

I70 Exit 203 and EB Aux Lane Feasibility Study

Project Leadership Team #3

3 May 2019



Agenda

- Introductions 5 Min
- Project Update 30 Min
- Review of Work 50 Min
- Review of Project Schedule 10 Min
- Next Steps 5 Min

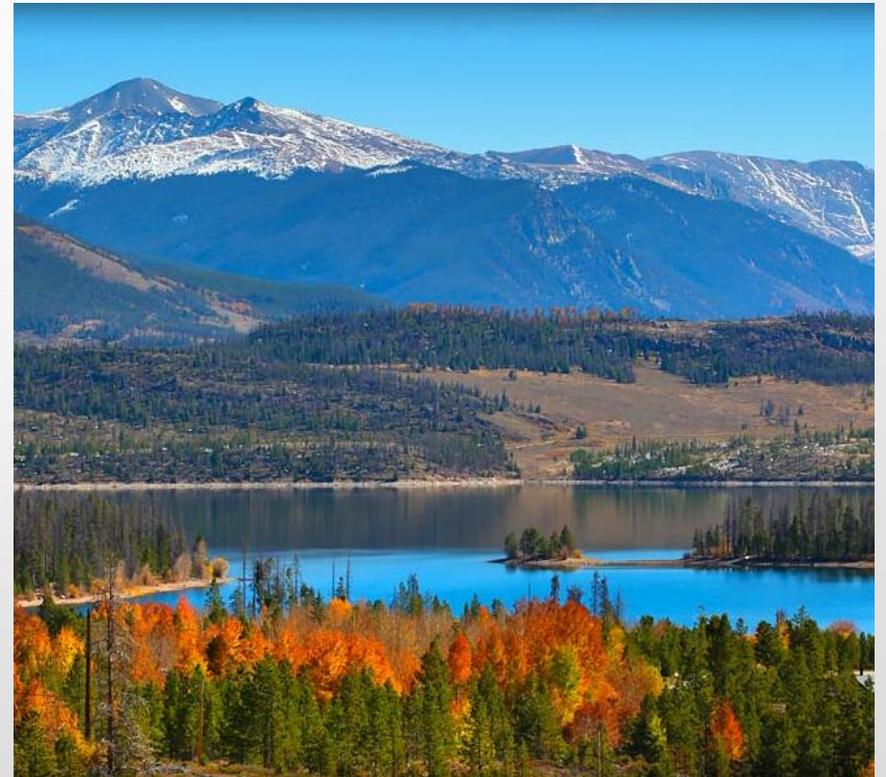
Critical Success Factors

- Address Safety and Capacity of I-70 Corridor
- Improve I-70 Corridor Operations
- Address the I-70 lane balance at EXIT 205



Critical Success Factors

- Attend to the PEIS
- Consider Local Planning Efforts
- Evaluate SH 9 / Dillon Dam Road Intersection



Project Update



Work To Date

- Environmental
(no update)
- Planning
- Traffic
- Roadway

Work To Date

PLANNING

- Demand Forecasts
 - I-70 2045 ADT
 - CO 9 2045 ADT
 - 2045 Turning Movements



Work To Date

Forecasting Methodology

- Sketch Planning Technique
- Historic & current traffic counts
- Development studies, tourism, & population growth
- Seasonal and recreational traffic
 - Peak traffic = July & Feb/Mar

Monthly Average Daily Traffic
I-70 @ Eisenhower Tunnel



Monthly Average Daily Traffic
I-70 @ Copper Mountain

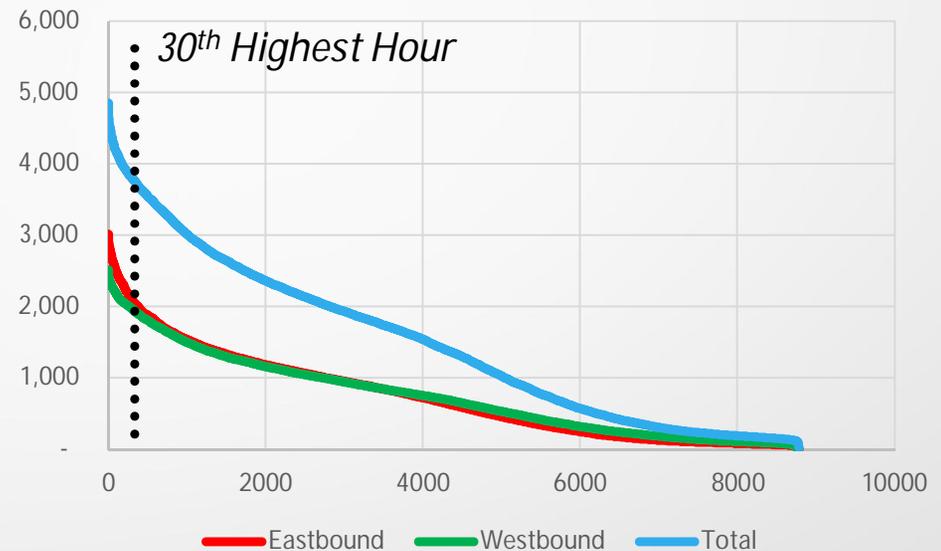


Work To Date

Data & Analysis

- 30th Design Hourly Volume
- Growth Rate
 - I-70 Mountain Corridor PEIS, Intermountain TPR, CDOT OTIS
 - PEIS based on socioeconomic models and trend data; deemed best estimate

