



# value analysis study richardson highway MP 351 interchange

alaska department of transportation and public facilities

value analysis study  
december 19-21, 2017

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December 19-21, 2017

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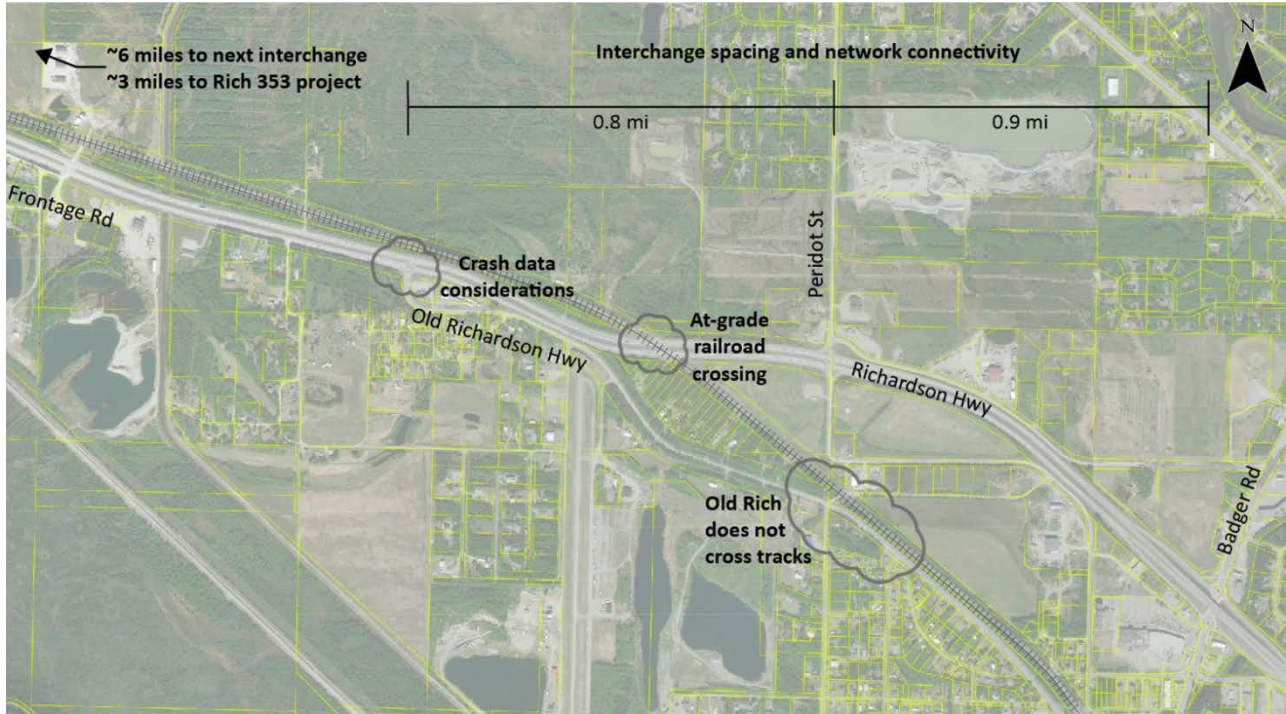
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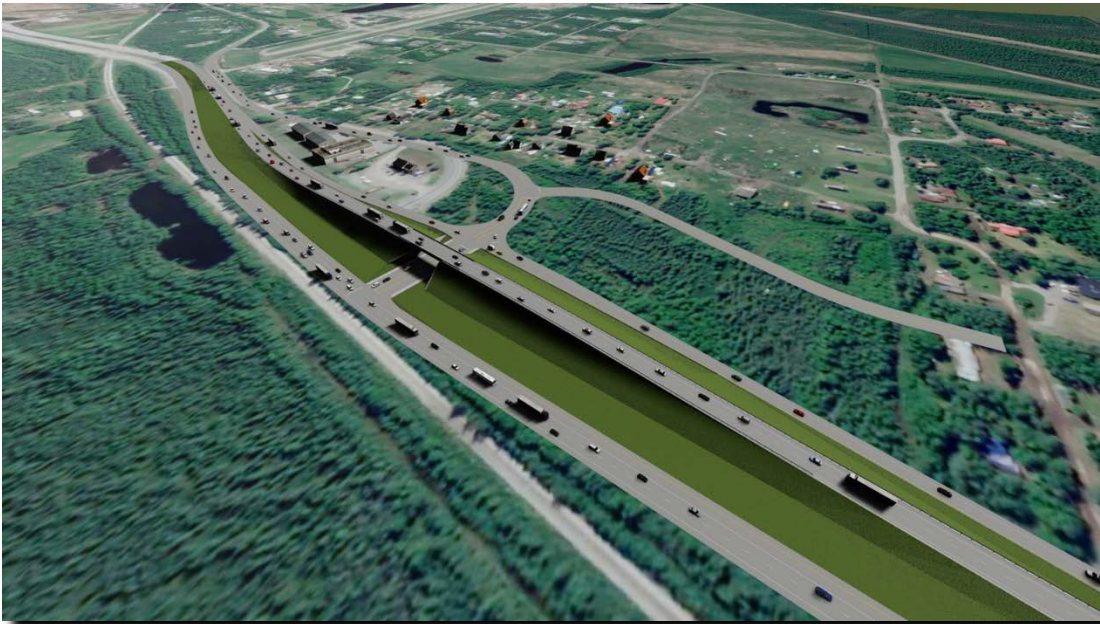
Aerial Photo showing McKinley Village area

