I-70 Traffic & Revenue Study
Project Leadership Team & Technical Team
5 Dec 2013 Meeting Agenda

Trail Ridge Conference Room
425 C Corporate Circle, Golden. CO

1:00 Welcome & Introductions

1:15 Reviews & Updates
- CSS Process
- Traffic & Revenue Study Update
- Issue Task Forces Update
- Review of Core Values, Critical Issues, & Critical Success Factors
- Review of Performance Measures

1:45 Review of Alternatives

2:15 Presentation of Alternatives

2:30 PLT Endorsement of Alternatives (Includes Small Group Sessions)

3:00 Presentation of Traffic & Revenue Study Assumptions

3:30 Discussion of Traffic & Revenue Study Assumptions (Includes Small Group Sessions)

4:00 Next Steps & Schedule

4:15 Adjourn

I-70 Traffic and Revenue Study
Combined
Project Leadership Team (PLT) Meeting #6
Technical Team (TT) Meeting #3
Meeting Minutes
December 05, 2013
Golden, CO – CDOT West – Trail Ridge Conference Room

Handouts for the meeting included:

An information packet was given to PLT & TT members on December 05 that included the following: Agenda; Alternatives List with Descriptions, Alternatives Typical Cross Section Drawings, Traffic and Revenue Assumptions List

Welcome and Opening

Ben Acimovic (CDOT) opened the combined PLT and TT meeting with welcoming remarks and a request for self-introductions.

Agenda Item 1 – Reviews & Updates

Context Sensitive Solution (CSS) Process:

Ben Acimovic (CDOT) presented a summary of where we are at in the CSS Process.

The CSS process began in Spring 2013. The project team has completed CSS Process steps 1 through 3. The CSS Process steps 4 & 5 will be done today. The CSS Process step 6 will be planned for March.

The PLT has discussed the first five CSS Endorsed Components. After the Level 1 screening analysis, the PLT will review all CSS Endorsed Components as they relate to Level 2. Changes can be made to better align with a Level 2 T&R Analysis.

Traffic & Revenue Study Update:

Ben Acimovic presented a summary of what work is underway for the traffic and revenue study.

The project team is currently working on the following tasks:

- *Louis Berger* has developed assumptions to feed into the travel forecasting model, which we will be reviewing today.
- *Parsons* is working on developing the preliminary alternative designs to get base quantities and costs. These will feed into the revenue model to get financial results. The project team will then be able to perform the Level 1 screening analysis.
- All *Issues Task Forces* have met except the historic and the finance groups. The historic ITF will be meeting this month. All ITFs will all be able to review the preliminary screening results in early 2014.

Issues Task Forces Update:

Wendy Wallach (Parsons) presented a summary of what the Issue Task Forces have been doing to date.

- *Alternatives* – Reviewed initial alternatives; suggested additional option (Peak Period Shoulder Lane – Alternative 5 Option 1); working to differentiate between interim Peak Period Shoulder Lane project and our Alternative 5 Option 1;
- *Cost Estimating* – Necessary to develop an apples to apples approach of comparing cost estimates; working through CSS process with FHWA to get accurate cost estimates;
- *Structures/Tunnel Cost Estimating* – Working to finalize structural cost estimates; includes ALIVE crossings and 3rd bore tunnel;
- *Transit Cost Estimating* – Clarified that transit is only part of the alternatives, no stand-alone transit alternative; that the AGS has different termini leads to a challenge when comparing costs;
- *Traffic Operations and Maintenance* – The expectation of users of the managed lanes is to have very well maintained roadway in order to safely keep the speeds up;
- *Traffic Modeling & Tolling* – Assumptions are broader at this level; alternatives need to be designed before this ITF can complete their cost estimate;
- *Mitigation* – Very broad at this level; will incorporate SWEEP and ALIVE mitigation; will need agreement on cost estimating methodology;
- *Permitting* – Developing costs of getting permits; looking at risks to the schedule
- *ALIVE* – Determined _to use Linkage Interference Zones (LIZs) as described in the PEIS; developing typology and prioritization of mitigation; mitigation will also include monitoring efforts after construction;
- *SWEEP* – Still developing cost estimates and making sure they aren't double counting items;

Discussion:

Cindy Neely (Clear Creek County): She would like to have the presentation slides sent out. The project team will include the presentation with the meeting minutes. **(ACTION ITEM)** Note: The presentation was sent out on December 12, 2013.

A Transit Service Plan White Paper was developed to discuss the following three ideas:

1. How the transit operating plans to feed into traffic modeling;
2. How to cost out the transit operations;
3. Verify assumptions made on transit from PEIS;

The overall summary of the Transit Service Plan White Paper is that depending on the alternative selected, there will be a base level of bus service operated by Colorado Department of Transportation until the managed lanes are opened. After that, a more developed bus service (BRT) will run in the managed lanes. Additionally, if no managed lanes are to be constructed, the CDOT bus service will run until the AGS is opened.

Cindy Neely (Clear Creek County): She would like to understand the diversity of attendance in the ITFs (would like to have access to meeting minutes from each ITF). The minutes are currently on SharePoint and members of the PLT should have access.

Clear Creek County wondered why SharePoint is being used and not a public site, so information could be available to constituents (i.e. CDOT website). CDOT will look into capabilities of CDOT public website for a project to this scale and will get back to PLT early next week**. (ACTION ITEM)**

Note: At request of the stakeholders, CDOT has created an I-70 Traffic and Revenue Study website, it will be updated in the weeks to come and then on a regular basis, it can be found at: http://www.coloradodot.info/projects/i-70mountaincorridor/trafficrevenuestudy/

Agenda Item 2 – Alternatives Under Consideration

Wendy Wallach (Parsons) presented a summary of the five alternatives.

Five Alternatives with several options under each alternative (listed in handout) were explained. All of the alternatives extend from C-470 to Silverthorne (the exception of the new temporary PPSL alternative). Typical cross sections of these alternatives were included in the handout. A few specific items of note include:

- Alternative 1 and Alternative 2 (both options) include third bores at EJMT and Twin Tunnels
- Alternative 4 Options 1 and 2 should have been removed from the handout – the project team is not considering these anymore as they have no means of producing revenue
- Alternative 4 Options 3 and 4 were developed recently based on CDOT policy to implement managed lanes when adding new capacity.

  Please note: a revised version of the Alternatives table, including schematics has been distributed with these notes.

Discussion:

The team was previously not considering tolling on Alternative 3 as the alternative included such small sections of auxiliary lanes. CDOT will consider implementing managed lanes where new capacity is being added (for example tolling third bore). **(ACTION ITEM)**

Note: CDOT Response: All new capacity will be considered for tolling. Small sections of auxiliary lanes will not be tolled. It does not make sense to toll short lengths of improvements. But tunnels would be tolled.

Should the No Action Alternative include interim peak period shoulder lanes or not? CDOT will consider this. **(ACTION ITEM)**

Note: CDOT Response: No Action will include interim peak period westbound (WB) and eastbound (EB) from Empire to Floyd Hill (alternative 6a). An operations and maintenance narrative will be included in the results detailing how a WB and EB Peak Period Shoulder Lane would work from Empire to the Eisenhower Johnson Memorial Tunnels (EJMT).

Clear Creek County suggested the project team examine extending interim peak period shoulder lanes as another alternative for this study if they are shown to be effective at increasing mobility for a period of 5-10 years. CDOT will consider this. **(ACTION ITEM)**

Note: CDOT Response Alternative 5 Option 1 is a full peak period option. This T&R study will only evaluate ultimate solutions. This would be a future after construction decision once operations could be observed for a long period.

Agenda Item 3 – PLT Endorsement of Alternatives

Ben Acimovic (CDOT) and other members of the project team facilitated five small group break-out sessions to discuss the alternatives and answer the following two questions. 20 minutes was given for these small group break-out sessions. Group facilitators then reported back on each comment and discussion point, as well as any questions that were raised in the small group setting.

Question 1: Does everyone understand the differences between the Alternatives and the Alternative Options?

Question 2: Do we have a reasonable range of alternatives we are carrying forward? Have we missed anything big?

The reports back were as follows.

Group 1 – Ben Acimovic (CDOT)

- Clarified alternatives
- Is 65 mph on curves realistic with cost, construction time

How many years of construction will each alt take? (**see attachment on Assumptions Q&A**)

- More discussion about interim HSR
- Should we look at smaller segments of solutions vs. entire C-470 to Silverthorne

Group 2 – Wendy Wallach (Parsons)

- Would 3 managed lanes be able to do 2 one direction, 1 other direction? (**See attachment on General Q&A)**
- Will interchanges all be reconstructed? – mostly yes because of wider typical **(See attachment on General Q&A)**

- Bus service question: 2015 Denver to Glenwood Springs; 1-2 trips per day; no more until managed lanes in place
- More discussion about interim HSR
- Could HSR alt be for buses only
- Clarified alternatives; group felt good range of alts was examined

Group 3 – Brad Doyle (Parsons)

- Clarified alternatives
- Non-compete revenue clause? Concern that if phasing BRT to AGS is done in 2035, new bonds would need to be issued. Unless the original concessionaire had an agreement to phase, this could create a conflict if a second private concessionaire were

to implement an AGS and finance construction with bonds**. (See attachment on General Q&A)**

- Suggested 3rd bore location, when reversible, and explore tolling the Eisenhower Johnson Memorial tunnels (EJMT) with the minimum program. (**see attachment on Assumptions Q&A**)

- An alternative continuing interim hard shoulder running should be evaluated
- Why studying alternatives that some stakeholders feel are not viable to construct as proposed? **(See attachment on General Q&A)**

Group 4 – Ralph Trapani (Parsons)

- Why considering alts where no tolls? This is because there is a need to compare operational data. **(See attachment on General Q&A)**
- Alt 3 – what criteria could be established to determine length needed to toll? (**See attachment on General Q&A)**

- 2035 BRT, after 2035 AGS: why not BRT to 2050? **(See attachment on General Q&A)**
- Discussed interim peak period shoulder lanes
- Suggestion to model interim PPSL in No Action alternative
- How to get to publicly acceptable solution? **(See attachment on General Q&A)**

Group 5 – Al Racciatti (Louis Berger Group)

- Clarified alternatives – need more detail in descriptions
- Discussed AGS 2035 start date Clarified Alts 1 and 2 are mostly in median of existing lanes
- Clarify which alternatives included 3rd bore at EJMT
- Assumption Question No. 2: Explore tolling the Eisenhower Johnson Memorial tunnels (EJMT) with Alternative 3 (**see attachment on Assumptions Q&A**)
- Discussion HSR on left side of roadway

Agenda Item 4 – T&R Study Assumptions

Al Racciatti (Louis Berger Group) explained the assumptions, methods, and data sources going into the travel forecasting model (included in handout). Team will be using the PEIS traffic model in Level 1. It covers all potential origin and destination pairs that might be using I-70. It is currently up and running for base year and future year. Will feed Level 1 alternatives into this model to determine how traffic operations will work for each.

Discussion:

Cindy Neely (Clear Creek County): Stated April 15 to June 15 has very little traffic/congestion and should not be included in the Peak Period data set.: She suggested looking at those months more specifically to refine traffic volumes or develop third “season”. The project team will look at this and make adjustments as necessary. **(ACTION ITEM)**
(**see attachment on Assumptions Q&A**)

Dick Bauman: Should the value of time be different per each "season"? This will be looked at during Level 2. (**see attachment on Assumptions Q&A and General Q&A**)

Cindy Neely (Clear Creek County): Were the PEIS model results accurate in predicting future years?? How would those results compare to our model results? This is part of the calibration, and will be looked at. **(ACTION ITEM) (See attachment on General Q&A)**

Art Ballah (Colo. Motor Carriers Association): Can the sensitivity analysis be done for trucks? **(See attachment on General Q&A)** Is the value of time correct for trucks? (**see attachment on Assumptions Q&A)**
Project team will look at this and make adjustments as necessary**. (ACTION ITEM)**

Assumption Question No. 5 Truck percentage value might need to be explained further in the assumptions, as truck percentages are lower in the peak then in off-peak. **(ACTION ITEM)**

How will the design of the HSR Alternative look as far as on-ramp acceleration lanes? PPSL is on left, so alleviates these problems. **(also See attachment on General Q&A)**

The TBD statements within the assumptions will be developed and reviewed with the PLT in early 2014.

Cindy Neely (Clear Creek County): Stated all alternatives should not have the same construction year. The project team will look into this and make adjustments as necessary. **(ACTION ITEM)** (**see attachment on Assumptions Q&A)**

Agenda Item 5 – Discussion of T&R Study Assumptions

Ben Acimovic (CDOT) and other members of the project team facilitated a second round of five small group break-out sessions to discuss the study assumptions and answer the following two questions. 20 minutes was given for these small group break-out sessions. Group facilitators then reported back on each comment and discussion point, as well as any questions that were raised in the small group setting.

Question 1: The PEIS included an estimation of unmet demand, meaning that some people decide not to make a trip during the most congested periods on I-70. Do you agree with that assumption and what level of speed or travel time delay would prompt people to not make the trip?

Question 2: To be consistent with the PEIS, we will use the population and employment growth assumptions for future years. In the corridor, population and employment are expected to grow 2.5%-3% per year. In the Denver Metropolitan the expected growth is 1.5% per year. We will check this with current forecasts. Are there any trends we should consider?

The reports back were as follows.

Group 1 – Ben Acimovic (CDOT)

- When does congestion start in EB direction? When lifts close. **(Also See attachment on General Q&A)**
- Value of Time (VOT) is different for day trips versus weekend trip

Is the Value of Time assumption correct for all / different users? (**see attachment on Assumptions Q&A)**

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About ½ to 1 hour may be the time for delaying / omitting a trip. Can this information be incorporated? (**see attachment on Assumptions Q&A)**

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- Clear Creek County growth rate correct? Can we separate the growth rates out per area? **(See attachment on General Q&A)**
- What are the demographics of the skiers? **(See attachment on General Q&A)**

Group 2 – Mariana Torres (Louis Berger Group)

- This group feels that yes, people are foregoing trips or changing time of travel because of congestion. Repeat of No. 7 30 minutes might be a threshold to make the trip or not.
- Psychological effect between stopped versus slow moving traffic
- Are growth percentages from PEIS accurate? (See attachment on General Q&A)
- Younger generation changing when they take trip (i.e. trend of flexible work days)
- Increase in secondary home and/or using secondary home as primary home

Group 3 – Larry Pesesky (Louis Berger Group)

- This group feels that yes, there is unmet demand
- A survey should be conducted at Georgetown Visitor Center
- Jefferson County is finding more folks are using their facilities to avoid congestion on I-70
- 2013 tunnel volumes are getting back to pre-2008 drop: how will future drops be accounted for? **(see attachment on Assumptions Q&A)**
- Truck purpose questions and truck requirement questions for Level 1
- Alternatives 1 and 2 would still need to go through NEPA process, which would impact construction years – should we account for different construction years in revenue forecasts
- Include a per mile CSS factor or % CSS factor derived from previous successful CSS projects along the I-70 corridor. This is under development by CDOT. **(see attachment on Assumptions Q&A)**
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Group 4 – Ralph Trapani (Parsons)

- Construction schedules – will cash flow drive construction schedule? **(See attachment on General Q&A)**
- Population projections? **(See attachment on General Q&A)**
- Skier growth rates? **(See attachment on General Q&A)**
- Summer vs Winter demand? **(See attachment on General Q&A)**
- Compare AGS stated preference survey data to PEIS stated preference survey data for comparison at Level 1.
- How long until we finalize assumptions/still give input? Have until December 13, 2013 to get suggestions or questions to project team.

Group 5 – Al Racciatti (Louis Berger Group)

- Peak hour spread
- Difference in VOT for day pass holders versus season pass holders
- Not a good snow year last year – how does this affect traffic
- Clear Creek did not have growth according to PEIS growth rates
- Economic activity on western slope trends affect travel on I-70
- For Level 1, need to rely on FHWA roadway design guidelines
- Look at E-470 truck toll pricing structure

Agenda Item 6 – Next Steps & Schedule

Ben Acimovic (CDOT) presented a summary of the next meeting dates for the PLT/TT.

1/22/14 – PLT meeting – Silverthorne – discussion on process and partnering – CDOT will explore**. (ACTION ITEM)**
Note: After discussing this with representative PLT members, CDOT has decided to hold next PLT/TT in February.

2/26/14 – No meeting – project updates will be sent by email.

3/26/14 – PLT/TT meeting – CDOT HQ Auditorium (tentative) – presentation on Level 1 Results

Additional Discussion Topic

No Action Alternative – Should it include the interim peak period shoulder lane project?

Consensus that the No Action should include interim PPSL in both eastbound and westbound directions, from Empire to Twin Tunnels. **(Final Decision)**

Question remains as to what should No Action include west of Empire, in both eastbound and/or westbound directions? At this time it is not being modeled in the base case because PPSL is not funded in both directions. Consider doing two modeling runs – one with these and one without. **(CDOT will discuss and make a decision) (ACTION ITEM)**

Meeting adjourned.

Attachments:

Recommendations to Modeling Assumptions
General Q&A from PLT / TT Meeting

PLT / TT MEETING 5 Dec 2013

NAME	REPRESENTING	EMAIL
EVA WILSON	Eagle county	on file
Jill Ryan	Eagle County	on file
Earl Pollard	Silver Plume	on file
Patrick Byrne	CO Ski Country USA	pbyrne@coloradoski.com
David Krutsinger (TT) & Alternate (PLT)	CDOT - DTR	on file
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I-70 Traffic & Revenue Study

Project Leadership Team Meeting # 6
Technical Team Meeting #3
December 5, 2013

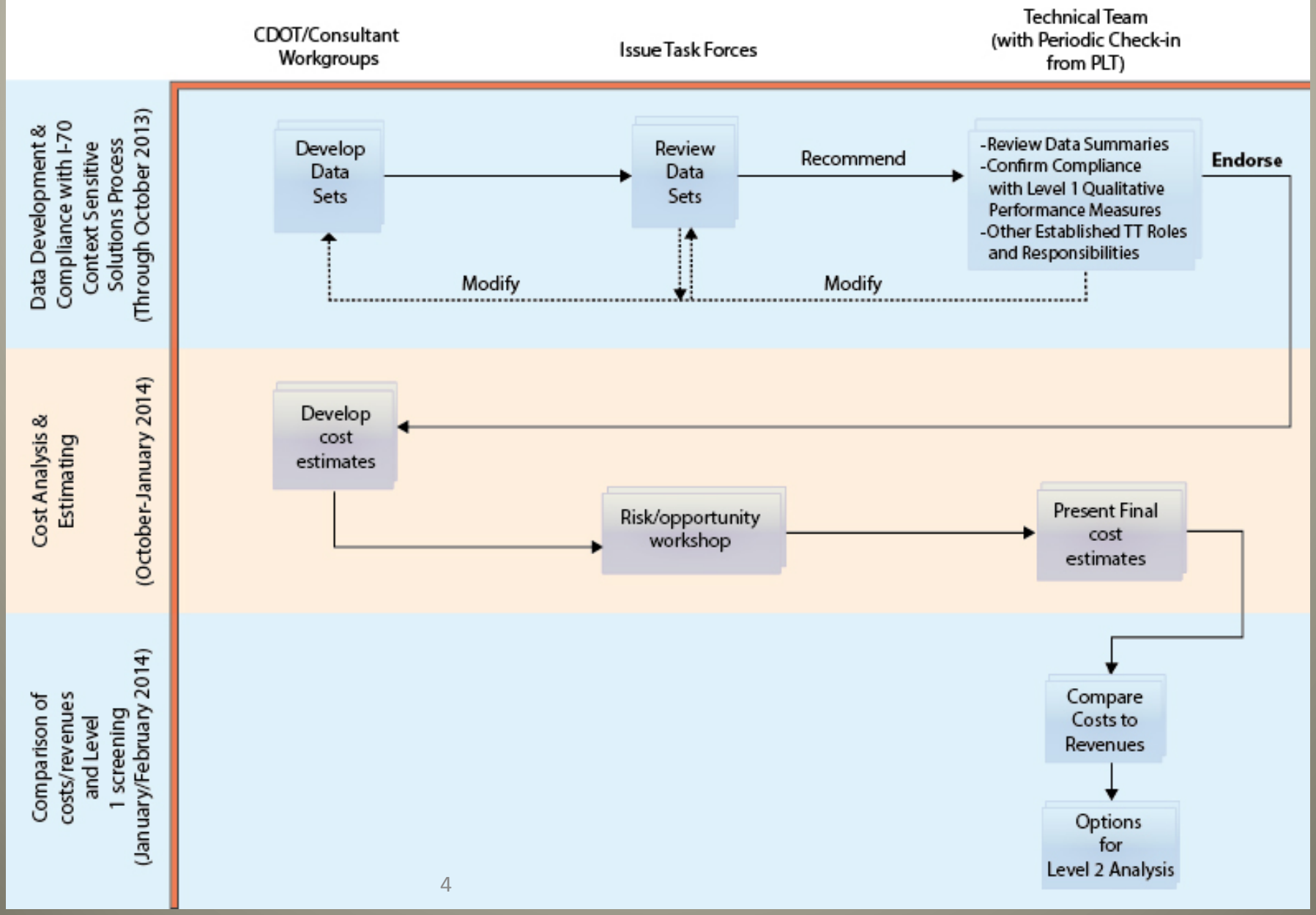
I-70 Traffic & Revenue Study Agenda

- Welcome & Introductions
- Review & Updates
  - CSS Process
  - Traffic & Revenue Study Update
  - Issue Task Forces Update
  - Review of Core Values, Critical Issues, & Critical Success Factors
  - Review of Performance Measures
- Review of Alternatives
- PLT Endorsement of Alternatives
- Presentation & Discussion of Traffic & Revenue Study Assumptions
- Next Steps & Schedule