30th Design Hourly Volume
(I-70 @ Eisenhower)



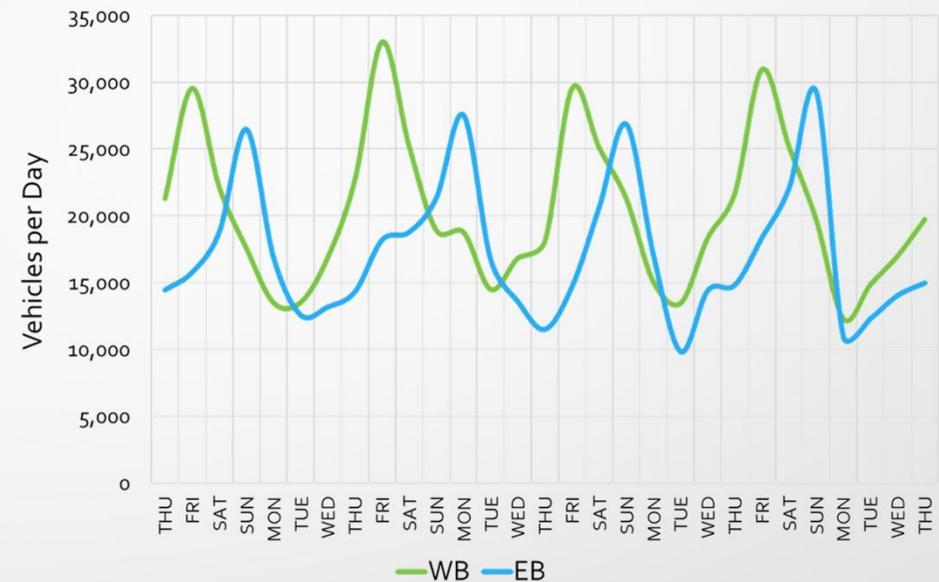
Source	I-70 Mountain Corridor PEIS	Intermountain TPR	CDOT OTIS	
Location	<i>I-70 w/o Silverthorne</i>	<i>Eisenhower Tunnel</i>	<i>I-70 Eisenhower Tunnel</i>	<i>CO 9 s/o Main</i>
Annual Growth Rate	1.60%	1.80%	1.11%	1.25%

Work To Date

2045 Projected Volumes

- 2045 volumes = 150% of existing
- Factor for 30th design hour in ultimate design
- Design accounts for peak traffic in both directions
- Forecast volumes for I-70 & CO 9 used for turning movement forecasts

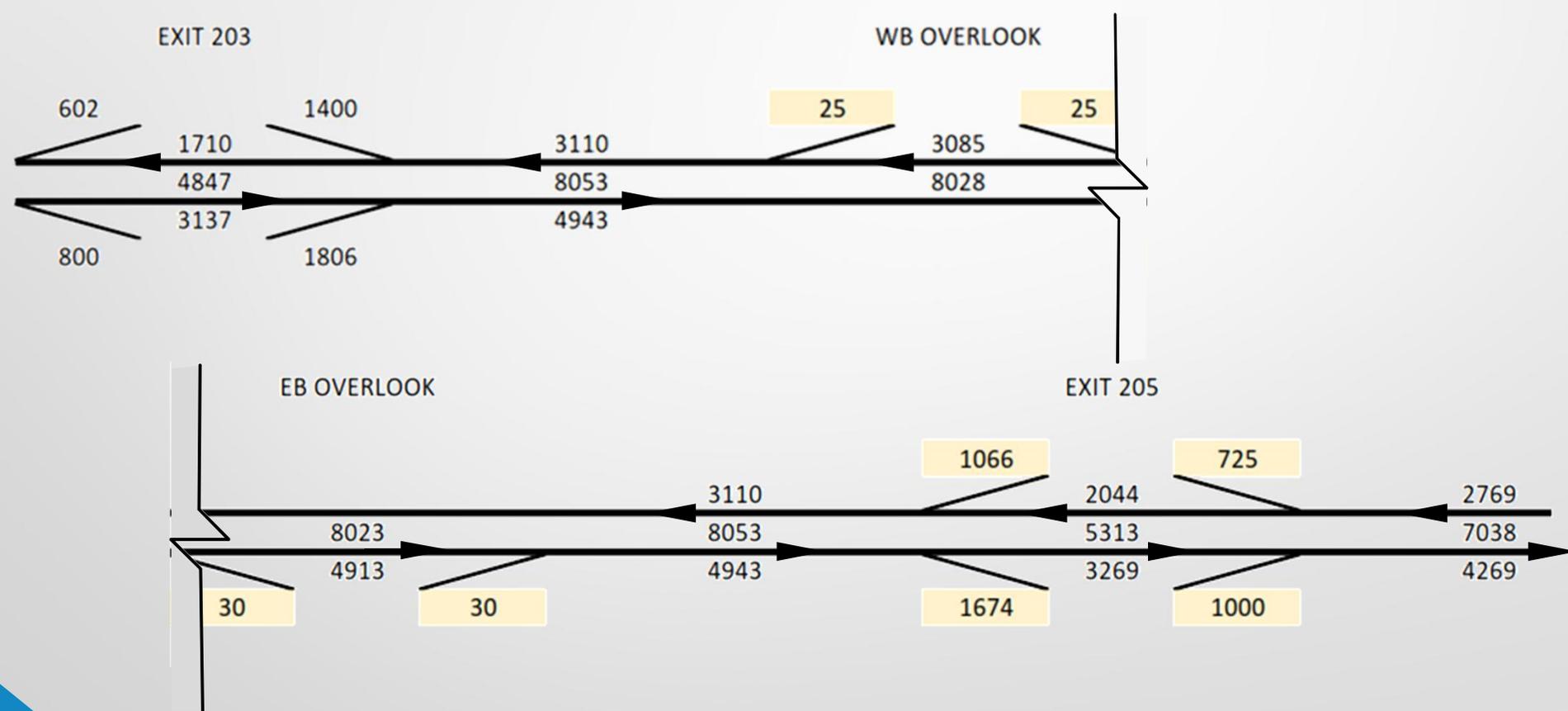
I-70 West of Eisenhower - Daily Traffic Patterns
(February/March 2017)



