

APPENDIX D FEASIBILITY-LEVEL AND CONCEPT-LEVEL SCREENING ANALYSIS

**STATE HIGHWAY 9 AND U.S. HIGHWAY 6
IMPROVEMENT PROJECT AT THE
INTERSTATE 70 SILVERTHORNE/DILLON INTERCHANGE**

**FEASIBILITY-LEVEL AND CONCEPT-LEVEL
SCREENING ANALYSIS**

May 20, 2011



Prepared for:

**Colorado Department of Transportation
Region 1**

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**STATE HIGHWAY 9/U.S. HIGHWAY 6 IMPROVEMENT PROJECT
AT THE
INTERSTATE 70 SILVERTHORNE/DILLON INTERCHANGE

FEASIBILITY-LEVEL AND CONCEPT-LEVEL SCREENING ANALYSIS**

SUMMARY

INTRODUCTION

The I-70 Silverthorne/Dillon project team held a Technical Workshop to perform an initial evaluation of interchange alternatives and options. The workshop was held on April 21, 2011. The participants in the workshop included representatives from the Colorado Department of Transportation (CDOT), the Town of Silverthorne, the Town of Dillon, Summit County and stakeholder groups. The participants were organized into three technical groups:

1. Design, Cost and Maintenance
2. Motor Vehicle Traffic and Safety
3. Multimodal, Community and Environment

Each group addressed relevant Feasibility-Level (Yes/No) and Concept-Level (Good, Fair, Poor) evaluation questions. The questions were based on the Context Sensitive Solutions (CSS) process developed during the I-70 Mountain Corridor EIS process. A total of 41 questions were addressed at the Technical Workshop. The questions were adapted from the CSS process and related guidance.

Four interchange alternatives were analyzed and compared along with three sets of options that could be added to the interchange alternatives. The Alternatives included:

1. Improved Diamond
2. Roundabout
3. SPUI
4. Diverging Diamond

A total of eight options were evaluated. The Options included:

Eastbound Off Ramp	Options A, B and C
Westbound On Ramp	Options A, B and C
Straight Creek	Options A and B

Appendix A presents the alternatives and options that were evaluated. Appendix B provides the Feasibility and Concept-Level screening criteria questions. Appendix C presents the results of the evaluation process by the three groups performing the screening analysis at the Technical Workshop.

The Feasibility-Level and Concept-Level screening process results from the groups were organized and analyzed. The results are presented in Sections 1 and 2 of this report. The outcome is summarized in the following discussion.

TECHNICAL WORKSHOP SCREENING PROCESS: SUMMARY OF OUTCOME

The following graphic summarizes the Feasibility-Level and Concept-Level alternative screening process results from the Technical Workshop.

STAND ALONE ALTERNATIVES

		FEASIBILITY-LEVEL	CONCEPT-LEVEL	ADVANCED FOR DETAILED LEVEL EVALUATION
1	Improved Diamond	-----●	-----●	Yes
2	Roundabout	-----●	-----●	See Note
3	Single Point Urban Interchange	-----●	-----●	Yes
4	Diverging Diamond	-----●	-----●	Yes

OPTIONS

		FEASIBILITY-LEVEL	CONCEPT-LEVEL	ADVANCED FOR DETAILED LEVEL EVALUATION
EASTBOUND OFF RAMP OPTIONS				
A	One Way Frontage Road	-----●	-----X	NO
B	Two Way Frontage Road	-----●	-----●	Yes
C	Combined Stephens Way Frontage Road	-----X		NO
WEST BOUND ON RAMP OPTIONS				
A	New Structure with Improved Grade	-----●	-----●	Yes
B	Split Diamond	-----●	-----●	Yes
C	Slip Ramp to Wilderdest Road	-----X		NO
STRAIGHT CREEK OPTIONS				
A	Flyover	-----X		NO
B	Underpass	-----X		NO

-----● Alternative/Option carried forward for further consideration.

-----● Alternative not carried forward as a stand-alone alternative, but roundabout concept was carried forward in combination with other stand alone alternatives (Roundabouts will be evaluated at the intersections of Wilderdest/SH 9 and Little Beaver Trail/ US 6 in combination with the other stand alone alternatives.

-----X Eliminated from further consideration. Refer to additional information for reasons for elimination.

FEASIBILITY-LEVEL EVALUATION

OVERALL SCORES

EVALUATION CRITERIA	ALT 1 Imp Diam	ALT 2 Round- abouts	ALT 3 SPUI	ALT 4 Div. Diam.	EB Off A One Way	EB Off B Two Way	EB Off C Combined	WB On A New Struct.	WB On B Split Diam.	WB On C Split Ramp Wilderness	Straight Creek Flyover A	Straight Creek Underpass B
QUESTION												
Sustainable Operations 1 Does this alternative preserve future transportation options?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Safety 5 Can this alternative improve safety?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Healthy Environment 19 Can adverse environmental impacts be avoided, minimized, or mitigated? 20 Can impacts to irreplaceable natural resources (e.g. wetlands or Gold Medal Fisheries) be avoided?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Communities 30 Is the alternative compatible with local land use plans? 31 Does the alternative serve as a gateway to the area, providing good identity for local communities? 32 Are impacts to community resources resolvable?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Historic Context 28 Can impacts to paleontological, historical, and archeological resources be avoided, minimized, or mitigated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Mobility and Accessibility 10 Does the alternative improve traffic mobility? 11 Is this alternative compatible with the existing and planned transportation system? 12 Does this alternative provide access for local trips? 38 Does this alternative improve bike/pedestrian mobility? 39 Does this alternative improve transit mobility?	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	No	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	No	No
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
FINDING	EVAL	EVAL	EVAL	EVAL	EVAL	EVAL	ELIM	EVAL	EVAL	ELIM	ELIM	ELIM

EVAL = Evaluate - Advance for further consideration
ELIM = Eliminate – Do not advance for further evaluation

ANALYSIS

The Yes/No Feasibility Level evaluation criteria questions are intended to determine if “fatal flaws” exist with an alternative or option under consideration. A fatal flaw is a basic problem with the feasibility of an alternative or option and implies that the alternative or option should no longer be considered.

During the Technical Workshop, the teams did not find fatal flaws with the four alternatives, but did find that two of the four roundabouts associated with the roundabout alternative did not provide enough capacity for 2035 conditions. However, the two roundabouts furthest from the interchange involving Wildercrest/Rainbow Drive and Little Beaver Trail should be given further consideration. In particular, the roundabout serving US 6 could not provide right turn bypass lanes to add capacity and improve performance. The primary constraints in relation to this improvement are topography and the presence of Straight Creek and its associated wetlands. Another critical concern in relation to roundabouts at the ramp terminals was the difficulty for trucks to navigate the roundabout curves particularly considering that this is the primary interstate to highway connection for trucks including hazardous material haulers.

During the Technical Workshop, the teams did find fatal flaws with four of the options.

Eastbound Off Ramp Option C had fatal flaws associated with mobility and accessibility because it requires closing the existing off and consolidating traffic on Stephens Way creating an offset off ramp condition at US 6.

Westbound On Ramp Option C had fatal flaws because of the alternative creates a weaving requirement with safety and mobility problems while trying to solve a weaving problem at and near the SH 9 on ramp intersection. This option also requires land that may be needed for future transit options.

Straight Creek Flyover Option had fatal flaws because the alignment over I-70 is not compatible with the existing and planned roadway system and because it does not improve safety.

Straight Creek Underpass Option had fatal flaws because the alignment under I-70 is not compatible with the existing and planned roadway system and because it does not improve safety.