I-70 Mountain Corridor
Context Sensitive Solutions Process

1. Define Desired Outcomes and Actions
2. Endorse the Process
3. Establish Criteria
4. Develop Alternatives or Options
5. Evaluate, Select, and Refine Alternative or Option
6. Finalize Documentation and Evaluate Process

Level 1 Workflow Process



I-70 Traffic & Revenue Study Update

Current Work Efforts - Louis Berger Group

- Review and Update of the original PEIS model:
  - Updated demographics to 2010;
  - Updated model code to TransCAD version 6.0;
  - Added toll capability
- Conducted preliminary runs of the revised model
- Developed Assumptions Framework
  - Presented in the Traffic Modeling & Tolling ITF *(Dec. 4)*

I-70 Traffic & Revenue Study Update

Current Work Efforts - Parsons

- In development of design concepts for all alternatives
  - Completed & submitted reversible lane concepts
  - In development of all other alternatives – expected completion by mid-January
- In development of cost estimating each of the alternatives - expected completion by end of January
- Assisting CDOT with Issue Task Forces

I-70 Traffic & Revenue Study Update

Current Work Efforts – Ernst & Young

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I-70 Traffic & Revenue Study Update

Current Work Effort – Issue Task Forces

- Combined Cost Estimating ITFs (Roadway, Structures, Transit, Tunnels)
- Combined Traffic Modeling & Tolling ITFs
- All ITFs have met except Historic & Finance
- Historic & Finance ITFs to be scheduled
- Specific ITF Updates follow

ITF Update: Alternatives

- Conducted 3 meetings
- Anticipate additional meetings for Level 2 Screening
- Key Points from work efforts
  - Convened ITF to review Alternatives Under Consideration
  - Presented Proposed Alternatives to the ITF and Solicited Information
  - ITF recommended one additional Alternative Option for Consideration in Level 1 Evaluation
- Remaining Challenges
  - Differentiating benefits associated with Interim Hard Shoulder Running and Permanent Hard Shoulder Running Options

ITF Update: Roadway Cost Estimating

- Conducted 2 meetings
- Anticipate 0 meetings to complete effort for Level 1 Screening
- Key Points from work efforts
  - Determined approach to implement I-70 Design Guidelines
  - Established use of a Critical Constraints line to minimize impacts
  - Formulated approach to design all alternatives to achieve consistency in level and quality of design
  - Refined options to tunnel approaches
  - Reached consensus on level of effort need to support the capital cost estimate
- Remaining Challenges
  - Balancing I-70 Design Guidelines against the constraints in the corridor from the terrain

ITF Update: Structures Cost Estimating

- Conducted 2 meetings
- Do not anticipate more meetings to complete effort for Level 1 Screening
- Key Points from work efforts
  - Structure layouts at this level will incorporate CSS if physically possible. Where not physically possible, the CSS factor and/or % will be incorporated to cover additional and different structure possibilities.
  - Environmental group to provide information on animal crossings/ALIVE requirements
- Remaining Challenges
  - Quantity calculations
  - Square foot costs for each structure type

ITF Update: Transit Cost Estimating

- Conducted 2 meetings
- Anticipate additional meetings in Level 2 Analysis
- Key points from meetings
  - Needed to clarify that the transit issues and technology comparisons are only part of the alternative screening process
  - Needed to expand issues analysis/responses beyond what TT/PLT originally asked for, based on discussion with the group. So the Idaho Springs bus service analysis includes connections with Central City/Blackhawk and with Downieville-Lawson-Dumont; and the Breckenridge to Silverthorne bus connector for AGS also includes a Keystone to Silverthorne bus connector option
  - Needed to add discussion of AGS and BRT ridership and farebox revenue for comparison with O&M costs, based on discussion with the group
  - Preparing the final technical paper and PowerPoint for presentation to the TT/PLT on Dec. 5

ITF Update: Tunnel Cost Estimating

- Conducted 3 meetings
- Anticipate 2 meetings to complete effort for Level 1 Screening
- Key Points from work efforts
  - Developed conceptual EJMT 3rd bore alignment
  - Developed conceptual tunnel cross sections
  - Working on alignment of 3rd bore at Twin Tunnels
- Remaining Challenges
  - Completion of 3rd bore at Twin Tunnels alignment
  - Development of quantities and cost

ITF Update: Traffic Operations & Maintenance

- Conducted 1 meeting
- Anticipate 1 meeting to complete effort for Level 1 Screening
- Key Points from work efforts
  - For a toll facility we need to have a higher standard of Maintenance to ensure that the public will use the managed lanes.
  - Some information is available from US 36 but we have differences in actual elevation of the roadway that will impact maintenance costs. David Miller will provide actual CDOT costs for I-70 from C-470 to EJMT.
  - Snow removal from the managed lanes when they fall between the free lanes will be challenging and costly.

ITF Update: Traffic Modeling & Tolling

- Conducted 2 Traffic Modeling & 2 Tolling meetings (Now combined)
- Anticipate 2 meetings to complete effort for Level 1 Screening
- Key Points from work efforts
  - Level 1 is a high-level screening; assumptions can be broader at this level as long as they are consistently applied across all scenarios
  - Modeling results highly dependent upon growth and land use projections; assumptions and inputs must be validated and agreed upon
- Remaining Challenges
  - Alternatives need to be finalized before modeling and tolling scenarios can be completed.

ITF Update: Mitigation

- Conducted 1 meeting
- Anticipate 1 meeting to complete effort for Level 1 Screening
- Key Points from work efforts
  - Identifying Mitigation vs. Enhancements
  - Ensuring SWEEP and ALIVE Mitigation accounted for and not doubled
  - Verifying mitigation identified in ROD is accounted for
- Remaining Challenges
  - Identifying Mitigation costs for each proposed Alternative's Option

ITF Update: Permitting

- Conducted 2 meetings
- Anticipate 1 meetings to complete effort for Level 1 Screening
- Key Points from work efforts
  - Tasked with evaluating the risks and costs of permits needed for the project
  - In most cases, costs of permits are insignificant
  - Risks of legal challenge and to schedule are a focus
  - Are there other approval processes that should be considered in the analysis (e.g. NEPA)

ITF Update: ALIVE

- Conducted 1 meeting
- Anticipate 2 meetings to complete effort for Level 1 Screening
- Key Points from work efforts
  - Confirm Identified Linkage Interference Zones (LIZ's) within Corridor
  - Create an appropriate typology for recommended crossing types (3 to 5)
  - Prioritization of crossings
  - Explore potential monitoring opportunities of crossings
- Remaining Challenges
  - Verify typology and appropriateness of crossing based on Alternative - Option
  - Create conservative cost estimates by typology
  - Schedule with Stakeholders

ITF Update: SWEEP

- Conducted 3 meetings
- Anticipate 1 meeting to complete effort for Level 1 Screening
- Key Points from work efforts
  - Gather existing information on Water Quality and Aquatic Issues
  - Quantify SWEEP related elements
  - Ensure SWEEP requirements taken into account with Drainage design
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- Remaining Challenges
  - Provide costs for SWEEP recommendations
  - Ensure costs are only used 1 time and not doubled

Core Values, Critical Issues and Critical Success Factors

Core Values	Critical Issues	Critical Success Factors
Safety	•Safe Traffic Operations •Emergency Response •Incident Management	Enhancing safety for all is a priority. Balance the anticipated needs of capacity and safety improvements with minimized impacts. Provide reliable access and protection for emergency responders to / from and through the corridor accident/incident scenes.

Core Values, Critical Issues and Critical Success Factors

Core Values	Critical Issues	Critical Success Factors
Mobility	•Travel Time Reliability •Slow Moving Vehicles •Modal Choice •Local Mobility •Incident Management	Provide a multimodal solution that improves mobility, reliability, increases person trips, efficiently manages slow moving vehicles, provides incident response access, and reduces travel time .

Core Values, Critical Issues and Critical Success Factors

Core Values	Critical Issues	Critical Success Factors
Constructability	•Funding •Efficiency of Operations & Maintenance	Develop funding priorities to construct financially feasible improvements that use innovative and efficient practices which have the greatest ability to preserve, conserve and maintain existing environment and future improvements. Must be “buildable”.

Core Values, Critical Issues and Critical Success Factors

Core Values	Critical Issues	Critical Success Factors
Engineering Criteria and Aesthetic Guidelines	•Aesthetics •Adherence to Accepted Design Standards	Use the I-70 Mountain Corridor CSS process to create and assess financially feasible infrastructure improvements that adhere to acceptable engineering standards and are compatible with the natural surroundings and provide the best value for their life-cycle while not

Core Values, Critical Issues and Critical Success Factors

Core Values	Critical Issues	Critical Success Factors
Sustainability	•Preserve Future Transportation Options •Energy Use •Maintenance •Impact of No Action	Address the continuing decline of mobility and accessibility along the corridor by developing long- term multi-modal transportation solutions that are compatible with the natural surroundings and minimize the use of non-renewable resources.

Core Values, Critical Issues and Critical Success Factors

Core Values	Critical Issues	Critical Success Factors
Decision Making Process	•CSS Guidance •Stakeholder Support •Public Acceptance •Identify & Prioritize Mitigation and Enhancement Opportunities	Conduct a transparent (fair, open, equitable and inclusive) CSS process utilizing relevant and defensible data and a consistent set of assumptions. Obtain general agreement by the public, the Project Leadership Team, and stakeholders of the study

Core Values, Critical Issues and Critical Success Factors

Core Values	Critical Issues	Critical Success Factors
Community (Local, Regional, Statewide)	•Enhance Recreational Opportunities •Enhance Community Values •Improve Economic Vitality & Livability	Advance a solution that improves local, regional and statewide livability and economic vitality.

Core Values, Critical Issues and Critical Success Factors

Core Values	Critical Issues	Critical Success Factors
Historic Context	Preservation & Enhancement of Historic Elements & Landscape	Enable a positive experience for local residents and tourists through preservation and enhancement of historic elements and landscape.

Core Values, Critical Issues and Critical Success Factors

Core Values	Critical Issues	Critical Success Factors
Healthy Environment	•Environmental Sensitivity •Ability to Mitigate	Identify solutions that avoid, minimize, enhance and/or mitigate environmental impacts.

Core Values, Critical Issues and Critical Success Factors

Core Values	Critical Issues	Critical Success Factors
Fiscal Responsibility	•Life Cycle Considerations •Benefit - Cost	Assure fiscal responsibility through sustainable revenue generation and minimized public funding.

Qualitative Performance Measures
Level 1 Screening

Qualitative Performance Measures Level 1 Screening (1 of 5)

Safety

- Does the alternative meet minimum design standards (AASHTO, CDOT, etc) of cross section, curvature, sight distance and grades?
- Does the alternative provide safe reliable access ?
- Does the alternative provide protection for incident responders?
- Does the alternative have the potential to reduce crashes?

Mobility

- Does the alternative reduce travel times for long distance trips for all users?
- Does the alternative reduce the travel time for short distance trips for all users both on and off the Interstate?
- Does the alternative offer competitive modal choices with reliable travel times?
- Does the alternative allow for increased person trips?
- Does the alternative provide for incident management?

Qualitative Performance Measures Level 1 Screening (2 of 5)

Constructability

- Is the construction of the alternative financially feasible with the minimal funding?
- Does the alternative provide flexibility for future expansion and modification?
- Does the alternative have a positive impact on operations and maintenance?

Engineering Criteria and Aesthetic Guidelines

- Does the alternative provide opportunities to balance aesthetics and engineering?
- Does the alternative adhere to the I-70 CSS Mountain Corridor Guidelines and specific design criteria?

Qualitative Performance Measures Level 1 Screening (3 of 5)

Sustainability

- Does the alternative protect existing natural resources?
- Does the alternative use existing natural resources efficiently to generate improvements in efficiency and mobility?
- Does the alternative have the potential to improve operations and maintenance?

Decision Making Process

- Does the alternative provide opportunities for enhancements (i.e. recreational, community, environmental)?
- Is the alternative consistent with the Record of Decision?
- Does the alternative have a minimal risk of public or political opposition?

Qualitative Performance Measures Level 1 Screening (4 of 5)

Community (Local, Regional, Statewide)

- Does the alternative improve access to key destinations along the corridor, including recreation areas?
- Does the alternative have the potential to improve livability and vitality locally, regionally, and statewide?

Historic Context

- Does the alternative have the ability to protect Historic Districts and Landmarks?
- Does the alternative have opportunities for mitigation and / or enhancement to historic districts and landmarks?

Qualitative Performance Measures Level 1 Screening (5 of 5)

Healthy Environment

- Does the alternative have the potential to avoid immitigable environmental impacts?

Fiscal Responsibility

- Does the alternative have the ability to be financially self sustaining in terms of capital and operations and maintenance costs with minimal public funding?

Alternatives

- **Alt01_Opt01** - 2 managed lanes at 65 mph with 55 mph curves where required for General Purpose lanes only (Viaduct needed for independent alignments). Includes BRT prior to 2035 and AGS after 2035.

- **Alt01_Opt02** - 2 managed lanes with 65 mph curves (including General Purpose lanes).

- **Alt02_Opt01 -** 3 managed lanes at 65 mph with 55 mph curves where required for General Purpose lanes only (Viaduct needed for independent alignments). Includes BRT prior to 2035 and AGS after 2035.

- **Alt02_Opt02** - 3 managed lanes with 65 mph curves (including General Purpose lanes).

Alternatives

- **Alt03_Opt01 -** Minimum program per PEIS with 55 mph curves and 3rd bore at EJMT (no separate managed lanes). Includes CDOT bus service prior to 2035.

- **Alt03_Opt02 -** Minimum program per PEIS with 65 mph curves and 3rd bore at EJMT (no separate managed lanes). Includes CDOT bus service prior to 2035.

- **Alt03_Opt03** - Minimum program per PEIS with 55 mph curves without 3rd bore at EJMT (no separate managed lanes). Includes CDOT bus service prior to 2035.

- **Alt03_Opt04** - Minimum program per PEIS with 65 mph curves without 3rd bore at EJMT (no separate managed lanes). Includes CDOT bus service prior to 2035.

Alternatives

- **Alt04_Opt01** - Maximum program per PEIS with 55 mph curves (no separate managed lanes). Includes CDOT bus service prior to 2035.

- **Alt04_Opt02** - Maximum program per PEIS with 65 mph curves (no separate managed lanes). Includes CDOT bus service prior to 2035.

- **Alt05_Opt01** - Hard Shoulder Running EB and WB C-470 to Silverthorne.

PLT Endorsement of Alternatives

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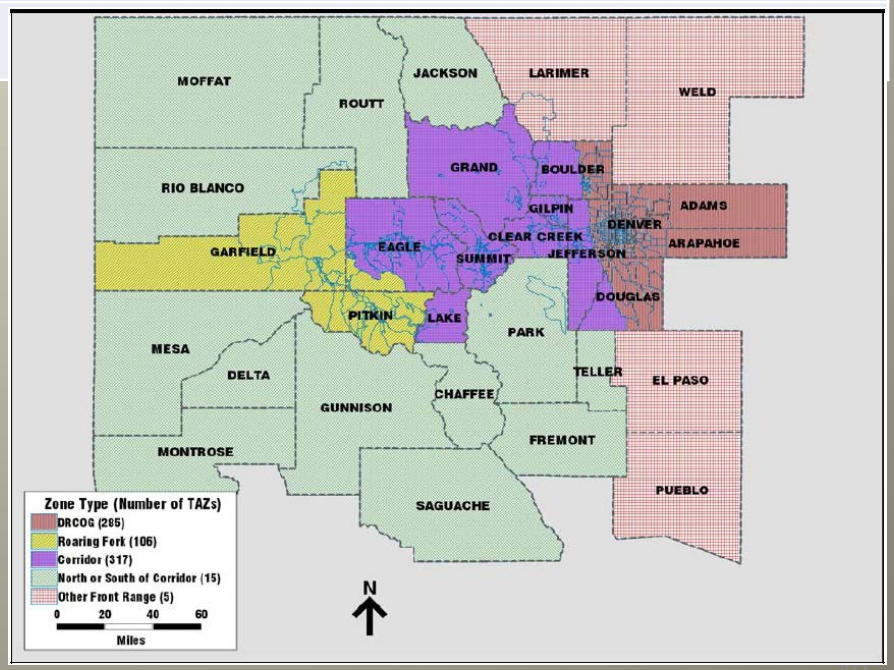
Assumptions: Level 1 Screening

Alignment	
Network Modeling Tool	I-70 Mountain Corridor PEIS Corridor Model (Corridor Model)
Western terminus	Silverthorne (I-70 Exit 205)
Eastern terminus	I-70 and C-470 (Golden)
Model extent	See map



Assumptions: Level 1 Screening

Market Segments	
Trip purposes	As defined in PEIS Corridor Model: Home-based work, local non-work; front range day recreation; stay at hotel, resort, or forest; corridor to airport / front range; corridor day recreation; second homes; visit friends and family; out of state air; gaming trips
Trip duration	Trip lengths calculated for each OD pair and trip purpose represented in the Corridor Model
Origin / Destination of trips	As specified in Corridor Model and benchmarked to AirSage O/D data obtained for AGS study.
Season of travel	Peak season: Winter weekend days (Friday after Thanksgiving to April 15th, 48/year). Summer weekend days (69 per year) Source: PEIS
Vehicle occupancy rate	Work trips: 1.1; local non-work trips, home-based other, and non-home based: 1.7; other trip purposes: 2.7. Source: PEIS

Assumptions: Level 1 Screening

Route Assignment	
Assignment for Managed Lanes (ML)	The split between free lanes and managed lanes will take place in the route assignment step. We will manually adjust for expected ridership from AGS and BRT as projected in earlier studies. The effect of managed lanes on the AGS ridership will not be modeled.
Socioeconomic Data	
Population, households, income, employment	As evaluated in PEIS

Assumptions: Level 1 Screening

Model Run Parameters	(1 of 2)
Base year	2010
Forecast year	2025 (PEIS forecast year)
Future years	2035 and 2050 (forecast will be extrapolated based on land use forecast from the ROD study in order to develop the long-term cash flow)
Sensitivity Test	Modeling all existing highway lanes with toll applied. Toll = initial toll rate for autos and trucks as specified below. This sensitivity test includes AGS up to 2035 and BRT prior to 2035.
Existing traffic volumes (all vehicles)	C-DOT traffic counts 2012 to be used as a benchmark for volumes represented in the Corridor Model
Toll structure	Based on cents/mile. Optimized rates for specific day types based on model sensitivity tests (toll response curves).

