity funding. A TIFIA interest rate, final repayment date, and percentage of project cost identical to the rate in the concession analysis are assumed. **Exhibit 4.5** shows sources and uses of funds for the publicly financed option based on the current debt structure in Parsons' financial model.

*Exhibit 4.5 – Publicly Financed Feasibility Analysis Source and Use of Funds (2017)*

| | Express Lanes/BRT | Tunnels | Total |
|---|---|---|---|
| **Sources of Funds** | | | |
| Bonds | $ 1,245,299,000 | $910,849.000 | $2,156,148,000 |
| TIFIA Loan | $ 1,242,724,000 | $909,038,000 | $2,151,762,000 |
| Construction Fund Earnings | $ 57,346,000 | $41,991,000 | $99,337,000 |
| ***TOTAL*** | ***$2,545,369,000*** | ***$1,861,878,000*** | ***$4,407,247,000*** |
| **Use of Funds** | | | |
| Design/Construction Costs | $2,289,970,000 | $1,662,039,000 | $3,952,009,000 |
| Capitalized Interest | $120,171,000 | $100,555,000 | $220,726,000 |
| Debt Service Reserve Fund | $124,530,000 | $91,085,000 | $215,615,000 |
| Contingencies and Expenses | $10,698,000 | $8,199,000 | $18,897,000 |
| ***TOTAL*** | ***$2,545,369,000*** | ***$1,861,878,000*** | ***$4,407,247,000*** |

To replace the funding provided by the equity component of the concession scenario, the publicly financed plan will extend the maturity of fixed rate bonds to 35 years. The capacity created by the maturity extension will be realized using capital appreciation bonds (CABs), because the amount of current interest bonds is already limited by the first year of revenue after the capitalized interest period. Current interest bond maturities will be extended to 35 years and CABs layered into earlier maturities to optimize the debt service within the net revenue curve. The pricing and appetite for CABs with long maturities varies and either greater spreads or lack of demand for CABs will affect the publicly financed plan. This option generates less residual revenues than the P3 concession scenario, due to the greater reliance on debt financing without private equity and for the fact that a public agency will likely take a more conservative stance on forecasted traffic and resulting revenues. The additional percentage eligibility for a TIFIA loan also plays an important role in the structure, again providing a cost of financing perhaps 300 basis points lower than market comparables. There are residual toll revenues and they can be used to retire debt early, or returned to the State for additional capital projects or other purposes. The Parsons team will evaluate both the publicly financed and P3 concession approach and consider any other local or ancillary funding sources that can be contributed to the project. This will be the essence of the value for money (VFM) analysis, discussed in Section 4.7.3. Additionally, the co-development team will consider the potential benefits of hybrid project delivery models, which could involve a non-recourse public financing but incorporate the benefits of private participation through a design-build contract or design-build-operate approach, which may have the potential to reduce the risk-adjusted, life-cycle costs of the project.

## 4.7 STRATEGY FOR OBTAINING A P3 CONCESSIONAIRE

To provide best value to CDOT in our role as program manager, the Parsons team will properly prepare and educate the P3 concessionaire industry on the potential attractiveness of this project investment. If agreeable to CDOT, a portion of the information that was developed during the development of the technical and financial master plan could be released on the project's website. Additionally, the Parsons team will prepare a detailed procurement plan in collaboration with CDOT to solicit for a P3 concessionaire that will perform the design, build, finance, operate, and maintain (DBFOM). The following steps outline a strategy for selecting the most qualified P3 concessionaire which offers best value.

### 4.7.1 STRATEGY TO SELECT A P3 CONCESSIONAIRE AND REACH FINANCIAL CLOSE

***Pre-Request for Qualifications (RFQ) Industry Meeting*** – A pre-RFQ industry meeting will be held to release information for the project and to promote private industry attention and discussion. This early meeting will serve dual purposes. First, it will capitalize on what is likely to be worldwide interest in the project because of its size and attractive features. Such interest has the capability to create a competitive process that could lead

to an attractive financial bid. The second purpose is to assure that the private sector is given sufficient time to scrutinize the project before being asked to enter the procurement.

***RFQ Solicitation for Project*** – After potential P3 bidders have been given sufficient time to study the project, Parsons will develop and issue an RFQ to solicit responses from P3 concessionaires that are qualified to execute the DBFOM.

***Review RFQs/Shortlist*** – Parsons, in collaboration with CDOT staff will review the RFQ submittals. For a project of this magnitude, qualifying four to five concessionaires is appropriate.

***Develop/Issue Draft RFP*** – Parsons will develop and issue a draft request for proposals (RFP) that includes a draft contract between CDOT and the concessionaire and more detailed technical information, including the Level 2 T&R report. The draft version of the RFP will undergo revisions after industry review meetings held with each of the proponents.

***Industry Review Meetings*** – Industry review meetings will be held separately with each of the pre-qualified teams. The intention is to identify concerns the concessionaire teams may have with the draft contract or other draft RFP provisions. Strict rules must be followed for these meetings to prevent one team from gaining an unfair advantage. Additionally, during this process, the concessionaires will submit alternate technical concepts (ATCs) for design innovations.

***Development of the DBFOM Contract*** – During the industry review stage, the contract will be further developed and refined to strike the proper balance of protecting CDOT from undesirable risks while incentivizing the P3 concessionaires to submit a competitive bid. The assessment of comments received from the private sector will need to be considered as the contract is further developed.

***Issuance of the Final RFP*** – Once the proposed contract and project terms have been thoroughly discussed and reviewed by the co-development legal team, the final RFP will be released to the qualified concessionaires. This document is important to the concessionaires because it will provide the basis of the technical, legal, and financial bidding guidelines. Any revisions to the final RFP must be issued by addendum.

***Receive Final Bids/Bid Evaluation and Scoring*** – The P3 concessionaires will be given a reasonable amount of time to prepare their final bids. After receipt of the bids, Parsons and CDOT will review each submittal for completeness and then score it on its technical and financial merits. The co-development team will then collaborate to ascertain which bid offers the highest value to the state and subsequently make a recommendation for the winning concessionaire.

***Selection of Preferred P3 Concessionaire*** – CDOT's Executive Director and Commission will review the recommendation made and decide whether or not to select the winning bidder for the project. At this stage, CDOT is not obligated to enter into a contract unless it is satisfied with the results of the bidding process and the final bid.

***Financial Close*** – In the strictest sense, there are no final negotiations on the contract. However, typically, it is in both parties' interest to hold final discussions regarding the scope of work and any final discussions regarding contract terms. In essence, the executed contract will be identical to the one issued with the final RFP, including any possible addenda issued before receipt of final bids.

The terms and conditions typically include a no-later-than date for financial close. Once the contract has been agreed to and approved by CDOT, it is executed and the remaining steps that lead to financial close begin. These steps include taking final action to secure the loan instruments, TIFIA, or PAB commitments — and other financial information that lead to securing capital to begin construction.

## 4.7.2 EXPECTATIONS OF A P3 CONCESSIONAIRE

The P3 concessionaire industry is watching the progress of the I-70 Mountain Corridor Project and already realizes that it has the potential of being one of the United States' most outstanding P3 projects. The Parsons team includes staff that was formerly senior members of P3 concessionaire teams and therefore, we have a thorough understanding of the expectations of a P3 developer. To obtain an overall best value bid for this

project, the co-development team will need to prepare the project carefully so that it becomes an attractive investment for the P3 concessionaire's time and resources. The following list details a few of the primary expectations of a P3 concessionaire for the project:

| | |
|---|---|
| **Pre-Procurement Expectations** | Efficient environmental process with a clear path to receiving environmental clearance |
| | Sufficient technical information available to evaluate and understand key technical risks |
| | Level 2 T&R study and economic analysis that points to financial viability |
| | Clear identification of potential sources of revenue |
| | Reasonable expectations for any future competing transportation facilities, such as AGS |
| | Well-conceived plan for the P3 concessionaire's role in the BRT system |
| **Procurement Expectations** | Ability for the co-development team to secure TIFIA funding |
| | Reasonable sharing of financial risks and opportunities |
| | Contract terms that are in line with other successful U.S. and Canadian P3 projects |
| | Co-development team's aggressiveness in securing TIFIA commitment |
| | Reasonable plan to share potential excess revenue that's consistent with other U.S. P3s |

## 4.7.3 METHODOLOGY TO DETERMINE OPTIMUM FINANCIAL MODEL

The methodology employed by the Parsons team will involve the identification of project implementation alternatives for various types of P3 alternatives and the public financing plan that describes and evaluates the funding, financing, and project implementation plan for each. To assess traditional procurement by the public sector, a public sector comparator (PSC) will be constructed. Alternatives will be ranked against financial, legal, and implementation criteria to facilitate the selection of a preferred financial model. The criteria will consist of measures, including time to implement; cost of capital; CDOT financial contribution; maintenance of service standards; control of tolls; project delivery risk; and requirement to create new legal frameworks to finance the project. In consultation with CDOT, the Parsons team will prepare a delivery options matrix to assist in the alternatives evaluation. The matrix will include several categories of project characteristics that can be ranked for their likely contribution to a successful P3 approach.

Parsons will also prepare a financial model that has the structural flexibility to quantify and compare the costs and benefits of various P3 alternatives versus traditional public funding strategies. Our examination of a P3 structure will go beyond the financial cost and benefits and will analyze the VFM of each potential strategy.

***Value for Money Analysis*** –VFM is a comparative concept, and as such, most delivery agencies seek to use a public-sector comparator approach to evaluate VFM. Many of the accepted methodologies for evaluation VFM — for example, Canada and Victoria, Australia — are derived from the United Kingdom VFM approach, which applies quantitative assessment of whole-life, risk-adjusted costs of P3 and alternative, or public, delivery routes. VFM assessment also requires consideration of qualitative, non-numeric factors — including potential commercial incentives, market interest, and an assessment of deliverability of the procurement model, among other factors. Maximum VFM will tend to be generated by proper allocation of risks, the application of competitive tension and incentives, or penalties, and the ability to accommodate innovation.

The VFM is intended to quantify the expected savings from implementing a project as a P3 and determine whether the private sector's efficiency justify what might be a higher cost of finance. It also assesses if the private sector can access greater amounts of capital to build the project than traditional tax-exempt revenue financing.

REQUEST FOR PROPOSALS

# CO-DEVELOPMENT, MULTI-MODAL I-70 MOUNTAIN CORRIDOR PROJECT

## PART 1 – TECHNICAL APPENDIX

August 15, 2012

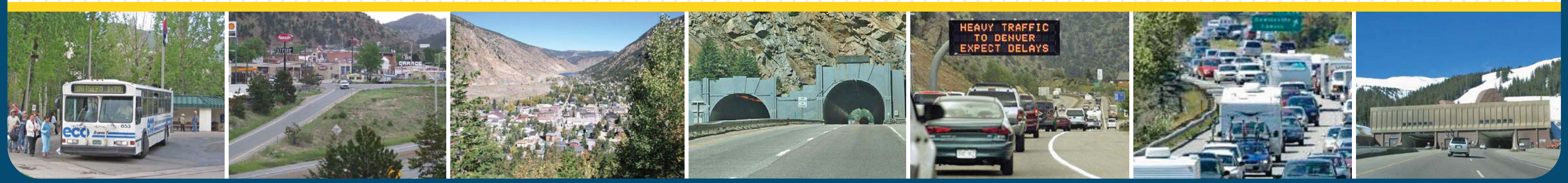
*Submitted to*

DOT
DEPARTMENT OF TRANSPORTATION

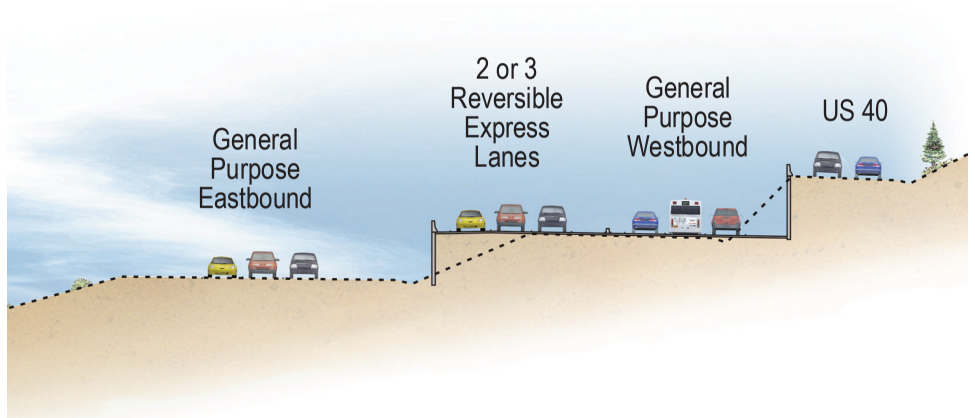
***CONFIDENTIAL***

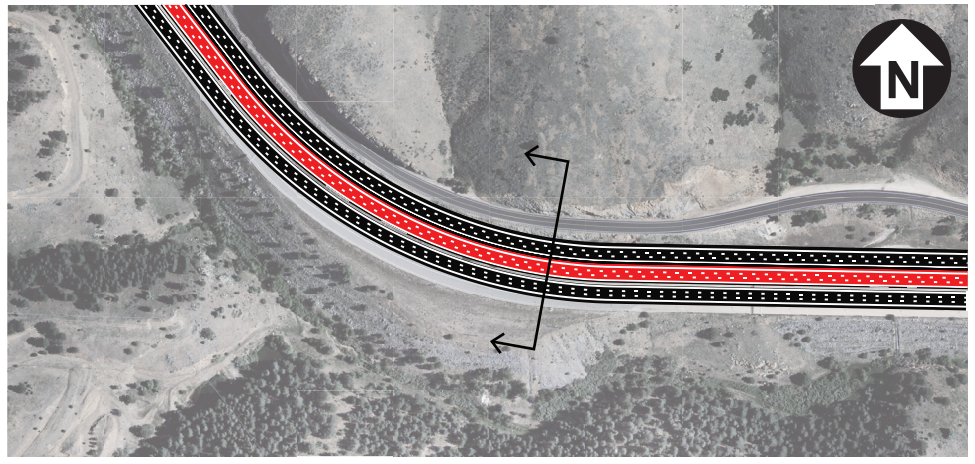
*Submitted by*

**PARSONS**



## Mt. Vernon Canyon Showing Split Vertical Alignment

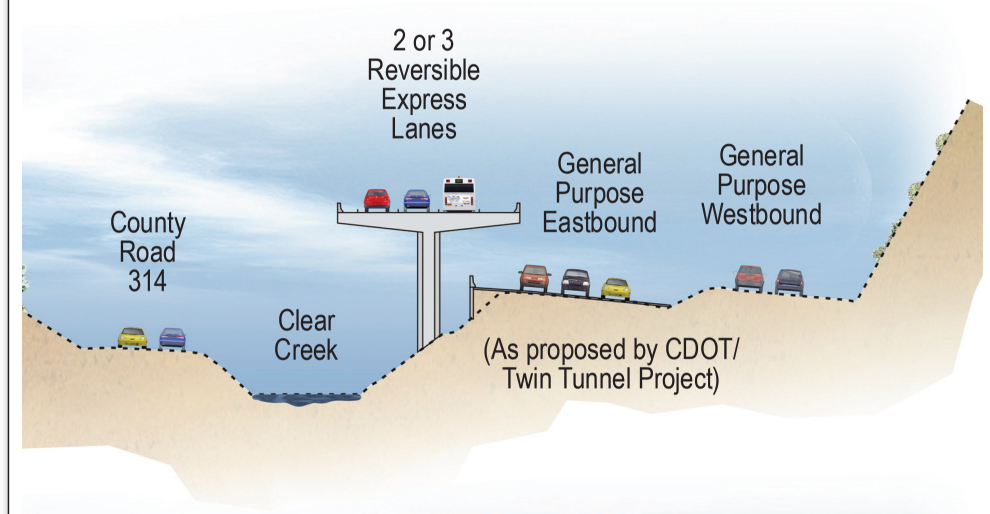


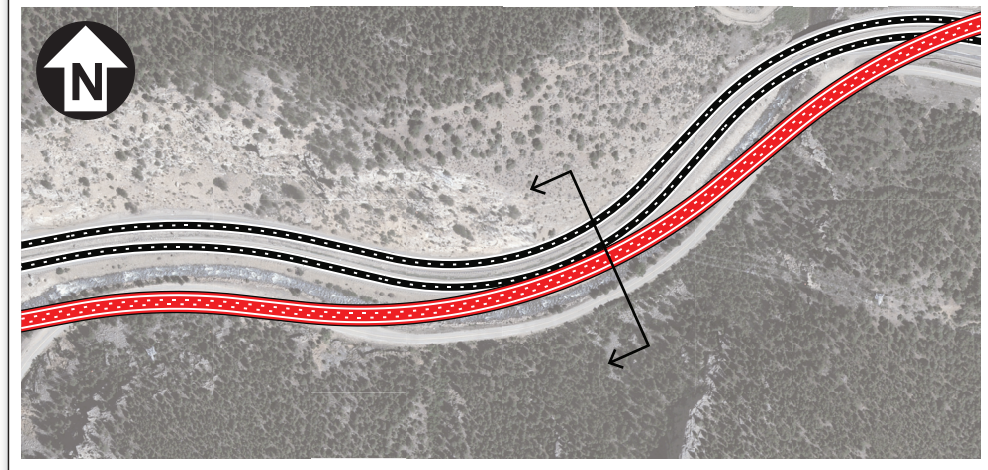




**Tiered alignments can be used to minimize cuts and fills, environmental impacts and reduce construction costs.**

- Additional capacity improvements shown are beyond those proposed in PEIS. Will be resolved in PDP Stage 2 Studies.
- Steep terrain in both profile and cross section. Requires retaining walls and consideration for runaway vehicles.
- Speed differential on downhill grade through Mount Vernon Canyon. Will be improved by restricting slow moving vehicles in express lanes.