CONCEPT-LEVEL EVALUATION

OVERALL SCORES

EVALUATION CRITERIA	ALT 1 Imp Diam	ALT 2 Round- abouts	ALT 3 SPUI	ALT 4 Div. Diam.	EB Off A One Way	EB Off B Two Way	WB On A New Struct.	WB On B Split Diam.
Sustainable Operations								
2 What is the life-cycle cost of the alternative?	●	○	○	○	○	●	●	○
3 What is the comparative capital cost of the alternative?	●	○	●	○	●	○	●	●
4 How well can the alternative integrate sustainable construction practices?	○	○	○	○	○	○	●	○
Safety								
6 How well does the alternative maintain a safe work environment for maintenance employees?	●	○	●	○	●	○	●	●
7 How well does the alternative reduce the number of or improve higher than expected crash locations?	○	○	●	●	●	●	●	●
8 How well does the alternative follow current design standards?	●	●	○	○	○	○	●	●
9 How well does the alternative reduce conflict points?	●	●	●	●	●	○	○	●
Healthy Environment								
21 How well can the adverse environmental impacts be avoided, minimized, or mitigated?	●	●	○	○	●	○	●	●
22 How well does the alternative minimize right of way requirements?	●	●	●	○	●	○	●	●
23 How well does the alternative address water quality?	●	●	●	●	●	○	○	○
24 How well does the alternative avoid, minimize, and mitigate impacts to wetlands?	●	●	○	○	●	○	○	○
25 How well does the alternative avoid, minimize, and mitigate impacts to the Gold Medal Fisheries?	●	●	●	●	●	○	○	○
26 How effectively can Best Management Practices (BMPs) for water quality be accommodated?	●	●	●	●	●	○	●	●
27 How well does the alternative avoid, minimize, and mitigate impacts to recreational resources?	●	○	●	●	●	●	N/A	N/A
Historic Context								
29 How well can impacts to paleontological, historical, and archeological resources be avoided, minimized, or mitigated?	●	●	●	●	●	●	●	○
Communities								
33 How compatible is the alternative with local comprehensive plans?	●	●	●	○	●	●	●	●
34 How well does the alternative limit disproportionate impacts on low-income or minority communities?	●	●	●	●	●	●	●	●
35 How well does the alternative minimize adverse effects on local businesses?	●	●	●	○	●	●	●	●
36 How well does the alternative treat residential areas?	●	●	●	●	●	●	●	●
37 How well does the access provided by the alternative support existing and future economic development?	●	○	●	○	○	●	●	●
Mobility and Accessibility								
13 How well does the alternative improve regional mobility?	●	○	●	●	○	●	○	●
14 How well does the alternative address local access traffic?	○	●	●	○	○	●	○	●
15 How well does the alternative address cut-through traffic?	N/A	N/A	N/A	N/A	●	●	●	●
16 How well does the alternative promote efficient freight movement?	○	●	●	●	○	●	●	●
17 How easy is the interchange to use for non-local drivers?	●	○	●	○	○	●	●	●
40 How well does the alternative accommodate existing and future transit?	●	●	●	●	●	●	●	●
41 How well does the alternative accommodate bike/pedestrian (multi-modal) mobility?	○	○	○	○	●	●	●	●
Aesthetics								
18 How consistent is the alternative with the I-70 CSS Aesthetic Guidance?	●	●	●	●	●	●	●	●
FINDING	EVAL	SEE NOTE	EVAL	EVAL	ELIM	EVAL	EVAL	EVAL

● Good ○ Fair ● Poor EVAL = Evaluate - Advance for further consideration ELIM = Eliminate – Do not advance for further evaluation

Note: Alternative not carried forward as a stand-alone alternative, but roundabout concept was carried forward in combination with another alternative (Roundabouts will be evaluated at the intersections of Wildernest/SH 9 and Little Beaver Trail/ US 6 in combination with the other remaining alternatives.

SUMMARY COMPARISON

EVALUATION CRITERIA QUESTION	ALT 1 Imp Diam	ALT 2 Roundabouts	ALT 3 SPUI	ALT 4 Div Diam	EB Off A Elev Ramp	EB Off B 2 Brdg Exist Ramp	WB On A Split Diam	WB On B New Struct
GOOD	20	14	20	13	12	21	21	20
FAIR	5	10	6	14	16	5	6	6
POOR	2	3	1	0	0	2	0	1
N/A	1	1	1	1	0	0	1	1

ANALYSIS

The Good/Fair/Poor Concept Level questions help clarify differences between the alternatives and options providing a qualitative overall comparison. These questions also help to examine the appropriateness of an alternative and option when the comparative rating in relation to other alternatives and options is “poor.” A “poor” rating may or may not imply that an alternative or option should be eliminated from further consideration, but it can be a good indicator, especially if there are many “poor” ratings and other alternatives and options do not have “poor” ratings for those criteria or others.

During the Technical Workshop, the conceptual level ratings helped the team decide that the roundabout alternative should be combined with the diverging diamond alternative and that the Eastbound Off Ramp Option A should be eliminated from further consideration.

The Roundabout Alternative involves replacing existing conventional intersections with four traffic circles. These circles create some mobility advantages, but in combination they require trucks to make a series of relatively sharp curves, require substantial right of way, displace and disrupt existing businesses and may impact the Blue River Trail and wetlands. The team thought that roundabouts may be effective in the interchange area, but that the roundabout concept might be applied more effectively in two locations rather than four locations. Consequently, the team suggested that the Diverging Diamond alternative consider roundabouts at the Wildernest and Stephens Way intersections as an option to conventional intersections.

Eastbound Off Ramp Option A is similar to Eastbound Off Ramp Option B except Option A provides for an existing underpass at Adams creating a problematic mid-block intersection along Wildernest between two signals. Option B takes advantage of the new intersections to be built along Wildernest in the summer of 2011 thereby consolidating traffic operations on both sides of I-70 at signalized intersections. Option A is superior to Option B in relation to sustainability (cost), mobility, access and safety, but has some potential environmental effects to address in relation to adding another bridge over the Blue River and the Blue River Trail.

NEXT STEPS

ALTERNATIVE PACKAGING

Based on the results of the Feasibility-Level and Concept-Level Screening, complete alternatives will be developed for further analysis. These alternatives will be as follows:

- Improved Diamond
- SPUI
- Diverging Diamond

Each alternative will include:

- Roundabouts at Wilderndest and Little Beaver Trail
- Eastbound Off Ramp Option B
- Westbound On Ramp Option A and B
- Eastbound auxiliary lane from the Frisco Interchange to the Silverthorne/Dillon interchange

DETAILED-LEVEL SCREENING

The four alternatives developed as an outcome of the Feasibility-Level and Concept-Level screening process will be evaluated in the Detailed-Level screening process. The Detailed-Level evaluation criteria were set defined and approved in the Launch Phase of the project. The Detailed-Level criteria were based on the I-70 Mountain Corridor EIS Context Sensitive Solutions (CSS) process and focus on a mix of qualitative measures (Good, Fair, Poor) and quantitative measures (levels of service at intersections, acres of wetlands impact, etc.)

APPENDIXES

A. Alternatives and Options

B. Feasibility-Level and Concept-Level Screening Evaluation Criteria Questions

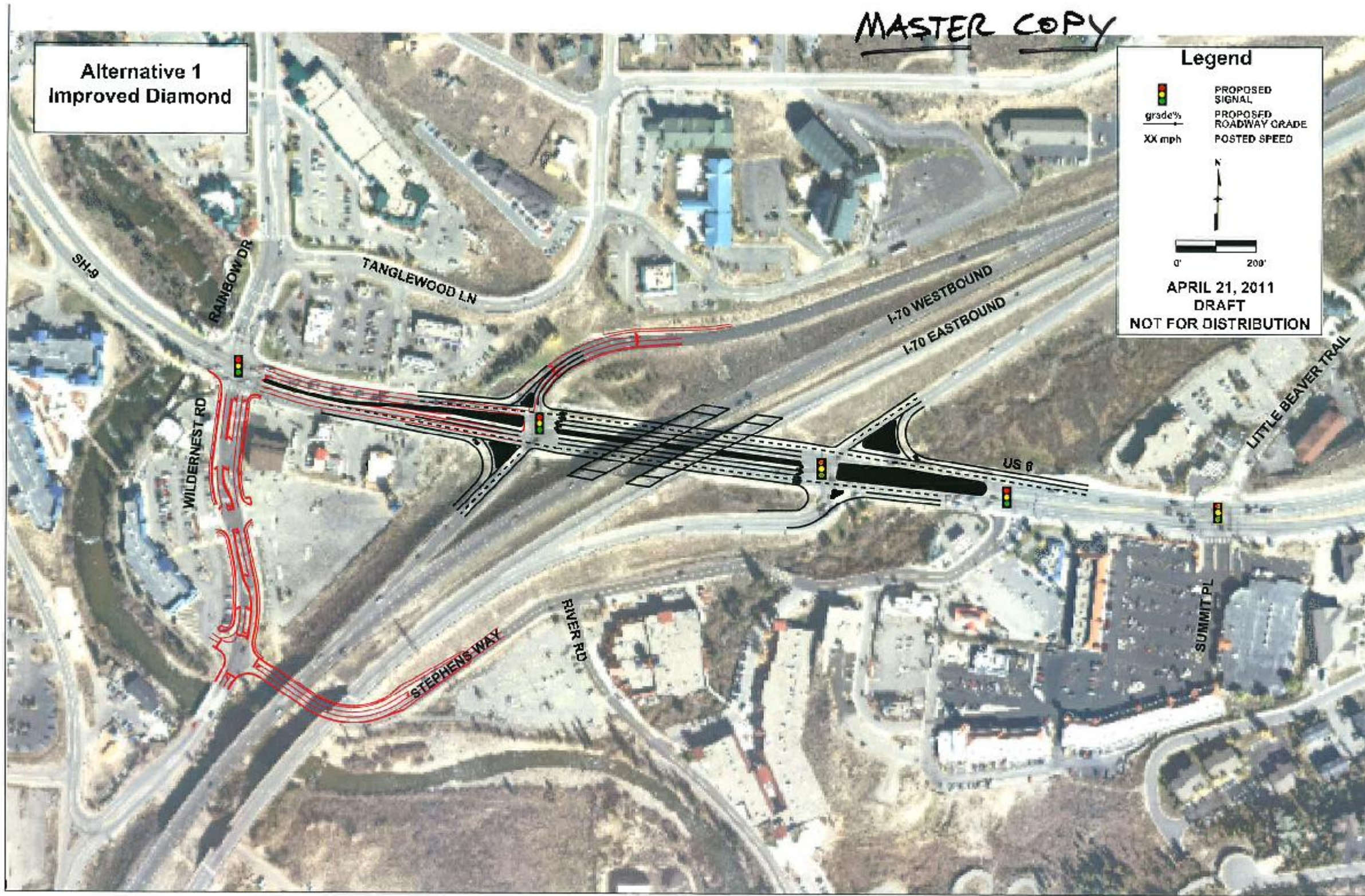
C. Summary of Workshop Group Results

Design, Cost and Maintenance

Motor Vehicle Traffic and Safety

Multimodal, Community and Environmental

MASTER COPY



Alternative 1
Improved Diamond

Legend

- PROPOSED SIGNAL
- PROPOSED ROADWAY GRADE
- POSTED SPEED

N

0' 200'