Assumptions: Level 1 Screening

Model Run Parameters	(2 of 2)
Initial toll rate auto (/mi)	$0.10 - Range to be tested: initial rate $0.05 - $1.00
Initial toll rate truck (/mi)	$0.30 - Range to be tested: initial rate $0.15-$3.00
Value of Time (VOTs)	VOT for transit: $8.23/hr. Source: AGS SP survey
	VOT for home-based work; front range day recreation; stay at hotel resort or forest; second homes; and out of state air: $10.05/hr. Source: PEIS
	VOT for local non-work; corridor to airport / front range; corridor day recreation; visit friends and family: $5.03/hr. Source: PEIS
	VOT for trucks: $36 in peak; $18 in off-peak. Source: DRCOG Model

Assumptions: Level 1 Screening

Traffic Growth	(1 of 2)
Car / commercial / through / out-of-state traffic	Based on PEIS demographic assumptions, benchmarked to DRCOG and AGS growth assumptions
Analysis Periods	As established by the PEIS AM peak period: 6:00 AM to 9:59 AM; Midday or Noon period: 10:00 AM to 2:59 PM; PM peak period: 3:00 PM to 6:59 PM; Night period: 7:00 PM to 5:59 AM the next day
Peak Days of the week	Thursday - Sunday inclusive
Mix of traffic	As determined in PEIS: Trucks represent 10% of traffic, or based on existing traffic count percentages
Unmet demand	Estimated through comparison of capacity constrained vs. unconstrained model runs
Induced demand	Calculated from improvement in generalized cost of travel; each alternative as compared to no build future condition

Assumptions: Level 1 Screening

Traffic Growth	(2 of 2)
Diverted traffic for tolling estimation purposes	As calculated through the capacity constrained network model

Assumptions: Level 1 Screening

Operations	(1 of 2)
Lane widths and geometrics	All alternatives will be modeled using full AASHTO Standards. Lane widths and geometrics will be used to determine capacities for Level 1
Minimum shoulder width	Based on TRB Highway Capacity Manual (HCM) or material provided by Parsons Engineering Team
Vehicle lane capacity	Provided by Parsons Engineering Team
Grade	Derived from topographical mapping or material provided by Parsons Engineering Team
Percent grade	Derived from topographical mapping or material provided by Parsons Engineering Team
Interchange configuration	Provided by Parsons Engineering Team

Assumptions: Level 1 Screening

Operations	(2 of 2)
Trucks allowed on toll lanes	Yes
Buses allowed on toll lanes	Yes
HOV implementation	No
Days of year of lane closure	Based on historical data for lane closures on the corridor due to weather, construction, or accidents

Assumptions: Level 1 Screening

Construction Costs	
Cost Data	Information from PEIS work efforts
	Quantities & Cost Basis: CDOT Cost Data Book
	Cost / Risk Workshop – January 2014
	Range of Costs Presented for Level 1 Screening

Assumptions: Level 1 Screening

Transit Assumptions	(1 of 2)
AGS Mode share	9-11%, based on AGS study. Ridership will be subtracted prior to mode split step in the model
AGS Fares	$.26 / mi as established by the AGS committee
AGS Frequency	Based on AGS Study: 30 minute service in peak period (6 hours/day); hourly service for remaining 12 hours of the day (18 hour day service span)
AGS Construction and O&M Cost	Based on AGS Study: $11-$32 Billion for full option, $5.5-$18 Billion for MOS costs
Revenue forecast BRT	Based on mode share assumptions and fares

Assumptions: Level 1 Screening

Transit Assumptions	(2 of 2)
BRT Mode share	BRT ridership will not be modeled; a mode share of 3-6% based on capacity limits with a low and high occupancy rate range will be subtracted prior to the mode split step in the model
BRT Fares	$.17 / mi as per the expected fare of the CDOT service starting operations in 2014.
BRT Frequency / hr. at peak	3, as a starting point; Parsons to finalize service plan
BRT Construction and O&M Cost	Based on information developed by Parsons Engineering Team
Revenue forecast AGS	Will use traffic forecast parameters as defined in the PEIS and ROD analysis unless updated information is available from current studies or traffic collection information.

Assumptions: Level 1 Screening

Financial Assumptions	(1 of 2)
Build year	2018
Construction end year	2022
CPI	3% (TBD)
Toll rate increase over CPI	0 (TBD)
Initial toll year	2022
Toll days per year (Monday-Thursday)	200
Toll days per year (Friday)	52
Toll days per year (Saturday)	52
Toll days per year (Sunday + holiday)	61

Assumptions: Level 1 Screening

Financial Assumptions	(2 of 2)
Annual O&M	Calculated by T&R and Engineering Team
Capex	Calculated by T&R and Engineering Team
Capex base year	2012 (TBD)
WACC	8.25% (TBD)
% Equity	25% (TBD)
Debt service coverage ratio	160% (TBD)
CSS Contingency Factor	5% (TBD)

I-70 T&R Study Level 1 Screening
Project Leadership Team & Technical Team Schedule

January 22, 2014 - Tentative

- Traffic & Revenue Study Update
- PLT Meeting

February 26, 2014 - Tentative

- Presentation on Level 1 Results
- Combined PLT / TT Meeting

Wrap up & Action Items Review

-

Next Meeting Agenda 22 Jan 2014

- Traffic & Revenue Study Update
- Reports from Issue Task Forces
- Update on Level 1 Screening Process
- Action Items & Wrap-up

I-70 Mountain Corridor Traffic and Revenue Study - Assumptions	
Draft Framework for Discussion 12-04-2013	
	Level 1
Alternatives / Alignment	
Network Modeling Tool	I-70 Mountain Corridor PEIS Corridor Model (Corridor Model)
Western terminus	Silverthorne (I-70 Exit 205)
Eastern terminus	I-70 and C-470 (Golden)
Model extent	See map below
Alternatives	
Alt01_Opt01	2 managed lanes at 65 mph with 55 mph curves where required for General Purpose lanes only (Viaduct needed for independent alignments). Includes BRT prior to 2035 and AGS after 2035.
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Socioeconomic Data	
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I-70 Mountain Corridor Traffic and Revenue Study - Assumptions	
Draft Framework for Discussion 12-04-2013	
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Parsons to incorporate	
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% Equity	25% (TBD)
Debt service coverage ratio	160% (TBD)
CSS Contingency Factor	5% (TBD)

General Questions and Answers from PLT/TT Meeting December 5, 2013

Questions	Answers
Would 3 managed lanes be able to do 2 one direction, 1 other direction?	No, the intent is to run the Managed Lanes in the peak direction. In order to run 2 lanes in one direction, and one in the other would require a moveable barrier. Moveable barriers have already been studied for use on the Mountain Corridor and have been found to be infeasible.
Will interchanges all be reconstructed?	Most of the interchanges will need to be reconstructed to accommodate the wider template.
Will there be a non-compete revenue clause?	Yes, there will be a non-compete clause for the concessionaire contract. If a second concessionaire were to be allowed they could possibly divert revenue and ridership rendering the investment unattractive.
Why studying alternatives that some stakeholders feel are not viable to construct as proposed?	The team is evaluating a “reasonable range of alternatives”. The team asked if the PLT/TT felt this statement was accurate at the December 5, 2013 meeting and the answers were affirmative.
Why is the team considering alternatives that don’t include tolls?	The team is not considering any “Build” alternatives that don’t include tolls. There is a baseline alternative which does not include tolls that will be used for comparison of operations data.

Regarding Alt 3 (PEIS Minimum Program) – what criteria could be established to determine length needed to toll?	Per CDOT Policy Directive 1603.0, managed lanes must be strongly considered during the planning and development of capacity improvements on state highway facilities. All new capacity will be considered for tolling. Small sections of auxiliary lanes will not be tolled. It does not make sense to toll short lengths of improvements. But tunnels would be tolled.
The assumptions state that there will be 2035 BRT, after 2035 AGS: Why not BRT to 2050?	Under concessionaire agreement, AGS will be analyzed for implementation on a regular basis. If a business case can be made for implementation, the concessionaire will be required to implement AGS.
How to get to publicly acceptable solution?	The team is working with a Project Leadership Team, a Technical Team and Issue Task Forces to solicit input on the Traffic and Revenue evaluation. These groups represent a wide array of interests in hopes of reaching a mutually agreeable solution for all stakeholders.
Should the value of time be different per each “season”?	USDOT guidelines and toll road literature have found that Value of Time (VoT) is a direct function of income. Income can be assumed to be generally steady throughout the year. In the Level 1 study we will maintain the assumption of steady VoT throughout the year, however, we will differentiate VoT by trip purpose as was done in the PEIS (e.g., recreation travelers have a higher value of time than commuters). In Level 2 we conduct a Stated Preference survey to determine if VoT differs substantial by season of travel in addition to trip purpose.

Were the PEIS model results accurate in predicting future years?	The study team has updated the PEIS model to incorporate 2010 census counts and up-to-date employment estimates. After updating the model performs as well as the PEIS model in corresponding to base year traffic counts. We will provide an evaluation of the performance of the model in the Level 1 Report.
Can the sensitivity analysis be done for trucks? Long-haul operators may have different value than short-haul LTL delivery.	The study team will conduct a literature review for the appropriate VoT for long vs. short haul trucking and will conduct sensitivity tests to determine the impact of a range of potential values on the final results for commercial traffic
How will the design of the Hard Shoulder Running Alternative look as far as on-ramp acceleration lanes?	The motorists on the Peak Period Shoulder Lane (HSR) would use the inside shoulder therefore there would be no conflict.
When does congestion start in EB direction?	When the lifts at the resorts close.
Clear Creek County growth rate correct? Can we separate the growth rates out per area?	Berger has updated the model to reflect growth in population and employment through a new base year (2010). We will provide documentation of the difference in growth rates in the Level 1 Report.
What are the demographics of the skiers?	The PEIS contained information regarding the demographic profile of winter resort visitors, and the recent AGS study may have additional relevant information. The study team will review this information for any impact on the study assumptions and will present the results of this review in the Level 1 Report.
Construction schedules – will cash flow drive construction schedule?	No, cash flow will not. However it is a benefit to the concessionaire to accelerate construction to start toll collection.

Are growth percentages from PEIS accurate? Skier growth rates? Summer vs Winter demand?	The study team will review Colorado tourism reports and available information from the ski industry to determine if the growth and demand rates for resort visitation are consistent with the assumptions in the PEIS and the I-70 Corridor Model. The results of this review will be documented in the Level 1 Report.

Recommendations to Modify Modeling Assumptions

Questions about Assumptions from PLT	Comments
How many years of construction will each alt take?	Construction duration varies from alternative to alternative, ranging from 1 year (Base Condition) up to 4 years (NOT including the time needed for additional environmental studies, This information has been added to the schematics for each alternative.
Explore tolling the Eisenhower Johnson Memorial tunnels (EJMT) with Alternative 3	For Alternative 3 Options 1 and 2 the lane that runs through the third bore of the EJMT will be dynamically tolled.
Refine months more specifically to refine traffic volumes or develop third “season”.	The Level 1 Study will be based on the same seasons of travel as designated in the PEIS in order to appropriately compare across results. The peak travel seasons are defined by 12 winter weekends in a year (a total of 48 days) running from the Friday after Thanksgiving to April 15th; and 17 summer weekends in a year (a total of 69 days). The remaining 23 weekends in the year (92 days) are considered off-peak for the purposes of this analysis.
Is the value of time correct for trucks?	Berger is conducting a literature review to identify a more appropriate value of time for long distance freight. We will provide the PLT with further information as it develops.

Truck percentage value might need to be explained further in the assumptions	As stated in the PEIS: "On weekends, truck and recreational vehicle use is most dominant in Garfield and Eagle counties: seven to eight percent, respectively. In the rest of the Corridor, truck and recreational vehicle use is about three to four percent of person trips. On summer weekdays, truck and recreational vehicle use is most dominant in Glenwood Canyon at 12 to 14 percent, followed by Clear Creek County at nine or ten percent, then Silverthorne to the Loveland Pass interchange with nine percent, and finally the Edwards to Vail East Entrance and Jefferson County segments tying with eight percent. (The fraction of heavy vehicles in Jefferson County represents a smaller percentage, but the greatest number of these vehicle trips in both directions combined.)" (Pg. 7 of the Technical Report). We will add this detail to the assumptions list. Note that we will use these numbers as a starting point, and expect to be able to corroborate the percentage with the winter and summer counts that we plan to conduct.
Is the Value of Time assumption correct for all / different users?	The VOTs proposed come directly from existing studies of the corridor including the PEIS (Pg. A-149 Technical Report) and the AGS study (Colorado AGS Mode Choice Model spreadsheet from SDG SP Survey Results). We will use these numbers as a starting point, but given that they do seem low when compared to the USDOT guidelines ("Revised Departmental Guidance on Valuation of Travel Time in Economic Analysis" Sept. 28, 2011 http://www.dot.gov/office-policy/transportation-policy/revised-departmental-guidance-valuation-travel-time-economic), we will test a range of numbers and evaluate based on the results

About ½ to 1 hour may be the time for delaying / omitting a trip. Can this information be incorporated?	The Team will take into account this anecdotal information for Level 1 and corroborate it at Level 2 with the stated preference survey.
Can we separate the growth rates out per area?	The growth rates are separated on a per county basis, as described in the PEIS on appendix C, page. C-4.
How will future drops in volume at tunnels be accounted for?	There are no assumptions related to changes in traffic volumes, and none particularly to changes in traffic volumes at the tunnels. The traffic volumes throughout the corridor will be calculated by the model based on existing traffic volumes in combination with assumptions on traffic growth rates, design specifications of capacity additions, values of time and days of lane closures.
Include a per mile CSS factor derived from previous successful CSS projects	CDOT initially looked at a per lane mile CSS factor but found that more in-depth study of project budgets would be required to determine that from past projects. CDOT queried consultants, current and ex-CDOT employees, and contractors on the percentage of design and construction budgets impacted by CSS. Two factors will be applied. A CSS design factor ranged from 3%(SH91) to 300% (Glenwood Springs). Glenwood Springs was kept in the analysis and was not removed as an outlier. A CSS design factor of **27%** will be added to all design costs for this study as the average of all projects. A CE or Construction CSS Factor ranged from 5% (SH 91/WB TT) to 39% (Frontage Road). A CSS design factor of **19%** will be added to construction costs where CSS has not already been added or meets the CSS guidelines.

Base Condition

Existing I-70 with EB Peak Period Shoulder Lane

Base Condition includes the existing highway infrastructure including the planned improvement of the EB peak period shoulder lane from Empire to Floyd Hill. The recently completed widening of the EB Twin Tunnel is part of the peak period shoulder lane project.

Roadway Information

Extent of Roadway Improvements	Empire to Floyd Hill
General Purpose (GP) Lane Information	Additional capacity by restriping existing pavement
Direction of Improvements	EB Only Direction
Design Speed	Match Existing
Trucks, Private Buses, BRT	Allowed in Peak Period Shoulder Lane (Always in GP Lanes)
Tolling	
Capacity Improvements	Dynamic priced toll for EB Peak Period Shoulder Lane
Tunnels	Dynamic priced toll as part of the EB Peak Period Shoulder Lane
Technology	Transponder and license plate recognition
Schedule	
Construction Start	2014 (Assumes NEPA Cat-Ex)
Construction Duration	1 year
First Year Operation	2014 - WB Tunnel / 2015 - EB PPSL
Financial Period	50 years

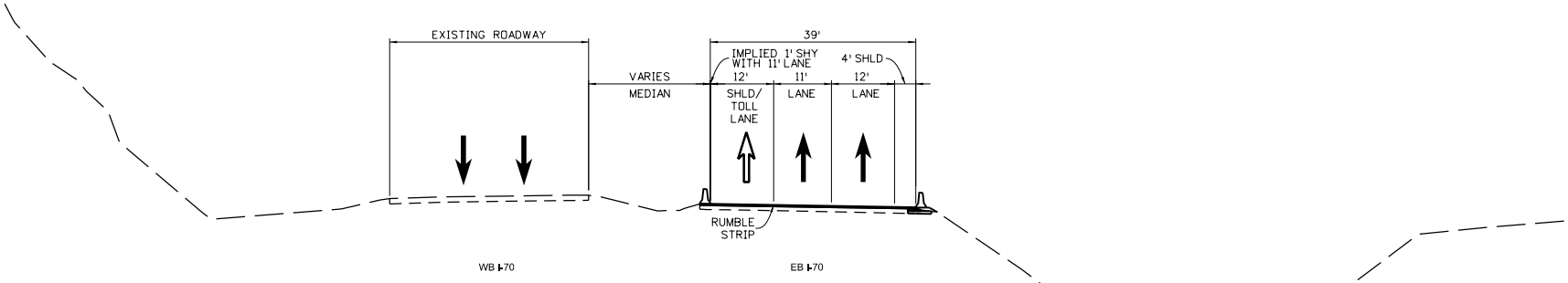
Transit Information

Termini	Glenwood Springs to Denver (CDOT Bus)
Special Infrastructure	N/A
Schedule	Fall 2014
Stations	6 CDOT Bus Stations - Glenwood Springs, Eagle, Vail, Frisco, Denver (2)
Type	
CDOT Bus	TBD by CDOT
BRT	N/A
AGS	N/A

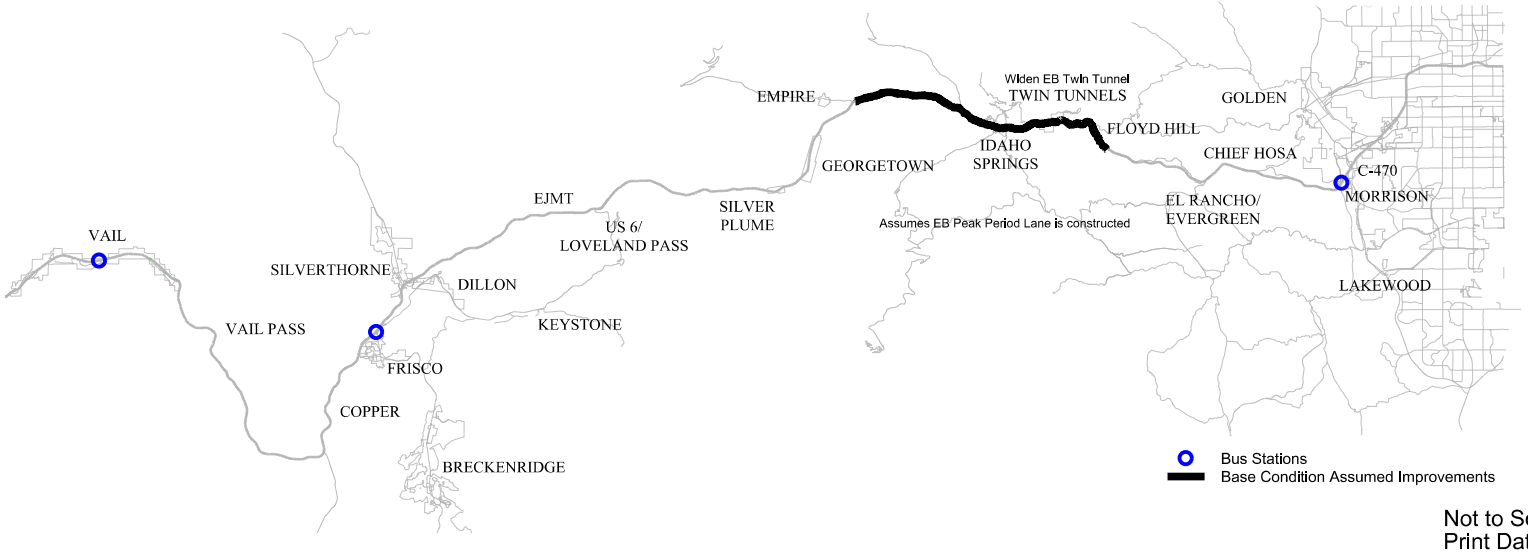
Special Structures

Special Structures	Existing EB Twin Tunnel Widening

GP = General Purpose Lane EJMT = Eisenhower Johnson Memorial Tunnels



TYPICAL SECTION BASE CONDITION
PEAK PERIOD SHOULDER LANE (TEMPORARY)
APPROX LIMITS: EB I-70 EMPIRE TO FLOYD HILL



Not to Scale
Print Date: 1/16/2014

Alt01_Opt01

2 Tolled Reversible Managed Lanes

Reversible managed lanes designed at 65 mph. The reversible managed lanes are on a separate viaduct structure from East Idaho Springs to Floyd Hill in order to maintain 65 mph design speed. General purpose (GP) lanes designed at 55 mph except from East Idaho Springs to Floyd Hill, where existing design speeds & lanes will remain.