## Through Hidden Valley Area (Viaduct Option Shown)

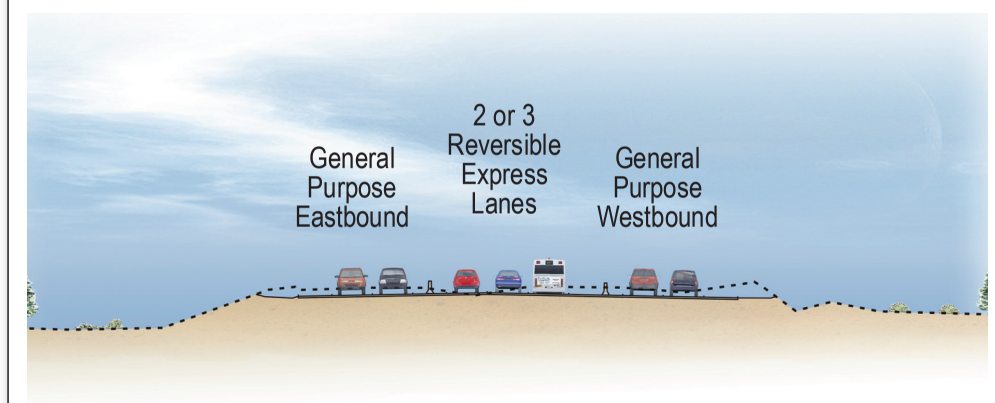


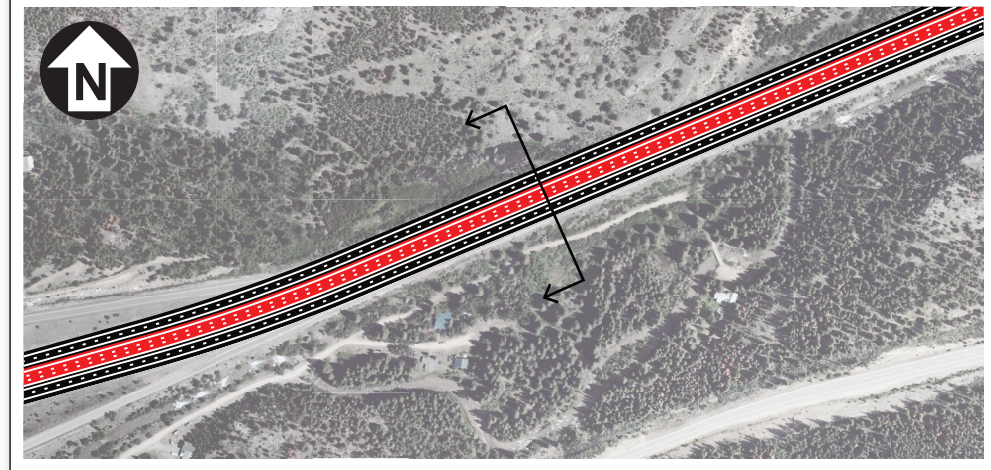




**Express lanes on independent viaduct structures allows for a 65 mph option with least environmental impact, minimal impacts to traffic, and lowest cost.**

- Other options considered which will be evaluated with CDOT include
  - Continue Express Lanes in median, reconstructing I-70 to a 55 mph alignment.
  - Continue Express Lanes in median, reconstructing I-70 to 65 mph alignment. Will require large rock cuts or tunnel segments.

## Bakerville (Prevalent Section for On-grade Roadway)




**Represents a majority of the corridor where simple construction methods can construct express lanes in the median with minimal impacts to traffic.**

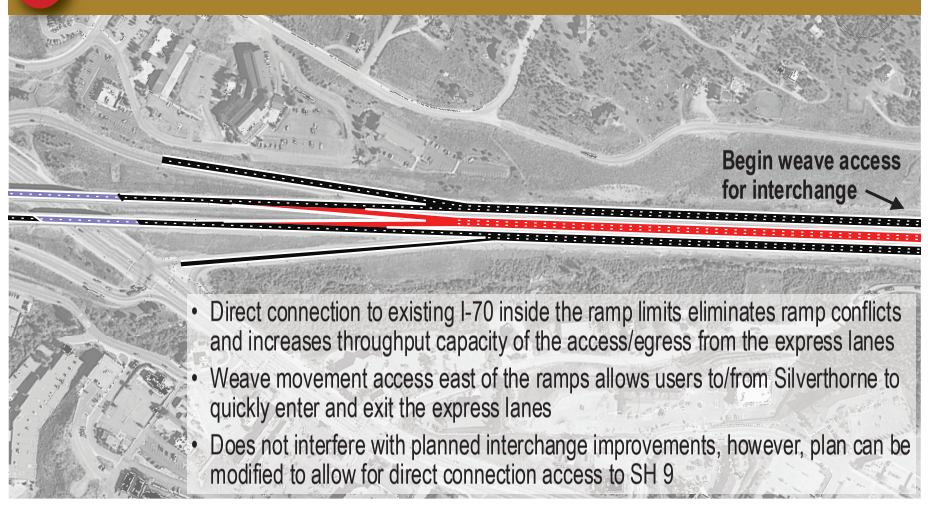
- Non-complex section requiring paving existing median with minor widening to outside.
- Short median walls may be used in segments to reduce cuts and fills.

**Legend**

- General Purpose Lanes
- Express Lanes

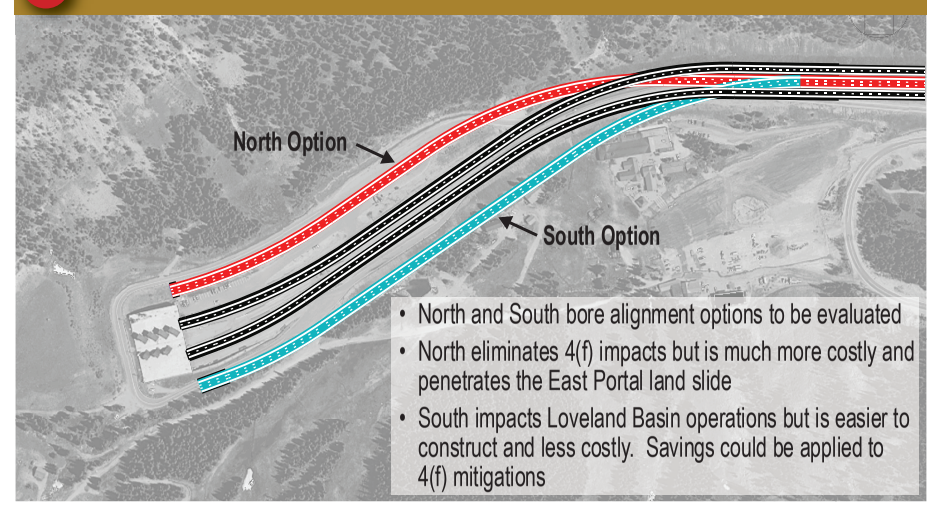
*Exhibit 2 – Concept Design at Critical Locations*

## 1 Silverthorne Terminus



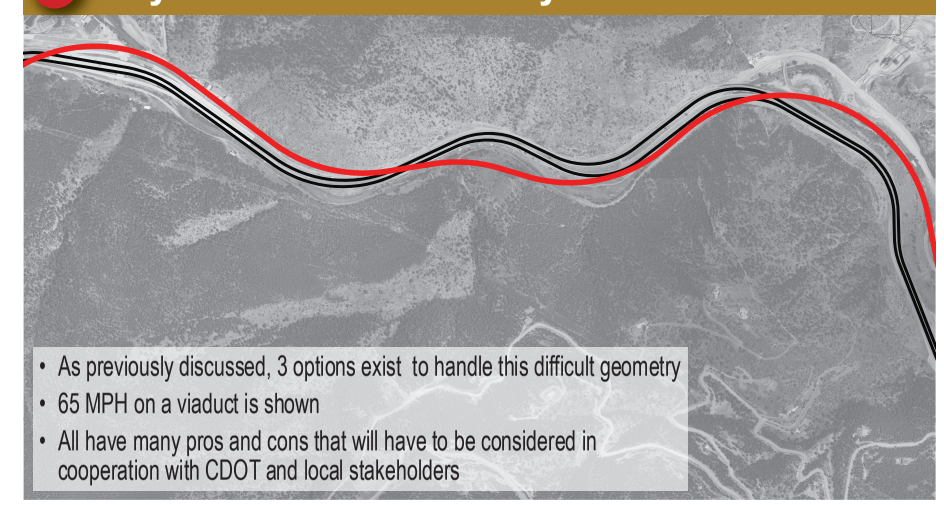

- Direct connection to existing I-70 inside the ramp limits eliminates ramp conflicts and increases throughput capacity of the access/egress from the express lanes
- Weave movement access east of the ramps allows users to/from Silverthorne to quickly enter and exit the express lanes
- Does not interfere with planned interchange improvements, however, plan can be modified to allow for direct connection access to SH 9

## 3 Eisenhower-Johnson Memorial Tunnel



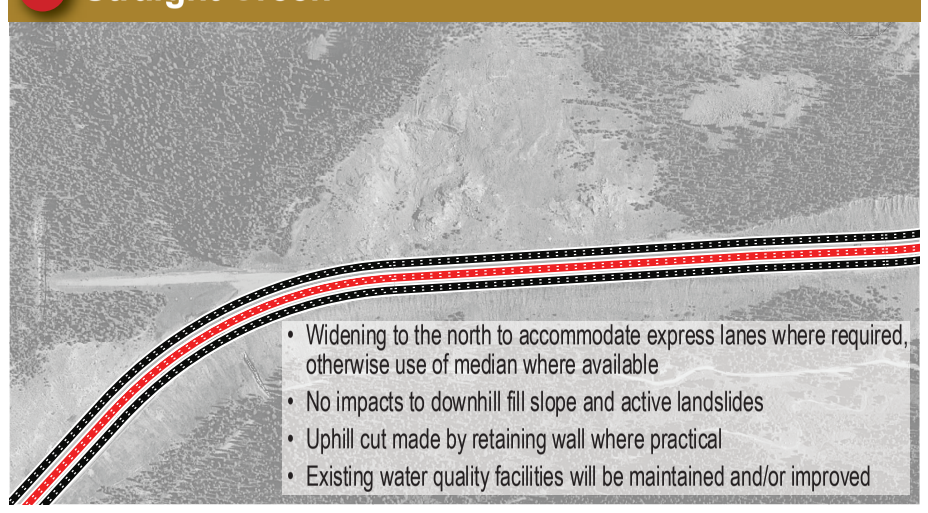

- North and South bore alignment options to be evaluated
- North eliminates 4(f) impacts but is much more costly and penetrates the East Portal land slide
- South impacts Loveland Basin operations but is easier to construct and less costly. Savings could be applied to 4(f) mitigations

## 5 Floyd Hill to Hidden Valley



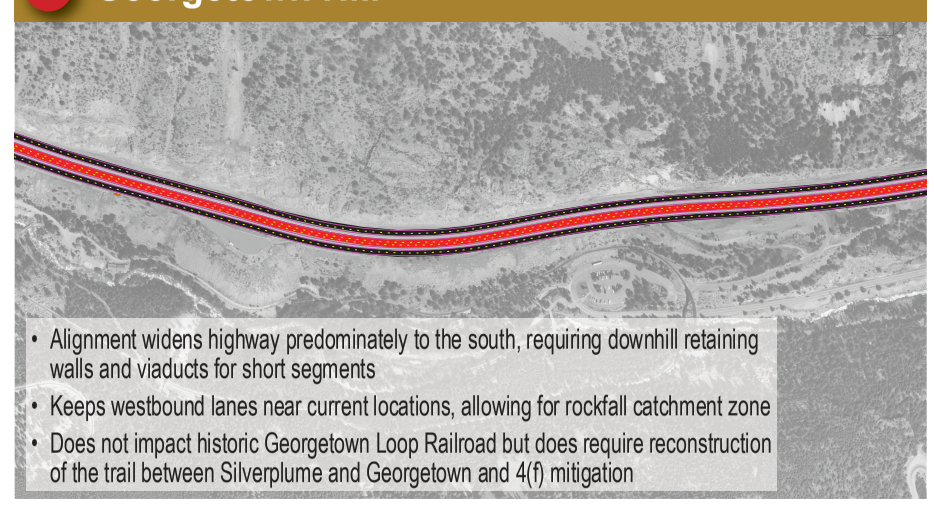
- As previously discussed, 3 options exist to handle this difficult geometry
- 65 MPH on a viaduct is shown
- All have many pros and cons that will have to be considered in cooperation with CDOT and local stakeholders

## 2 Straight Creek



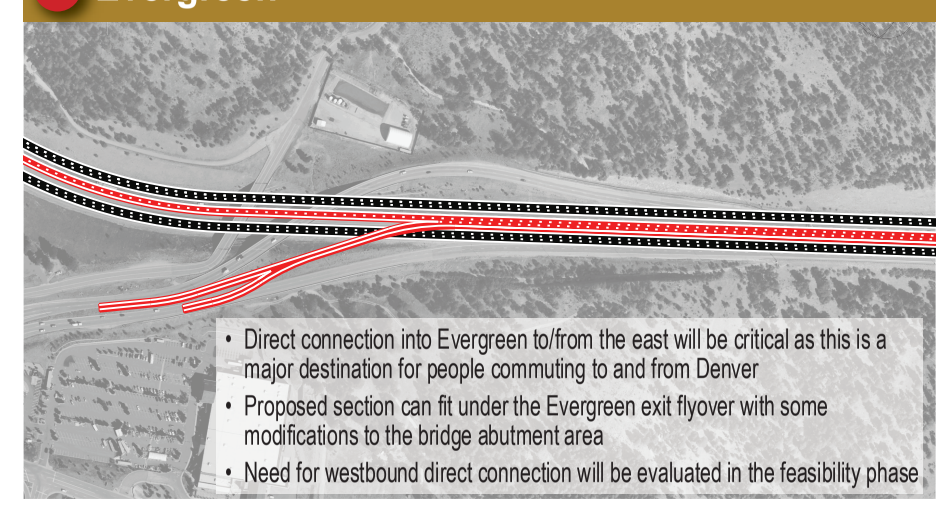
- Widening to the north to accommodate express lanes where required, otherwise use of median where available
- No impacts to downhill fill slope and active landslides
- Uphill cut made by retaining wall where practical
- Existing water quality facilities will be maintained and/or improved