Location	I-70 EB @ Exit 203	I-70 WB @ Exit 203	I-70 Total @ Exit 203	SH 9 N/O Main
2017 ADT	24,300	20,500	44,800	28,900
2045 ADT	38,000	32,200	70,200	48,100

Work To Date

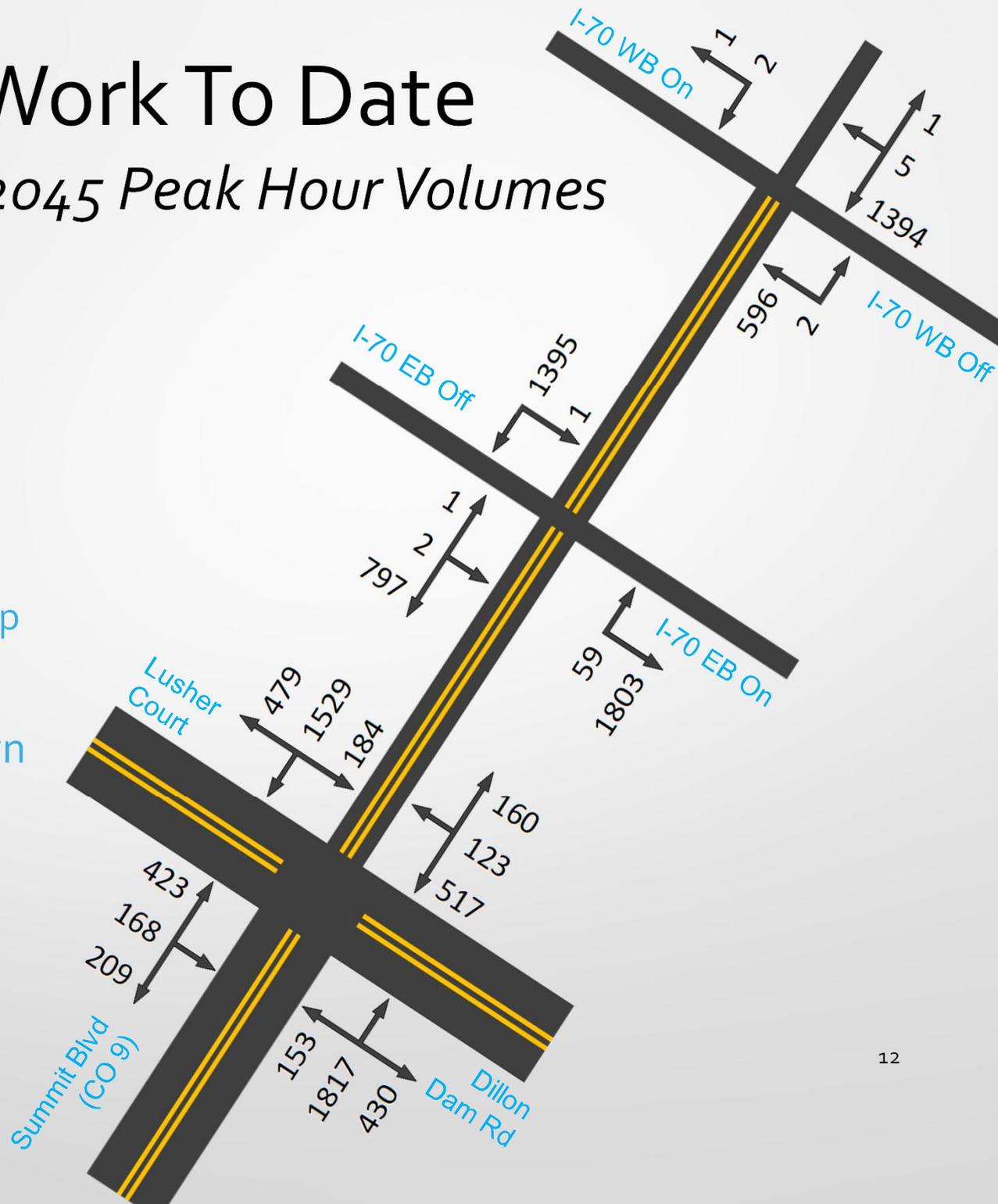
I-70 2045 Peak Hour Volumes



Work To Date

CO 9 2045 Peak Hour Volumes

- Balanced to match existing patterns
- Volume Notes
 - > 300 LTs at WB Ramp
 - < 10 LTs at EB Ramp
- Lusher/DDR volumes verified against known planning studies