Roadway Information

Extent of Roadway Improvements	Silverthorne to C-470
General Purpose (GP) Lane Information	Align managed lanes with GP lanes except from E Idaho Springs to Floyd Hill
Direction of Improvements	Both directions (EB and WB)
Design Speed	65 mph Managed Lanes, 55 mph GP lanes
Trucks, Private Buses, BRT	Allowed in Managed Lanes (Always in GP Lanes)
Tolling	
Capacity Improvements	Dynamic priced toll for Reversible Managed Lanes
Tunnels	Dynamic priced toll for EJMT 3rd Bore and Twin Tunnels 3rd bore
Technology	Transponder and license plate recognition
Schedule	
Construction Start	2019 (Assumes 4 years NEPA & Procurement)
Construction Duration	4 years
First Year Operation	2023
Financial Period	50 years

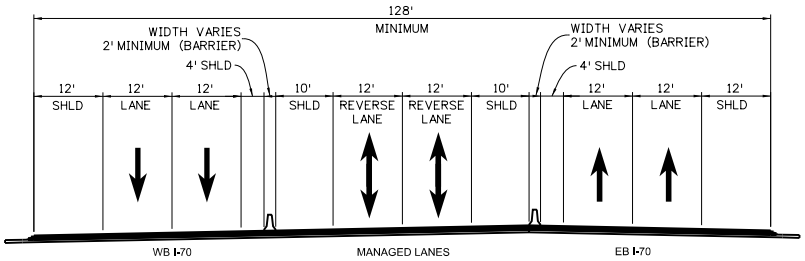
Transit Information

Termini	Vail to Denver
Special Infrastructure	Stations
Schedule	2019 - Limited Startup / 2023 - Full BRT Service
Stations	12 Total
Type	
CDOT Bus	N/A
BRT	Transit option for full 50 year concession
AGS	N/A

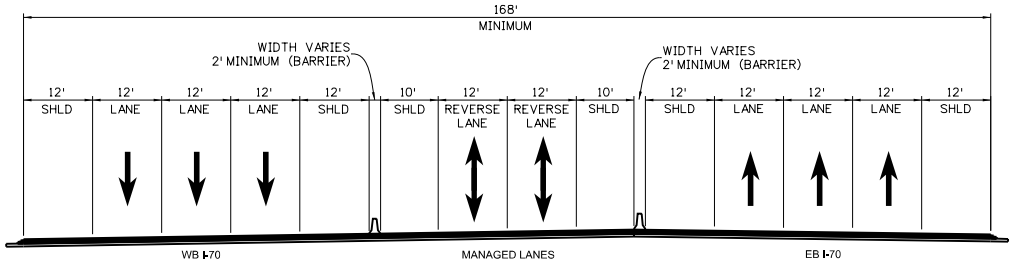
Special Structures

Special Structures	EJMT and Twin Tunnel 3rd Bores
	Managed Lanes on Viaduct from East Idaho Springs to Floyd Hill

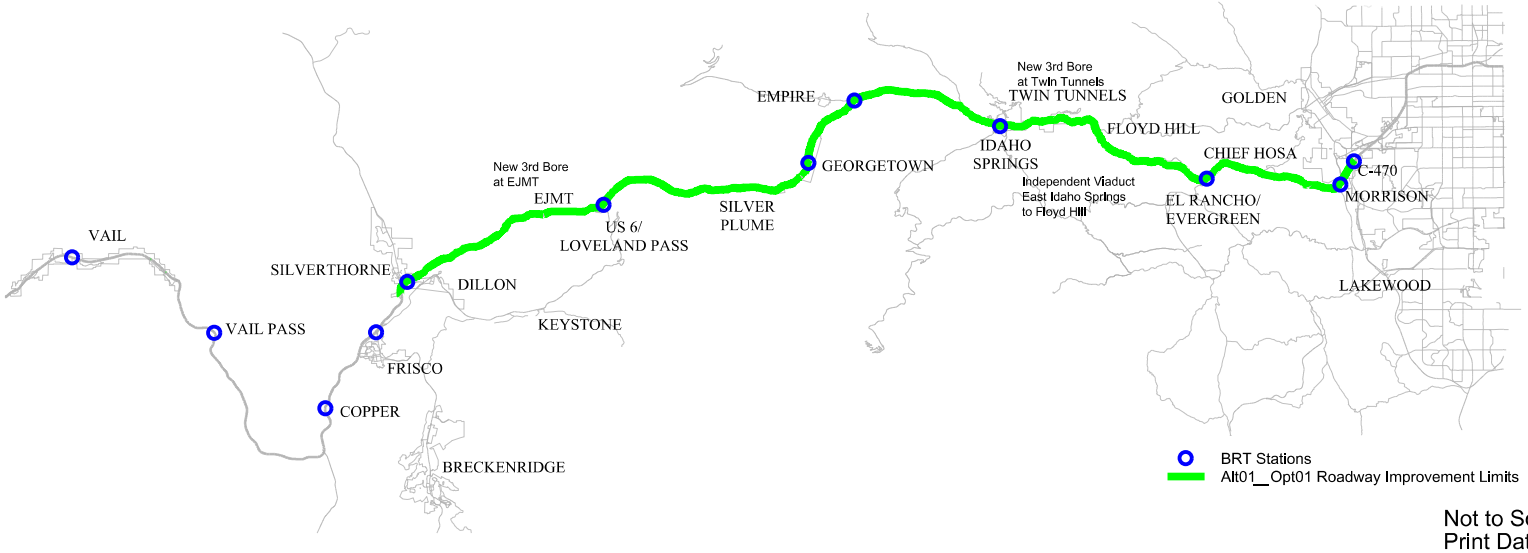
GP = General Purpose Lane EJMT = Eisenhower Johnson Memorial Tunnels



TYPICAL SECTION ALT01
2 TOLLED REVERSIBLE MANAGED LANES
EXISTING 2 GENERAL PURPOSE LANES EB & WB I-70
APPROX LIMITS: EJMT TO FLOYD HILL



TYPICAL SECTION ALT01
2 TOLLED REVERSIBLE MANAGED LANES
EXISTING 3 GENERAL PURPOSE LANES EB & WB I-70
APPROX LIMITS: SILVERTHORNE TO EJMT, FLOYD HILL TO C-470



Not to Scale
Print Date: 1/16/2014

Alt01_Opt02

2 Tolled Reversible Managed Lanes

Reversible managed lanes and I-70 designed at 65 mph. This option matches Alt01_Opt01 except from East Idaho Springs to Floyd Hill, where the reversible managed lanes and I-70 will be reconstructed to meet a 65 mph design speed.

Roadway Information

Extent of Roadway Improvements	Silverthorne to C-470
General Purpose (GP) Lane Information	Align managed lanes with GP lanes
Direction of Improvements	Both directions (EB and WB)
Design Speed	65 mph - Managed Lanes & GP Lanes
Trucks, Private Buses, BRT	Allowed in Managed Lanes (Always in GP Lanes)
Tolling	
Capacity Improvements	Dynamic priced toll for Reversible Managed Lanes
Tunnels	Dynamic priced toll for EJMT 3rd Bore and Twin Tunnels 3rd bore
Technology	Transponder and license plate recognition
Schedule	
Construction Start	2019 (Assumes 4 years NEPA & Procurement)
Construction Duration	4 years
First Year Operation	2023
Financial Period	50 years

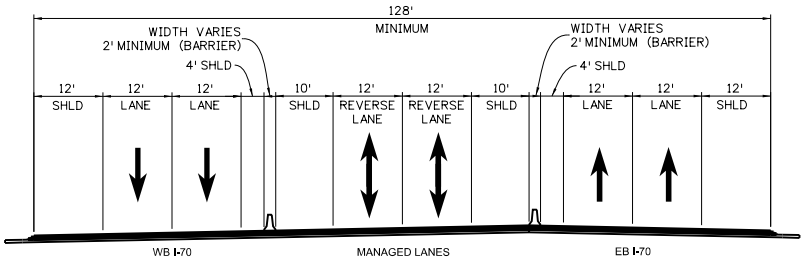
Transit Information

Termini	Vail to Denver
Special Infrastructure	Stations
Schedule	2019 - Limited Startup / 2023 - Full BRT Service
Stations	12 Total
Type	
CDOT Bus	N/A
BRT	Transit option for full 50 year concession
AGS	N/A

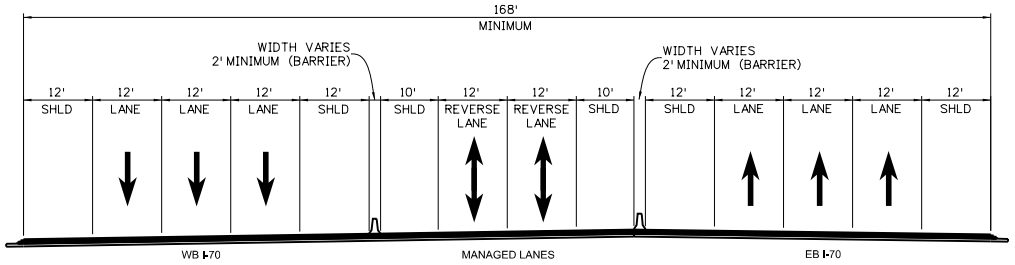
Special Structures

Special Structures	EJMT and Twin Tunnel 3rd Bores

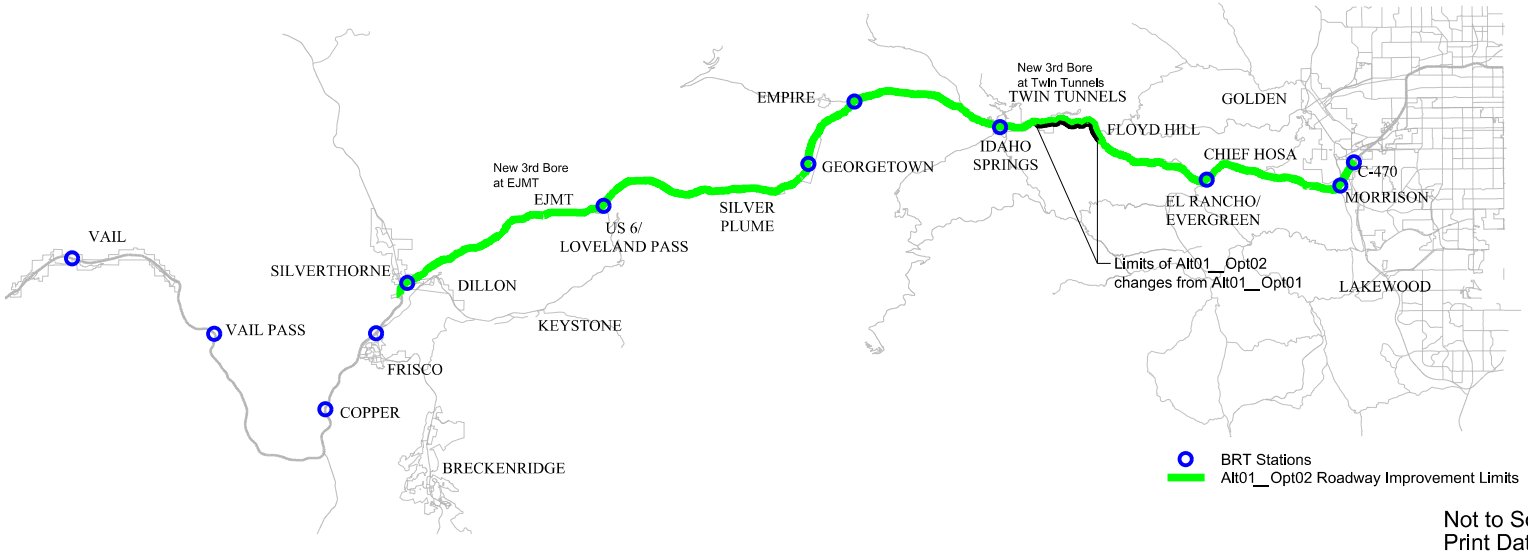
GP = General Purpose Lane EJMT = Eisenhower Johnson Memorial Tunnels



TYPICAL SECTION ALT01
2 TOLLED REVERSIBLE MANAGED LANES
EXISTING 2 GENERAL PURPOSE LANES EB & WB I-70
APPROX LIMITS: EJMT TO FLOYD HILL



TYPICAL SECTION ALT01
2 TOLLED REVERSIBLE MANAGED LANES
EXISTING 3 GENERAL PURPOSE LANES EB & WB I-70
APPROX LIMITS: SILVERTHORNE TO EJMT, FLOYD HILL TO C-470



Not to Scale
Print Date: 1/16/2014

Alt02_Opt01

3 Tolled Reversible Managed Lanes

Reversible managed lanes designed at 65 mph. The reversible managed lanes are on a separate viaduct structure from East Idaho Springs to Floyd Hill in order to maintain 65 mph design speed. General purpose (GP) lanes designed at 55 mph except from East Idaho Springs to Floyd Hill, where existing design speeds & lanes will remain.

Roadway Information

Extent of Roadway Improvements	Silverthorne to C-470
General Purpose (GP) Lane Information	Align managed lanes with GP lanes except from E Idaho Springs to Floyd Hill
Direction of Improvements	Both directions (EB and WB)
Design Speed	65 mph Managed Lanes, 55 mph GP lanes
Trucks, Private Buses, BRT	Allowed in Managed Lanes (Always in GP Lanes)
Tolling	
Capacity Improvements	Dynamic priced toll for Reversible Managed Lanes
Tunnels	Dynamic priced toll for EJMT 3rd Bore and Twin Tunnels 3rd bore
Technology	Transponder and license plate recognition
Schedule	
Construction Start	2019 (Assumes 4 years NEPA & Procurement)
Construction Duration	4 years
First Year Operation	2023
Financial Period	50 years

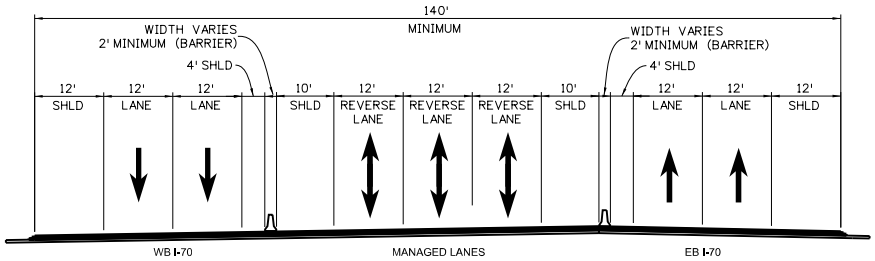
Transit Information

Termini	Vail to Denver
Special Infrastructure	Stations
Schedule	2019 - Limited Startup / 2023 - Full BRT Service
Stations	12 Total
Type	
CDOT Bus	N/A
BRT	Transit option for full 50 year concession
AGS	N/A

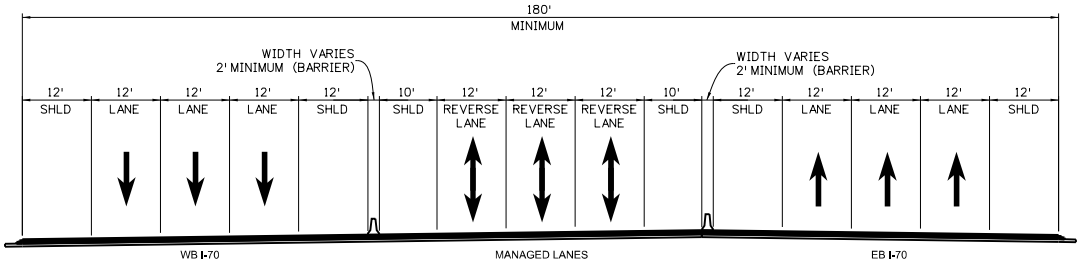
Special Structures

Special Structures	EJMT and Twin Tunnel 3rd Bores
	Managed Lanes on Viaduct from East Idaho Springs to Floyd Hill

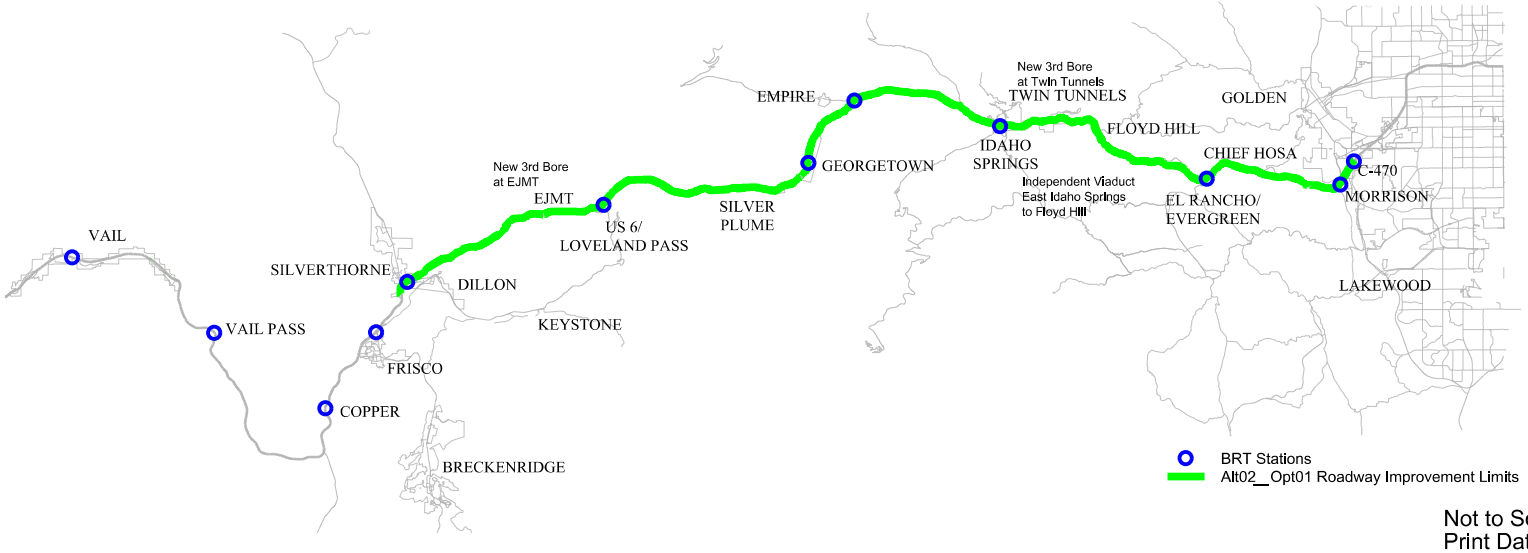
GP = General Purpose Lane EJMT = Eisenhower Johnson Memorial Tunnels



TYPICAL SECTION ALT02
3 TOLLED REVERSIBLE MANAGED LANES
EXISTING 2 GENERAL PURPOSE LANES EB & WB I-70
APPROX LIMITS: EJMT TO FLOYD HILL



TYPICAL SECTION ALT02
3 TOLLED REVERSIBLE MANAGED LANES
EXISTING 3 GENERAL PURPOSE LANES EB & WB I-70
APPROX LIMITS: SILVERTHORNE TO EJMT, FLOYD HILL TO C-470



Not to Scale
Print Date: 1/16/2014

Alt02_Opt02

3 Tolled Reversible Managed Lanes

Reversible managed lanes and I-70 designed at 65 mph. This option matches Alt02_Opt01 except from East Idaho Springs to Floyd Hill, where the reversible managed lanes and I-70 GP lanes will be reconstructed to meet a 65 mph design speed.