## 4 Georgetown Hill



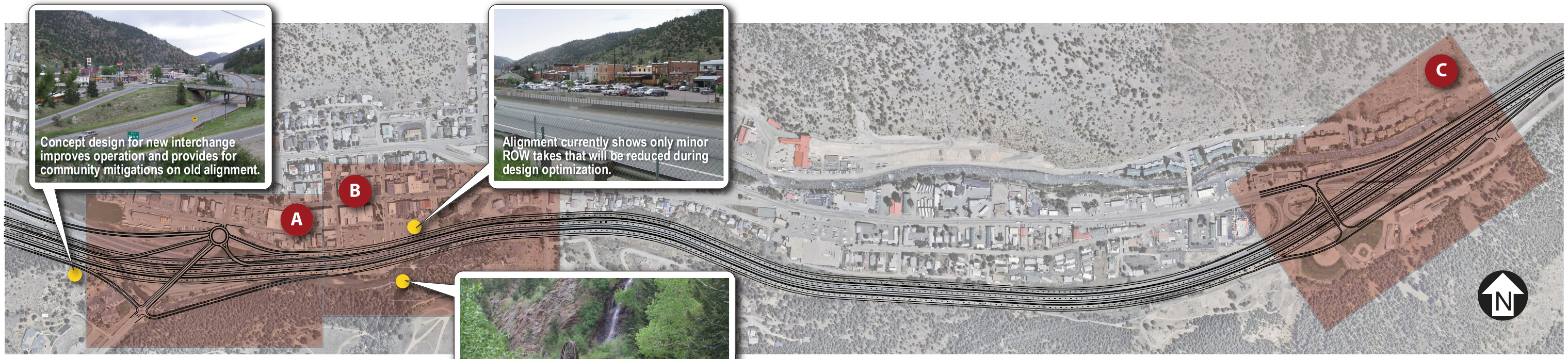
- Alignment widens highway predominately to the south, requiring downhill retaining walls and viaducts for short segments
- Keeps westbound lanes near current locations, allowing for rockfall catchment zone
- Does not impact historic Georgetown Loop Railroad but does require reconstruction of the trail between Silverplume and Georgetown and 4(f) mitigation

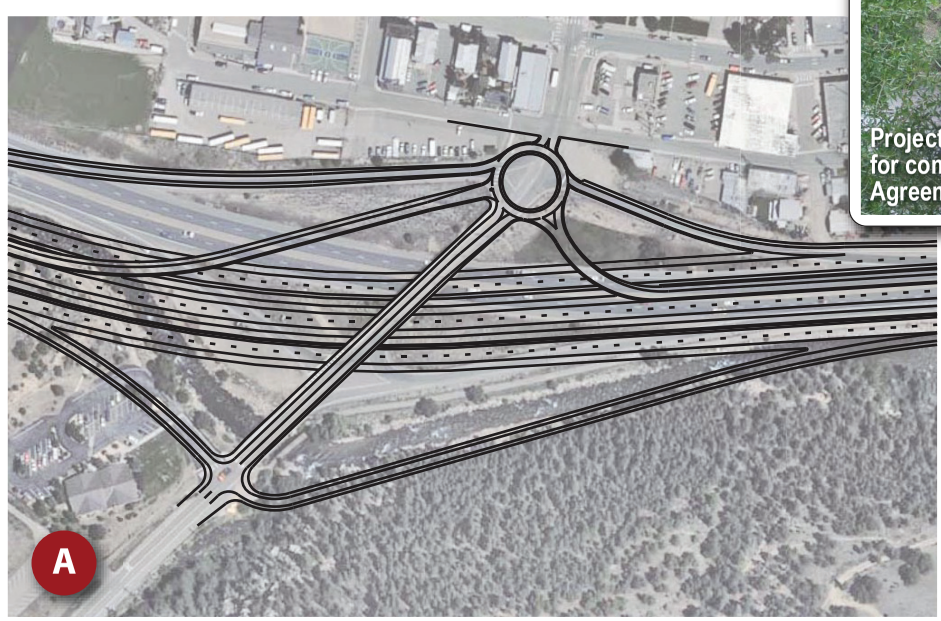
## 6 Evergreen

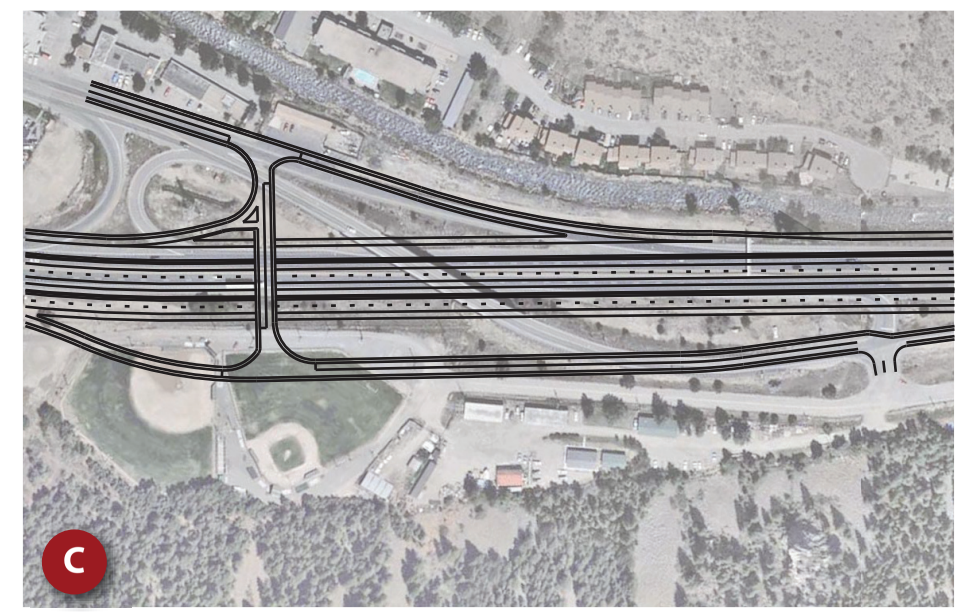


- Direct connection into Evergreen to/from the east will be critical as this is a major destination for people commuting to and from Denver
- Proposed section can fit under the Evergreen exit flyover with some modifications to the bridge abutment area
- Need for westbound direct connection will be evaluated in the feasibility phase

*Exhibit 3 – Concept Design at Idaho Springs*






**Reconfigure the Highway 103 Interchange**

- Upgrades interchange to modern design standards
- Roundabout improves traffic flow and safety
- Provides direct access from the managed lanes to Idaho Springs
- Realignment of I-70 can allow reclaiming the exiting right of way for other uses

**Minimize Right-of-Way impacts to local community**

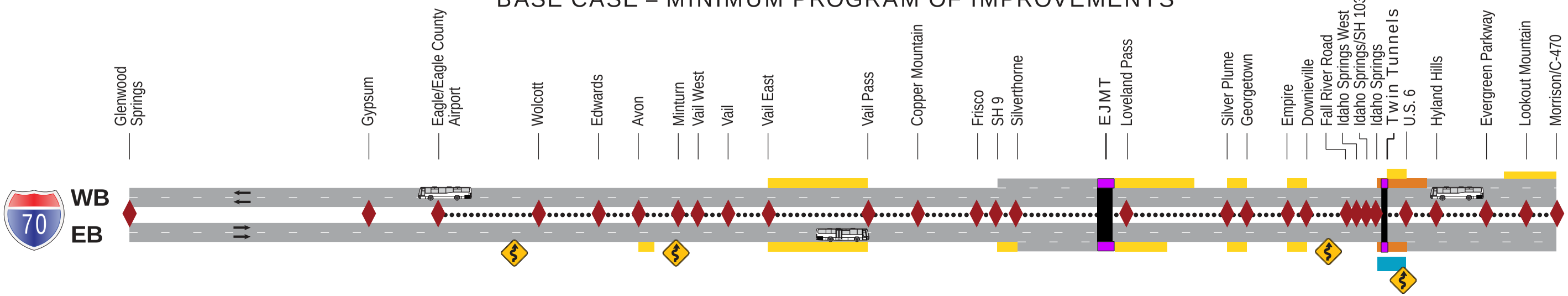
- Use of retaining walls and tight typical section to minimize pavement expansion
- Innovative design to utilize existing right-of-way
- Protects water wheel viewing area
- Select off highway improvements to mitigate impacted properties, local streets, and parking
- Linear drainage systems to collect highway stormwater discharge and convey to water quality basin

**Upgrade the Idaho Springs East Interchange**

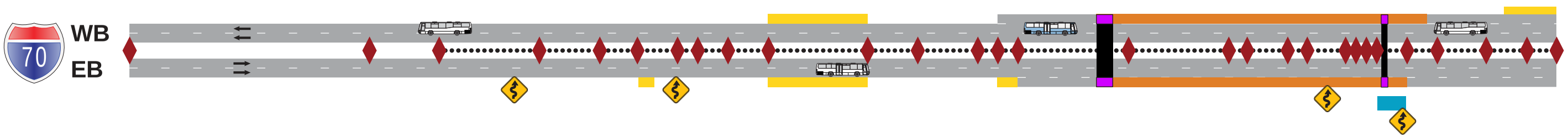
- Utilize a tight diamond as shown to improve safety and meet current standards
- Consider a single point urban interchange (SPUI) to minimize impacts
- Mitigate impacts to ball fields by reconfiguring and upgrading facilities or possibly relocate to west end of town on old I-70 alignment
- Improves operating speed of I-70 by improved merge speeds at ramps

*Exhibit 4 – Base Case Compatibility*

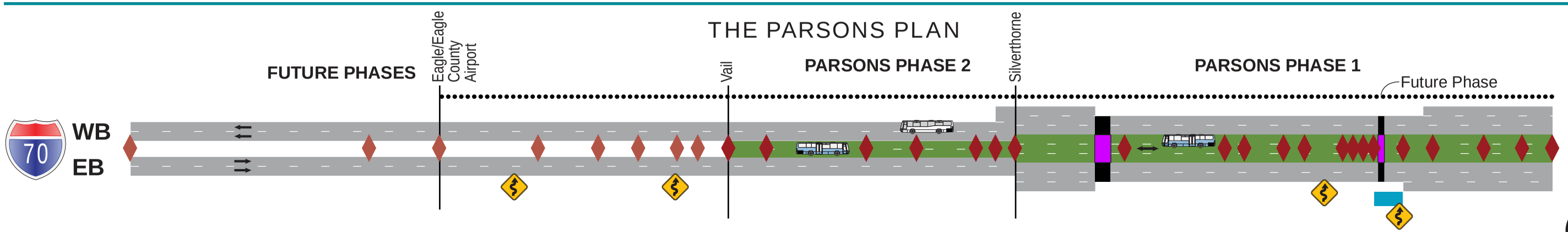
## BASE CASE – MINIMUM PROGRAM OF IMPROVEMENTS




## BASE CASE - MAXIMUM PROGRAM OF IMPROVEMENTS




## THE PARSONS PLAN




| | *Minimum Program of Improvements* | *Maximum Program of Improvements* | *Parsons Plan* |
|---|---|---|---|
| Highway Capacity Limits | Floyd Hill through the Twin Tunnels | Floyd Hill through the EJMT to Silverthorne | C-470 to Silverthorne in Phase 1 and continuing to Vail in Phase 2 |
| Lane Configuration | One additional general purpose lane both eastbound and westbound (two total) near Twin Tunnels only | One additional general purpose lane both eastbound and westbound (two total) | Two or three express lanes from C-470 to Silverthorne in Phase 1 and continuing to Vail in Phase 2 |
| Tunnel – EJMT | New third bore at $1 billion | New third bore at $1 billion | New third bore at $1 billion for express lanes |
| Tunnel – Twin | New third bore or widen existing | New third bore or widen existing | Third bore or express lanes |
| Tunnel – Floyd Hill | Included for 65 mph option only | Included for 65 mph option only | Viaduct option allows for 65 mph express lanes independent of I-70 |
| Transit | AGS from C-470 to Eagle with bus transit as a interim solution | AGS from C-470 to Eagle County Airport | BRT system from C-470 to Vail with future phase AGS implementation |
| Auxiliary Lanes | Only in critical locations | Auxiliary lanes are replaced by the general purpose lanes | Not needed, given the added capacity provided |
| Other Improvements | Interchange, curve radius, and frontage road improvements | Interchange, curve radius, and frontage road improvements | Interchange, curve radius, and frontage road improvements |
| Funding | $1.2 billion available in STP 2018-2035 is insufficient to construct minimum program | Unfunded | Mileage-based user fees (tolls) will produce sufficient revenues to construct and operate |

N

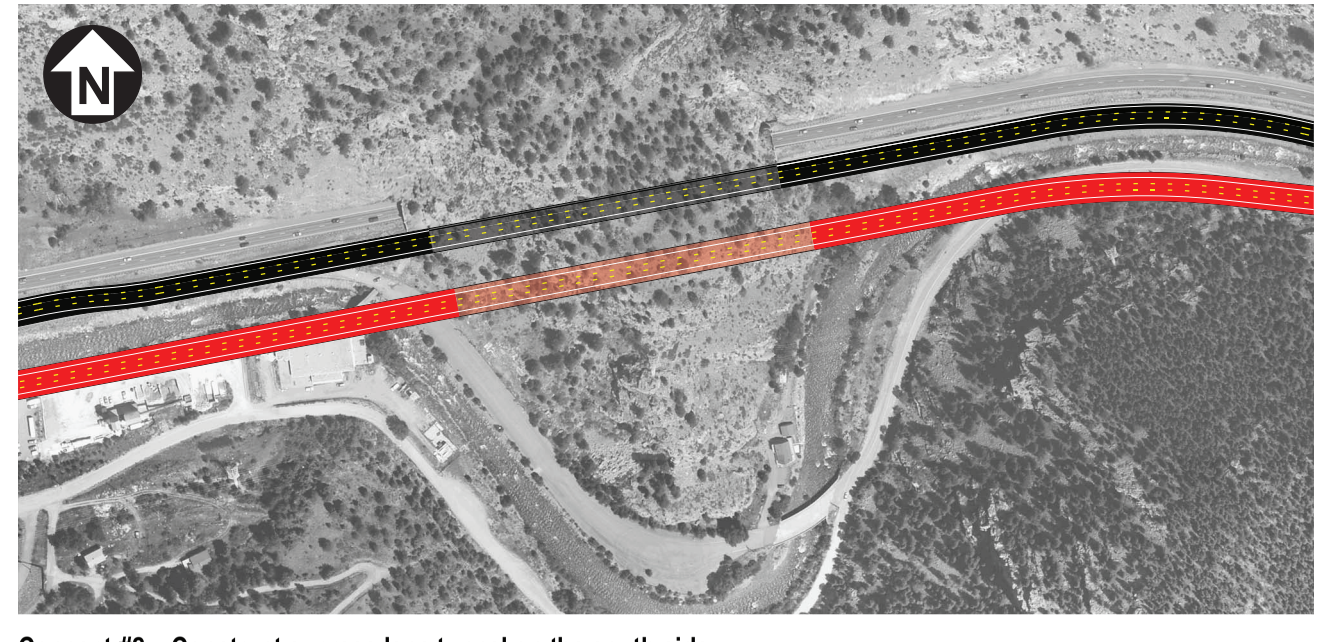
LEGEND

- Frontage Road Improvements
- Curve Improvements
- Advanced Guideway System
- Auxiliary Lanes
- Widening To Six Lanes
- New Tunnel – Location and Size TBD
- Interchange Improvements
- Managed Reversible Lanes
- Bus Service In Mixed Traffic
- BRT in Dedicated Lane