APRIL 21, 2011
DRAFT
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**Alternative 2
Roundabouts**

Legend

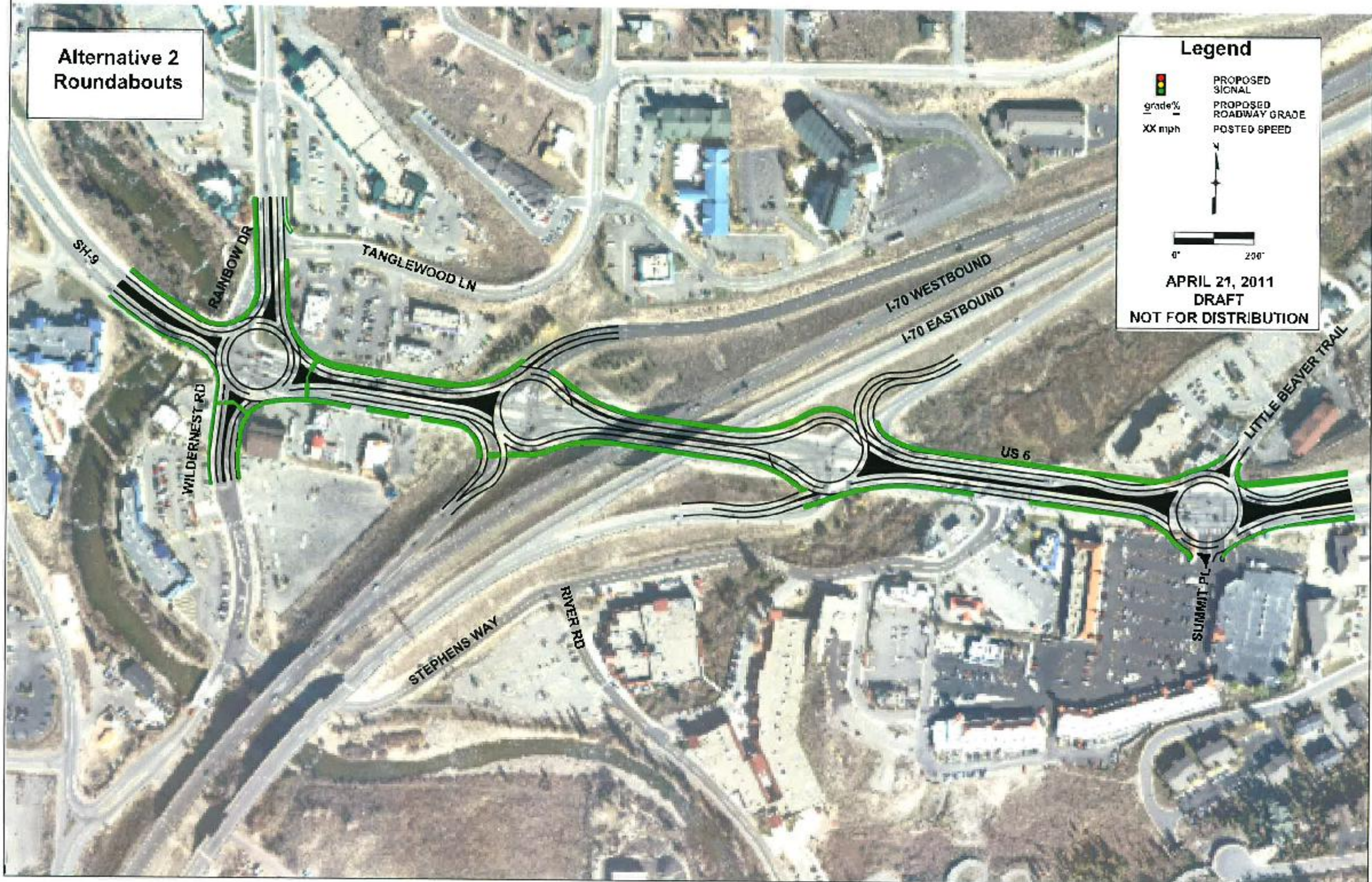
-  PROPOSED SIGNAL
-  PROPOSED ROADWAY GRADE
-  POSTED SPEED

grade%
XX mph



0' 200'

APRIL 21, 2011
DRAFT
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



**Alternative 3
Single Point Urban Interchange**



From
Silverthorne Transportation
Master Plan

Legend

	PROPOSED SIGNAL
	PROPOSED ROADWAY GRADE
	POSTED SPEED



N

NOT TO SCALE


APRIL 21, 2011
DRAFT
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**Alternative 4
Diverging Diamond**