## FOREWORD

This Value Analysis Report presents the recommendations for the Richardson Highway Interchange project at MP 351 conducted on December 19-21, 2017 in Fairbanks, Alaska.

This is to certify that the Value Analysis Study was led by the undersigned National Park Service Value Analysis Facilitator and was conducted in accordance with standard value analysis principles and guidelines.

Paul Schrooten  
Value Study Facilitator



## EXECUTIVE SUMMARY

The State of Alaska Department of Transportation & Public Facilities (ADOT&PF), in cooperation with the Federal Highway Administration (FHWA) is proposing to construct intersection improvements at the MP 351 Richardson Highway/Old Richardson Highway intersection under the Highway Safety Improvement Program (HSIP). The project is intended to reduce severe crashes at this intersection on the Interstate Highway System.

The primary purpose of this project is to reduce crashes at the intersection of Richardson Highway and Old Richardson Highway near MP 351. Currently, the project team has conducted an initial safety and operational assessment of Richardson Highway within the study area. The project team worked with a Technical Advisory Committee to identify three design concepts to meet the project purpose: median closure, interchange at the MP 351 intersection, and interchange near MP 352.

The FHWA requires that modifications to access on the Interstate system be reviewed from a corridor safety and operations standpoint. Part of this project is evaluating an interchange or other access modifications at MP 351 for impacts to the Richardson Highway with regards to future development and interchange locations. Three design concepts were developed by considering the project objectives and criteria that will be used to evaluate proposed improvements. In addition, the overall corridor context was considered to assess whether alternatives are consistent with guidelines for interchange spacing (>1 mile) as Richardson Highway is upgraded over time to a freeway with access provided only via interchanges.

Interstate Access Change Objectives:

- Support the vision of Richardson Highway in the study area to be grade-separated
- Consider the potential to provide a full interchange in the study area in the future
- Consider future access and interchange spacing on Richardson Highway within the study area
- Safety
- Transportation Operations
- Accessibility and Connectivity
- Constructability
- Maintenance
- Land Use
- Multimodal Accessibility
- Environmental Impact
- Cost

A value analysis study of the project was conducted on December 19-21, 2017 at ADOT&PF Northern Region offices at 2720 Pickett Place, Fairbanks, AK.