## *Exhibit 5 – Twin Tunnel Options*

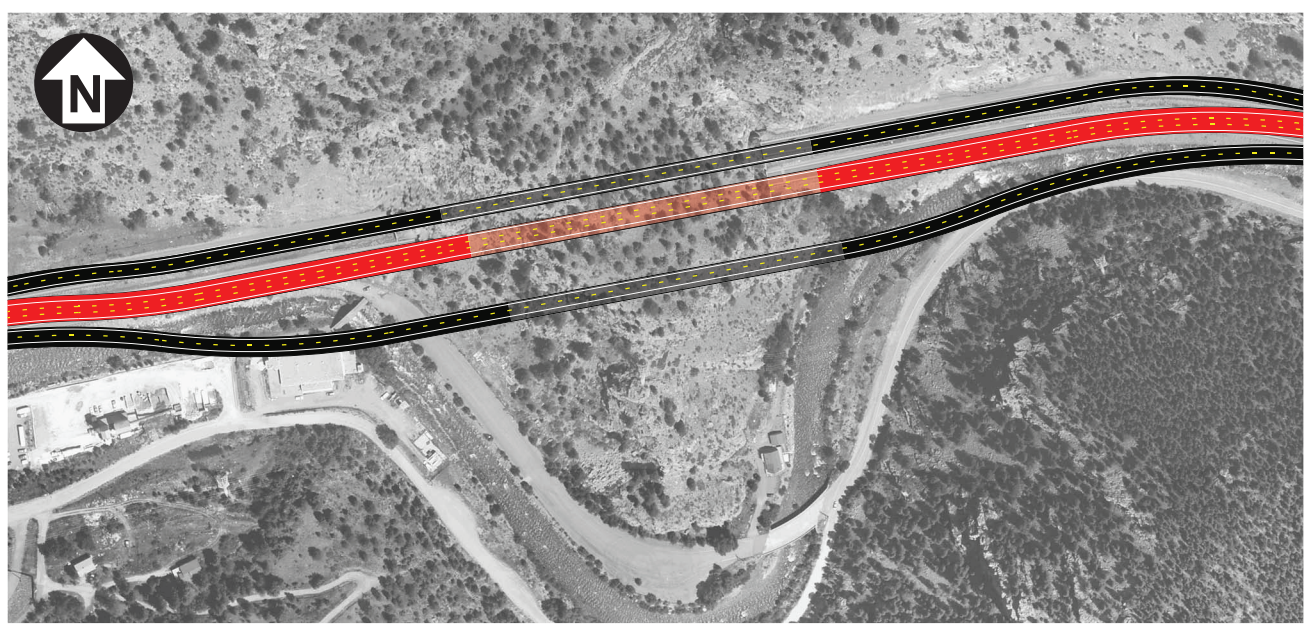
**CDOT Planned Improvements**

- CDOT has completed an Environmental Assessment and has executed a CM/GC contract to widen the eastbound bore of the Twin Tunnels to 3 lanes and extend a 3 lane configuration to the bottom of Floyd Hill, which is scheduled for completed by October of 2013.
- These improvements will improve traffic flow through this stretch in the near term.
- The project has undergone an intensive environmental process including stakeholder coordination through the CSS process.
- Parsons has developed 3 conceptual options of how our proposed plan can interact with these programmed improvements.



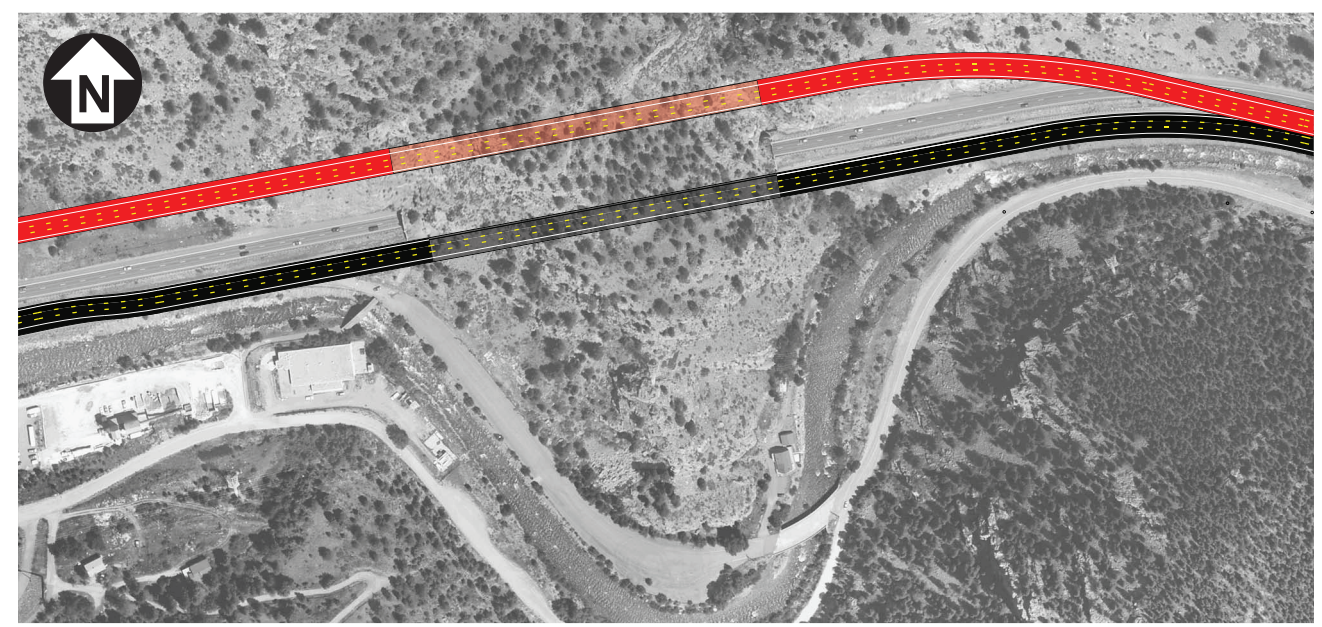

**Concept #2 – Construct express lane tunnel on the south side**

- Shortest of the tunnel options but engineering would require careful consideration of the existing geologic structure.
- Approach structures would have to carry express lanes over Clear Creek and would require relocation of impacted businesses on the west and possible re-alignment of the county road on the east.
- Viaduct option would work well with this option as would widening to the median, only requiring a flyover to the east and west.




**Concept #1 – Convert widened eastbound tunnel to express lanes and construct a new eastbound bore**

- The least expensive of the options would involve the Concessionaire constructing a 2 lane east bound bore and approach structures and realigning eastbound into this new tunnel.
- Concessionaire would utilize the widened bore for the new 3 lane express lane facility, keeping the express lanes in the median of I-70.
- Reconstruction of I-70 to a 55 mph or 65 mph would require rework of much of the stretch between the Twin Tunnels and Floyd Hill and existing widened pavement could be utilized for necessary traffic shifts or detours.
- East bound capacity of the general purpose lanes would be reduced when the express lanes were complete.




**Concept #3 – Construct express lane tunnel on the north side**

- Longest of the tunnel options, requiring a long sidewall cuts at the portals.
- Curvature to the east works well with a flyover structure from the median express lanes.
- Least impacts to Clear Creek and other properties on the south side of I-70.

**Legend**

General Purpose Lanes

Express Lanes

*Exhibit 6 – Cost Estimate Build-Up - Capital and O&M*

To establish the capital costs, Parsons drew upon our previous knowledge from the I-70 Cost Validation Study, which Parsons conducted for CDOT in 2006. Parsons used the base cost estimate methodology we developed with CDOT as a starting point for our managed-lane capital cost estimate. Using the conceptual design we developed for our scenario, we performed quantity takeoffs of key components and cost drivers. Costs were updated to 2012 amounts and contingency factors were adjusted where appropriate.

The capital costs shown include improvements to the existing free lanes for the I-70 Mountain Corridor. This is necessary because the new managed lanes, for the most part, will be located between the existing I-70 lanes; thus, the existing lanes must be realigned along with the new managed lanes. The conceptual design and quantity takeoffs include a final pavement overlay of the entire length of existing I-70 upon completion for the areas where the existing lanes do not require reconstruction. It is our expectation that the capital costs will be reduced by value engineering activities throughout the development stages of the project.

***Quantified Roadway Items*** *– Parsons completed conceptual design and a 3D model to determine order of magnitude quantities for major cost items associated with the planned program of improvements. This methodology follows CDOT standard practice when completing initial scoping efforts.*

| Bid Items | Cost Per Unit | Quantity | Cost |
|---|---|---|---|
| Structures (SF) - Basic | $ 150 | 602,273 | $ 90,340,909 |
| Special Structures (SF) - Complex | $ 225 | 636,000 | $ 143,100,000 |
| Special Structures (SF) - Fly-Over | $ 225 | 107,606 | $ 24,211,364 |
| Special Structures (SF) - Viaduct | $ 225 | 1,063,608 | $ 239,311,800 |
| Complex Interchange | $ 28,000,000 | 3 | $ 84,000,000 |
| Basic Interchange | $ 5,000,000 | 21 | $ 105,000,000 |
| Wildlife Crossings | $ 60,000,000 | 1 | $ 60,000,000 |
| Walls (SF) | $ 60 | 869,715 | $ 52,182,924 |
| Earthwork - Rock Cut (CY) | $ 30 | 3,912,315 | $ 117,369,458 |
| Resurfacing Pavement (TON) | $ 60 | 229,474 | $ 13,768,418 |
| Full Depth Pavement (TON) | $ 60 | 1,318,052 | $ 79,083,132 |
| Base Course (CY) | $ 40 | 348,678 | $ 13,947,135 |
| Barrier (Type 7)(LF) | $ 55 | 497,032 | $ 27,336,782 |
| Retaining Barrier (LF) | $ 80 | 6,505 | $ 520,364 |
| Guardrail (Type 3) (LF) | $ 20 | 35,107 | $ 702,138 |
| ITS (LF) | $ 48,000,000 | 1 | $ 48,000,000 |
| Transportation and Operation Center | $ 80,000,000 | 1 | $ 80,000,000 |
| Tolling, Gates, and Controls | $ 1,000,000 | 16 | $ 16,000,000 |
| Maintenance Resources | $ 48,000,000 | 1 | $ 48,000,000 |
| *ROADWAY SUBTOTAL* | | | *$1,242,874,423* |

***Roadway Allowances*** *– Appropriate allowances were added to the roadway items using standard CDOT factors for unquantifiable items at this stage of development.*

| Allowances | % Range | % Cost | Cost |
|---|---|---|---|
| Roadway Subtotal | | | $ 1 ,242,874,430 |
| Contingency | (15% - 30%) | 15.00% | $ 186,431,165 |
| Environmental Mitigation and NEPA | (1.5% - 3.0%) | 3.00% | $ 7,286,233 |
| Utilities | | 1.50% | $ 18,643,116 |
| Drainage | (3-10% ) | 4.50% | $ 55,929,349 |
| Water Quality | (1-3%) | 5.00% | $ 62,143,722 |
| Signing and Striping | (1-5%) | 3.00% | $ 37,286,233 |
| Construction Signing & Traffic Control | 5 to 25% | 7.00% | $ 87,001,210 |
| Mobilization | (4 to 10%) | 12.00% | $ 149,144,932 |
| *TOTAL OF ALLOWANCES* | | | *$633,865,959* |

***Major Tunnel Components*** *– Expected tunnel geometries were measured and unit cost applied. Unit costs were determined by the cost validation study previously completed and are comparable to unit cost of tunnels recently completed in the United States.*

| Bid Items | Cost Per Unit | Quantity | Cost |
|---|---|---|---|
| Twin Tunnels - New Bore (LF) | $40,000 | 662.00 | $ 26,480,000 |
| EJMT North Bore (LF) | $50,000 | 9,200.00 | $ 460,000,000 |
| EJMT North Bore Extension (LF) | $40,000 | 1,000.00 | $ 40,000,000 |
| EJMT Cross Passages | $40,000,000 | 1.00 | $ 40,000,000 |
| EJMT Misc | $243,500,000 | 1.00 | $ 243,500,000 |
| *TUNNEL SUBTOTAL* | | | *$809,980,000* |

***Roadway and Tunnel O&M Costs*** *– O&M estimation is based on published and known CDOT data and experience from working with CDOT on projects.*

| Item | Unit | Unit Cost | Total | Comments |
|---|---|---|---|---|
| Snow Removal | Per Plow Mile | $13 | $4,960,800 | 50 snow days average, 48 passes per day per lane |
| Routine Maintenance | Per Lane Mile | $43,500 | $6,916,500 | |
| Pavement Rehabilitation | Per Lane Mile | $135,000 | $3,066,429 | Assumes 7 year life |
| Long Term Capital Replacement | Per Centerline Mile | $100,000 | $5,300,000 | |
| *Subtotal* | | | *$20,243,729* | |
| Contingency | | 4.5% | $910,968 | |
| *Total Roadway Maintenance* | | | *$21,154,696* | *$400,000 per centerline mile* |
| *Tunnel O&M* | | | *$7,000,000* | *Combined EJMT and Twin Tunnels* |

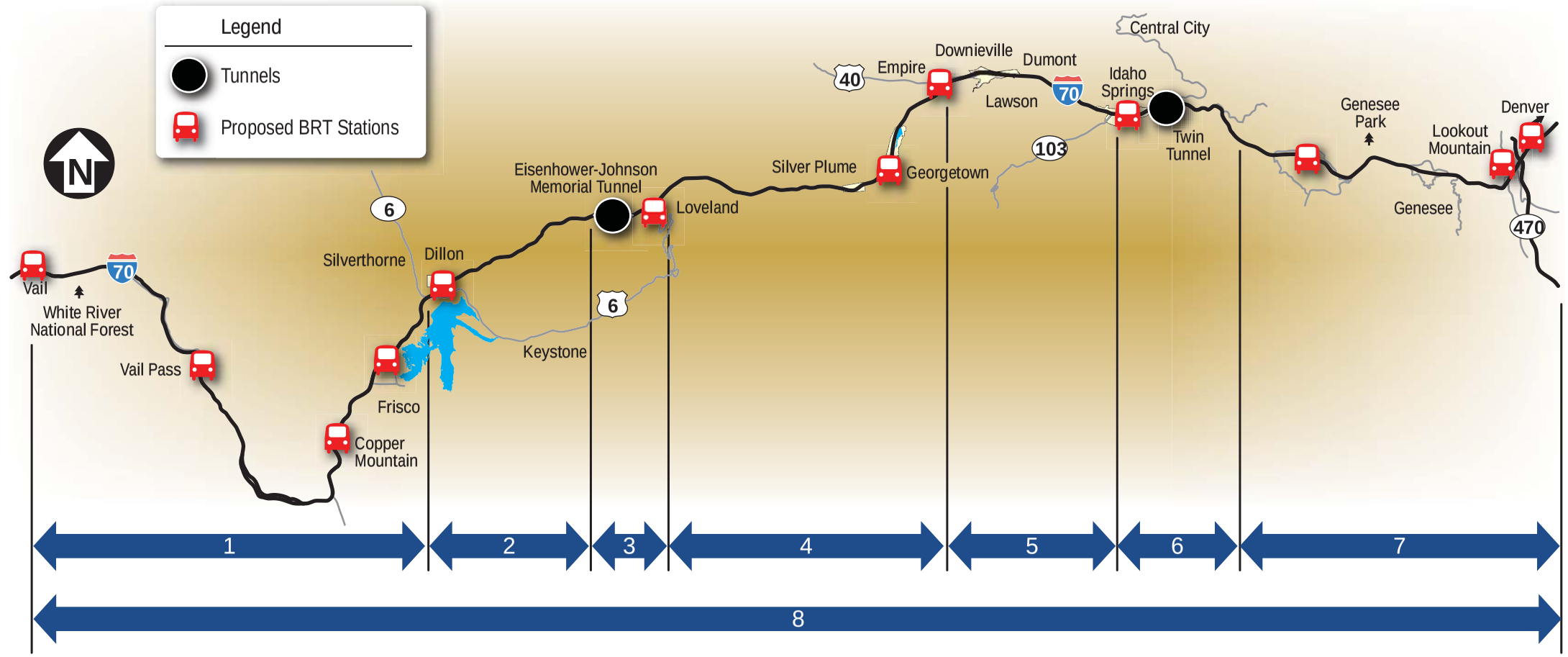
***BRT O&M Costs*** *– BRT O&M costs are estimated with other operating systems around the country and represent actual cost for those systems.*

| Item | Unit | Unit Cost | Quantity | Extended Amount |
|---|---|---|---|---|
| Vehicle Operations | Vehicle-hour | $65 | 47,500 | $3,087,500 |
| | Vehicle-mile | $6 | 1,415,000 | $8,490,000 |
| Vehicle Maintenance | Vehicle-mile | $1 | 1,415,000 | $1,415,000 |
| | Fleet vehicle | $70,000 | 20 | $1,400,000 |
| *Non-Vehicle Maintenance* | Station | $75,000 | 9 | $675,000 |
| | Intermodal Facility | $750,000 | 3 | $2,250,000 |
| General and Administrative | Percent of other O&M Costs | 5% | $17,317,500 | $865,875 |
| *TOTAL* | | | | *$18,183,375* |