Legend

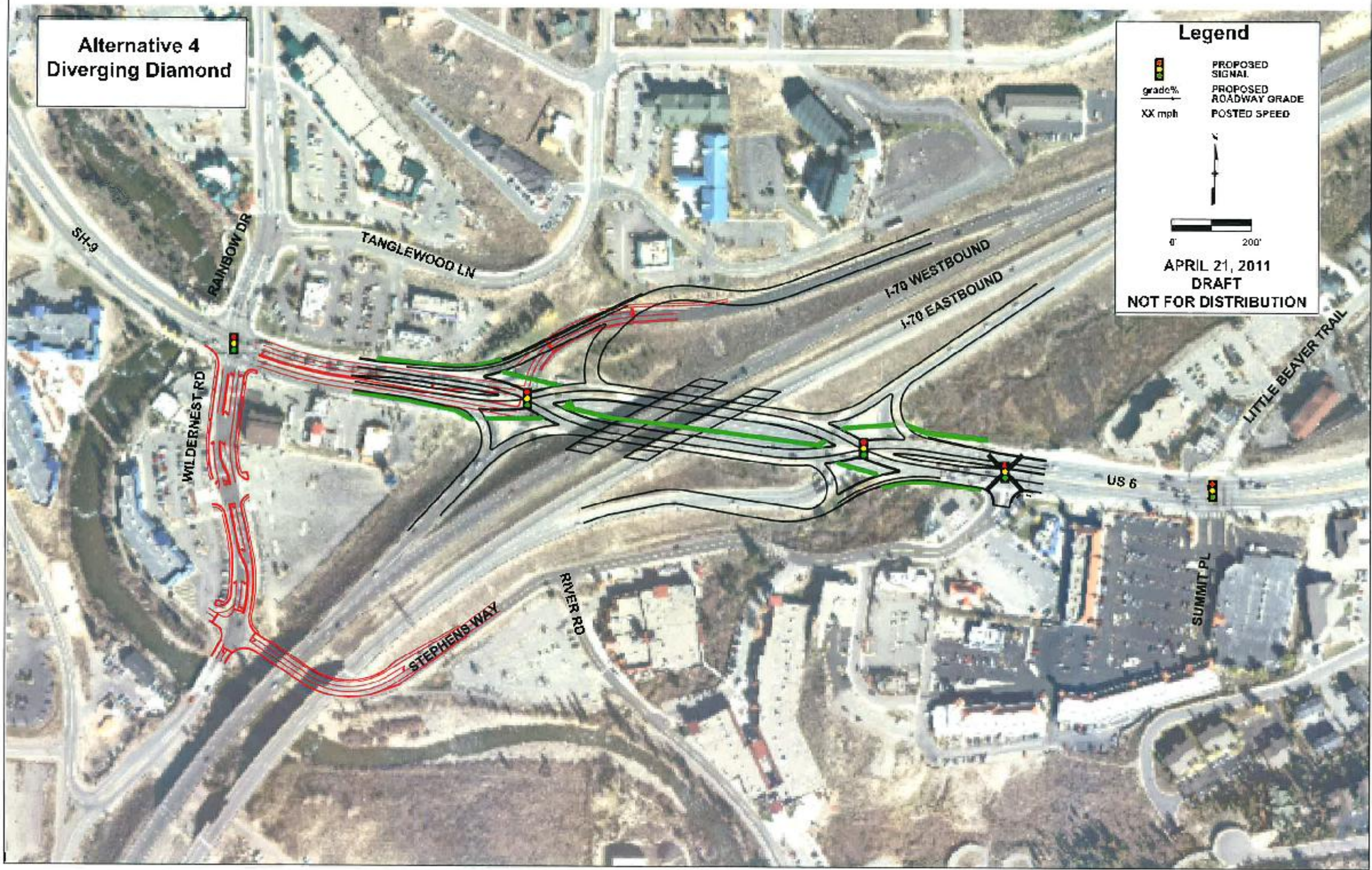
-  PROPOSED SIGNAL
-  PROPOSED ROADWAY GRADE
-  POSTED SPEED



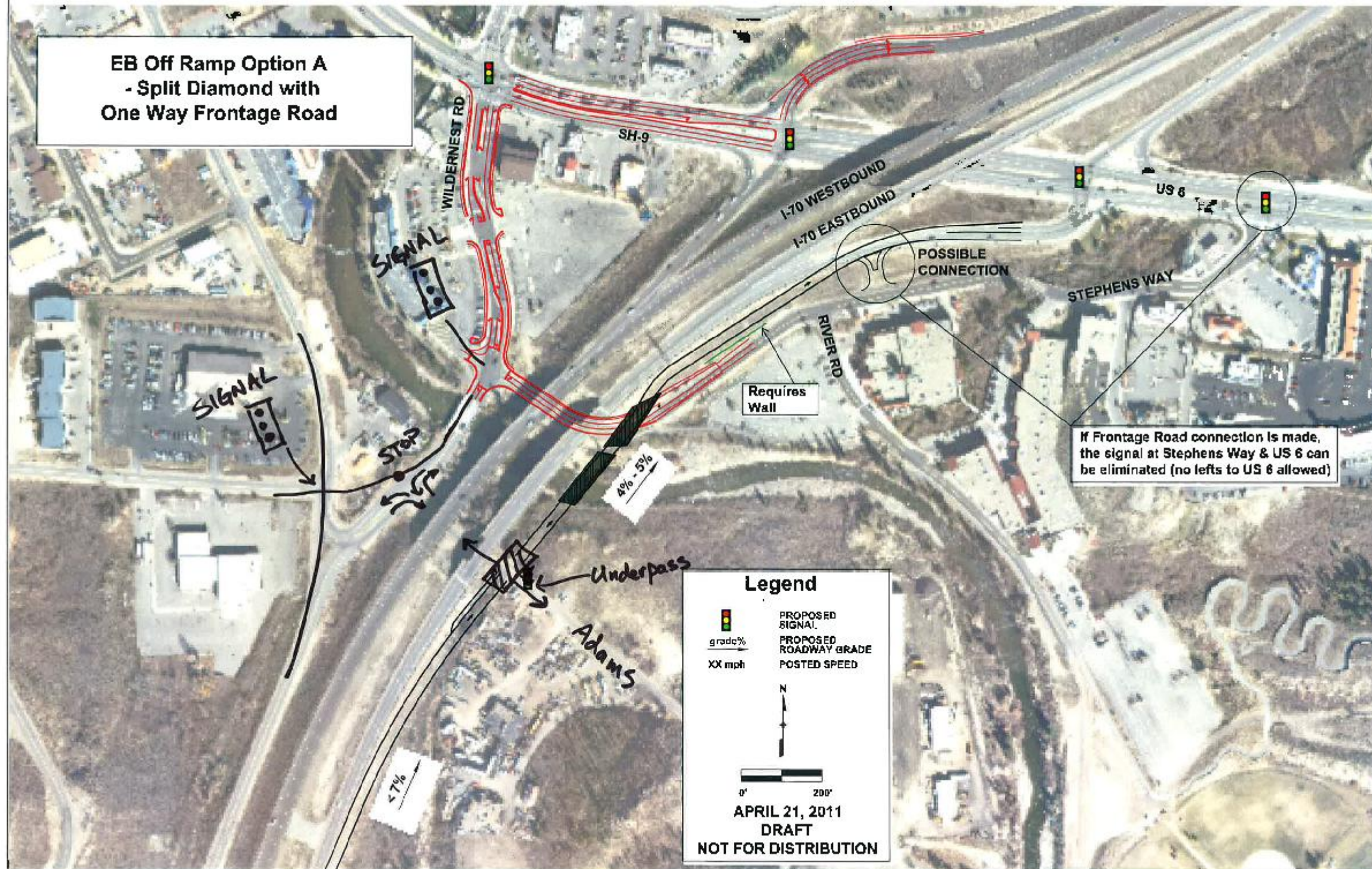


0' 200'




APRIL 21, 2011
DRAFT
NOT FOR DISTRIBUTION



**EB Off Ramp Option A
- Split Diamond with
One Way Frontage Road**



Legend

-  PROPOSED SIGNAL
-  PROPOSED ROADWAY GRADE
-  POSTED SPEED

N

0' 200'

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If Frontage Road connection is made, the signal at Stephens Way & US 6 can be eliminated (no lefts to US 6 allowed)

Requires Wall

POSSIBLE CONNECTION

Underpass

Adams

STOP

SIGNAL

SIGNAL

WILDERREST RD

SH-9

I-70 WESTBOUND
I-70 EASTBOUND

RIVER RD

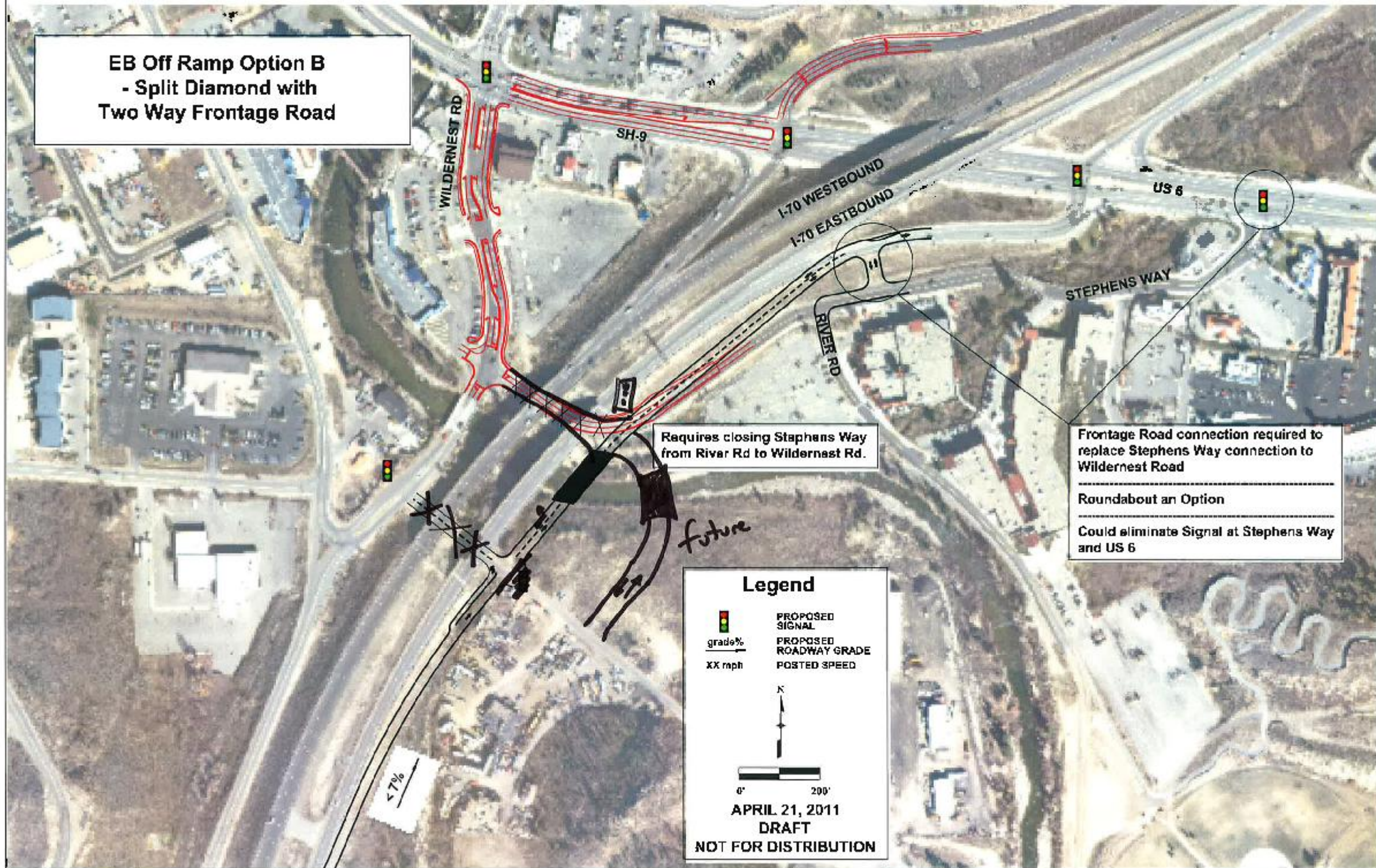
STEPHENS WAY

US 6

4% - 5%

5.7%

**EB Off Ramp Option B
- Split Diamond with
Two Way Frontage Road**






Requires closing Stephens Way from River Rd to Wildernest Rd.