Roadway Information

Extent of Roadway Improvements	Silverthorne to C-470
General Purpose (GP) Lane Information	Align managed lanes with GP lanes
Direction of Improvements	Both directions (EB and WB)
Design Speed	65 mph - Managed Lanes & GP Lanes
Trucks, Private Buses, BRT	Allowed in Managed Lanes (Always in GP Lanes)
Tolling	
Capacity Improvements	Dynamic priced toll for Reversible Managed Lanes
Tunnels	Dynamic priced toll for EJMT 3rd Bore and Twin Tunnels 3rd bore
Technology	Transponder and license plate recognition
Schedule	
Construction Start	2019 (Assumes 4 years NEPA & Procurement)
Construction Duration	4 years
First Year Operation	2023
Financial Period	50 years

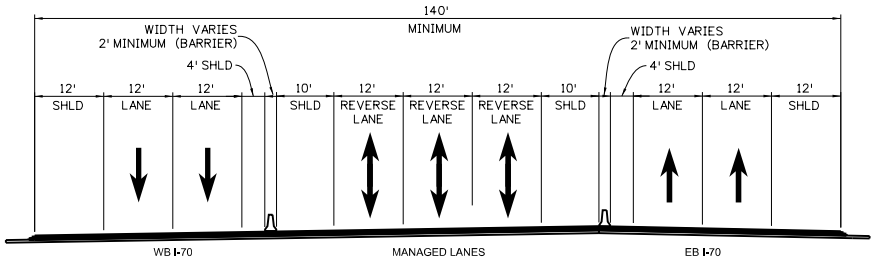
Transit Information

Termini	Vail to Denver
Special Infrastructure	Stations
Schedule	2019 - Limited Startup / 2023 - Full BRT Service
Stations	12 Total
Type	
CDOT Bus	N/A
BRT	Transit option for full 50 year concession
AGS	N/A

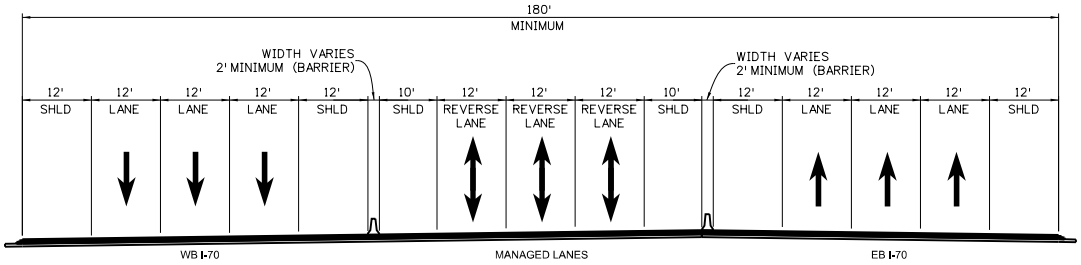
Special Structures

Special Structures	EJMT and Twin Tunnel 3rd Bores

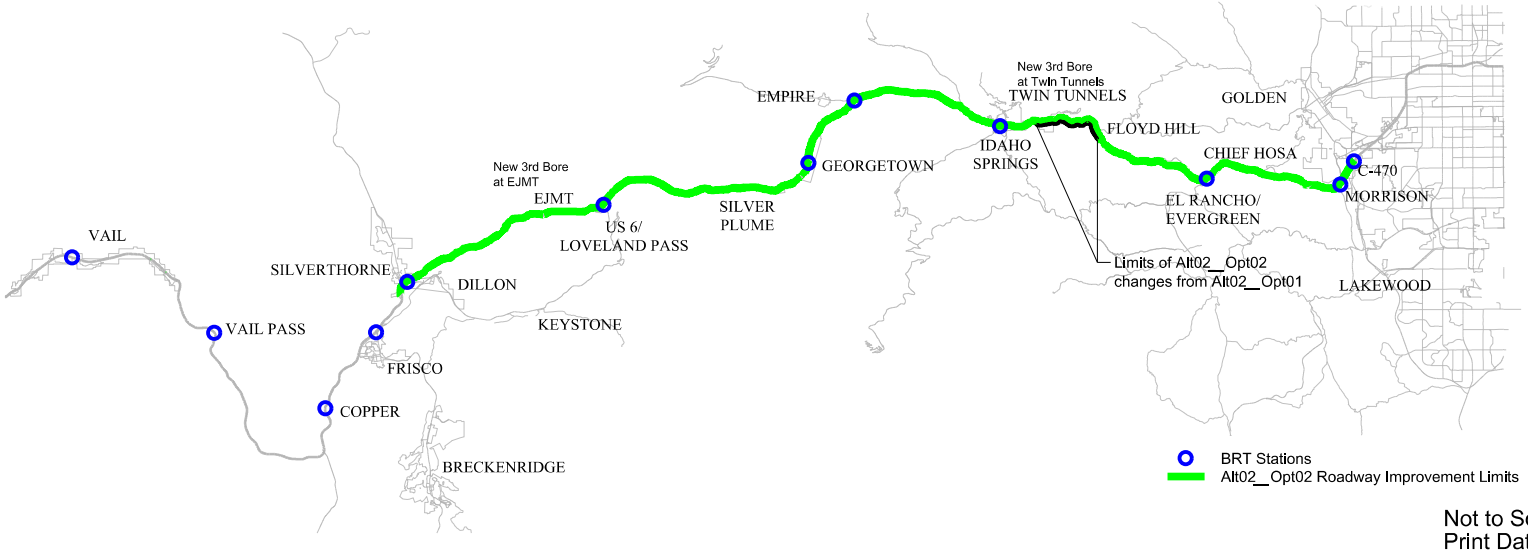
GP = General Purpose Lane EJMT = Eisenhower Johnson Memorial Tunnels



TYPICAL SECTION ALT02
3 TOLLED REVERSIBLE MANAGED LANES
EXISTING 2 GENERAL PURPOSE LANES EB & WB I-70
APPROX LIMITS: EJMT TO FLOYD HILL



TYPICAL SECTION ALT02
3 TOLLED REVERSIBLE MANAGED LANES
EXISTING 3 GENERAL PURPOSE LANES EB & WB I-70
APPROX LIMITS: SILVERTHORNE TO EJMT, FLOYD HILL TO C-470



Not to Scale
Print Date: 1/16/2014

Alt02_Opt03

3 Tolled Reversible Managed Lanes

Reversible managed lanes designed at 65 mph. The reversible managed lanes are on a separate viaduct structure from West Idaho Springs to Floyd Hill to minimize impacts. General purpose (GP) lanes designed at 65 mph except from West Idaho Springs to Floyd Hill, where existing design speeds & lanes will remain. This option is similar to Alt02_Opt01, except viaduct extends to West Idaho Springs.

Roadway Information

Extent of Roadway Improvements	Silverthorne to C-470
General Purpose (GP) Lane Information	Align managed lanes with GP lanes except from W Idaho Springs to Floyd Hill
Direction of Improvements	Both directions (EB and WB)
Design Speed	65 mph Managed Lanes, 55 mph GP lanes
Trucks, Private Buses, BRT	Allowed in Managed Lanes (Always in GP Lanes)
Tolling	
Capacity Improvements	Dynamic priced toll for Reversible Managed Lanes
Tunnels	Dynamic priced toll for EJMT 3rd Bore and Twin Tunnels 3rd bore
Technology	Transponder and license plate recognition
Schedule	
Construction Start	2019 (Assumes 4 years NEPA & Procurement)
Construction Duration	4 years
First Year Operation	2023
Financial Period	50 years

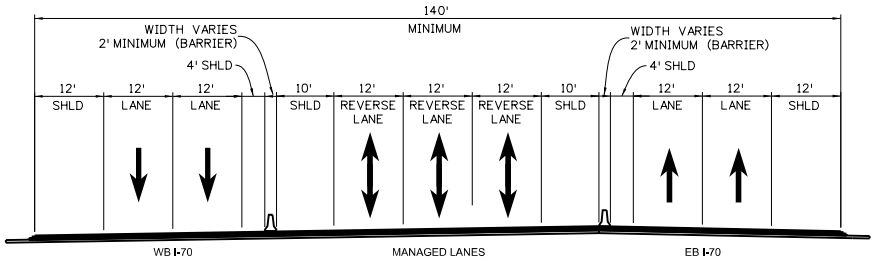
Transit Information

Termini	Vail to Denver
Special Infrastructure	Stations
Schedule	2019 - Limited Startup / 2023 - Full BRT Service
Stations	12 Total
Type	
CDOT Bus	N/A
BRT	Transit option for full 50 year concession
AGS	N/A

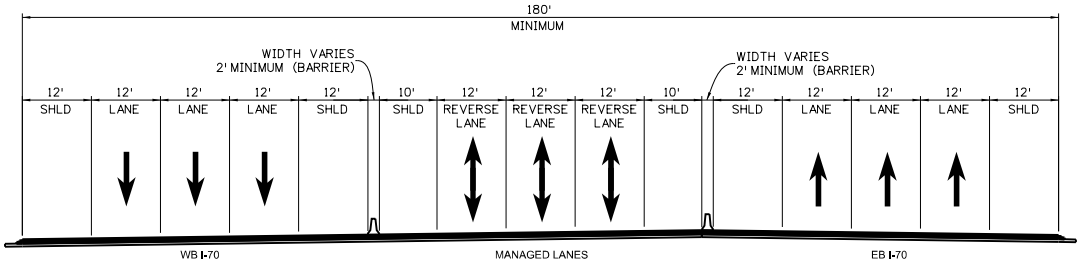
Special Structures

Special Structures	EJMT and Twin Tunnel 3rd Bores
	Managed Lanes on Viaduct from West Idaho Springs to Floyd Hill

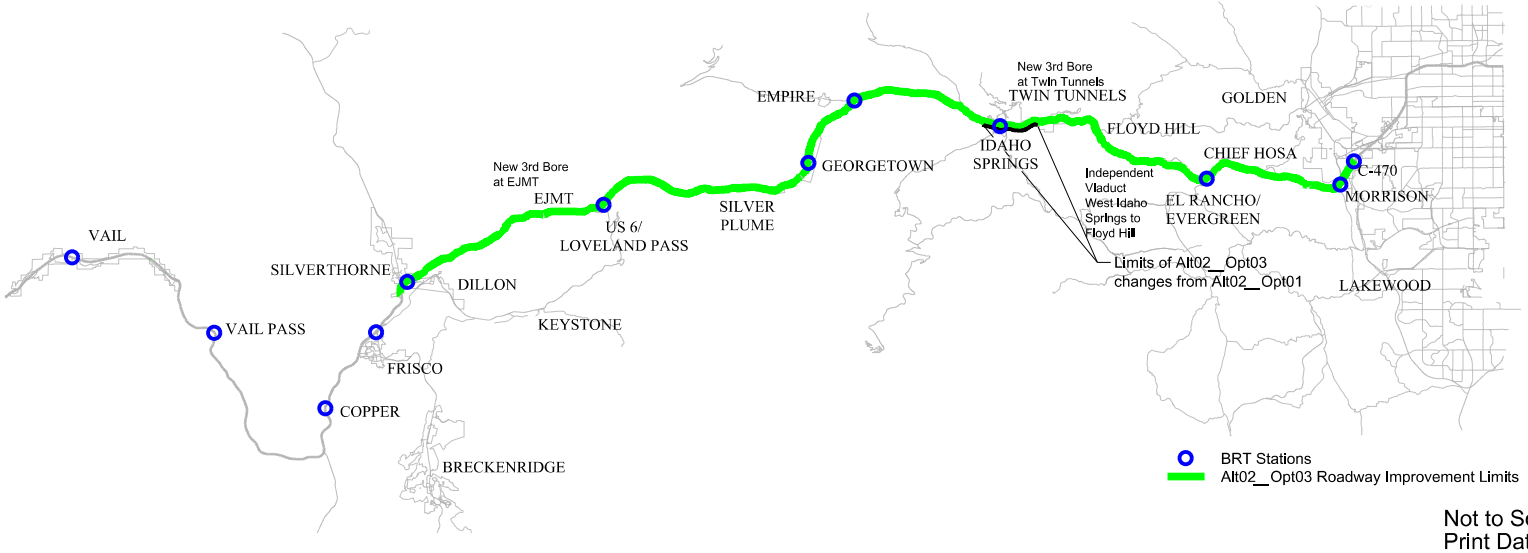
GP = General Purpose Lane EJMT = Eisenhower Johnson Memorial Tunnels



TYPICAL SECTION ALT02
3 TOLLED REVERSIBLE MANAGED LANES
EXISTING 2 GENERAL PURPOSE LANES EB & WB I-70
APPROX LIMITS: EJMT TO FLOYD HILL



TYPICAL SECTION ALT02
3 TOLLED REVERSIBLE MANAGED LANES
EXISTING 3 GENERAL PURPOSE LANES EB & WB I-70
APPROX LIMITS: SILVERTHORNE TO EJMT, FLOYD HILL TO C-470



Not to Scale
Print Date: 1/16/2014

Alt03_Opt01

Minimum Program per PEIS

Minimum program per PEIS with 55 mph design speed including a 3rd bore at EJMT. Minimum program is generally localized auxiliary lane improvements.

Roadway Information

Extent of Roadway Improvements	EJMT to Floyd Hill
General Purpose (GP) Lane Information	Auxiliary lanes added at localized areas between interchanges
Direction of Improvements	Both directions (EB and WB)
Design Speed	55 mph
Trucks, Private Buses, BRT	Allowed in GP Lanes and auxiliary lanes
Tolling	
Capacity Improvements	No toll for auxiliary lanes
Tunnels	Dynamic priced toll for EJMT 3rd Bore and Twin Tunnels 3rd Lane
Technology	Transponder and license plate recognition
Schedule	
Construction Start	2018 (Assumes 3 years NEPA)
Construction Duration	3 years
First Year Operation	2021
Financial Period	50 years

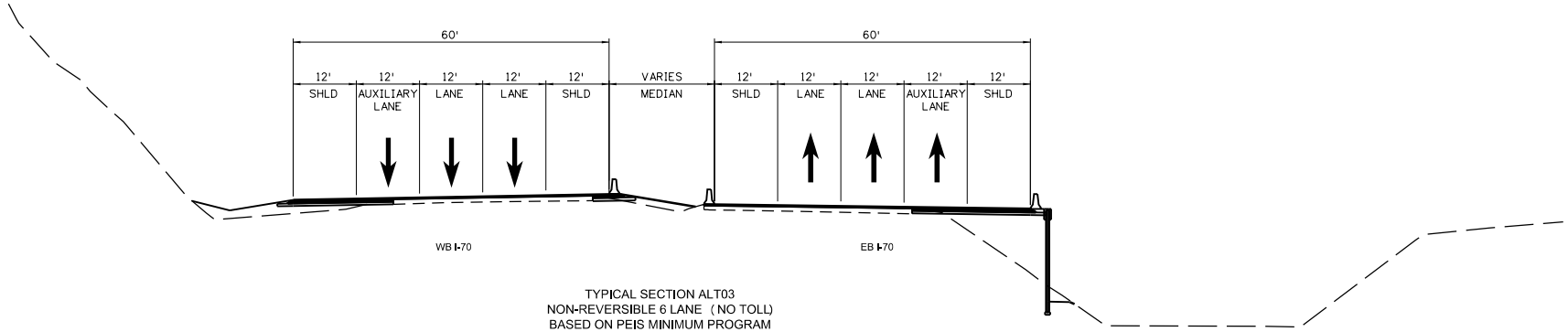
Transit Information

Termini	Silverthorne-Denver, Service to GWS (CDOT Bus), Breckenridge-Denver (AGS)
Special Infrastructure	AGS System; None for CDOT Bus
Schedule	Fall 2014 - CDOT Bus / After 2035 - AGS
Stations	6 CDOT Bus Stations - GWS, Eagle, Vail, Frisco, Denver (2); 5 AGS Stations
Type	
CDOT Bus	TBD by CDOT
BRT	N/A
AGS	In operation after 2035

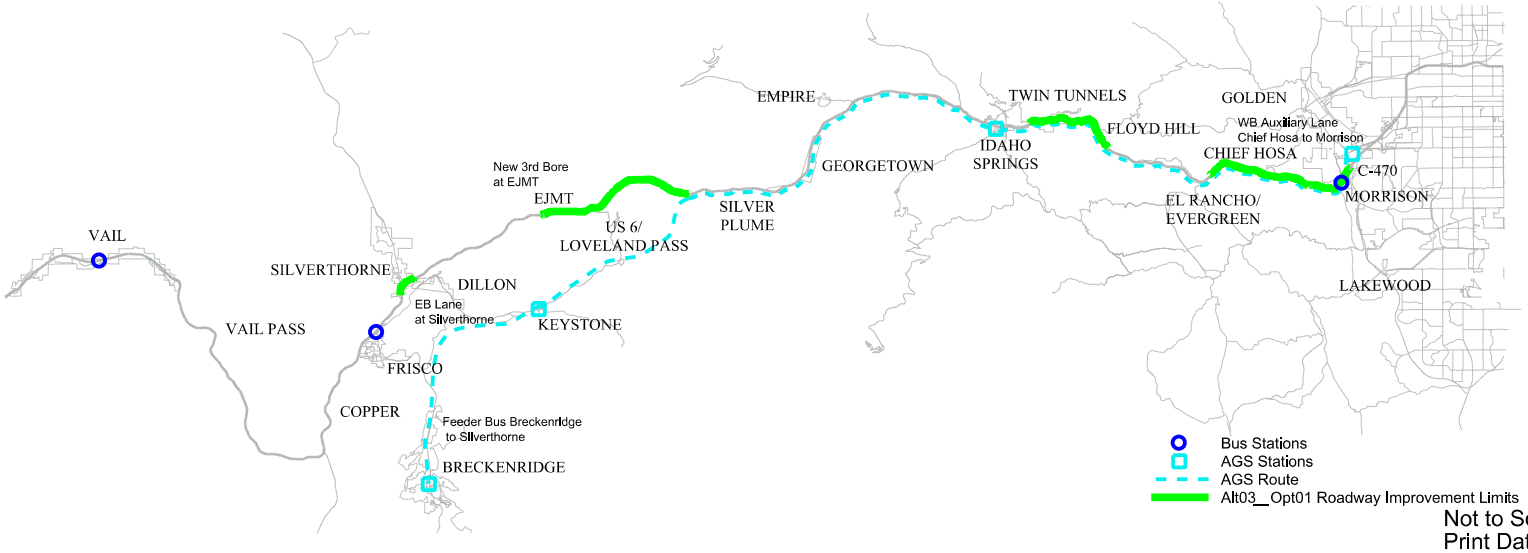
Special Structures

Special Structures	EJMT 3rd Bore

GP = General Purpose Lane EJMT = Eisenhower Johnson Memorial Tunnels GWS = Glenwood Springs



TYPICAL SECTION ALT03
NON-REVERSIBLE 6 LANE (NO TOLL)
BASED ON PEIS MINIMUM PROGRAM
APPROX LIMITS: EJMT TO BAKERVILLE, IDAHO SPRINGS TO FLOYD HILL



Not to Scale
Print Date: 1/16/2014

Alt03_Opt02

Minimum Program per PEIS

Minimum program per PEIS with 65 mph design speed including a 3rd bore at EJMT. Minimum program is generally localized auxiliary lane improvements.