***Summary of Capital Cost Estimate*** *– Roadway, roadway allowances, and tunnel costs were combined. Preliminary and final design, ROW, and construction engineering, estimated at 25 percent of the bid items, was added to the subtotal. Finally, the estimate for the BRT was added in to determine our bottom line estimate of capital costs.*

| Bid Items | Cost |
|---|---|
| Roadway Subtotal | $ 1,242,000,000 |
| Allowances Subtotal | $ 634,000,000 |
| Tunnel Subtotal | $ 810,000,000 |
| *Construction Bid Item Total* | *$ 2,687,000,000* |
| Preliminary and Final Design, ROW, and Construction Engineering | $ 671,000,000 |
| Bus Rapid Transit | $ 135,000,000 |
| *TOTAL PROJECT COST* | *$3,493,000,000* |

*Exhibit 7 – Critical Challenges*




## 1 Silverthorne to Vail

- BRT service extended to Vail allows regional connectivity to Eagle County Airport.
- Intermodal centers at Silverthorne and Vail will connect with local transit.
- Stations planned for major destination locations.

## 2 EJMT to Silverthorne

- Additional capacity improvements beyond those proposed in PEIS will be resolved in PDP Stage 1 studies.
- Minimum speed control in the express lanes will reduce the speed differential and allow for a higher posted speed limit, improving safety, travel time, and traffic flow
- Design of downhill runaway vehicle ramps adjacent to express lanes will be incorporated.

## 3 Third Bore at EJMT

- New bore will allow most hazardous loads to move through in mixed traffic.
- Managed lanes will transition from median to outside by dropping below I-70 grade and transitioning under the general purpose lanes to the north or south.
- Northern alignment is assumed to avoid section 4(f) impacts associated with the Loveland Ski Area. Additional engineering research will be completed on the East Portal landslide to determine best mitigation methods. Added cost of mitigation and added tunnel length will be considered against the 4(f) impact to determine optimum alignment.
- Lessons learned and extensive understanding of geologic conditions combined with modern tunnel evacuation techniques will reduce construction risks and costs that were experienced with the original bores.

## 4 Georgetown to Loveland Pass

- Georgetown Hill cross section and grade is one of the most challenging on the corridor. Express lanes will improve safety and traffic flow. Added width will be added by downhill retaining walls or viaduct as the steep embankment cannot be modified. Uphill cuts will be minimized.
- CDOT has an extensive plan for mitigation of rockfall hazards on Georgetown Hill. For safety of all users, the concessionaire will complete the programmed improvements.
- Snow removal from the barrier separated managed lanes and storage is a major concern in this area. During a snow event, snow will be plowed to the managed lane shoulder. Once storm is over, the adjacent general purpose lane can be closed, detouring traffic, into the managed lanes. Snow will be blown to outside edges where it can accumulate. Snow could also be loaded and hauled away, as determined by most efficient operation.

## 5 Idaho Springs to Empire Junction

- Added capacity will be studied in PDP Stage 1.
- Critical section as shown by volume/capacity ratios. U.S. 40 traffic contributes additional volume.
- Improvements to I-70 will greatly decrease traffic congestion and surface road impacts on adjacent county roads as I-70 traffic now attempts to avoid congestion on the highway by using county road.

## 6 Floyd Hill through Idaho Springs

- Added capacity on Floyd Hill greatly improves traffic flow on this steep grade.
- Current curvature of I-70 at the bottom of Floyd Hill is substandard. 65 mph alignment can be obtained for managed lane by itself on independent viaduct structure or coupled with I-70 with large viaduct structure, walls, and extensive rock cuts. 55 mph is less difficult and less expensive to obtain
- Several options exist at the Twin Tunnels that accommodate CDOT's planned improvements. Details of these options are presented in Technical Appendix, Exhibit 5, Twin Tunnel Options.
- Segment through Idaho Springs is constrained. Mainline will fit within existing ROW but interchanges will require additional ROW. Interchange concepts will be developed with CDOT and community stakeholders to improve functionally obsolete geometry while minimizing community impacts.

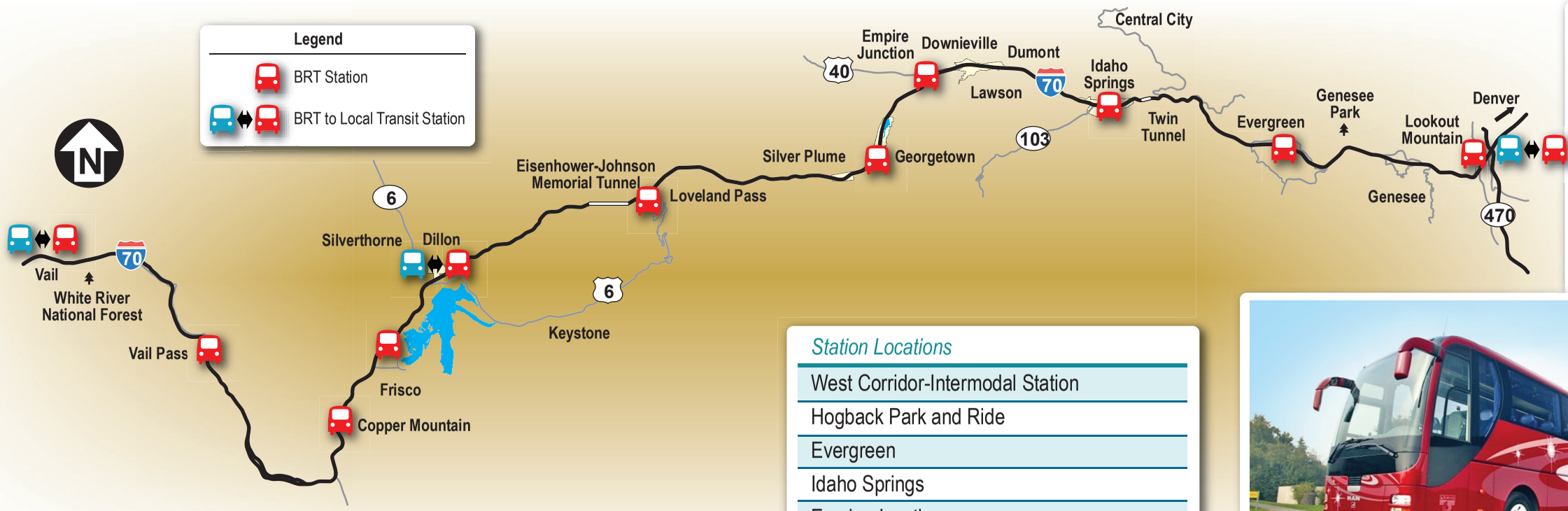
## 7 C-470 to top of Floyd Hill

- Additional capacity improvements beyond those proposed in PEIS will be resolved in Tier 1 Re-evaluation.
- Steep terrain in both profile and cross section. Grades will require emergency run-away truck ramps similar to ramp already in place in Mount Vernon Canyon.
- Speed differential on downhill grade through Mount Vernon Canyon has increased accident rate. Express lanes with minimum speed limits will reduce traffic accidents caused high-speed differential. Express lane speed limits can be set at 65 mph similar to current westbound direction.
- Split vertical eastbound and westbound alignments will require median retaining walls, and modifications to uphill rock cuts and U.S. 40 alignments in tight locations.
- West Corridor Intermodal Station will allow connectivity to RTD systems.

## 8 Corridorwide Environmental Challenges

- The Parsons team has reviewed and incorporated both the A Landscape Level Inventory of Valued Ecosystem Components (ALIVE) and the Stream and Wetland Ecological Enhancement Program (SWEEP) MOU's in the I-70 Project Proposal. Phase I of the proposal will address the area in the agreements between I-70 Mile Posts 205 to 260.
- Currently a minimum of $60 million has been proposed in the project preliminary budget for wildlife crossings, wildlife fencing, and related work. These funds will be used in several ways. New structures will be constructed as under/over passes with the intent to address large mammals crossing I-70 through the six identified linkage interference zones (LIZs) identified in the ALIVE MOU. In addition to the under- and overpasses, minor drainage structures throughout I-70 will be modified, where warranted, to allow safe passage of small mammals, rodents, and reptiles. Modifications and additions to the existing drainage systems are also planned to help with sediment control and water quality.
- The Parsons team realizes that the entire Clear Creek Drainage is an active Superfund Site for the U.S. Environmental Protection Agency (EPA) and the Colorado Department of Public Health and Environment (CDPHE) due to the pollution coming from the historical mining activities in the area. The project team will work with the EPA, CDPHE, and others to identify and mitigate all pollution sources within the I-70 ROW. Mitigation will include containment, treatment, or avoidance as actual circumstances require.
- Additional efforts will be made to identify partnerships that will provide additional funding, contributions of labor, and/or equipment and technical expertise to resolve environmental challenges. These partnerships will allow us to increase the project improvements by combining our efforts with others to maximize the project benefits.

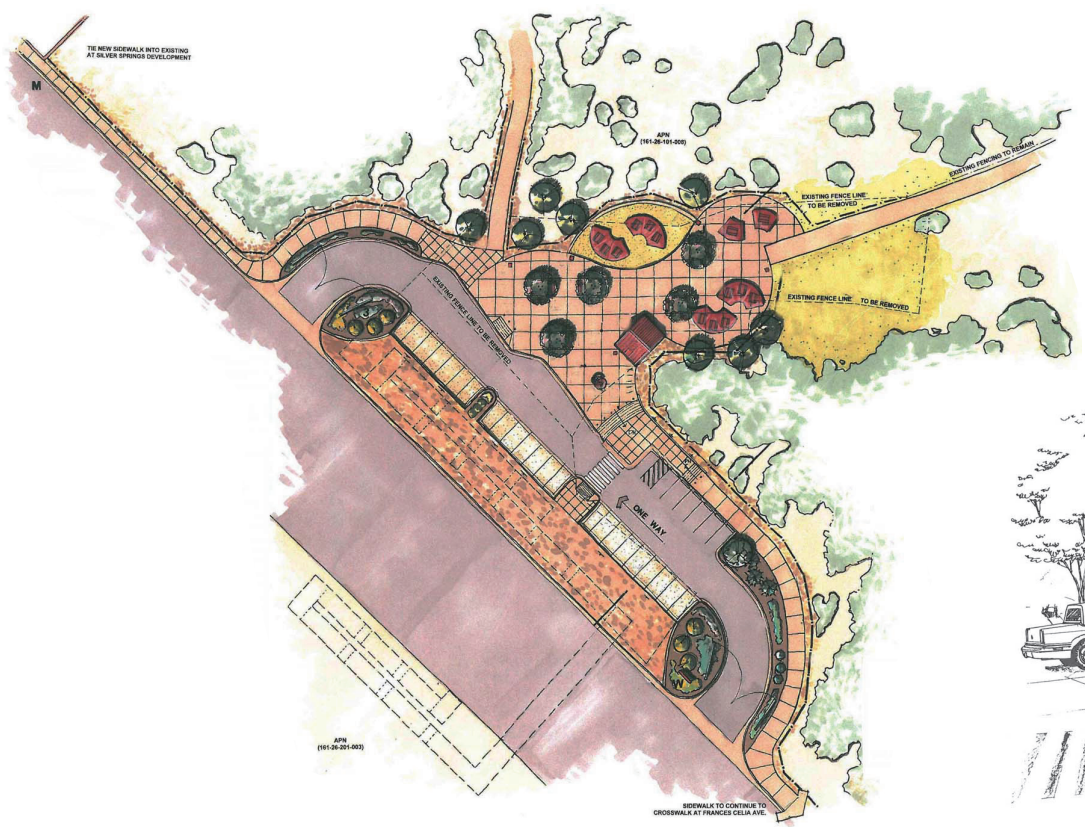
## Exhibit 8 – BRT Concepts



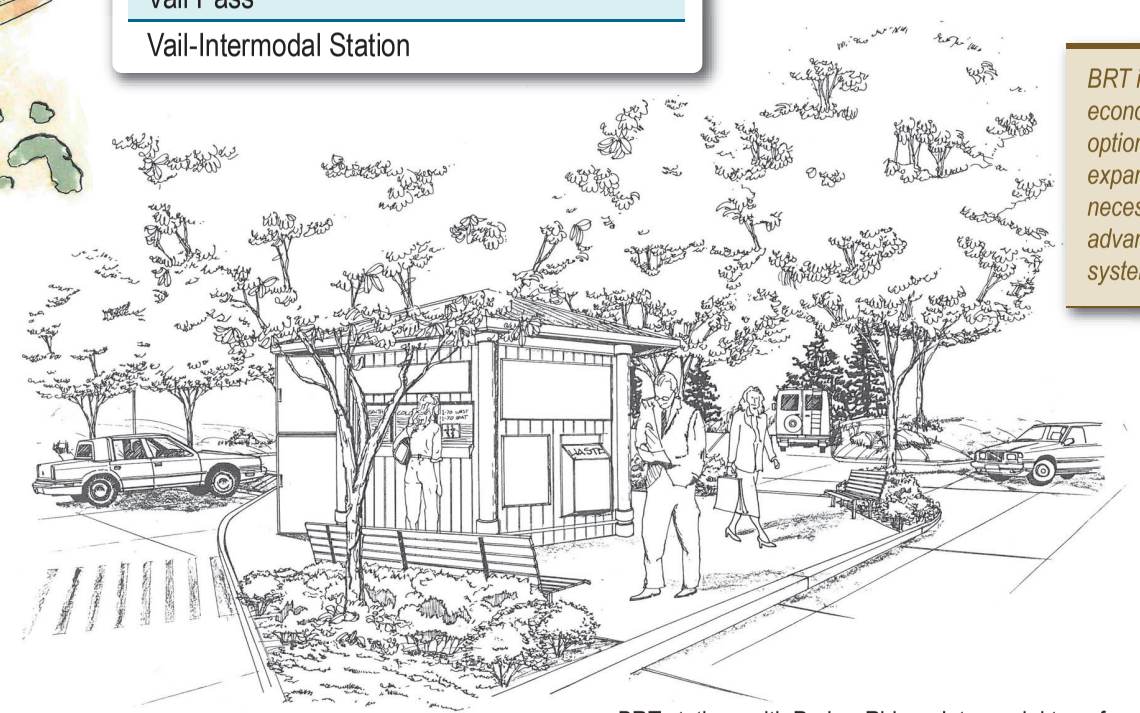

| Station Locations |
|---|
| West Corridor-Intermodal Station |
| Hogback Park and Ride |
| Evergreen |
| Idaho Springs |
| Empire Junction |
| Georgetown |
| Loveland Pass |
| Silverthorne-Intermodal Station |
| Frisco |
| Copper Mountain |
| Vail Pass |
| Vail-Intermodal Station |

Modern station facilities will include aesthetic treatments that fit with the character of the local communities but remain easily identifiable as a component of the corridor wide BRT system. Shelters will provide an area of refuge for waiting passengers and contain real-time "Next Bus" information.