Work To Date

TRAFFIC

- 2045 Operations
 - Interstate 70
 - Exit 203
- Phasing Thresholds



Operations Analysis

Overview

- I-70 analysis= HCS 7 software (freeway facility)
- SH 9 analysis = Synchro 10 (arterial)

HCS – Highway Capacity Software

Operations Analysis

I-70 HCS Approach

- Not specifically calibrated
- WB at Exit 203
 - Does not account for reduced roundabout capacity
 - Mainline capacity reduced to match extent of existing queues
 - Build Options capacity reduced less to approximate capacity increase of the off ramp (almost double that of existing conditions)

Operations Analysis

I-70 Westbound Results (No Action)



Location	EXIT 203				CHAINUP/SCENIC			EXIT 205			
Analysis Year	Basic	Merge	Basic	Weave	Basic	Diverge	Basic	Merge	Basic	Diverge	Basic
Existing	A	B	A	F	F	F	F	B	B	B	B
2025	A	B	A	F	F	F	F	B	B	B	B
2035	B	B	A	F	F	F	F	F	F	B	B
2045	B	B	A	F	F	F	F	F	F	F	F

Operations Analysis

I-70 Eastbound Results (No Action)



Location		EXIT 203			CHAINUP/SCENIC			EXIT 205			
Analysis Year	Basic	Diverge	Basic	Weave	Basic	Merge	Basic	Diverge	Basic	Merge	Basic
Existing	B	B	B	B	C	C	C	C	B	B	C
2025	C	C	B	C	D	C	D	A	B	B	B
2035	D	D	C	F	F	F	F	F	C	C	C
2045	F	F	F	F	F	F	F	F	C	C	C

Operations Analysis

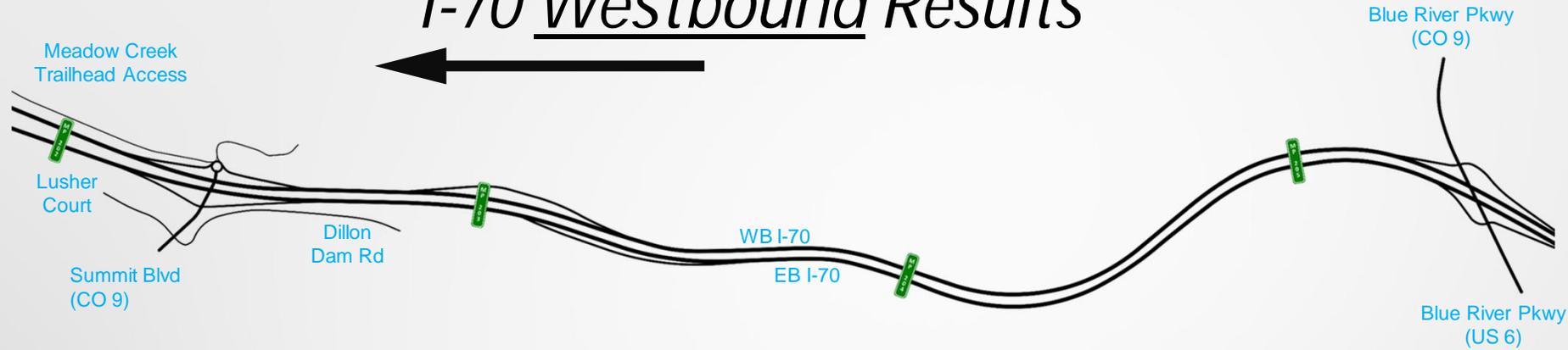
I-70 Improvement Options

Westbound

- Exit remains a single lane exit
- New storage lane at WB ramp intersection with CO 9

Operations Analysis

I-70 Westbound Results



Location		EXIT 203			CHAINUP/SCENIC			EXIT 205			
Analysis Year	Basic	Merge	Basic	Weave	Basic	Diverge	Basic	Merge	Basic	Diverge	Basic
2025	B	B	B	B	B	B	B	B	B	B	B
2035	C	B	B	B	B	B	B	B	B	B	B
2045	B	B	B	F	F	F	F	C	C	C	B