## Summary Description of Project

Highway 2 (Richardson Highway) runs east/west between Fairbanks and North Pole. It is a separated roadway with two lanes in both directions and a posted speed of 60 miles per hour. The existing three-leg intersection of Richardson Highway and Old Richardson Highway near milepost 351 is currently at grade with Old Richardson Highway stop-controlled. According to the Alaska Highway Safety Improvement Plan (HSIP), crash data at this intersection indicates 24 multi-vehicle crashes at this intersection from 2008 to 2012, including 8 minor injury crashes and 1 fatal crash. Overall, the intersection has experienced a crash rate 2.5 times higher than the statewide average for similar intersections. From a pure capacity standpoint, the existing interchange form is adequate to support existing development along the corridor. As a result of the intersection's crash history, this intersection has been included in the Alaska HSIP and an Interstate Access Change Request (IACR, also known as an Interchange Justification Report) has been requested.

### Background Information:

The IACR will focus on the existing Richardson/Old Richardson Highway intersection and the area along the Richardson Highway corridor in proximity to this intersection. Based on conversations with FHWA and ADOT&PF, four study intersections (shown in Figure 1) have been selected for detailed operations and safety analysis. The project study area will extend to the existing adjacent interchanges on Richardson Highway to the east and west. In addition to the intersections called out below for detailed analysis, the IACR will assess consistency with future plans along the Richardson Highway corridor.

The **Richardson Highway** is a four-lane divided roadway along the length of the study area. It is defined as an Interstate per ADOT&PF functional classification. Traffic volumes along Richardson Highway in this area are approximately 15,000 per day and the speed limit is posted at 60 miles per hour. ADOT&PF has expressed a general preference towards grade separation where possible along this portion of the Richardson Highway corridor.

The **Richardson Highway and Old Richardson Highway** intersection is a three leg minor approach stop-controlled intersection located approximately 10 miles east of downtown Fairbanks and 2 miles west of North Pole. At this intersection, Richardson Highway includes turn-lanes and allows U-turns. There is an acceleration lane westbound for vehicles taking a northbound left-turn from Old Richardson Highway. Old Richardson Highway is a one-lane approach. It is classified by ADOT&PF as a major collector and the traffic volumes along its approach are approximately 2,000 per day. Old Richardson Highway continues southeast and runs roughly parallel to the railroad. The Petro Star refinery is located on Old Richardson Highway approximately 3 miles from the Richardson Highway intersection, leading to increased freight traffic at this intersection. Some carriers, however, do not permit their trucks to use this route based on safety concerns.

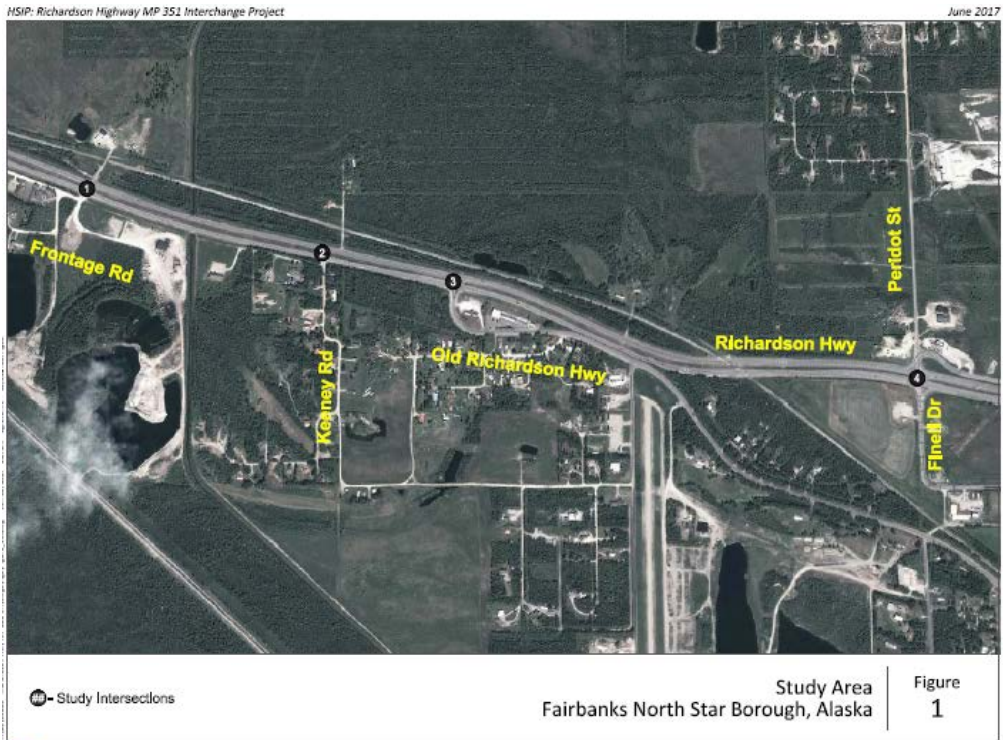
The **Richardson Highway and Frontage Road** intersection is a four leg minor approach stop-controlled intersection located approximately 0.75 miles west of the Richardson Highway/Old Richardson Highway intersection. At this intersection, Richardson Highway includes a left-turn