Plan is to have a fleet of high performance alpine coaches with a modern interior design, Wi-Fi capabilities, and interior storage for skis and other luggage.



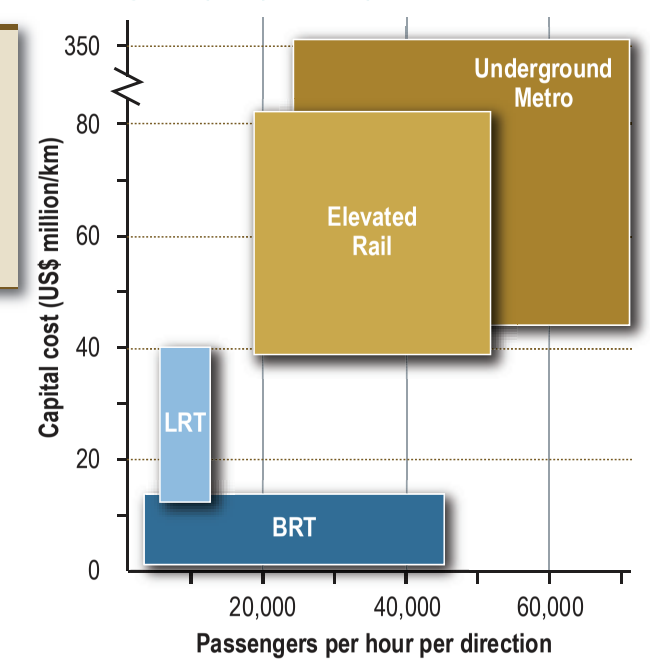
Small BRT stations will be easily integrated into communities desiring only walk-up or drop off access.



BRT stations with Park-n-Ride or Intermodal transfer stations will be established at select locations in cooperation with local communities plans.

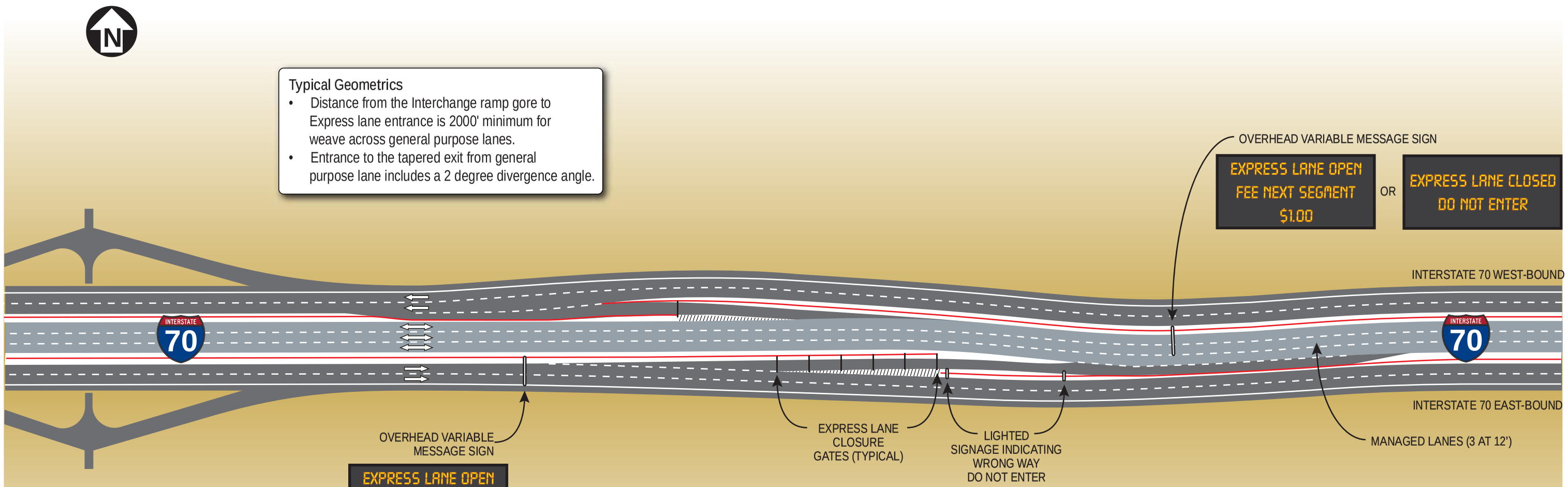
*BRT is a proven and economical transit option with ability to expand to ridership levels necessary to implement advanced rail or guideway systems.*

*Passenger Capacity and Capital Costs*




*Copied from Bus Rapid Transit Planning Guide, June 2007*
*By: Institute for Transportation and Development Policy.*

*Exhibit 9 – Express Lane Access/Egress Weave Movement*




Typical Geometrics

- Distance from the Interchange ramp gore to Express lane entrance is 2000' minimum for weave across general purpose lanes.
- Entrance to the tapered exit from general purpose lane includes a 2 degree divergence angle.

Typical Geometrics (continued)

- Parallel entrance for merge acceptance is 300'.
- Use a tapered exit from express lanes with parallel entrance back into general purpose lanes.
- Typical lane widths are 12' for all mainline lanes.
  - 4' Left shoulder
  - 10' Right shoulder
  - Design variance required for reversed direction.

*Note: For illustration purpose. Drawing is vertically exaggerated.*

*Exhibit 10 - I-70 Co-Development Schedule*

I-70 Co-Development Schedule



| Activity ID | Activity Name | RD (Working Days) | Start | Finish |
|---|---|---|---|---|
| **I-70 I-70 Co-Development Schedule** | | **1071** | **01-Oct-12** | **07-Nov-16** |
| **I-70.0 CDOT Oversight and Parsons Management** | | **1071** | **01-Oct-12** | **07-Nov-16** |
| **I-70.0.00 CDOT Oversight** | | **1071** | **01-Oct-12** | **07-Nov-16** |
| 00000-100 | CDOT Oversight | 1071 | 01-Oct-12 | 07-Nov-16 |
| 00001-100 | CDOT Design Oversight 30% | 143 | 02-Feb-15 | 19-Aug-15 |
| **I-70.0.01 Parsons Program Management** | | **1071** | **01-Oct-12** | **07-Nov-16** |
| 00101-100 | Management - Stage 1 & 2 | 599 | 01-Oct-12 | 15-Jan-15 |
| 00102-100 | Planning and Scheduling - Stage 1 & 2 | 599 | 01-Oct-12 | 15-Jan-15 |
| 00103-100 | Budgeting and Cost Control - Stage 1 & 2 | 599 | 01-Oct-12 | 15-Jan-15 |
| 00104-100 | Document Management and Control - Stage 1 & 2 | 599 | 01-Oct-12 | 15-Jan-15 |
| 00105-100 | PR / Outreach - Stage 1 & 2 | 599 | 01-Oct-12 | 15-Jan-15 |
| 00107-100 | Estimating - Stage 1 & 2 | 599 | 01-Oct-12 | 15-Jan-15 |
| 00106-100 | Project Website - Stage 1 & 2 | 599 | 01-Oct-12 | 15-Jan-15 |
| 00109-100 | On-Call Legal Advisor - Stage 1 & 2 | 599 | 01-Oct-12 | 15-Jan-15 |
| 00101-200 | Management - Stage 3 | 472 | 16-Jan-15 | 07-Nov-16 |
| 00102-200 | Planning and Scheduling - Stage 3 | 472 | 16-Jan-15 | 07-Nov-16 |
| 00103-200 | Budgeting and Cost Control - Stage 3 | 472 | 16-Jan-15 | 07-Nov-16 |
| 00104-200 | Document Management and Control - Stage 3 | 472 | 16-Jan-15 | 07-Nov-16 |
| 00105-200 | PR / Outreach - Stage 3 | 472 | 16-Jan-15 | 07-Nov-16 |
| 00107-200 | Estimating - Stage 3 | 472 | 16-Jan-15 | 07-Nov-16 |
| 00106-200 | Project Website - Stage 3 | 472 | 16-Jan-15 | 07-Nov-16 |
| **I-70.1 PDP Stage 1 - Feasibility and Validation** | | **196** | **01-Oct-12** | **01-Jul-13** |
| **I-70.1.03 Technical Master Plan (10% Design)** | | **196** | **01-Oct-12** | **01-Jul-13** |
| 10303-000 | Survey 1 (Aerial, Ground Control / Terrain Ext, DTM) | 65 | 01-Oct-12 | 28-Dec-12 |
| 10301-000 | Design Management | 196 | 01-Oct-12 | 01-Jul-13 |
| 10301-100 | Constructability & Value Engineering Manager | 196 | 01-Oct-12 | 01-Jul-13 |
| 10302-000 | Design Quality Assurance | 196 | 01-Oct-12 | 01-Jul-13 |
| 10304-000 | ROW and Ownership | 196 | 01-Oct-12 | 01-Jul-13 |
| 10305-000 | Utilities | 196 | 01-Oct-12 | 01-Jul-13 |
| 10306-000 | Roadway Design | 196 | 01-Oct-12 | 01-Jul-13 |
| 10307-000 | Retaining Wall Design | 196 | 01-Oct-12 | 01-Jul-13 |
| 10308-000 | Bridge Design | 196 | 01-Oct-12 | 01-Jul-13 |
| 10309-000 | Tunnel Design | 196 | 01-Oct-12 | 01-Jul-13 |
| 10310-000 | TMP and Traffic Control Provisions | 196 | 01-Oct-12 | 01-Jul-13 |
| 10311-000 | Drainage & Water Quality | 196 | 01-Oct-12 | 01-Jul-13 |
| 10322-000 | Geotechnical - Rock Slope Engineering | 196 | 01-Oct-12 | 01-Jul-13 |
| 10323-000 | Geotechnical - Retaining Walls | 196 | 01-Oct-12 | 01-Jul-13 |
| 10324-000 | Geotechnical - Bridge Foundations | 196 | 01-Oct-12 | 01-Jul-13 |
| 10325-000 | Geotechnical - Tunnels | 196 | 01-Oct-12 | 01-Jul-13 |
| 10312-000 | ITS | 196 | 01-Oct-12 | 01-Jul-13 |
| 10313-000 | Lighting | 196 | 01-Oct-12 | 01-Jul-13 |
| 10330-000 | BRT Vehicles | 196 | 01-Oct-12 | 01-Jul-13 |
| 10332-000 | BRT Stations | 196 | 01-Oct-12 | 01-Jul-13 |
| 10314-000 | Landscaping and Aesthetics | 196 | 01-Oct-12 | 01-Jul-13 |
| 10341-000 | Toll Management | 196 | 01-Oct-12 | 01-Jul-13 |
| 10342-000 | Toll Collection and Systems | 196 | 01-Oct-12 | 01-Jul-13 |
| 10320-000 | Geotechnical - Management | 196 | 01-Oct-12 | 01-Jul-13 |
| 10326-000 | Geotechnical - Pavement Design | 196 | 01-Oct-12 | 01-Jul-13 |
| 10321-000 | Geotechnical - Surface & Subsurface Data Compilation | 196 | 01-Oct-12 | 01-Jul-13 |
| 10327-000 | Geotechnical - Risk Matrix | 196 | 01-Oct-12 | 01-Jul-13 |
| 10331-000 | Radio CAD AVL | 196 | 01-Oct-12 | 01-Jul-13 |