Operations Analysis

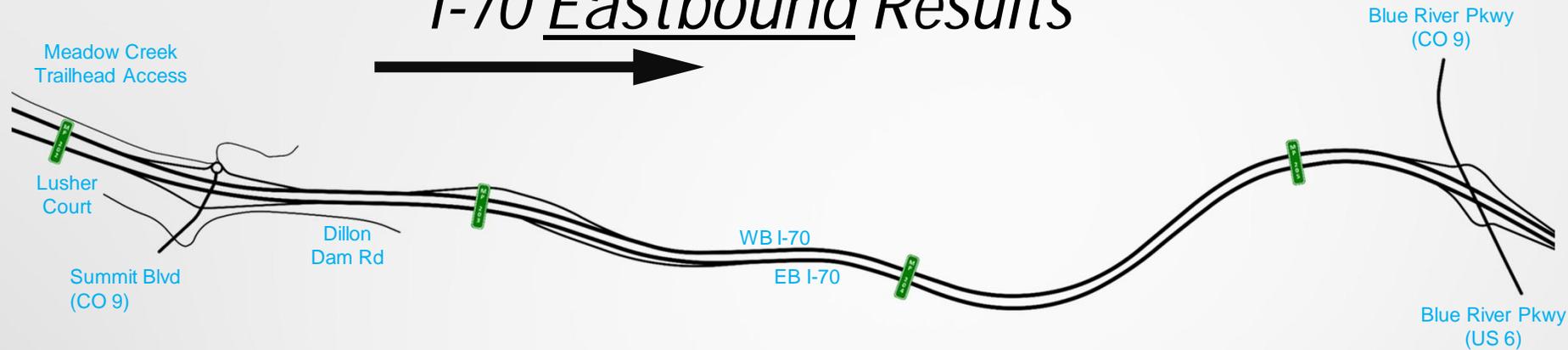
I-70 Improvement Options

Eastbound

- Add auxiliary lane between Exit 203 and Exit 205
- No changes at Exit 205
 - auxiliary lane becomes an exit only lane
 - second eastbound lane is an “optional off” at the gore

Operations Analysis

I-70 Eastbound Results



Location		EXIT 203			CHAINUP/SCENIC			EXIT 205			
Analysis Year	Basic	Diverge	Basic	Merge Diverge	Basic	Merge	Basic	Diverge	Basic	Merge	Basic
2025	C	C	B/C	B	C	B	C	C	B	B	B
2035	D	D	C	C	C	C	C	C	C	C	C
2045	F	F	D	D/C	D	C	D	D	D	D	C

Operations Analysis

CO 9 Results (No Action)

Location	I-70 WB Ramp	I-70 EB Ramp	Lusher / DDR
Analysis Year	Roundabout	Stop Control	Signalized
Existing	F	A	D
2025	F	E	D
2035	F	F	E
2045	F	F	F

Operations Analysis

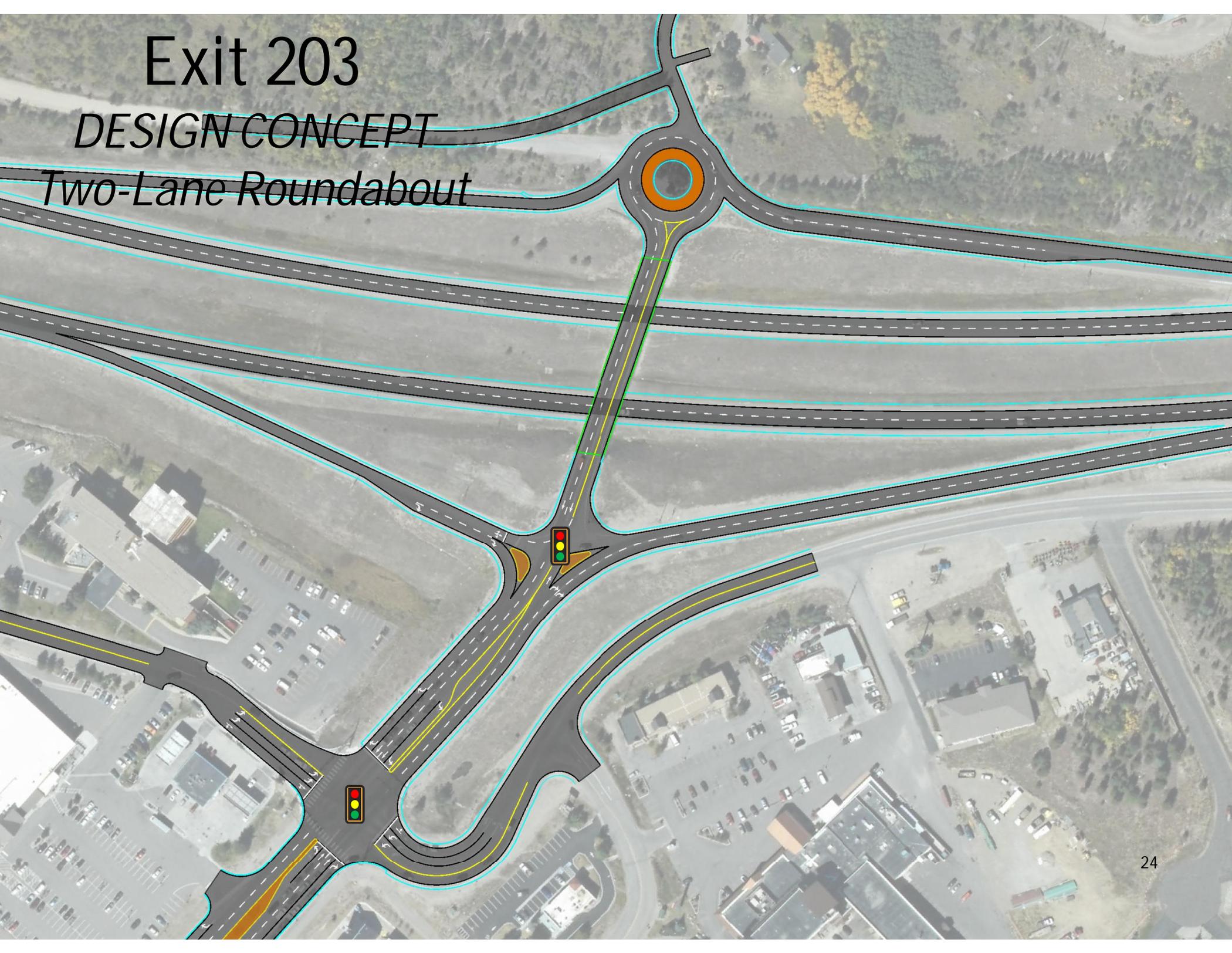
CO 9 Synchro Approach

- Roundabout modeled with a 1,000 vphpl capacity
- Slightly above the current maximum capability
- Signals optimized for each analysis year