lane on both approaches and a westbound right turn lane. Frontage Road includes a single-lane approach in each direction. South of Richardson Highway it is classified by ADOT&PF as a local road and it is a private road north of Richardson Highway. The Frontage Road turns to gravel just south of Richardson Highway.

The **Richardson Highway and Keeney Road** intersection is a three leg minor approach stop-controlled intersection located approximately 0.25 miles west of the Richardson Highway/Old Richardson Highway intersection. The intersection is right-in/right-out. Keeney Road is classified by ADOT&PF as a local road and turns to gravel just south of the intersection with Richardson Highway. Keeney Road serves the residential area south of Richardson Highway and Brady Sky-Ranch Airport, which is also accessible via Old Richardson Highway.

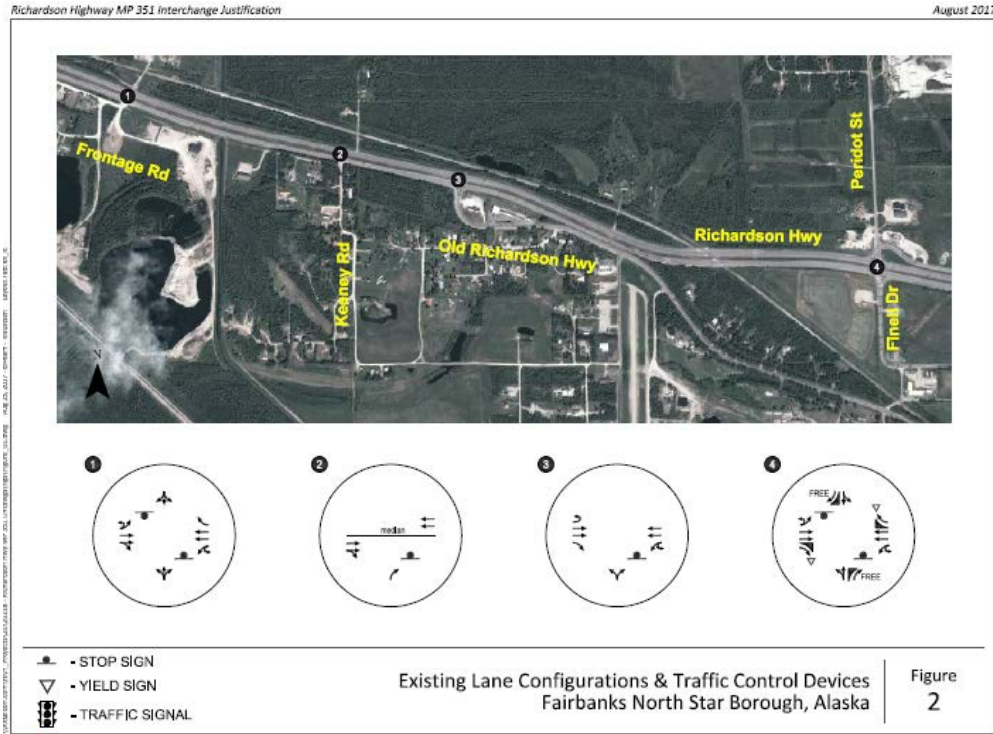
The **Richardson Highway and Peridot Street/Finell Drive** intersection is a four leg minor approach stop-controlled intersection located approximately 0.75 miles east of the Richardson Highway/Old Richardson Highway intersection. At this intersection, all approaches feature channelized right turn lanes. There are left turn lanes on Richardson Highway and acceleration lanes for northbound and southbound left-turning vehicles. Finell Drive and Peridot Street are both two lane roadways. Finell Drive is classified by ADOT&PF as a local road and Peridot Street is classified as a minor collector.