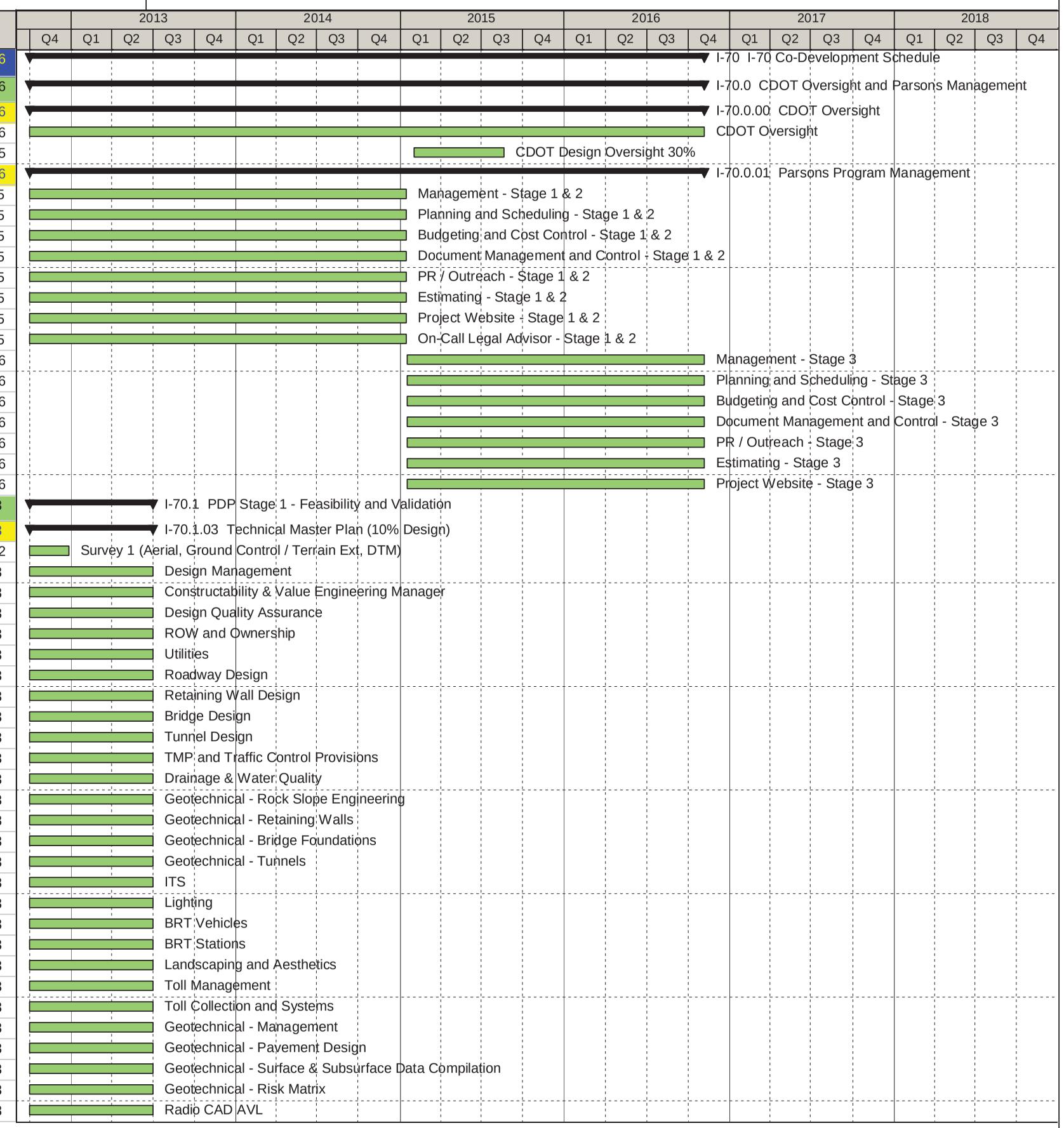
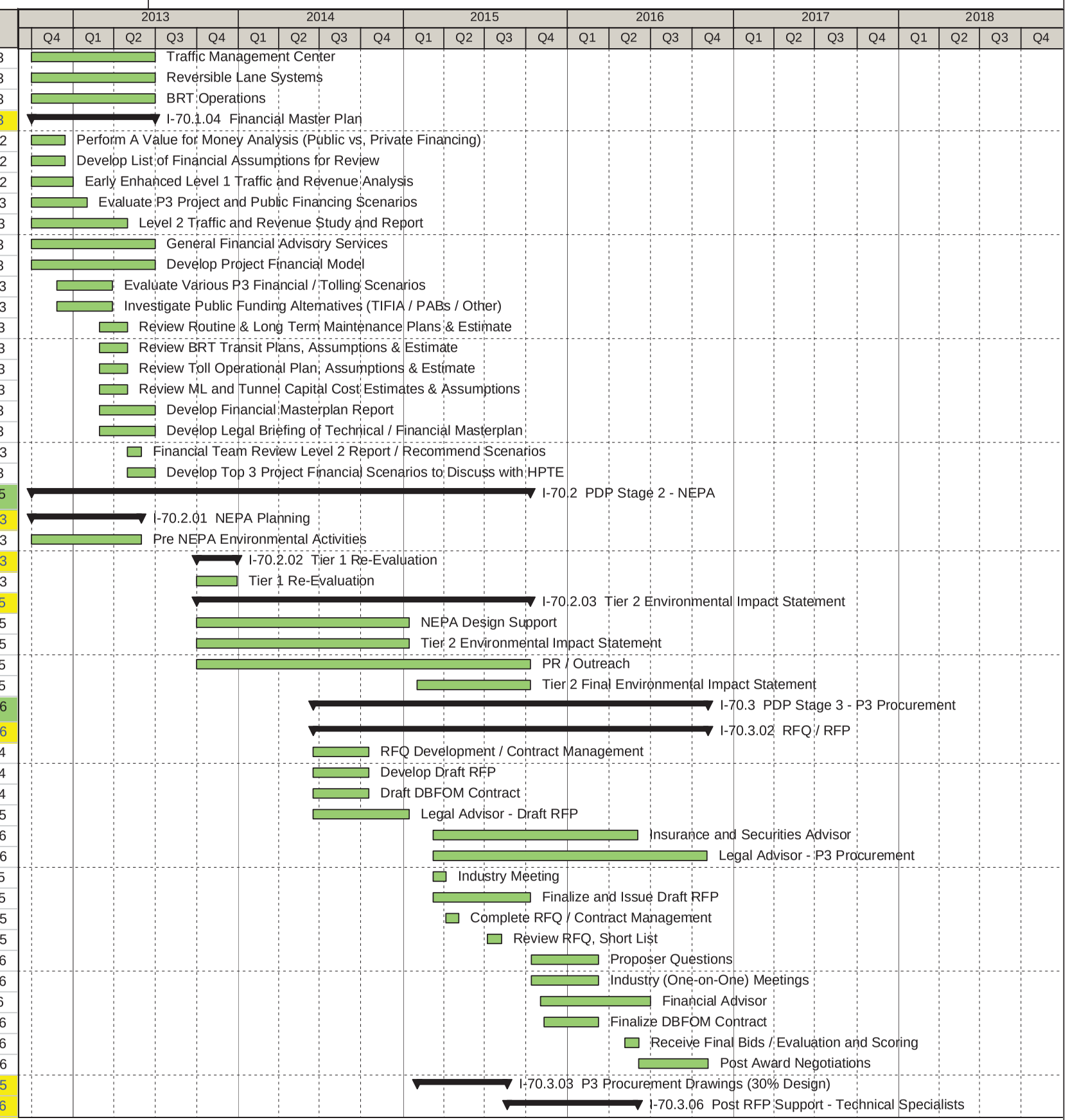


*Exhibit 10 - I-70 Co-Development Schedule, continued*

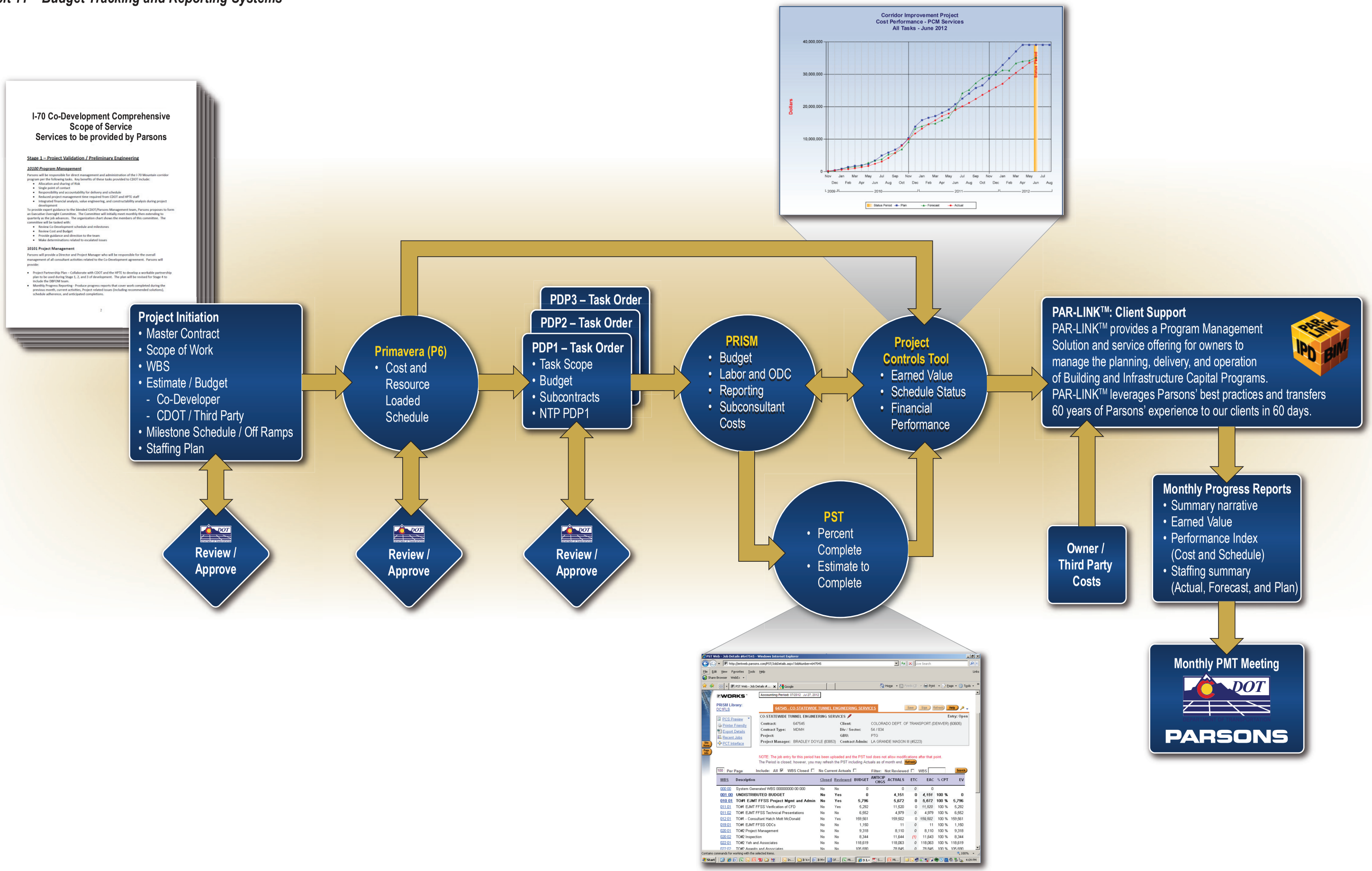
I-70 Co-Development Schedule



| Activity ID | Activity Name | RD (Working Days) | Start | Finish |
|---|---|---|---|---|
| 10340-000 | Traffic Management Center | 196 | 01-Oct-12 | 01-Jul-13 |
| 10343-000 | Reversible Lane Systems | 196 | 01-Oct-12 | 01-Jul-13 |
| 10333-000 | BRT Operations | 196 | 01-Oct-12 | 01-Jul-13 |
| **I-70.1.04 Financial Master Plan** | | **196** | **01-Oct-12** | **01-Jul-13** |
| 10403-100 | Perform A Value for Money Analysis (Public vs, Private Fin... | 55 | 01-Oct-12 | 14-Dec-12 |
| 10403-200 | Develop List of Financial Assumptions for Review | 55 | 01-Oct-12 | 14-Dec-12 |
| 10401-100 | Early Enhanced Level 1 Traffic and Revenue Analysis | 66 | 01-Oct-12 | 31-Dec-12 |
| 10403-000 | Evaluate P3 Project and Public Financing Scenarios | 90 | 01-Oct-12 | 01-Feb-13 |
| 10401-000 | Level 2 Traffic and Revenue Study and Report | 152 | 01-Oct-12 | 30-Apr-13 |
| 10406-000 | General Financial Advisory Services | 196 | 01-Oct-12 | 01-Jul-13 |
| 10406-100 | Develop Project Financial Model | 196 | 01-Oct-12 | 01-Jul-13 |
| 10404-000 | Evaluate Various P3 Financial / Tolling Scenarios | 90 | 26-Nov-12 | 29-Mar-13 |
| 10404-100 | Investigate Public Funding Alternatives (TIFIA / PABs / Other) | 90 | 26-Nov-12 | 29-Mar-13 |
| 10402-000 | Review Routine & Long Term Maintenance Plans & Estimate | 43 | 01-Mar-13 | 30-Apr-13 |
| 10402-100 | Review BRT Transit Plans, Assumptions & Estimate | 43 | 01-Mar-13 | 30-Apr-13 |
| 10402-200 | Review Toll Operational Plan, Assumptions & Estimate | 43 | 01-Mar-13 | 30-Apr-13 |
| 10402-300 | Review ML and Tunnel Capital Cost Estimates & Assumpti... | 43 | 01-Mar-13 | 30-Apr-13 |
| 10407-000 | Develop Financial Masterplan Report | 87 | 01-Mar-13 | 01-Jul-13 |
| 10408-000 | Develop Legal Briefing of Technical / Financial Masterplan | 87 | 01-Mar-13 | 01-Jul-13 |
| 10401-200 | Financial Team Review Level 2 Report / Recommend Scen... | 23 | 01-May-13 | 31-May-13 |
| 10405-000 | Develop Top 3 Project Financial Scenarios to Discuss with ... | 44 | 01-May-13 | 01-Jul-13 |
| **I-70.2 PDP Stage 2 - NEPA** | | **790** | **01-Oct-12** | **09-Oct-15** |
| **I-70.2.01 NEPA Planning** | | **175** | **01-Oct-12** | **31-May-13** |
| 20100-000 | Pre NEPA Environmental Activities | 175 | 01-Oct-12 | 31-May-13 |
| **I-70.2.02 Tier 1 Re-Evaluation** | | **65** | **02-Oct-13** | **31-Dec-13** |
| 20200-000 | Tier 1 Re-Evaluation | 65 | 02-Oct-13 | 31-Dec-13 |
| **I-70.2.03 Tier 2 Environmental Impact Statement** | | **528** | **02-Oct-13** | **09-Oct-15** |
| 20301-000 | NEPA Design Support | 337 | 02-Oct-13 | 15-Jan-15 |
| 20300-000 | Tier 2 Environmental Impact Statement | 337 | 02-Oct-13 | 15-Jan-15 |
| 20302-000 | PR / Outreach | 528 | 02-Oct-13 | 09-Oct-15 |
| 20303-000 | Tier 2 Final Environmental Impact Statement | 180 | 02-Feb-15 | 09-Oct-15 |
| **I-70.3 PDP Stage 3 - P3 Procurement** | | **626** | **16-Jun-14** | **07-Nov-16** |
| **I-70.3.02 RFQ / RFP** | | **626** | **16-Jun-14** | **07-Nov-16** |
| 30201-100 | RFQ Development / Contract Management | 89 | 16-Jun-14 | 16-Oct-14 |
| 30201-200 | Develop Draft RFP | 89 | 16-Jun-14 | 16-Oct-14 |
| 30201-300 | Draft DBFOM Contract | 89 | 16-Jun-14 | 16-Oct-14 |
| 30209-000 | Legal Advisor - Draft RFP | 154 | 16-Jun-14 | 15-Jan-15 |
| 30210-000 | Insurance and Securities Advisor | 325 | 09-Mar-15 | 03-Jun-16 |
| 30209-100 | Legal Advisor - P3 Procurement | 435 | 09-Mar-15 | 04-Nov-16 |
| 30203-000 | Industry Meeting | 20 | 10-Mar-15 | 06-Apr-15 |
| 30205-000 | Finalize and Issue Draft RFP | 154 | 10-Mar-15 | 09-Oct-15 |
| 30202-000 | Complete RFQ / Contract Management | 21 | 07-Apr-15 | 05-May-15 |
| 30204-000 | Review RFQ, Short List | 23 | 08-Jul-15 | 07-Aug-15 |
| 30205-200 | Proposer Questions | 107 | 12-Oct-15 | 08-Mar-16 |
| 30206-000 | Industry (One-on-One) Meetings | 107 | 12-Oct-15 | 08-Mar-16 |
| 30208-000 | Financial Advisor | 174 | 03-Nov-15 | 01-Jul-16 |
| 30207-000 | Finalize DBFOM Contract | 86 | 10-Nov-15 | 08-Mar-16 |
| 30211-000 | Receive Final Bids / Evaluation and Scoring | 22 | 06-May-16 | 06-Jun-16 |
| 30212-000 | Post Award Negotiations | 110 | 07-Jun-16 | 07-Nov-16 |
| **I-70.3.03 P3 Procurement Drawings (30% Design)** | | **143** | **02-Feb-15** | **19-Aug-15** |
| **I-70.3.06 Post RFP Support - Technical Specialists** | | **207** | **20-Aug-15** | **03-Jun-16** |



## *Exhibit 11 – Budget Tracking and Reporting Systems*



### Exhibit 12 – Traffic Forecast Comparison, Sketch Level Traffic Forecast, and Comparable Toll Rates

***Traffic Forecast Comparison for Base Forecasting Year (2010)*** *– The CTE Preliminary Traffic & Revenue Study, released in 2004, established 2010 as the base traffic forecasting year. With some notable exceptions, Parsons utilized the CTE Study's 2010 traffic volume forecast for the general purpose lanes and express lanes (Scenario 1 in CTE Study). The table below shows a comparison between the 2010 traffic data taken from the CTE Study and the baseline traffic volumes used for 2010 in the Parsons T&R analysis. Key differences between the two studies are further discussed in Technical Appendix, Exhibit 14.*

| | Mile Marker | WSA - CTE Preliminary T&R Forecast | | | | | | Parsons Traffic Forecast | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Monday - Friday Peak Direction | | Saturday Peak Direction | | Sunday Peak Direction | | Monday - Thursday Peak Direction | | Friday Peak Direction | | Saturday Peak Direction | | Sunday Peak Direction | |
| | | GP Lanes | M Lanes | GP Lanes | M Lanes | GP Lanes | M Lanes | GP Lanes | M Lanes | GP Lanes | M Lanes | GP Lanes | M Lanes | GP Lanes | M Lanes |
| Section 1: 206-230 | 216 | 16,255 | 137 | 24,368 | 7,747 | 29,272 | 9,710 | | | | | | | | |
| | 226 | 16,712 | | 25,219 | | 30,413 | | 16,484 | 1,648 | 27,024 | 8,833 | 24,206 | 7,755 | 29,843 | 9,910 |
| | 228 | 17,389 | 142 | 24,715 | 7,763 | 30,537 | 10,110 | | | | | | | | |
| Section 2: 230-242 | 232 | 21,062 | | 28,716 | | 35,185 | | | | | | | | | |
| | 234 | 21,614 | | 28,872 | | 34,666 | | | | | | | | | |
| | 235 | 22,902 | | 30,020 | | 35,371 | | | | | | | | | |
| | 238 | 22,902 | | 30,147 | | 35,371 | | 21,481 | 2,148 | 29,482 | 10,936 | 28,283 | 9,337 | 30,682 | 12,535 |
| | 239 | 22,537 | | 27,431 | | 29,069 | | | | | | | | | |
| | 240 | 21,960 | | 28,079 | | 29,011 | | | | | | | | | |
| | 241 | 25,389 | 315 | 35,790 | 10,911 | 33,152 | 14,960 | | | | | | | | |
| Section 3: 242 - 259 | 243 | 25,495 | | 35,846 | | 33,268 | | | | | | | | | |
| | 244 | 25,259 | 243 | 35,355 | 8,309 | 29,695 | 11,510 | 25,381 | 2,538 | 33,851 | 11,423 | 35,664 | 9,610 | 32,038 | 13,235 |
| | 247 | | | | | | | | | | | | | | |
| | 260 | | | | | | | | | | | | | | |