Exit 203

DESIGN CONCEPT

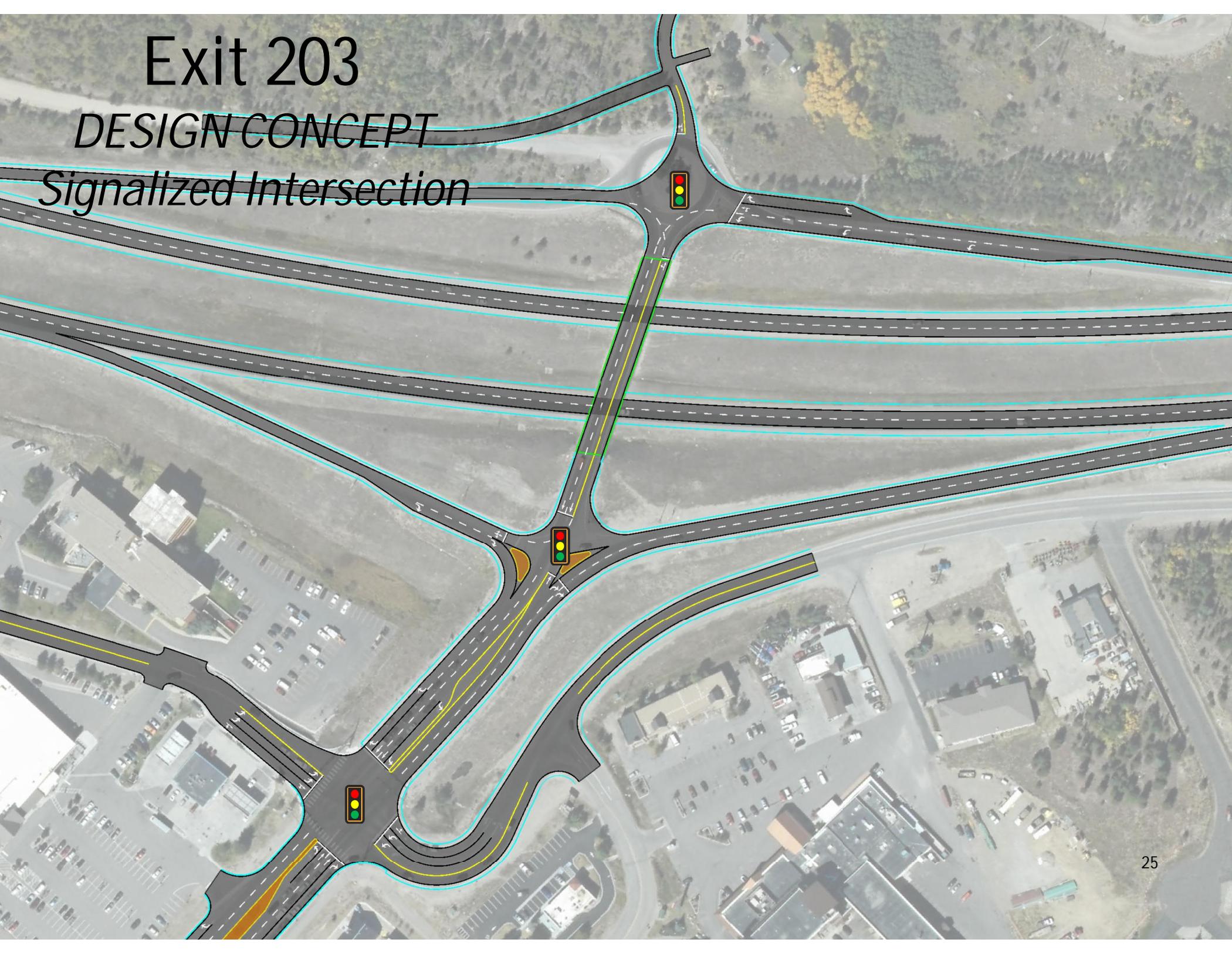
Two-Lane Roundabout



Exit 203

DESIGN CONCEPT

Signalized Intersection



Operations Analysis

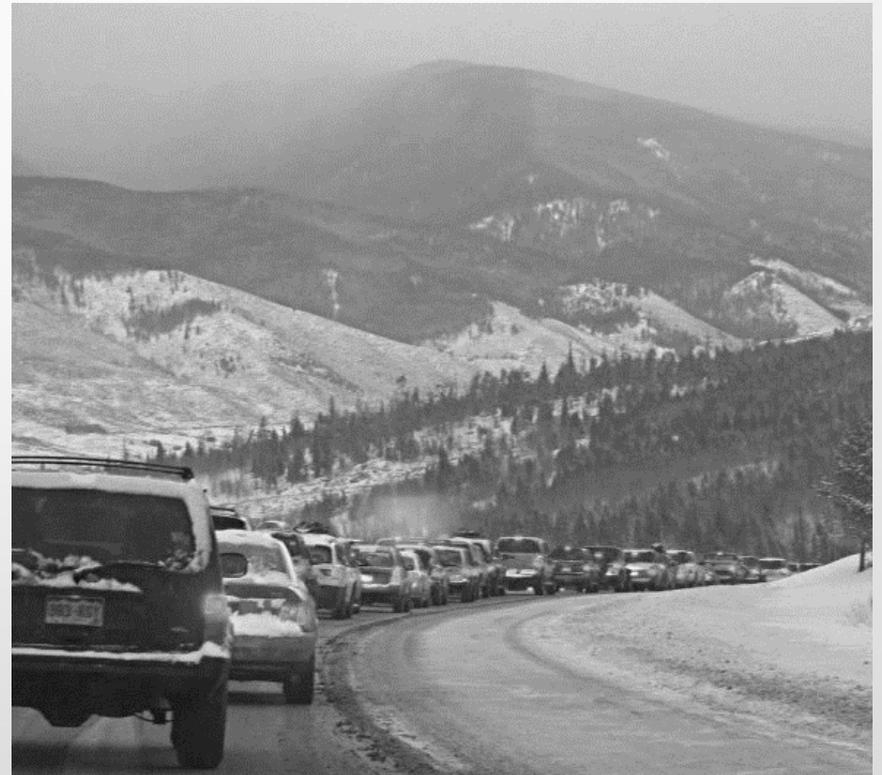
CO 9 Results

Location	I-70 WB Ramp		I-70 EB Ramp		Lusher / DDR	
OPTION #	Option 1	Option 2	Option 1	Option 2	Option 1	Option 2
Analysis Year	Two-Lane Roundabout	Signalized	Signalized	Signalized	Signalized	Signalized