Frontage Road connection required to replace Stephens Way connection to Wildernest Road

Roundabout an Option

Could eliminate Signal at Stephens Way and US 6

Legend

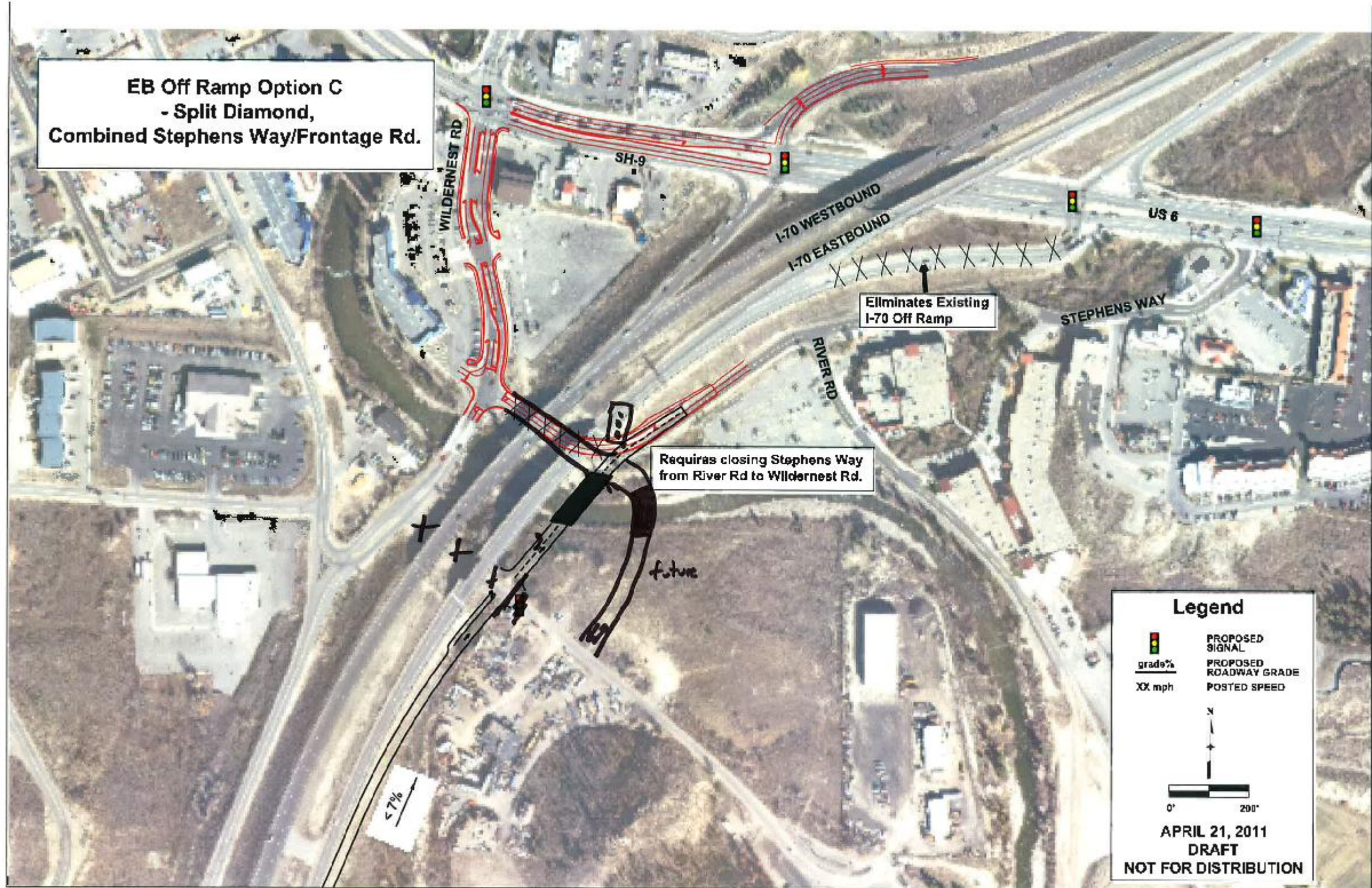
 PROPOSED SIGNAL
 PROPOSED ROADWAY GRADE
 POSTED SPEED



 APRIL 21, 2011
 DRAFT
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future

≤ 7%

**EB Off Ramp Option C
- Split Diamond,
Combined Stephens Way/Frontage Rd.**



Eliminates Existing I-70 Off Ramp

Requires closing Stephens Way from River Rd to Wilderndst Rd.

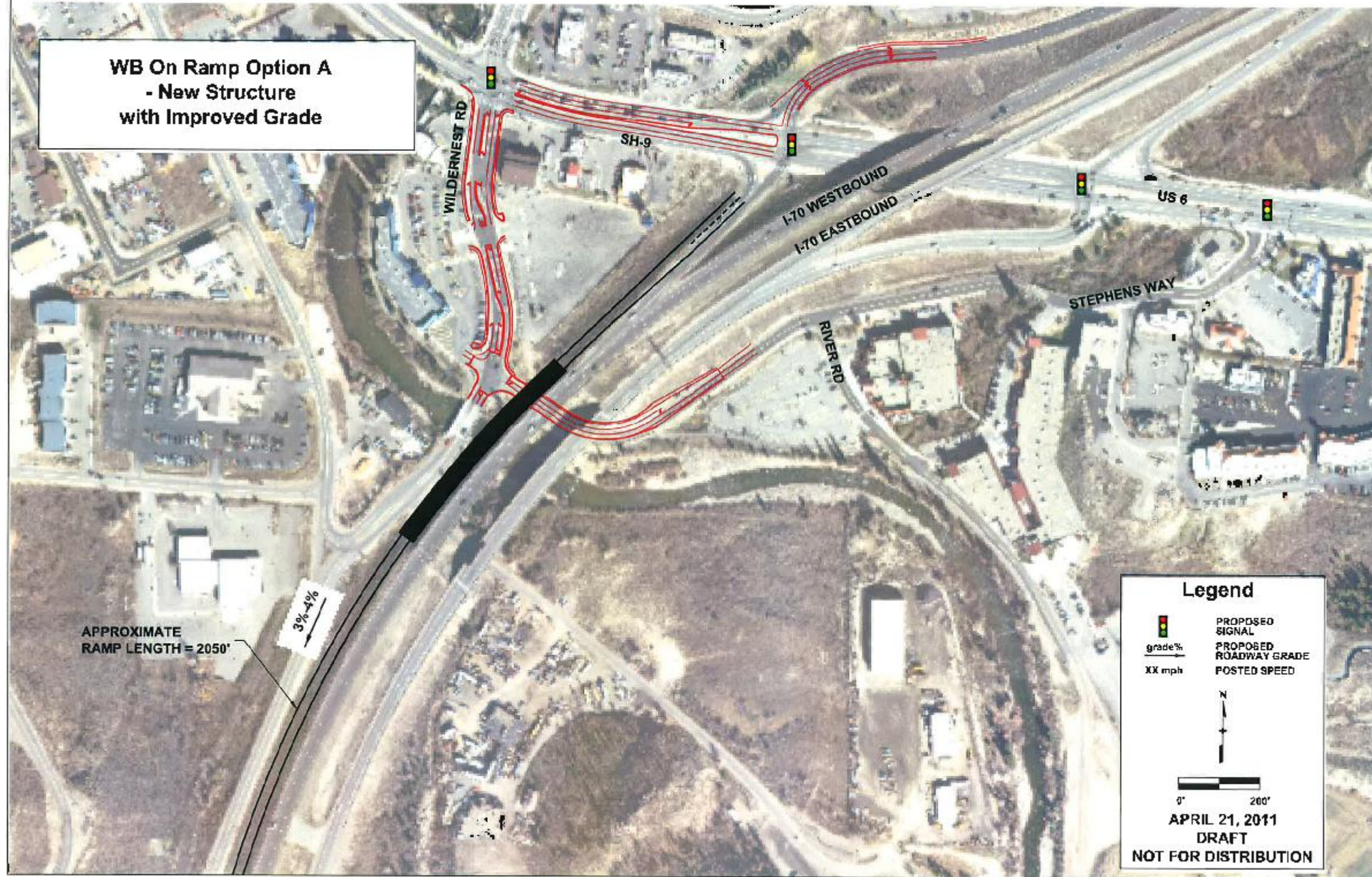
Legend

- PROPOSED SIGNAL
- PROPOSED ROADWAY GRADE
- POSTED SPEED

0' 200'