***Parsons Sketch Level Traffic Study Forecast*** *– The table below presents the 50-year sketch level traffic forecast for the I-70 Mountain Corridor general purpose and express lanes. The forecasted traffic volumes were divided generally into three sections for the sketch level study. Section 1 is from mile marker (MM) 206 to MM 230. Section 2 is from MM 230 to MM 242. Section 3 is from MM 242 to MM 259.*

| | YEAR | Monday - Thursday | | Friday | | Saturday | | Sunday | |
|---|---|---|---|---|---|---|---|---|---|
| | | GP Lanes | M Lanes | GP Lanes | M Lanes | GP Lanes | M Lanes | GP Lanes | M Lanes |
| Section 1: 206-230 | 2020 | 22,152 | 2,425 | 36,153 | 12,449 | 32,556 | 10,766 | 39,494 | 14,390 |
| | 2025 | 25,558 | 3,490 | 39,950 | 17,493 | 36,731 | 14,470 | 42,147 | 21,538 |
| | 2030 | 29,028 | 4,647 | 42,640 | 23,952 | 40,381 | 18,976 | 44,654 | 29,174 |
| | 2035 | 32,575 | 6,123 | 44,857 | 31,669 | 42,808 | 25,403 | 45,000 | 39,433 |
| | 2040 | 36,140 | 8,071 | 45,000 | 42,104 | 45,000 | 32,836 | 45,000 | 51,522 |
| | 2045 | 39,360 | 11,152 | 45,000 | 54,000 | 45,000 | 43,940 | 45,000 | 54,000 |
| | 2050 | 42,018 | 15,691 | 45,000 | 54,000 | 45,000 | 54,000 | 45,000 | 54,000 |
| | 2055 | 44,263 | 21,669 | 45,000 | 54,000 | 45,000 | 54,000 | 45,000 | 54,000 |
| | 2060 | 45,000 | 30,133 | 45,000 | 54,000 | 45,000 | 54,000 | 45,000 | 54,000 |
| Section 2: 230-242 | 2020 | 28,835 | 3,194 | 39,036 | 15,150 | 37,634 | 13,359 | 40,644 | 17,936 |
| | 2025 | 33,009 | 4,846 | 42,057 | 22,694 | 41,275 | 18,993 | 42,910 | 26,325 |
| | 2030 | 36,890 | 6,993 | 44,559 | 30,505 | 43,730 | 26,137 | 45,000 | 34,799 |
| | 2035 | 40,259 | 10,171 | 45,000 | 40,955 | 45,000 | 35,239 | 45,000 | 47,028 |
| | 2040 | 42,693 | 14,923 | 45,000 | 53,246 | 45,000 | 46,679 | 45,000 | 54,000 |
| | 2045 | 44,973 | 20,852 | 45,000 | 54,000 | 45,000 | 54,000 | 45,000 | 54,000 |
| | 2050 | 45,000 | 29,761 | 45,000 | 54,000 | 45,000 | 54,000 | 45,000 | 54,000 |
| | 2055 | 45,000 | 40,477 | 45,000 | 54,000 | 45,000 | 54,000 | 45,000 | 54,000 |
| | 2060 | 45,000 | 52,719 | 45,000 | 54,000 | 45,000 | 54,000 | 45,000 | 54,000 |
| Section 3: 242 - 259 | 2020 | 34,109 | 3,734 | 45,539 | 15,828 | 47,937 | 13,431 | 43,174 | 18,193 |
| | 2025 | 39,346 | 5,381 | 51,866 | 20,663 | 54,335 | 18,195 | 49,374 | 23,156 |
| | 2030 | 44,661 | 7,190 | 57,491 | 26,591 | 59,733 | 24,349 | 55,179 | 28,902 |
| | 2035 | 50,026 | 9,560 | 62,273 | 34,352 | 63,336 | 33,288 | 60,157 | 36,467 |
| | 2040 | 55,297 | 12,780 | 65,599 | 44,794 | 66,720 | 43,673 | 63,794 | 46,598 |
| | 2045 | 60,222 | 17,554 | 67,500 | 54,000 | 67,500 | 54,000 | 67,500 | 54,000 |
| | 2050 | 63,863 | 24,996 | 67,500 | 54,000 | 67,500 | 54,000 | 67,500 | 54,000 |
| | 2055 | 67,275 | 34,246 | 67,500 | 54,000 | 67,500 | 54,000 | 67,500 | 54,000 |
| | 2060 | 67,500 | 48,008 | 67,500 | 54,000 | 67,500 | 54,000 | 67,500 | 54,000 |

***Comparative Toll Rates – U.S. Express Lane Facilities*** *– Market competitive toll rates were determined based on comparable U.S. express lane and bridge/tunnel facilities. The tables below reflects comparative toll rates that were used to compute revenues.*

| State | Name of Facility | Length of Facility | Toll Rates (per mile) Dynamic based on Congestion |
|---|---|---|---|
| Texas | LBJ/I-635 (Dallas) | 13 miles | $0.15 to $0.55 |
| Texas | North Tarrant Express (Dallas) | 13 miles | $0.10 to $0.50 |
| California | 91 Express Lanes (Orange County) | 10 miles | $0.13 to $1.00 |
| Virginia | I-495 Capital Beltway HOT Lanes (UC) | 14 miles | $0.12 to $1.00 |
| Washington | SR 167 (Seattle) | 9 miles | $0.10 to $1.00 |
| Colorado | I-25 Express Lanes (Denver) | 7 miles | $0.10 to $0.67 |
| Colorado | Proposed I-70 Managed Lanes | 53 miles | $0.10 to $1.00 |

| State | Name of Facility | Car Fee | Truck Fee |
|---|---|---|---|
| Alaska | Whittier Tunnel | $12.00 | $125.00 |
| Virginia | Chesapeake Bay Bridge-Tunnel | $12.00 | $28.00 |
| New York | Lincoln Tunnel | $8.00 | $32.00 |
| New York | Holland Tunnel | $8.00 | $32.00 |
| Michigan | Detroit Windsor | $4.75 | $21.00 |
| Massachusetts | Ted Williams Tunnel | $3.50 | $7.50 |
| Colorado | I-70 Twin Tunnels (Third Bore) | $6.00 | $18.00 |
| Colorado | I-70 Eisenhower Tunnel (Third Bore) | $6.00 | $18.00 |

*Exhibit 13 – Parsons Revenue Forecasting*

***Parsons Revenue Forecast Utilizing a P3 Concession Approach*** – Parsons revenue forecasts for the express lanes and tunnels are shown below. These forecasts assume a 50-year P3 concession approach. Using current market assumptions, Parsons forecasts slightly more than $500 million in surplus revenue after all capital, operations, maintenance, and other project costs and reserves are deducted.

**I-70 Express Lanes – Financial Plan Summary**
*50-Year Gross Toll Revenues (2017 dollars – Projected Year of Financial Close)*

| | Section 1 MM 206 - 230 (24 miles) | Section 2 MM 230 - 242 (12 miles) | Section 3 MM 242 - 247 (5 miles) | Section 4 MM 247 - 259 (12 miles) |
|---|---|---|---|---|
| Monday – Thursdays | $ 287,607,409 | $ 322,515,063 | $ 208,932,393 | $ 281,139,385 |
| Fridays | $ 499,816,455 | $ 310,912,142 | $ 153,099,171 | $ 267,899,143 |
| Saturdays | $ 402,478,560 | $ 270,285,914 | $ 152,264,549 | $ 252,752,684 |
| Sundays | $ 698,282,262 | $ 405,659,415 | $ 180,872,352 | $ 338,975,861 |
| Totals | $ 1,888,184,686 | $ 1,309,372,534 | $ 695,168,465 | $ 1,140,767,073 |
| *Total Gross Toll Revenues** | *$ 5,033,493,000* | **This equals the gross bondable revenue stream for the 50-year toll period (not yet discounted for debt service charge.* | | |
| Maintenance and Captial Replacements Costs | $ 370,214,000 | | | |
| Toll Collection and Operation Costs | $ 340,251,000 | | | |
| Net Revenues | $ 4,323,028,000 | | | |
| Discounted Net Revenues** | $ 2,701,893,000 | ***Discounted 1.60x for Debt Service Coverage* | | |
| Construction Capital Costs | $ 2,289,970,000 | | | |
| Capitalized Interest | $ 118,998,000 | | | |
| Reserve Deposits | $ 61,349,000 | | | |
| ***Surplus Cash Flow*** | ***$231,576,000*** | | | |

**I-70 Tunnels – Financial Plan Summary**
*50-Year Gross Toll Revenues (2017 dollars – Projected Year of Financial Close)*

| | | EJMT | Twin Tunnels |
|---|---|---|---|
| Monday – Thursdays | | $ 213.040,081 | $ 674,820,909 |
| Fridays | | $ 329,630,307 | $ 509,517,630 |
| Saturdays | | $ 277,942,417 | $ 498,428,016 |
| Sundays | | $ 450,658,441 | $ 651,253,743 |
| Totals | | $ 1,271,271,246 | $ 2,334,020,299 |
| *Total Gross Toll Revenues** | *$ 3,605,292,000* | **This equals the gross bondable revenue stream for the 50-year toll period (not yet discounted for debt service charge.* | |
| Maintenance and Captial Replacements Costs | $ 122,240,000 | | |
| Toll Collection and Operation Costs | $ 200,874,000 | | |
| Net Revenues | $ 3,282,178,000 | | |
| Discounted Net Revenues** | $ 2,051,361,000 | ***Discounted 1.60x for Debt Service Coverage* | |
| Construction Capital Costs | $ 1,662,039,000 | | |
| Capitalized Interest | $ 88,196,000 | | |
| Reserve Deposits | $ 30,584,000 | | |
| ***Surplus Cash Flow*** | ***$270,542,000*** | | |

**I-70 Express Lanes and Tunnels – Financial Plan Summary**
*Summary 50-Year Gross Toll Revenues (2017 dollars)*

| | | |
|---|---|---|
| *Total Gross Toll Revenues** | *$ 8,638,785,000* | **This equals the gross bondable revenue stream for the 50-year toll period (not yet discounted for debt service charge.* |
| Maintenance and Captial Replacements Costs | $ 492,454,000 | |
| Toll Collection and Operation Costs | $ 541,125,000 | |
| Net Revenues | $ 7,605,206,000 | |
| Discounted Net Revenues** | $ 4,753,254,000 | ***Discounted 1.60x for Debt Service Coverage* |
| Construction Capital Costs | $ 3,952,009,000 | |
| Capitalized Interest | $ 207,194,000 | |
| Reserve Deposits | $ 91,933,000 | |
| ***Surplus Cash Flow*** | ***$502,118,000*** | |

**All costs are in 2017 dollars — the projected year of financial year.*

## Exhibit 14 – Key Differences: 2004 CTE Preliminary Traffic Study vs. Parsons Sketch Level Traffic and Revenue Study

***Variations in Assumptions, 2004 CTE Traffic and Revenue Study vs. Parsons' Sketch Level T&R Study*** *– Although we utilized much of the 2010 base year forecasts from the CTE Study, there were some major differences in the assumptions used to build from the base year forecasts. The following explains the different assumptions used to develop Parsons' sketch level T&R Study.*

| | 2004 CTE Preliminary Traffic Study Assumptions | Parsons Sketch Level T&R Study Assumptions |
|---|---|---|
| **Toll Scenarios** | Assumed either using tunnel tolls or express lanes tolls, but not both. | Assumed both a toll at each tunnel and a toll for the express lanes. |
| **High-Volume Traffic Days** | Assumed that high traffic volumes existed only on Saturdays and Sundays (weekend days). | Reviewed existing CDOT data and found that Fridays should be counted as a high-volume traffic day and not the same as a low-volume weekday. |
| **Trucks** | Did not account for potential revenue premium of truck traffic. | Assumed that trucks will be allowed and be charged a three times premium over other vehicles. |
| **Financing Term** | Assumed a 31-year financing term (2010-2040). | Assumed a P3 concession term of 50 years (current industry norm). |
| **Dynamic vs. Variable Pricing** | Assumed a limited form of variable pricing on the express lanes. | Assumed implementation of dynamic pricing for the express lanes. |
| **Toll Increases Due to Inflation** | Did not increase tunnel tolls for inflation. | Increased tunnels tolls with inflation (industry norm). |
| **Growth Rates/Pent-up Demand** | Did not consider existing pent-up demand and assumed a growth rate of 2%. CDOT-supplied traffic data shows 2.7% annual growth. | Applied a normal growth rate of 2.7%, with higher growth rates in the initial years of operation. |
| **Length of Express Lane Facility** | Express lane facility length equals 34 miles. | Express lane facility equals 53 miles (C-470 to Silverthorne). |
| **Toll Rates** | Used toll rates for the express lanes that are far below current market rates resulting in much lower revenues over concession term. | Used market rates for express lanes while utilizing dynamic pricing during peak periods. |

***Why Parsons' Sketch Level Revenue Estimates may be Underestimated*** *– Parsons' sketch level revenue estimates are based on reasonably conservative assumptions at this early stage of development. However, there are a number of potential upsides shown on the table below that may increase revenues. These will be investigated during PDP Stage 1.*

| Eight Potential Upsides to Parsons Sketch Level Revenue Estimates | |
|---|---|
| **1. Increase Concession Term** | Parsons' study used 50-year concession term, but Colorado allows a longer term that would add significant revenues. |
| **2. Reduce Collection Costs** | Early Parsons estimates made conservative assumptions for toll operations. Strategies can be employed during master plan development to reduce these costs. |
| **3. High-Traffic Weekend Periods Will Grow Over Time** | As the I-70 corridor becomes congested during later concession years, Mondays and Thursdays will likely see a significant increase in traffic growth. |
| **4. Potential Reduction in Design-Build Costs** | Design-build costs studies a have strong level of conservatism. Significant cost reductions possible after value engineering analysis. |
| **5. Updated T&R Studies Likely to Show Higher Traffic** | There have been no new T&R studies for nearly 10 years. Previous studies likely underestimated pent-up demand and did not utilize a dynamic pricing strategy. |
| **6. Competitive P3 Concession Likely to Increase Benefits** | The Project will be attractive as a P3 concession and past results of similar procurements have yielded a higher than expected benefit to the public agency. |
| **7. MAP-21 TIFIA Expansion** | The recently released MAP-21 legislation increases funding to TIFIA by 7 to 10 times and increases potential TIFIA share to 49%. This will greatly improve financial viability. |
| **8. Increased Accuracy of Dynamic Pricing** | Future traffic studies will more accurately estimate the premium over the concession term due to dynamic pricing; likely increasing estimated revenues. |