2025	B	C	A	A	D	C
2035	C	D	A	A	E	E
2045	E	E	A	C	F	F

Work To Date

ROADWAY

- Design Concepts
 - EB Aux Lane
 - Interchange
- Phasing Concepts



EB Auxiliary Lane

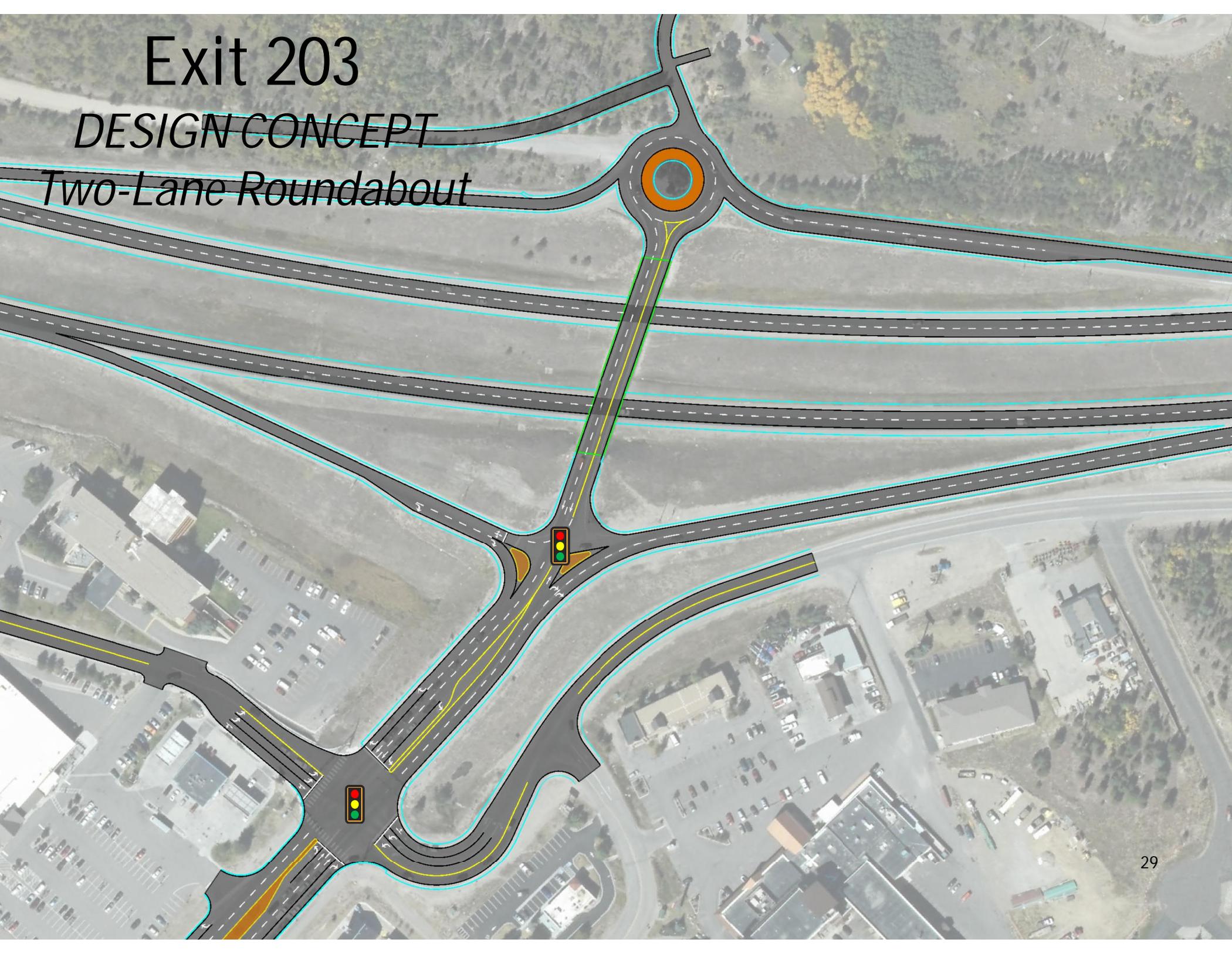
DESIGN CONCEPT

- Extend Aux Lane EXIT 203 to EXIT 205
- Merge/Diverge from Chain-up/Scenic Overlook
- Balance inside/outside alignments
- Maintain exit lane balance at EXIT 205