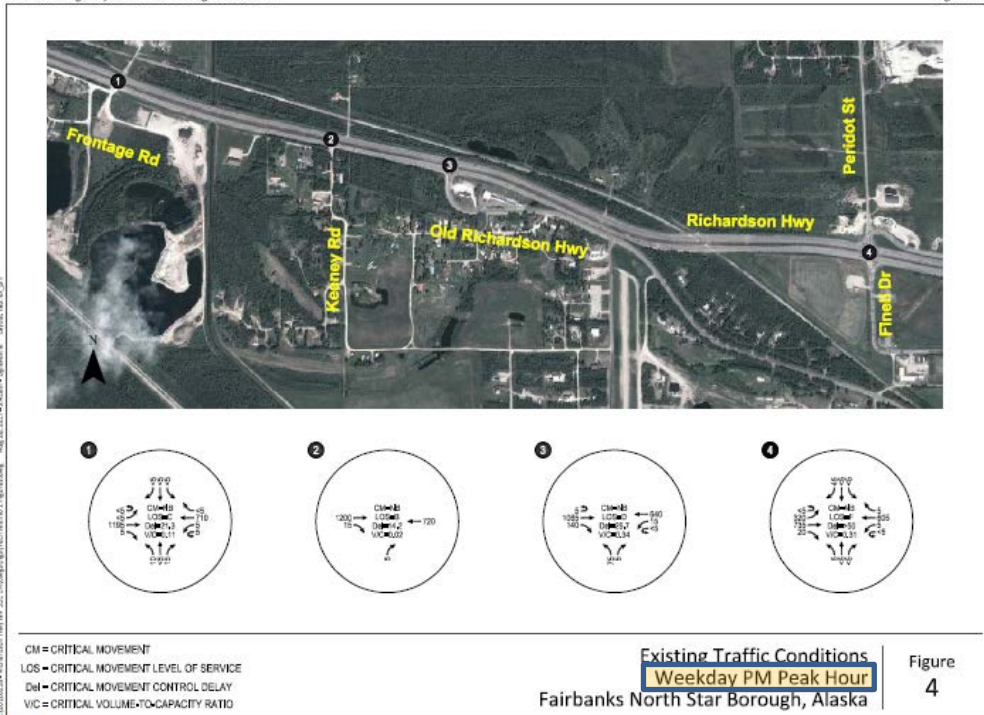
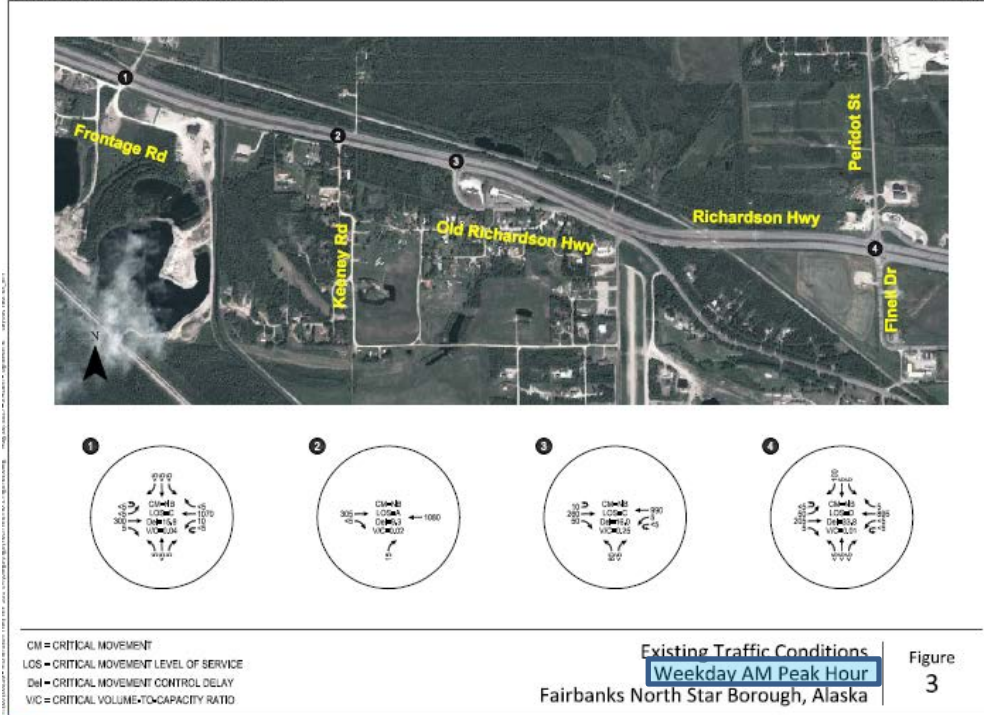