APRIL 21, 2011
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**WB On Ramp Option A
- New Structure
with Improved Grade**



APPROXIMATE
RAMP LENGTH = 2050'

3% - 4%

Legend

	PROPOSED SIGNAL
	PROPOSED ROADWAY GRADE
	POSTED SPEED

N

0' 200'

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**WB On Ramp Option B
Split Diamond**

Legend

- PROPOSED SIGNAL
- PROPOSED ROADWAY GRADE
- POSTED SPEED

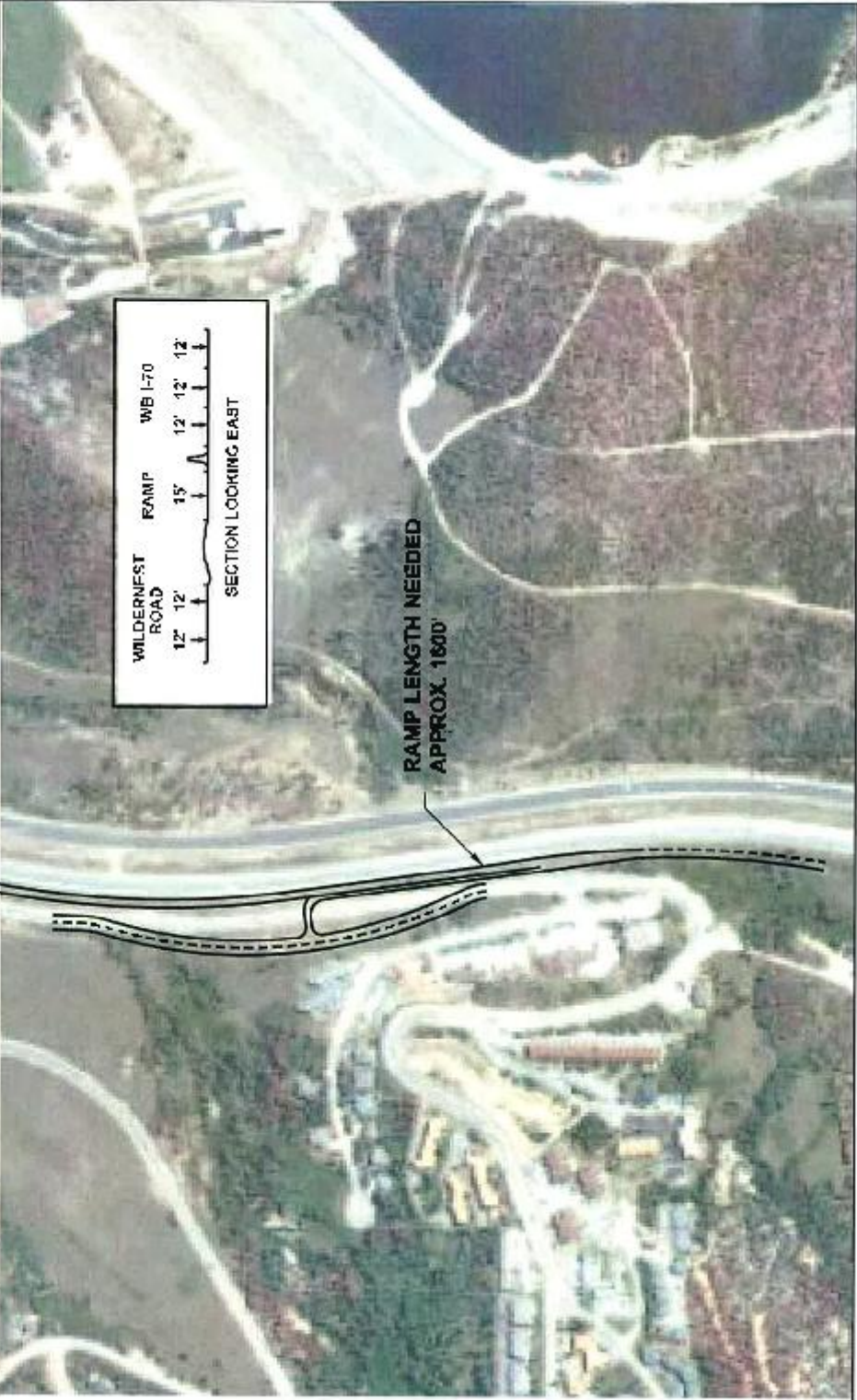
g radov%
XX mph

0' 400'

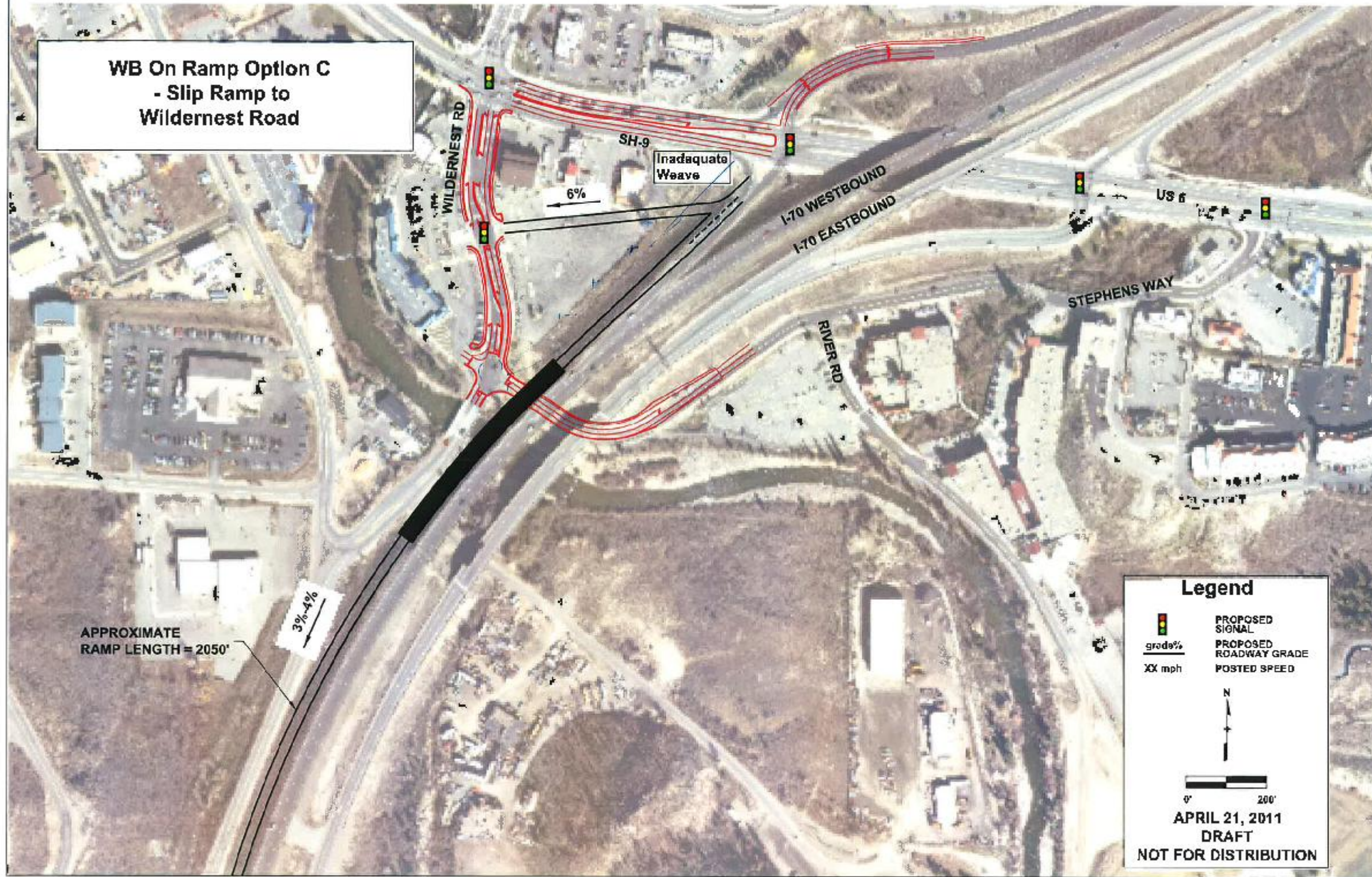
**APRIL 21, 2011
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**RAMP LENGTH NEEDED
APPROX. 1600'**