Roadway Information

Extent of Roadway Improvements	EJMT to Floyd Hill
General Purpose (GP) Lane Information	Auxiliary lanes added at localized areas between interchanges
Direction of Improvements	Both directions (EB and WB)
Design Speed	65 mph
Trucks, Private Buses, BRT	Allowed in GP Lanes and auxiliary lanes
Tolling	
Capacity Improvements	No toll for auxiliary lanes
Tunnels	Dynamic priced toll for EJMT 3rd Bore, New & Twin Tunnels 3rd Lane
Technology	Transponder and license plate recognition
Schedule	
Construction Start	2018 (Assumes 3 years NEPA)
Construction Duration	3 years
First Year Operation	2021
Financial Period	50 years

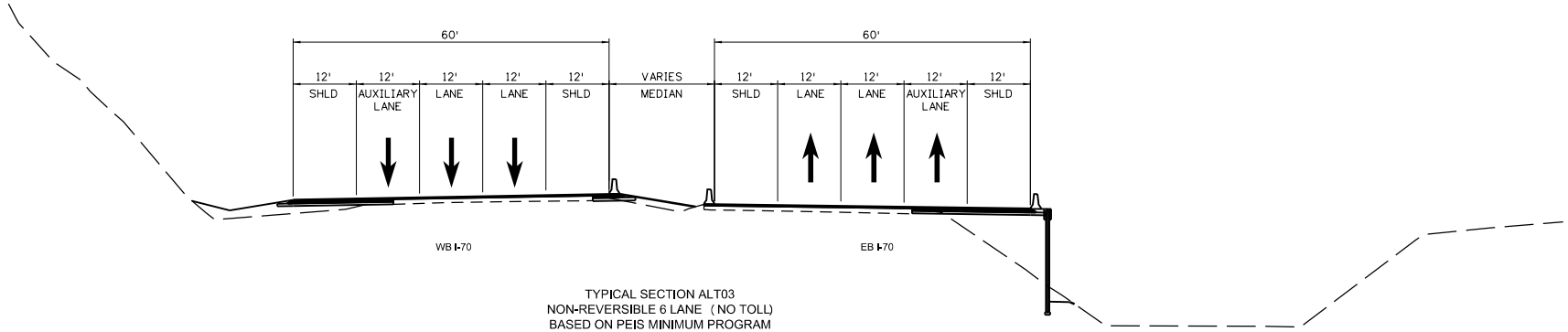
Transit Information

Termini	Silverthorne-Denver, Service to GWS (CDOT Bus), Breckenridge-Denver (AGS)
Special Infrastructure	AGS System; None for CDOT Bus
Schedule	Fall 2014 - CDOT Bus / After 2035 - AGS
Stations	6 CDOT Bus Stations - GWS, Eagle, Vail, Frisco, Denver (2); 5 AGS Stations
Type	
CDOT Bus	TBD by CDOT
BRT	N/A
AGS	In operation after 2035

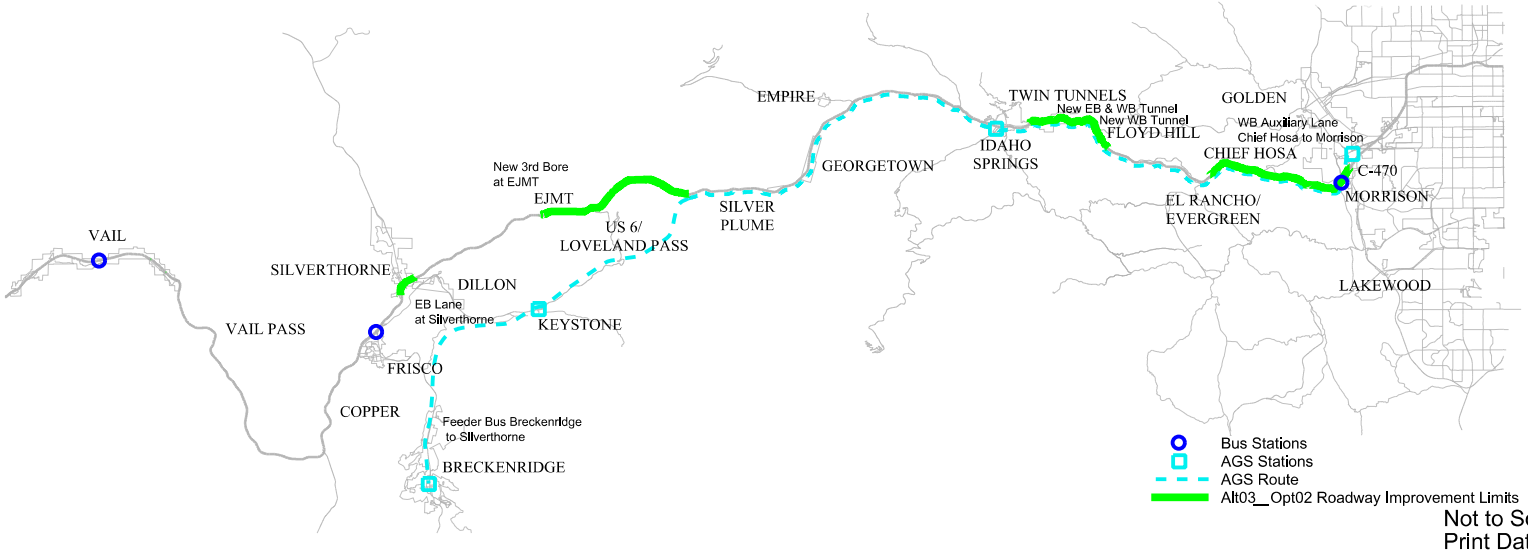
Special Structures

Special Structures	EJMT 3rd Bore
	New EB & WB Tunnel at Hidden Valley, New WB Tunnel near SH 6

GP = General Purpose Lane EJMT = Eisenhower Johnson Memorial Tunnels GWS = Glenwood Springs



TYPICAL SECTION ALT03
NON-REVERSIBLE 6 LANE (NO TOLL)
BASED ON PEIS MINIMUM PROGRAM
APPROX LIMITS: EJMT TO BAKERVILLE, IDAHO SPRINGS TO FLOYD HILL



Not to Scale
Print Date: 1/16/2014

Alt03_Opt03

Minimum Program per PEIS

Minimum program per PEIS with 55 mph design speed without a 3rd bore at EJMT. Minimum program is generally localized auxiliary lane improvements. Option is similar to Alt03_Opt01 without 3rd Bore EJMT.

Roadway Information

Extent of Roadway Improvements	EJMT to Floyd Hill
General Purpose (GP) Lane Information	Auxiliary lanes added at localized areas between interchanges
Direction of Improvements	Both directions (EB and WB)
Design Speed	55 mph
Trucks, Private Buses, BRT	Allowed in GP Lanes and auxiliary lanes
Tolling	
Capacity Improvements	No toll for auxiliary lanes
Tunnels	Dynamic priced toll for Twin Tunnels 3rd Lane
Technology	Transponder and license plate recognition
Schedule	
Construction Start	2018 (Assumes 3 years NEPA)
Construction Duration	3 years
First Year Operation	2021
Financial Period	50 years

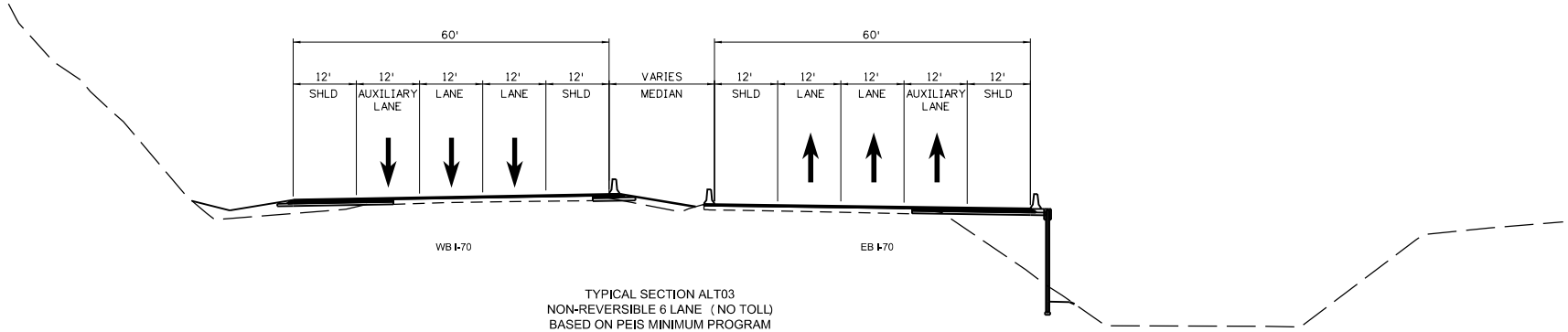
Transit Information

Termini	Silverthorne-Denver, Service to GWS (CDOT Bus), Breckenridge-Denver (AGS)
Special Infrastructure	AGS System; None for CDOT Bus
Schedule	Fall 2014 - CDOT Bus / After 2035 - AGS
Stations	6 CDOT Bus Stations - GWS, Eagle, Vail, Frisco, Denver (2); 5 AGS Stations
Type	
CDOT Bus	TBD by CDOT
BRT	N/A
AGS	In operation after 2035

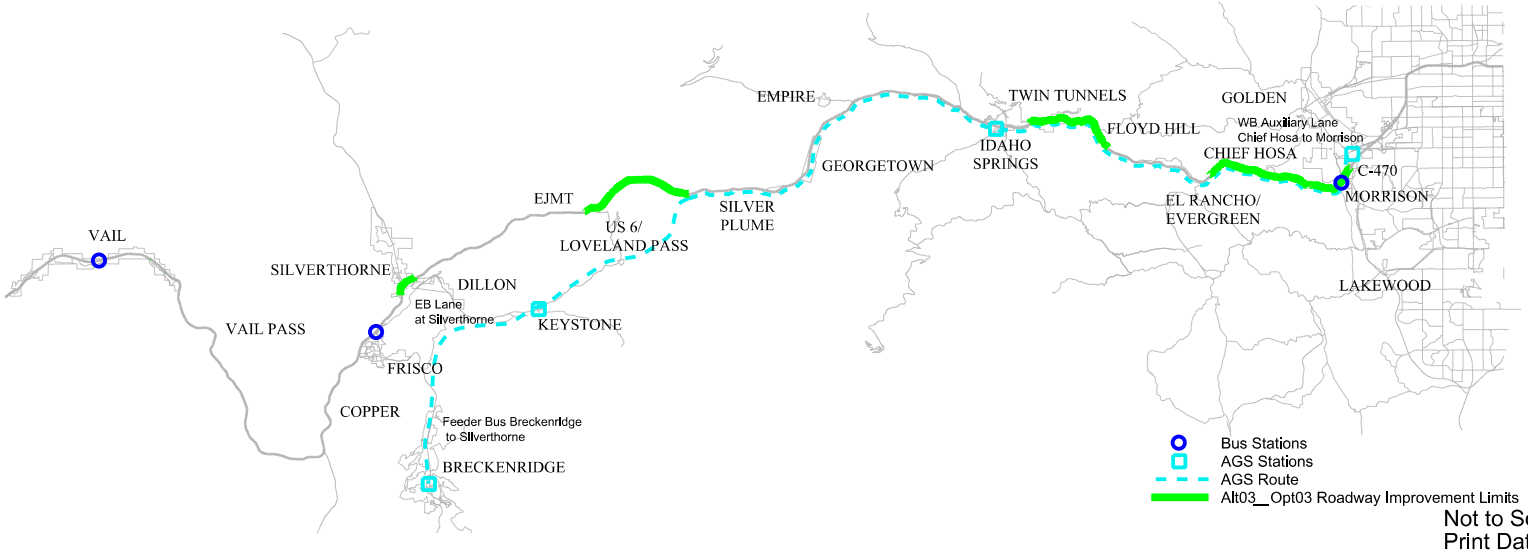
Special Structures

Special Structures	

GP = General Purpose Lane EJMT = Eisenhower Johnson Memorial Tunnels GWS = Glenwood Springs



TYPICAL SECTION ALT03
NON-REVERSIBLE 6 LANE (NO TOLL)
BASED ON PEIS MINIMUM PROGRAM
APPROX LIMITS: EJMT TO BAKERVILLE, IDAHO SPRINGS TO FLOYD HILL



Not to Scale
Print Date: 1/16/2014

Alt03_Opt04

Minimum Program per PEIS

Minimum program per PEIS with 65 mph design speed without a 3rd bore at EJMT. Minimum program is generally localized auxiliary lane improvements. Option is similar to Alt03_Opt02 without 3rd Bore EJMT.

Roadway Information

Extent of Roadway Improvements	EJMT to Floyd Hill
General Purpose (GP) Lane Information	Auxiliary lanes added at localized areas between interchanges
Direction of Improvements	Both directions (EB and WB)
Design Speed	65 mph
Trucks, Private Buses, BRT	Allowed in GP Lanes and auxiliary lanes
Tolling	
Capacity Improvements	No toll for auxiliary lanes
Tunnels	Dynamic priced toll for New & Twin Tunnels 3rd Lane
Technology	Transponder and license plate recognition
Schedule	
Construction Start	2018 (Assumes 3 years NEPA)
Construction Duration	3 years
First Year Operation	2021
Financial Period	50 years

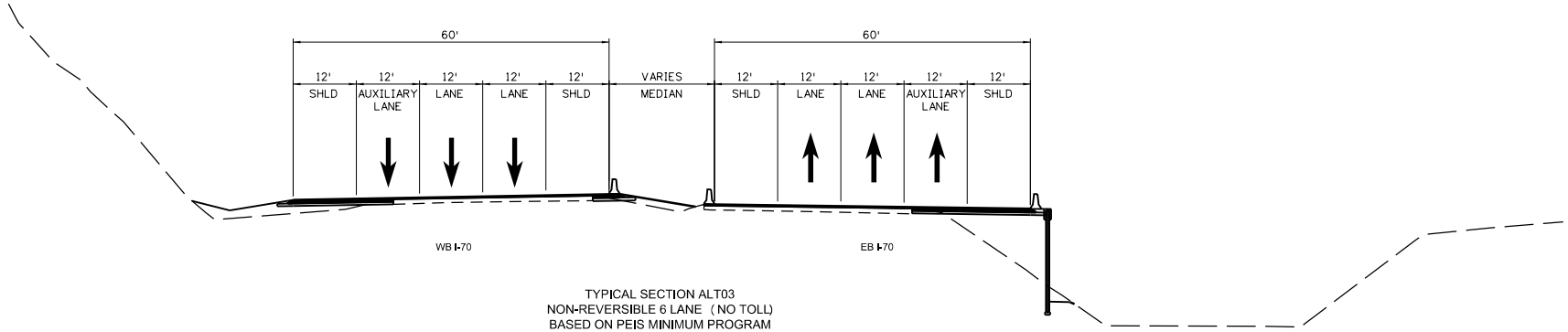
Transit Information

Termini	Silverthorne-Denver, Service to GWS (CDOT Bus), Breckenridge-Denver (AGS)
Special Infrastructure	AGS System; None for CDOT Bus
Schedule	Fall 2014 - CDOT Bus / After 2035 - AGS
Stations	6 CDOT Bus Stations - GWS, Eagle, Vail, Frisco, Denver (2); 5 AGS Stations
Type	
CDOT Bus	TBD by CDOT
BRT	N/A
AGS	In operation after 2035

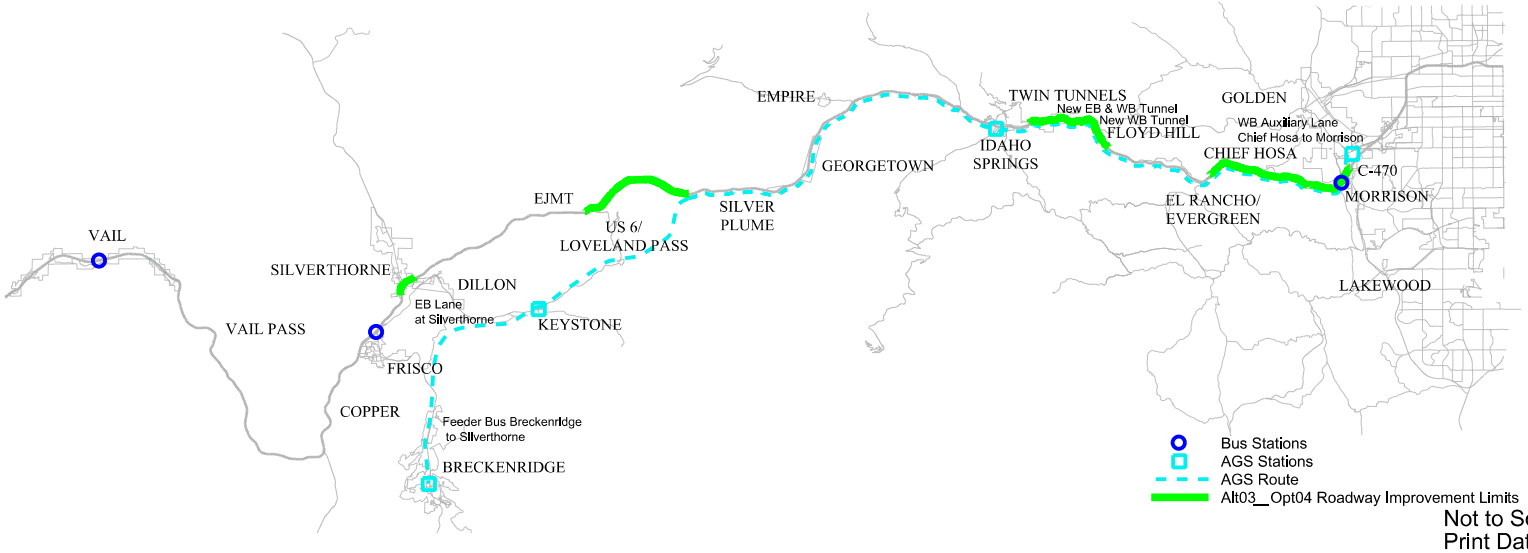
Special Structures

Special Structures	New EB & WB Tunnel at Hidden Valley, New WB Tunnel near SH 6

GP = General Purpose Lane EJMT = Eisenhower Johnson Memorial Tunnels GWS = Glenwood Springs



TYPICAL SECTION ALT03
NON-REVERSIBLE 6 LANE (NO TOLL)
BASED ON PEIS MINIMUM PROGRAM
APPROX LIMITS: EJMT TO BAKERVILLE, IDAHO SPRINGS TO FLOYD HILL



Not to Scale
Print Date: 1/16/2014

Alt04_Opt01

Maximum Program per PEIS

Maximum program per PEIS with 55 mph design speed including a 3rd bore at EJMT. Maximum program includes one additional non-reversible tolled lane (EB & WB) between EJMT and Floyd Hill.