## Traffic Data:

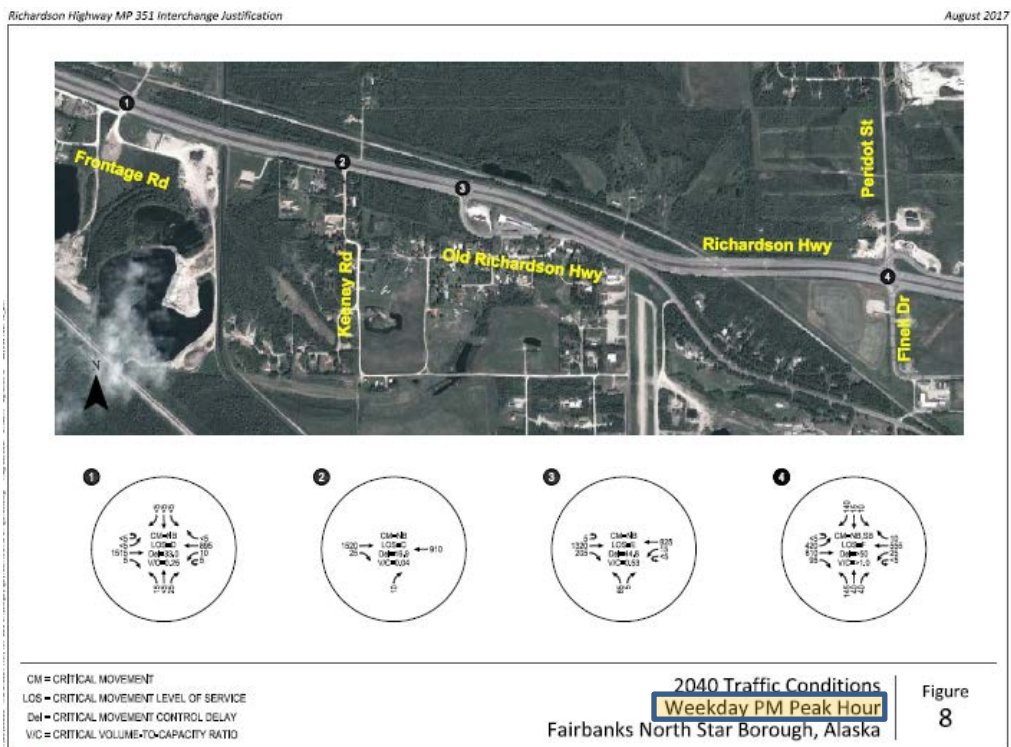
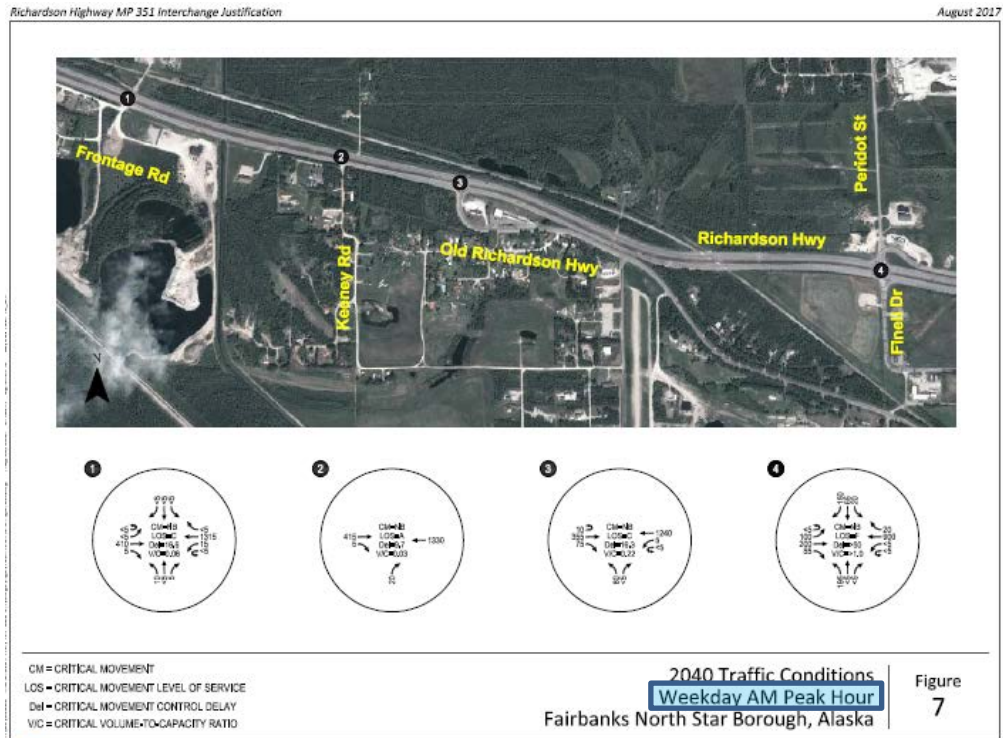
Turning movements have been collected by ADOT&PF at the following nearby locations:



# Existing Traffic Conditions:



# 2040 No Build Traffic Conditions:





## Intersection Crash Histories:

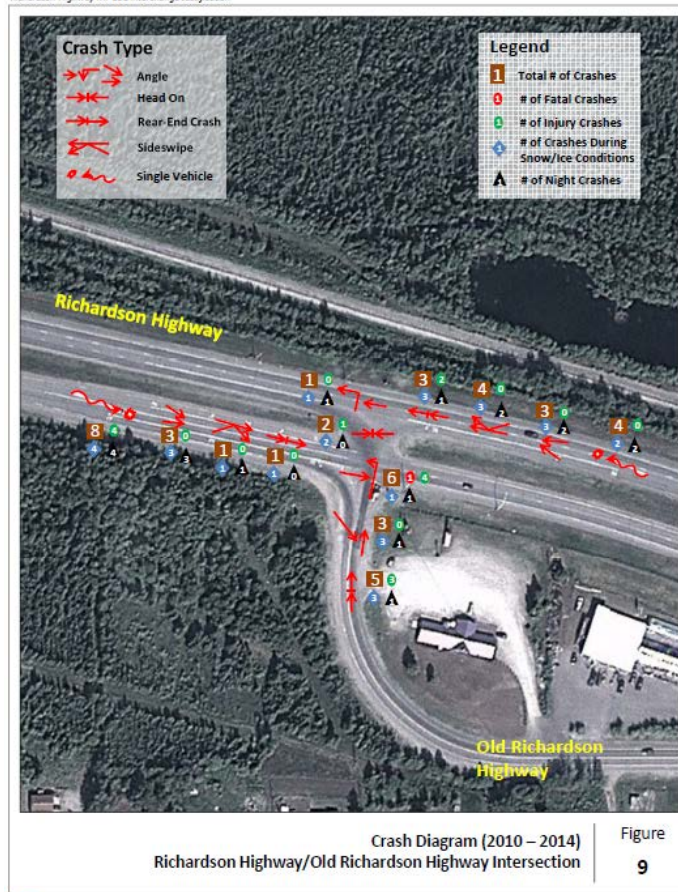
The crash histories at the study intersections were reviewed in an effort to identify potential safety issues. ADOT&PF provided crash records for the five-year period from January 1, 2010 through December 31, 2014.