**WB On Ramp Option C
- Slip Ramp to
Wilderness Road**



Legend

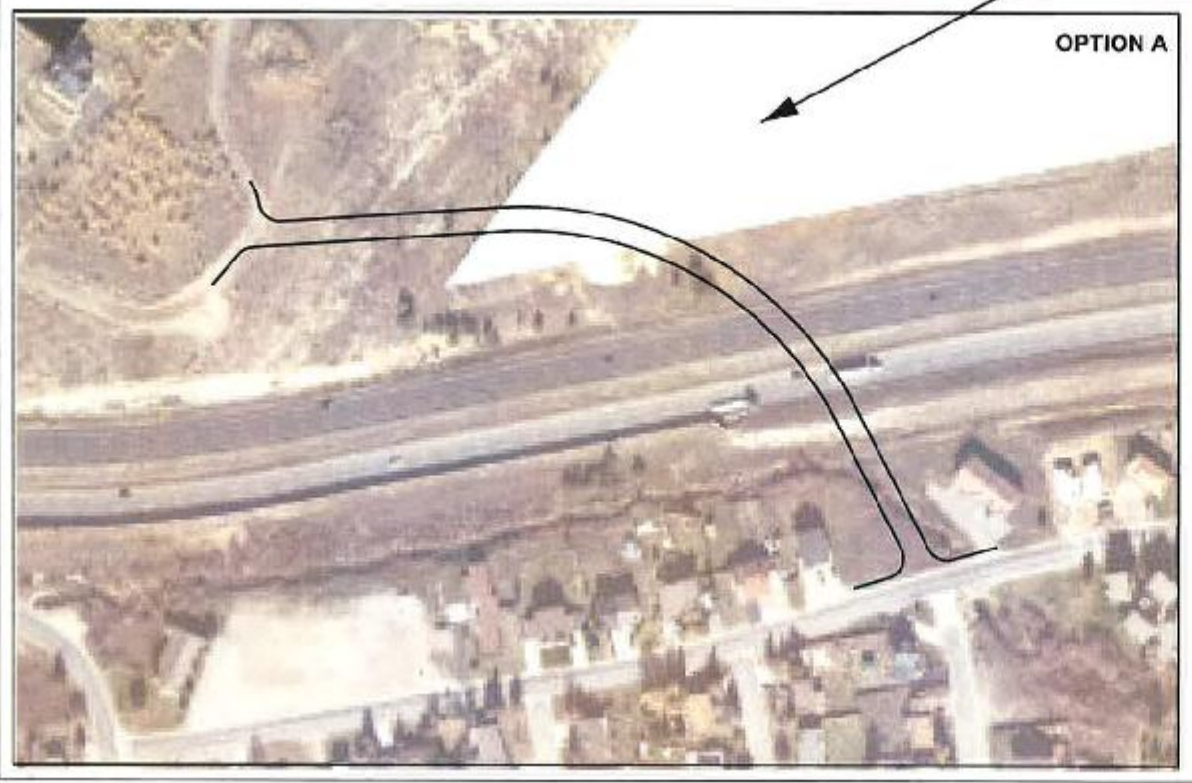
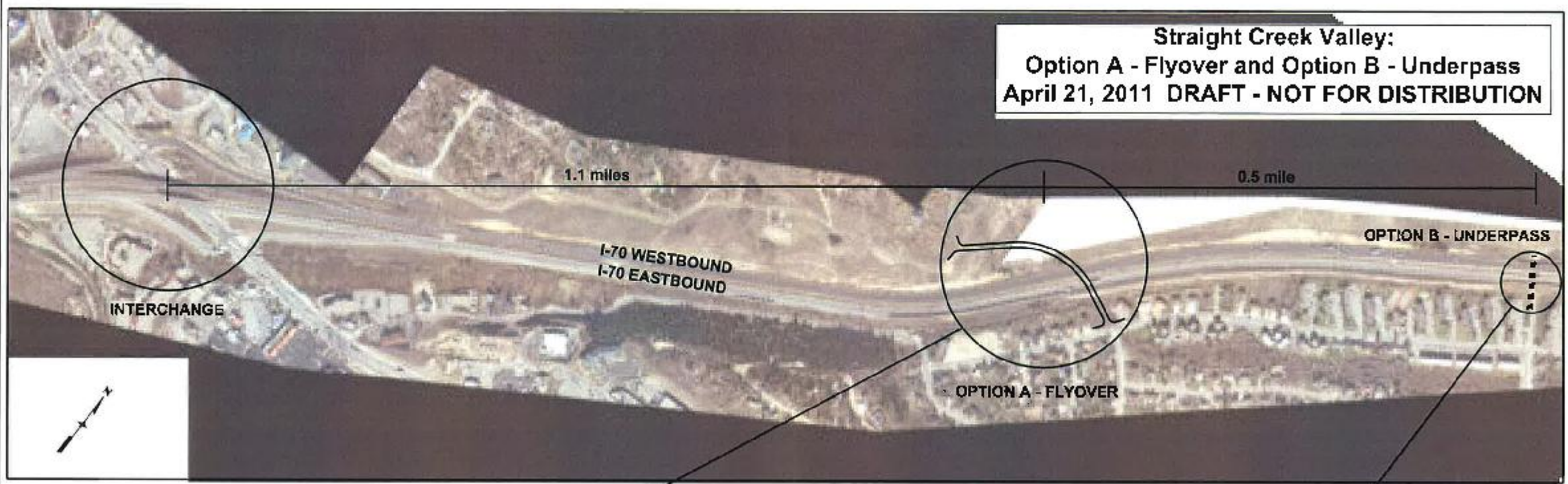
	PROPOSED SIGNAL
<u>grade%</u>	PROPOSED ROADWAY GRADE
XX mph	POSTED SPEED

N

0' 200'

APRIL 21, 2011
DRAFT
NOT FOR DISTRIBUTION

**Straight Creek Valley:
Option A - Flyover and Option B - Underpass
April 21, 2011 DRAFT - NOT FOR DISTRIBUTION**



Appendix B: Feasibility-Level and Concept-Level Screening Evaluation Criteria Questions

1. Does this alternative preserve future transportation options?
2. What is the life-cycle cost of the alternative?
3. What is the comparative capital cost of the alternative?
4. How well can the alternative integrate sustainable construction practices?
5. Can this alternative improve safety?
6. How well does the alternative maintain a safe work environment for maintenance employees?
7. How well does the alternative reduce the number of or improve higher than expected crash locations?
8. How well does the alternative follow current design standards?
9. How well does the alternative reduce conflict points?
10. Does the alternative improve traffic mobility?
11. Is this alternative compatible with the existing and planned transportation system?
12. Does this alternative provide access for local trips?
13. How well does the alternative improve regional mobility?
14. How well does the alternative address local access traffic?
15. How well does the alternative address cut-through traffic?
16. How well does the alternative promote efficient freight movement?
17. How easy is the interchange to use for non-local drivers?
18. How consistent is the alternative with the I-70 CSS Aesthetic Guidance?
19. Can adverse environmental impacts be avoided, minimized, or mitigated?
20. Can impacts to irreplaceable natural resources (e.g. wetlands or Gold Medal Fisheries) be avoided?
21. How well can the adverse environmental impacts be avoided, minimized, or mitigated?
22. How well does the alternative minimize right of way requirements?
23. How well does the alternative address water quality?
24. How well does the alternative avoid, minimize, and mitigate impacts to wetlands?
25. How well does the alternative avoid, minimize, and mitigate impacts to the Gold Medal Fisheries?
26. How effectively can Best Management Practices (BMPs) for water quality be accommodated?
27. How well does the alternative avoid, minimize, and mitigate impacts to recreational resources?
28. Can impacts to paleontological, historical, and archeological resources be avoided, minimized, or mitigated?
29. How well can impacts to paleontological, historical, and archeological resources be avoided, minimized, or mitigated?
30. Is the alternative compatible with local land use plans?
31. Does the alternative serve as a gateway to the area, providing good identity for local communities?
32. Are impacts to community resources resolvable?
33. How compatible is the alternative with local comprehensive plans?
34. How well does the alternative limit disproportionate impacts on low-income or minority communities?
35. How well does the alternative minimize adverse effects on local businesses?
36. How well does the alternative treat residential areas?
37. How well does the access provided by the alternative support existing and future economic development?
38. Does this alternative improve bike/pedestrian mobility?
39. Does this alternative improve transit mobility?
40. How well does the alternative accommodate existing and future transit?
41. How well does the alternative accommodate bike/pedestrian (multi-modal) mobility?