Roadway Information

Extent of Roadway Improvements	EJMT to Floyd Hill
General Purpose (GP) Lane Information	Additional capacity by widening existing (Non-reversible)
Direction of Improvements	Both directions (EB and WB)
Design Speed	55 mph
Trucks, Private Buses, BRT	Allowed in Toll Lane (Always in GP Lanes)
Tolling	
Capacity Improvements	Dynamic priced toll for 3rd toll lane
Tunnels	Dynamic priced toll for EJMT 3rd Bore and Twin Tunnels 3rd Lane
Technology	Transponder and license plate recognition
Schedule	
Construction Start	2018 (Assumes 3 years NEPA)
Construction Duration	4 years
First Year Operation	2022
Financial Period	50 years

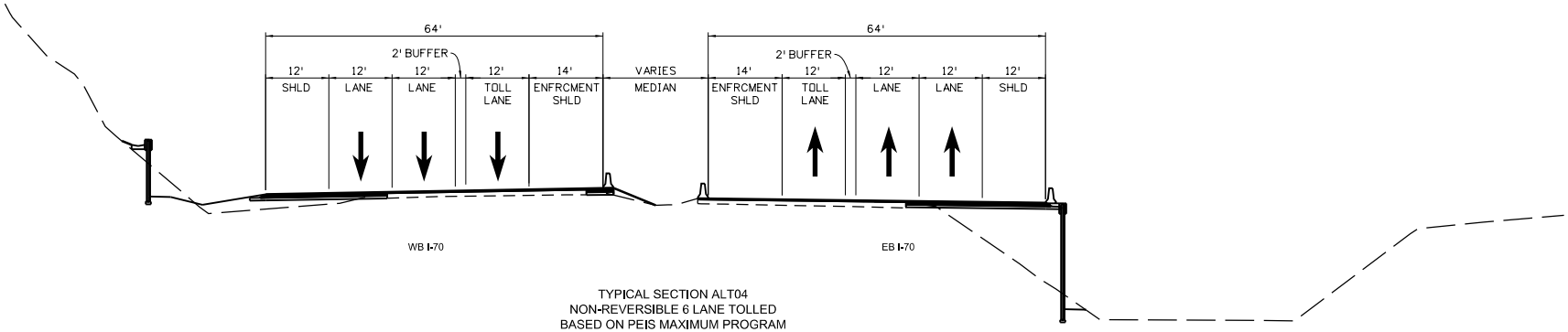
Transit Information

Termini	Silverthorne-Denver, Service to GWS (CDOT Bus), Breckenridge-Denver (AGS)
Special Infrastructure	AGS System; None for CDOT Bus
Schedule	Fall 2014 - CDOT Bus / After 2035 - AGS
Stations	6 CDOT Bus Stations - GWS, Eagle, Vail, Frisco, Denver (2); 5 AGS Stations
Type	
CDOT Bus	TBD by CDOT
BRT	N/A
AGS	In operation after 2035

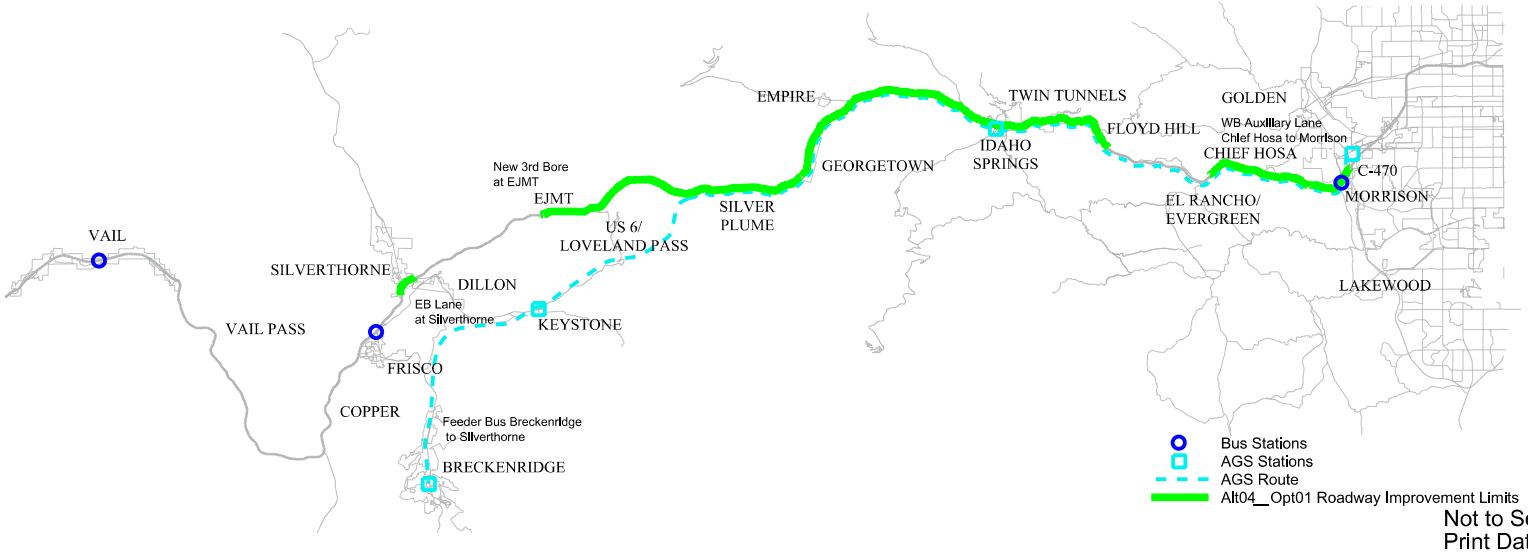
Special Structures

Special Structures	EJMT 3rd Bore

GP = General Purpose Lane EJMT = Eisenhower Johnson Memorial Tunnels GWS = Glenwood Springs



TYPICAL SECTION ALT04
NON-REVERSIBLE 6 LANE TOLLED
BASED ON PEIS MAXIMUM PROGRAM
APPROX LIMITS: EJMT TO FLOYD HILL



Not to Scale
Print Date: 1/16/2014

Alt04_Opt02

Maximum Program per PEIS

Maximum program per PEIS with 65 mph design speed including a 3rd bore at EJMT. Maximum program includes one additional non-reversible tolled lane (EB & WB) between EJMT and Floyd Hill.

Roadway Information

Extent of Roadway Improvements	EJMT to Floyd Hill
General Purpose (GP) Lane Information	Additional capacity by widening existing
Direction of Improvements	Both directions (EB and WB)
Design Speed	65 mph
Trucks, Private Buses, BRT	Allowed in Toll Lane (Always in GP Lanes)
Tolling	
Capacity Improvements	Dynamic priced toll for 3rd toll lane
Tunnels	Dynamic priced toll for EJMT 3rd Bore and New & Twin Tunnels 3rd Lane
Technology	Transponder and license plate recognition
Schedule	
Construction Start	2018 (Assumes 3 years NEPA)
Construction Duration	4 years
First Year Operation	2022
Financial Period	50 years

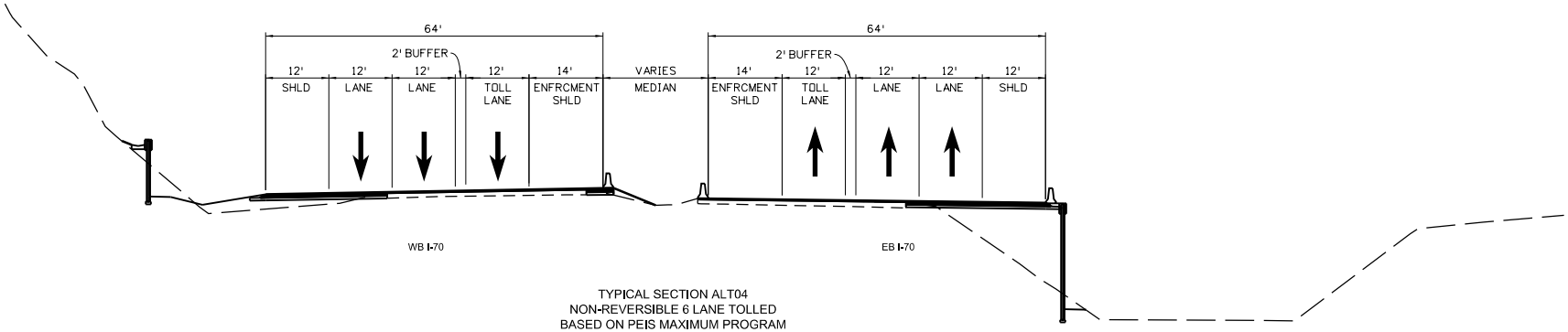
Transit Information

Termini	Silverthorne-Denver, Service to GWS (CDOT Bus), Breckenridge-Denver (AGS)
Special Infrastructure	AGS System; None for CDOT Bus
Schedule	Fall 2014 - CDOT Bus / After 2035 - AGS
Stations	6 CDOT Bus Stations - GWS, Eagle, Vail, Frisco, Denver (2); 5 AGS Stations
Type	
CDOT Bus	TBD by CDOT
BRT	N/A
AGS	In operation after 2035

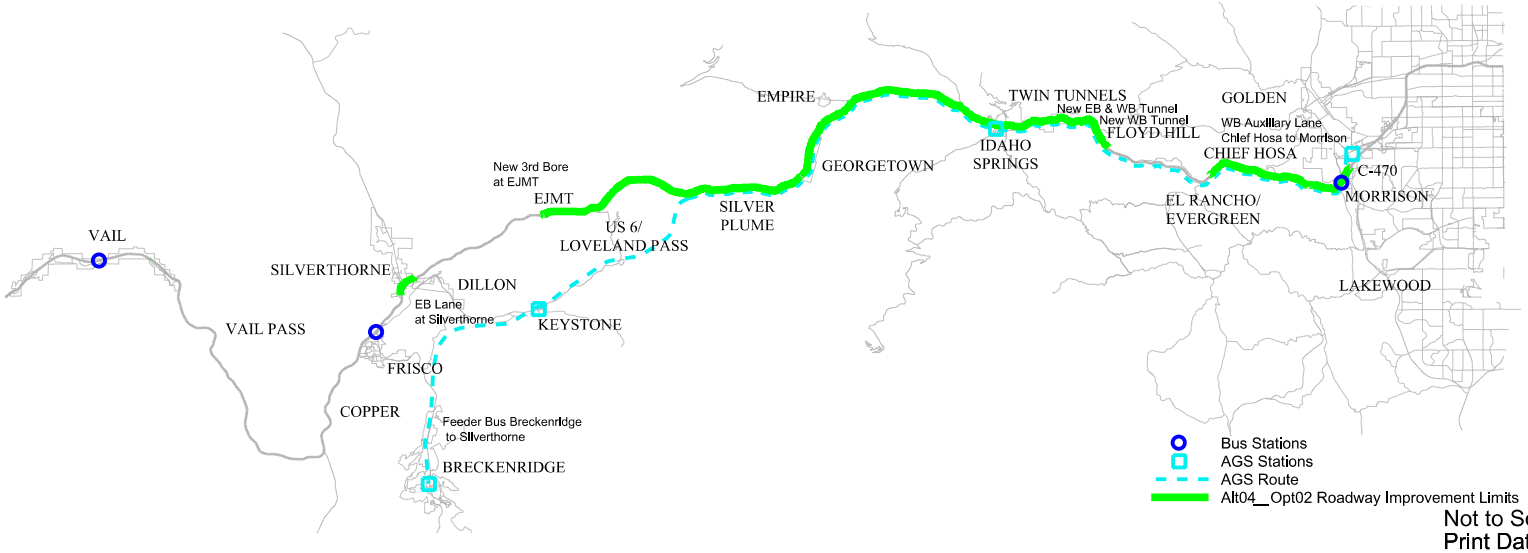
Special Structures

Special Structures	EJMT 3rd Bore
	New EB & WB Tunnel at Hidden Valley, New WB Tunnel near SH 6

GP = General Purpose Lane EJMT = Eisenhower Johnson Memorial Tunnels GWS = Glenwood Springs



TYPICAL SECTION ALT04
NON-REVERSIBLE 6 LANE TOLLED
BASED ON PEIS MAXIMUM PROGRAM
APPROX LIMITS: EJMT TO FLOYD HILL



Not to Scale
Print Date: 1/16/2014

Alt05_Opt01

Permanent Peak Period Shoulder Lane

Widen the existing roadway to accommodate one additional left side managed lane (EB & WB) for use during peak times, during non-peak times operates as a standard shoulder. Provide full width shoulder on right side.

Roadway Information

Extent of Roadway Improvements	EJMT to Floyd Hill
General Purpose (GP) Lane Information	Additional capacity by widening existing
Direction of Improvements	Both directions (EB and WB)
Design Speed	Match Existing
Trucks, Private Buses, BRT	Allowed in Peak Period Lane (Always in GP Lanes)
Tolling	
Capacity Improvements	Dynamic priced toll for EB & WB Peak Period Shoulder Lanes
Tunnels	Dynamic priced toll for EJMT 3rd Bore and Twin Tunnels 3rd Lane
Technology	Transponder and license plate recognition
Schedule	
Construction Start	2019 (Assumes 4 years NEPA)
Construction Duration	4 years
First Year Operation	2023
Financial Period	50 years

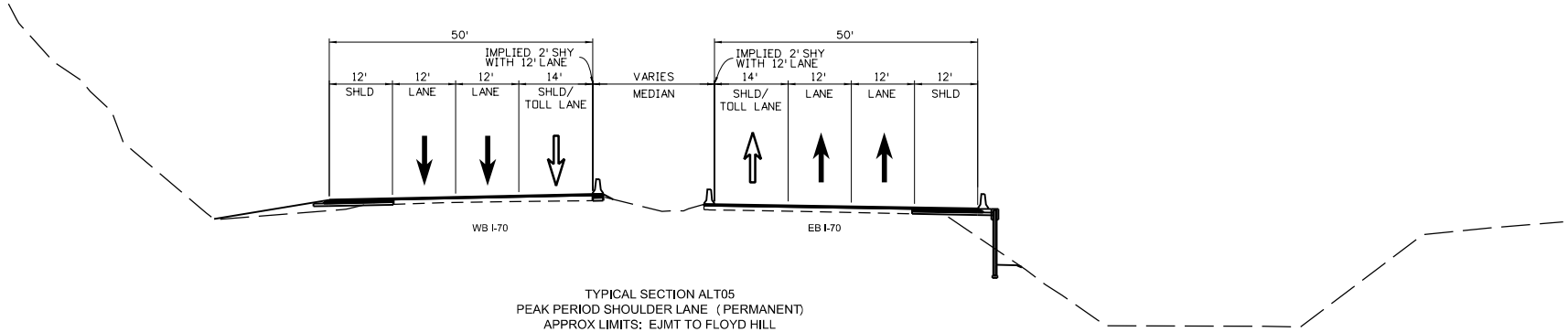
Transit Information

Termini	Silverthorne-Denver, Service to GWS (CDOT Bus), Breckenridge-Denver (AGS)
Special Infrastructure	AGS System; None for CDOT Bus
Schedule	Fall 2014 - CDOT Bus / After 2035 - AGS
Stations	6 CDOT Bus Stations - GWS, Eagle, Vail, Frisco, Denver (2); 5 AGS Stations
Type	
CDOT Bus	TBD by CDOT
BRT	N/A
AGS	In operation after 2035

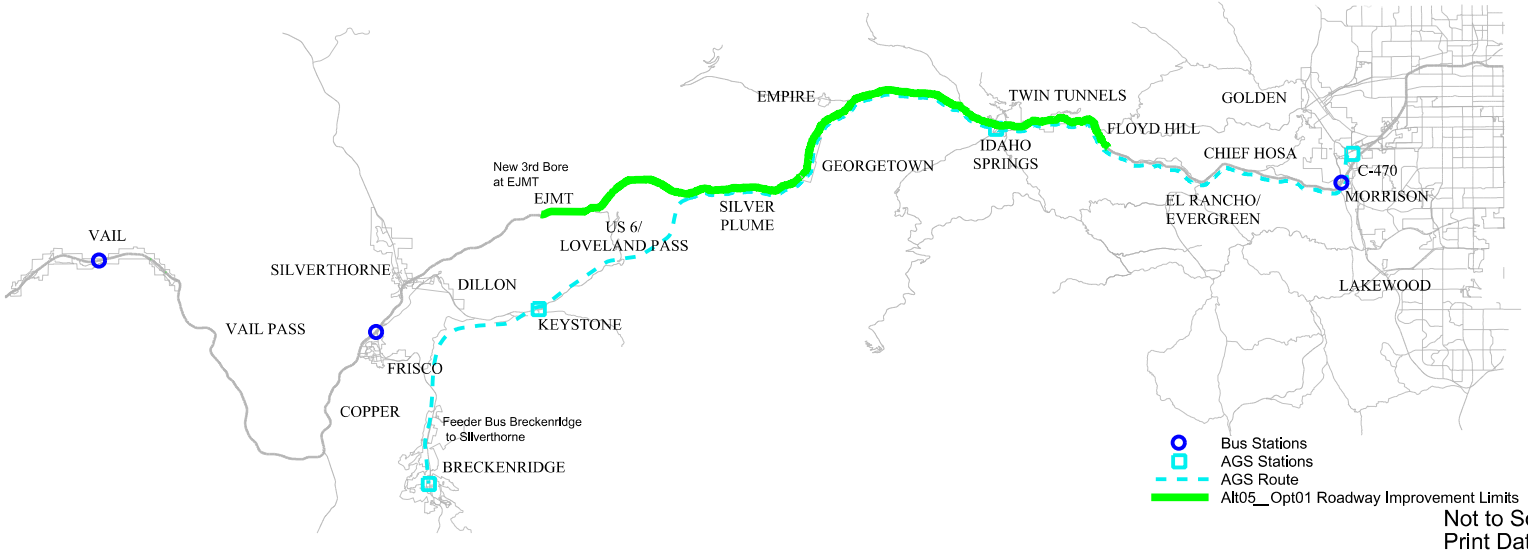
Special Structures

Special Structures	EJMT 3rd Bore

GP = General Purpose Lane EJMT = Eisenhower Johnson Memorial Tunnels GWS = Glenwood Springs



TYPICAL SECTION ALT05
PEAK PERIOD SHOULDER LANE (PERMANENT)
APPROX LIMITS: EJMT TO FLOYD HILL



Not to Scale
Print Date: 1/16/2014

Alt06_Opt01

Temporary Peak Period Shoulder Lane

Using the existing roadway, accommodate one additional WB left side managed lane for use during peak times; during non-peak times operates as a standard shoulder. No twelve foot wide shoulders are available during peak periods. During non-peak periods, twelve foot breakdown shoulder is on left side instead of right. Construction of WB peak period lane from Empire to Floyd Hill only. (This alternative assumes EB direction peak period lane from Empire to Floyd Hill is constructed.)

Roadway Information

Extent of Roadway Improvements	Empire to Floyd Hill
General Purpose (GP) Lane Information	Additional capacity by restriping existing
Direction of Improvements	WB Only Direction
Design Speed	Match Existing
Trucks, Private Buses, BRT	Allowed in Peak Period Lane (Always in GP Lanes)
Tolling	
Capacity Improvements	Dynamic priced toll for EB & WB Peak Period Shoulder Lanes
Tunnels	Dynamic priced toll for Twin Tunnels 3rd Lanes
Technology	Transponder and license plate recognition
Schedule	
Construction Start	2016 (Assumes 1.5 years NEPA)
Construction Duration	3 years
First Year Operation	2019
Financial Period	50 years

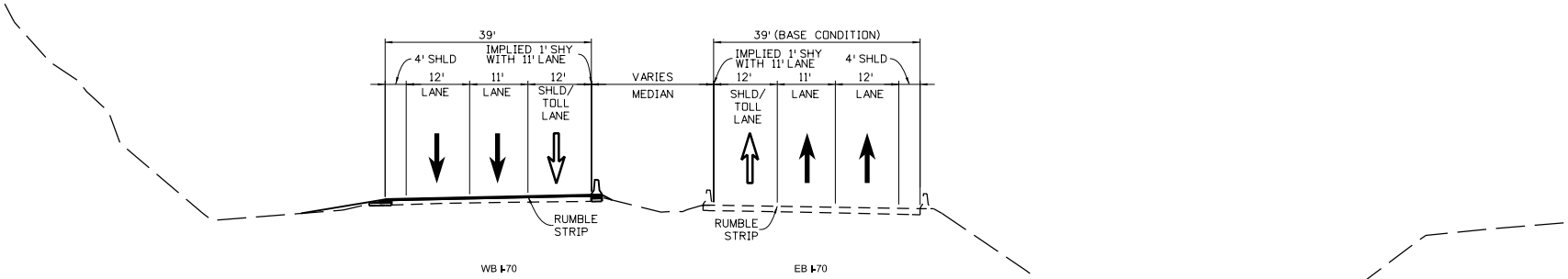
Transit Information

Termini	Silverthorne-Denver, Service to GWS (CDOT Bus), Breckenridge-Denver (AGS)
Special Infrastructure	AGS System; None for CDOT Bus
Schedule	Fall 2014 - CDOT Bus / After 2035 - AGS
Stations	6 CDOT Bus Stations - GWS, Eagle, Vail, Frisco, Denver (2); 5 AGS Stations
Type	
CDOT Bus	TBD by CDOT
BRT	N/A
AGS	In operation after 2035