Exit 203

DESIGN CONCEPT

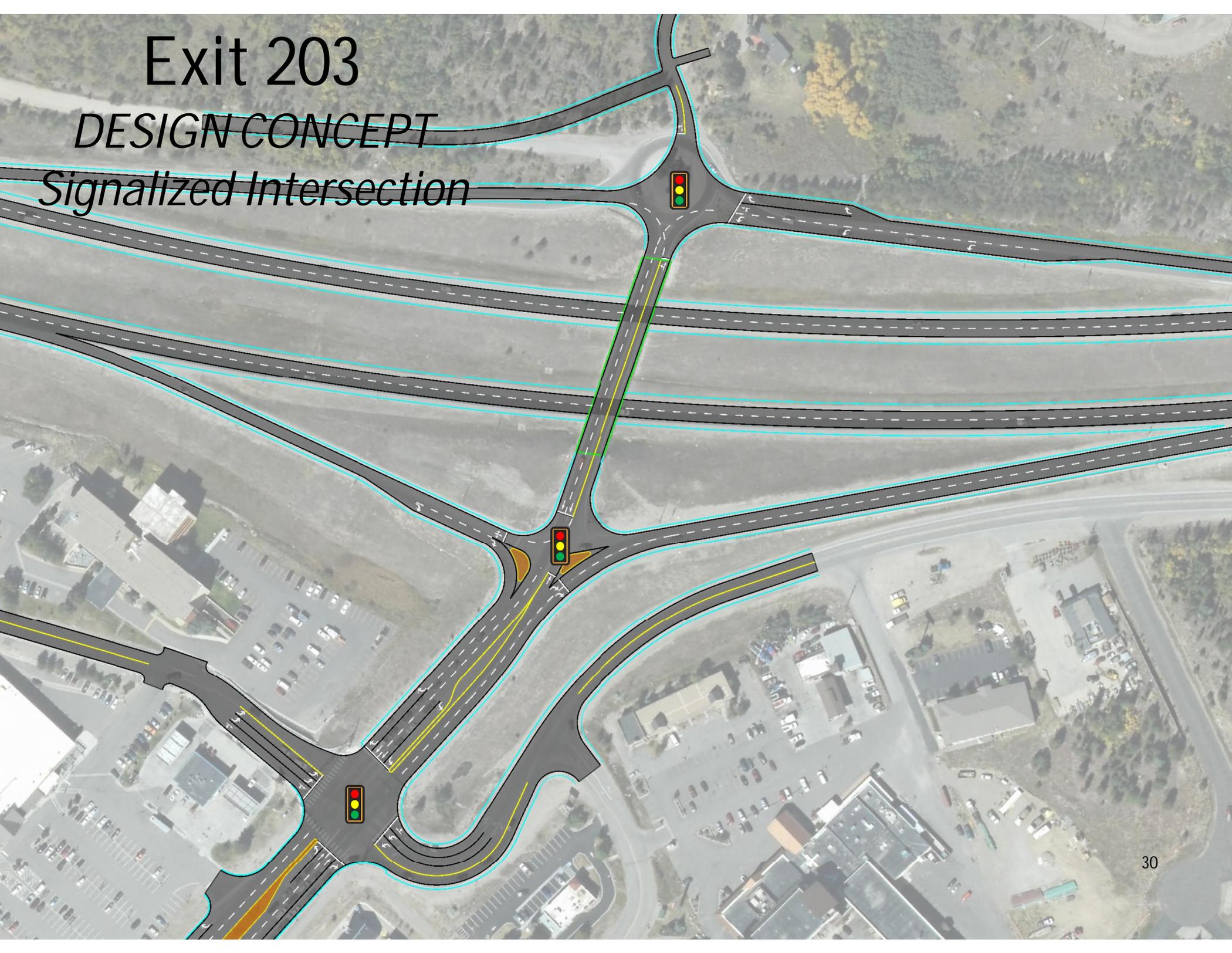
Two-Lane Roundabout



Exit 203

DESIGN CONCEPT

Signalized Intersection



Phasing Thoughts

Exit 203

Short term – next 5 years

- EB auxiliary lane
- WB ramp storage lane
- WB Ramp two lane roundabout
- Exit 203 bridge two SB and one NB lane
 - Consider separate pedestrian crossing
- SB left turn lane or restrict SB left turn at EB ramp
- Optimize signal operations along CO 9

Phasing Thoughts

Exit 203

Intermediate term – next 10-15 years

- Develop options at Lusher Court

Long term – 20+ years

- Further capacity improvements
- Lusher Court intersection will need additional improvements

Project Schedule

Task	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
PLT Meeting	t		t	t			t		t	
Public Meeting				t				t		
Forecasting			t Travel Demand Forecasting Memo							
Environmental		t Environmental Overview Memo								
Operations										
Alternatives								t Project Feasibility Study		
Survey & Mapping								Design Survey Ownership Mapping		t

Next Steps