APPENDIX C: SUMMARY OF WORKSHOP GROUP RESULTS

Technical Workshop Summary Table –Design, Cost and Maintenance

EVALUATION CRITERIA	ALT 1 Imp Diam	ALT 2 Round- abouts	ALT 3 SPUI	ALT 4 Div Diam	EB Off A Elev Ramp	EB Off B 2 Brdg Exist Ramp	EB Off C 2 Brdg Steph Ramp	WB On A Split Diam	WB On B New Struct	WB On C Wilder	Flyover A	Underpass B
Sustainable Operations												
2 What is the life-cycle cost of the alternative?	●	●	●	●	●	●	●	●	●	●	●	●
3 What is the comparative capital cost of the alternative?	●	●	●	●	●	●	●	●	●	●	●	●
4 How well can the alternative integrate sustainable construction practices?	●	●	●	●	●	●	●	●	●	●	●	●
Safety												
6 How well does the alternative maintain a safe work environment for maintenance employees?	●	●	●	●	●	●	●	●	●	●	●	●
8 How well does the alternative follow current design standards?	●	●	●	●	●	●	●	●	●	●	●	●

● Good ● Fair ● Poor

Design, Cost and Maintenance Summary

EVALUATION CRITERIA	ALT 1 Imp Diam	ALT 2 Round- abouts	ALT 3 SPUI	ALT 4 Div Diam	EB Off A Elev Ramp	EB Off B 2 Brdg Exist Ramp	EB Off C 2 Brdg Steph Ramp	WB On A Split Diam	WB On B New Struct	WB On C Wilder	Flyover A	Underpass B
YES	0	0	0	0	0	0	0	0	0	0	0	0
NO	0	0	0	0	0	0	0	0	0	0	0	0
GOOD	4	1	1	0	1	1	1	5	2	3	2	1
FAIR	1	4	3	5	3	4	4	0	2	1	2	3
POOR	0	0	1	0	1	0	0	0	1	1	1	1

Evaluation

Alternatives

There are no fatal flaws to the alternatives.

The SPUI is the most expensive alternative (3)

The improved diamond has the best score.

EB Off Ramp Options

There are no fatal flaws to the Options

Option A is the most expensive (3)

WB On Ramp Options

There are no fatal flaws to the Options, but Option C provides design challenges (8)

Option B is the most expensive (3)

Straight Creek Options

There are no fatal flaws to the Options, but the underpass presents design challenges (8)

The Flyover is the most expensive (3)

Evaluation

Alternatives

There are no fatal flaws to the alternatives.

The improved diamond scored poorly for not reducing conflict points (9) and not improving regional mobility relative to the other alternatives.

The roundabout scored poorly for handling freight due to a series of sharp curves (16)

The SPUI was slightly better than the diverging diamond for local access (14) and for ease of use by non-local drivers (17)

EB Off Ramp Options

There are no fatal flaws to Options A and B.

Option B has better scores than Option A.

There are fatal flaws to Option C:

- Mobility (10)
- System (11)
- Regional mobility (13)
- Cut through traffic (15)
- Freight movement (16)
- Non local drivers (17)

Options A and B are far superior to Option C because Option C puts all of the traffic on Stephens Way and creates an offset between the Stephens Way/Off Ramp traffic and the I-70 EB On Ramp.

WB On Ramp Options

There are no fatal flaws to Options A and B.

Options A and B have very similar scores

There are fatal flaws to Option C:

- Doesn't improve safety (5)
- Doesn't reduce conflicts points (9)
- Incompatible with the transportation system (11)
- Doesn't improve regional mobility (13) or local access (14)
- Creates cut through traffic (15)

- Difficult for freight movement (16)
- Confusing for non local drivers (17)

Option C creates and unacceptable weave at the WB On Ramp

Straight Creek Options

The Flyover and underpass options have identical scores and both options would create substantial adverse effects that may be unavoidable and could be considered fatal flaws:

- Doesn't improve safety (5)
- Conflicts points (9)
- Incompatible with the transportation system (11)
- Regional mobility (13)
- Local access (14)
- Cut through traffic (15)
- Freight movement (16)
- Non local drivers (17)

Technical Workshop Summary Table – Multimodal, Community and Environmental Effects

Feasibility-Level

EVALUATION CRITERIA	ALT 1 Imp Diam	ALT 2 Roundabouts	ALT 3 SPUI	ALT 4 Div. Diam.	EB Off A One Way	EB Off B Two Way	EB Off C Combined	WB On A New Struct.	WB On B Split Diam.	WB On C Split Ramp Wilderrest	Straight Creek Flyover A	Straight Creek Underpass B
QUESTION												
Sustainable Operations 1 Does this alternative preserve future transportation options?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Healthy Environment 19 Can adverse environmental impacts be avoided, minimized, or mitigated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20 Can impacts to irreplaceable natural resources (e.g. wetlands or Gold Medal Fisheries) be avoided?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Historic Context 28 Can impacts to paleontological, historical, and archeological resources be avoided, minimized, or mitigated?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Communities 30 Is the alternative compatible with local land use plans?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
31 Does the alternative serve as a gateway to the area, providing good identity for local communities?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
32 Are impacts to community resources resolvable?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Concept-Level

EVALUATION CRITERIA	ALT 1 Imp Diam	ALT 2 Roundabouts	ALT 3 SPUI	ALT 4 Div. Diam.	EB Off A One Way	EB Off B Two Way	EB Off C Combined	WB On A New Struct.	WB On B Split Diam.	WB On C Split Ramp Wilderrest	Straight Creek Flyover A	Straight Creek Underpass B
Aesthetics 18 How consistent is the alternative with the I-70 CSS Aesthetic Guidance?	●	●	●	●	●	●	●	●	●	●	●	●
Healthy Environment 21 How well can the adverse environmental impacts be avoided, minimized, or mitigated?	●	●	◐	◐	●	◐	◐	●	●	●	●	◐
22 How well does the alternative minimize right of way requirements?	●	●	●	◐	●	◐	◐	●	●	◐	●	●
23 How well does the alternative address water quality?	●	●	●	●	●	◐	◐	◐	◐	◐	◐	●
24 How well does the alternative avoid, minimize, and mitigate impacts to wetlands?	●	●	◐	◐	●	◐	◐	◐	◐	◐	◐	●
25 How well does the alternative avoid, minimize, and mitigate impacts to the Gold Medal Fisheries?	●	●	●	●	●	◐	◐	◐	◐	◐	●	●
26 How effectively can Best Management Practices (BMPs) for water quality be accommodated?	●	●	●	●	●	◐	◐	●	●	●	◐	◐
27 How well does the alternative avoid, minimize, and mitigate impacts to recreational resources?	●	◐	●	●	●	●	●	N/A	N/A	N/A	N/A	N/A
Historic Context 29 How well can impacts to paleontological, historical, and archeological resources be avoided, minimized, or mitigated?	●	●	●	●	●	●	●	●	◐	●	●	●
Communities 33 How compatible is the alternative with local comprehensive plans?	●	●	●	◐	●	●	●	●	●	●	◐	◐
34 How well does the alternative limit disproportionate impacts on low-income or minority communities?	●	●	●	●	●	●	●	●	●	●	●	●
35 How well does the alternative minimize adverse effects on local businesses?	●	●	●	◐	●	●	◐	●	●	●	●	●
36 How well does the alternative treat residential areas?	●	●	●	●	●	●	●	●	●	●	●	●
37 How well does the access provided by the alternative support existing and future economic development?	●	◐	●	◐	◐	●	●	●	●	●	●	●

● Good ◐ Fair ● Poor

Summary

EVALUATION CRITERIA	ALT 1 Imp Diam	ALT 2 Roundabouts	ALT 3 SPUI	ALT 4 Div. Diam.	EB Off A One Way	EB Off B Two Way	EB Off C Combined	WB On A New Struct.	WB On B Split Diam.	WB On C Split Ramp Wilderrest	Straight Creek Flyover A	Straight Creek Underpasses B
QUESTION												
YES	7	7	7	7	7	7	7	7	7	7	7	7
NO	0	0	0	0	0	0	0	0	0	1	0	0
GOOD	15	11	13	9	14	9	8	12	11	7	6	10
FAIR	1	3	3	7	1	6	7	3	4	4	4	3
POOR	0	2	0	0	1	1	1	0	0	4	5	2
N/A	0	0	0	0	0	0	0	1	1	1	1	1

Evaluation

Alternatives

There are no fatal flaws to the alternatives.

The roundabout:

- Requires substantial amounts of right of way (22)
- Displaces and disrupts existing businesses (35)
- May impact the Blue River Trail and wetlands (27, 24)

EB Off Ramp Options

There are no fatal flaws to the EB Off Ramp Options.

EB Off Ramp Option A conflicts with local planning in terms of limiting redevelopment potential (33, 37) by limiting EB off access to the parcel in the most westerly parcel of the SW quadrant

EB Off Ramp Options B and C are similar and required a second bridge over the Blue River (27)

WB On Option

There are no fatal flaws to the WB On Ramp Options.

WB On Ramp Option C includes a new road through the triangular parcel of land in the NW quadrant:

- Conflicts with local planning and limits redevelopment potential (33, 37)
- Impacts business (35)
- May conflict with future transit possibilities (40)

Straight Creek Options

The Flyover options would create substantial adverse effects that may be unavoidable (21) and fatal.

The Flyover:

- Conflicts with CSS aesthetic guidance (18)
- Requires all new right of way (22)
- Requires grading in the area of high paleontological sensitivity (29)

The underpass:

- Requires substantial amounts of right of way (22)
- Requires grading in the area of high paleontological sensitivity (29)