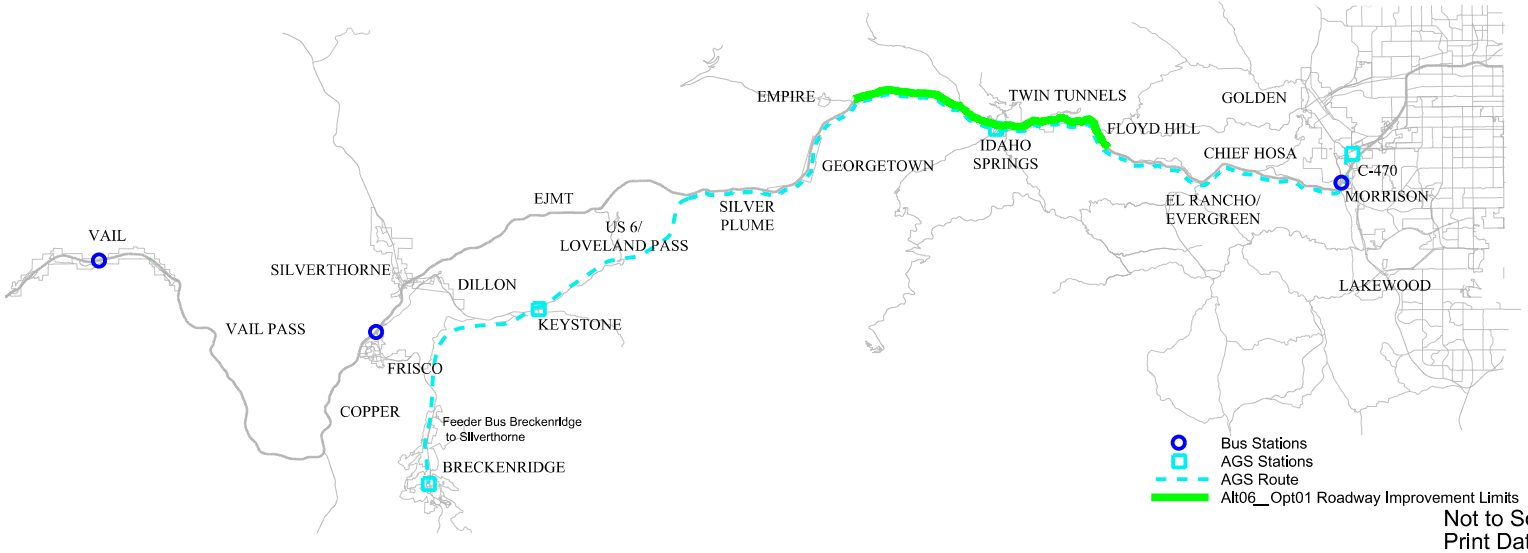
Special Structures

Special Structures	

GP = General Purpose Lane EJMT = Eisenhower Johnson Memorial Tunnels GWS = Glenwood Springs



TYPICAL SECTION ALT06__OPT01
PEAK PERIOD SHOULDER LANE (TEMPORARY)
APPROX LIMITS: WB I-70 EMPIRE TO FLOYD HILL



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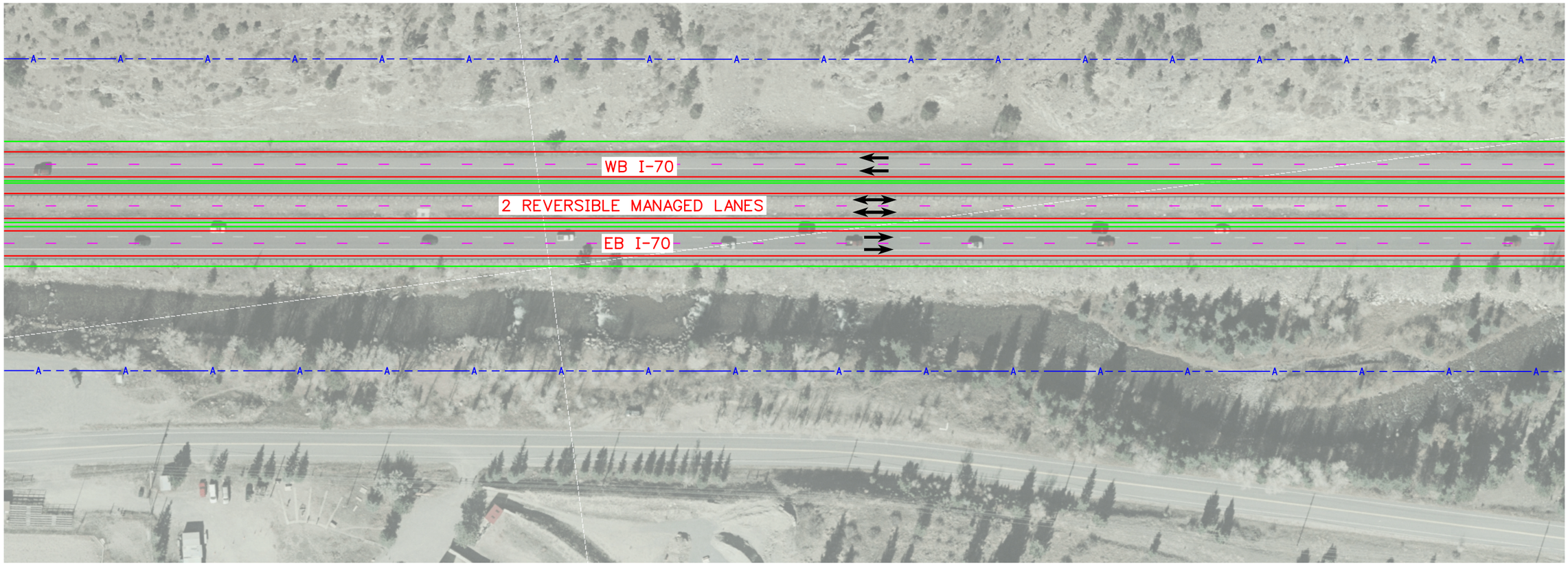
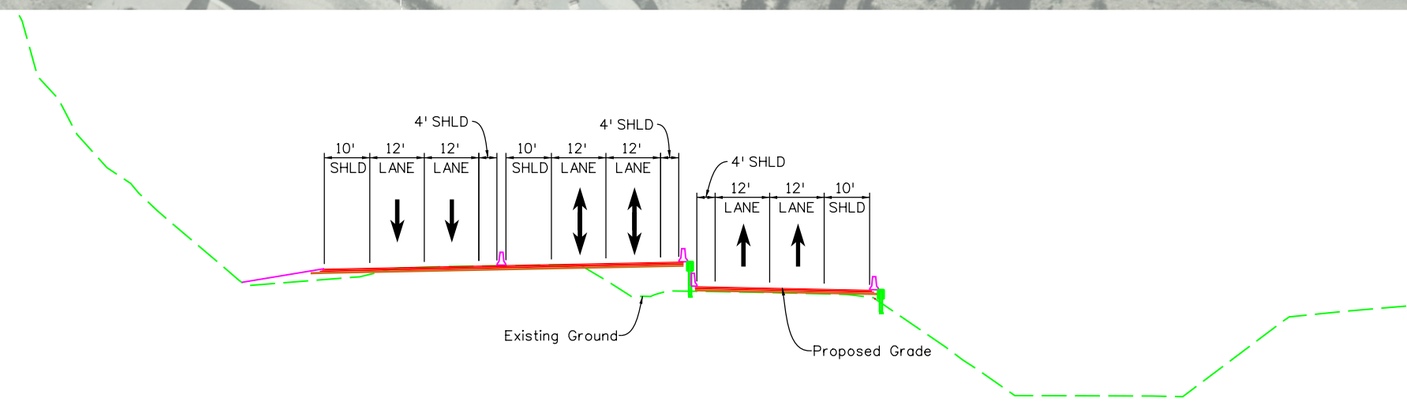
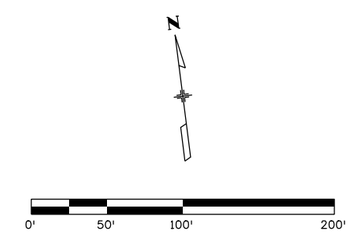
Print Date: 1/16/2014





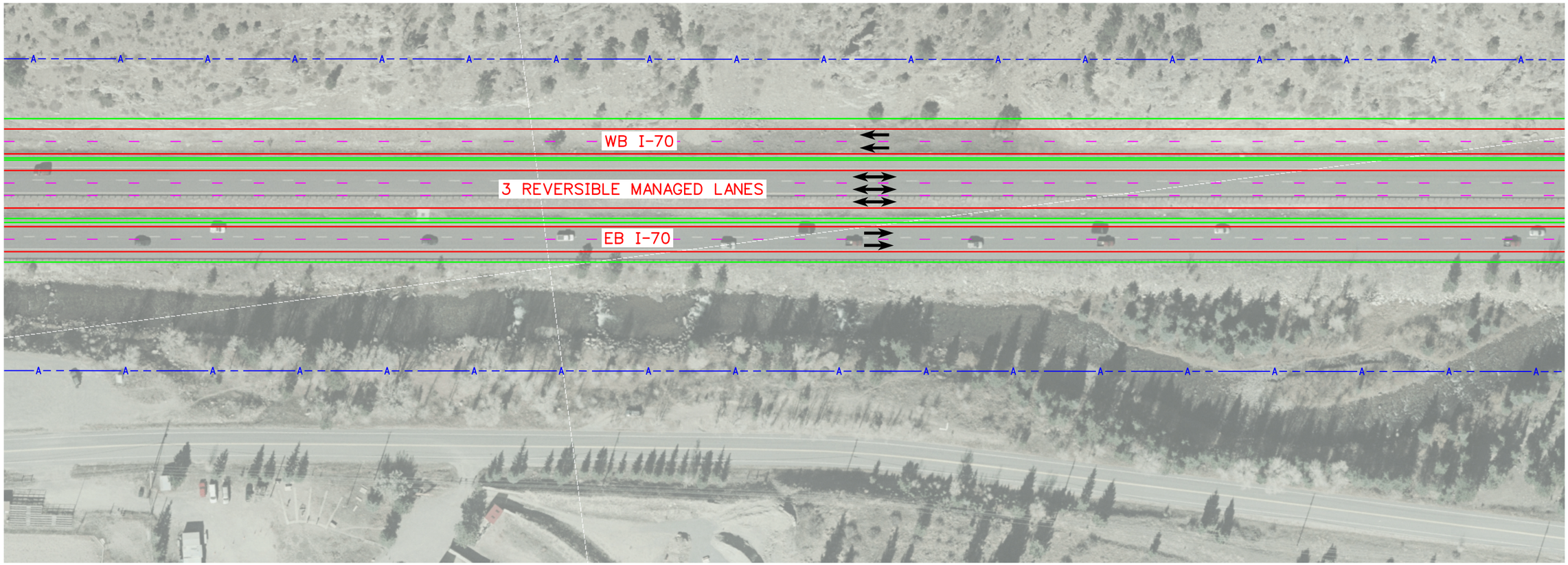
Typical Section
Alt01: 2 Reversible Managed Lanes

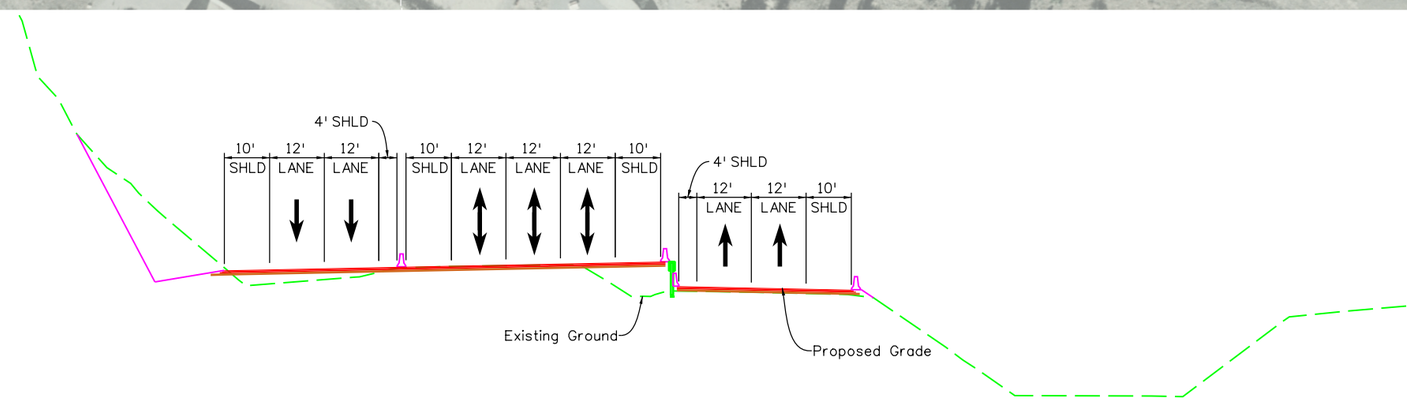


Colorado Department of Transportation
425 A Corporate Circle
Golden, CO 80401
Phone: 720-497-6918 FAX: 720-497-6901
Region 1
JB/BA

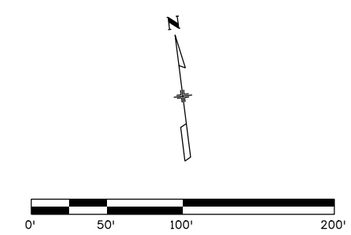
I-70 TRAFFIC & REVENUE ANALYSIS
Alternative 01
2 Reversible Managed Lanes

Print Date: 12/4/2013





Typical Section
Alt02: 3 Reversible Managed Lanes



Colorado Department of Transportation
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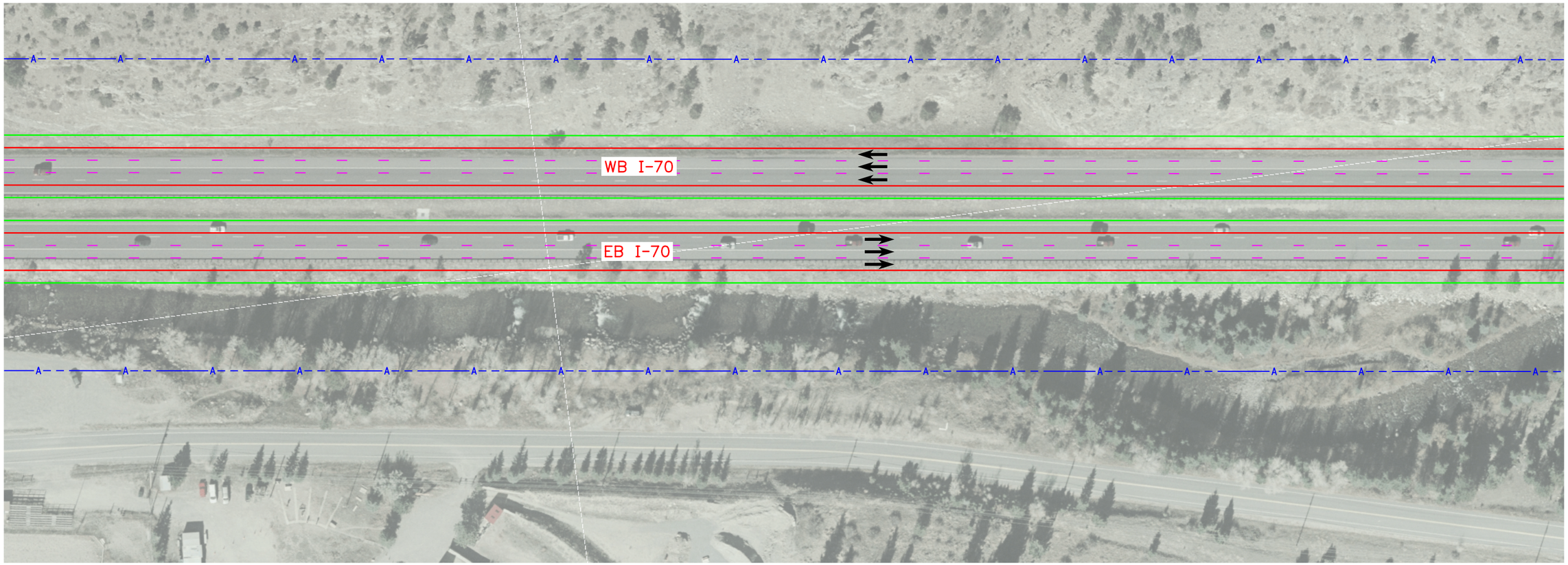
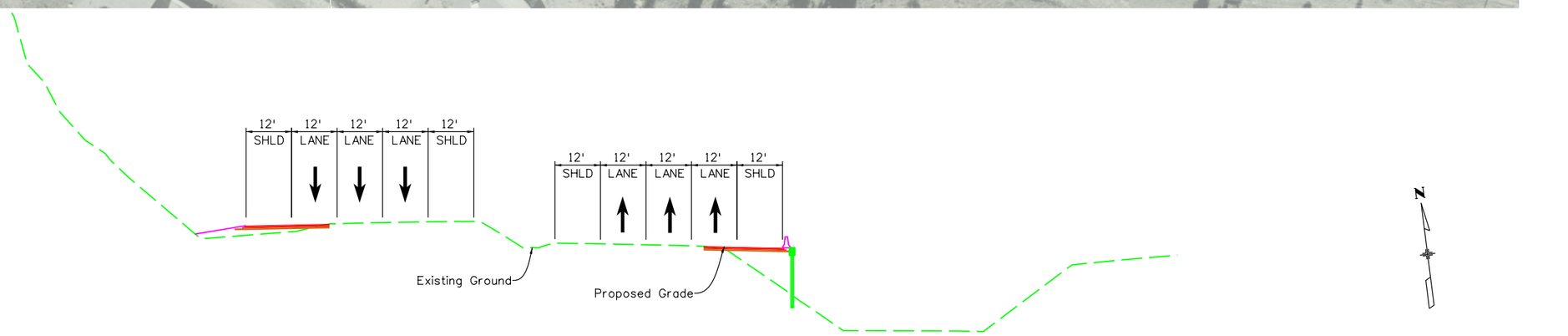
JB/BA

I-70 TRAFFIC & REVENUE ANALYSIS
Alternative 02
3 Reversible Managed Lanes

Print Date: 12/4/2013





Typical Section
Alt04: Maximum Program

Colorado Department of Transportation
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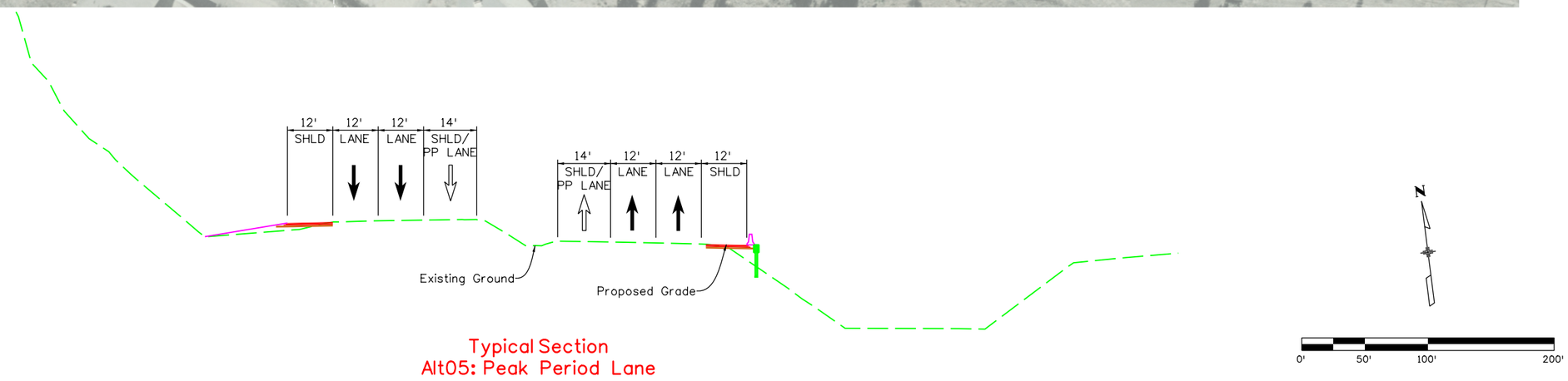
Region 1
JB/BA

I-70 TRAFFIC & REVENUE ANALYSIS
Alternative 04
Maximum Program per PEIS

Print Date: 12/4/2013



Typical Section
Alt05: Peak Period Lane

Colorado Department of Transportation
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I-70 TRAFFIC & REVENUE ANALYSIS
Alternative 05
Peak Period Lane

Print Date: 12/4/2013