Table 1: Study Intersection Crash Summary (January 1, 2010 – December 31, 2014)

Intersection	Total Crashes	Crash Type					Crash Severity		
		Angle	Rear End	Side-swipe	Single Vehicle	Head On	PDO <sup>1</sup>	Injury	Fatal
Frontage Road/Richardson Highway	1	0	0	0	1	0	1	0	0
Keeney Road/Richardson Highway	1	0	1	0	0	0	1	0	0
Old Richardson Highway/Richardson Highway	44	16	9	5	12	2	29	14	1
Peridot Street-Finell Drive/Richardson Highway	9	2	2	1	4	0	9	0	0

<sup>1</sup>PDO = Property Damage Only

Richardson Highway MP 351 Interchange Justification



## Project Schedule

Phase	Date
Startup and Scoping	March 2017 – June 2017 (complete)
Existing Conditions Analysis	May 2017 – September 2017 (complete)
Alternative Development and Evaluation	May 2017 – October 2017 (in-process)
Preferred Alternative Refinement	October 2017 – December 2017
IACR Report	November 2017 – February 2018

## Strategic Meeting and Value Study Objectives

The general objectives of the meeting and value analysis study include:

- Arrive at an optimal design solution through a structured and reasoned analysis
- Confirm project meets functional requirements
- Ensure:
  - consideration of all viable alternatives
  - soundness of evaluation factors
  - consideration of benefits to cost
  - an independent second opinion project review
- Provide clear documentation of decision-making
- Develop confidence that best solution/best value is achieved

## Alternatives Considered

- **Alternative 1: Median Closure at Old Richardson Highway/Richardson Highway Intersection**

The Old Richardson Highway/Richardson Highway intersection is restricted to right-in/right-out movements through a median closure. This concept is low cost and addresses the safety concern associated with northbound left-turn movements. It also does not preclude future infrastructure improvements. In the near-term, it causes out of direction travel and limits access for uses along Old Richardson Highway.

- **Alternative 2A: Interchange at Old Richardson Highway/Richardson Highway (MP 351) (HSIP Project Nomination)**

The eastbound mainline of Richardson Highway is elevated to eliminate its conflict with Old Richardson Highway. An at grade intersection remains between the westbound mainline of Richardson Highway and Old Richardson Highway. A full interchange could be developed in the future, as shown in the figure with dashed lines. This concept would require right-of-way acquisition to complete a frontage road system. Additionally, the Keeney Road access to Richardson Highway would be closed to accommodate the eastbound off-ramp.

- **Alternative 2B: Interchange at Old Richardson Highway/Richardson Highway (MP 351) (Shifted Southwest)**

As with Concept 2A, the eastbound mainline of Richardson Highway is elevated to eliminate its conflict with Old Richardson Highway while the westbound mainline remains at grade. The concept is shifted south to provide greater separation from the existing railroad. This concept would require right-of-way acquisition to the south of the existing Richardson Highway right-of-way, including the existing 12 Mile Road House and Hawk's Greenhouse, as well as additional right-of-way to complete the frontage road system. Additionally, the Keeney Road access to Richardson Highway would be closed to accommodate the eastbound off-ramp.

- **Alternative 3A: Full Interchange at Frontage Road/Richardson Highway (MP 351.75) (Mainline Moves North)**

A full interchange is implemented at the existing at grade intersection of Richardson Highway and Frontage Road. The Richardson Highway mainline is moved north and median width is decreased to keep all ramps within the existing available right-of-way. The existing Old Richardson Highway access to Richardson Highway is closed and a frontage road connection between Old Richardson Highway and the new interchange is created. The frontage road connection to the west may require right-of-way acquisition.

- **Alternative 3B: Full Interchange at Frontage Road/Richardson Highway (MP 351.75) (Frontage Moves South)**

As with Concept 3B, a full interchange is implemented at the existing at grade intersection of Richardson Highway and Frontage Road. The interchange is shifted south to maintain the current alignment of Richardson Highway and create more space between the interchange and railroad. The frontage road connecting Old Richardson Highway and the new interchange is diverted south because of lack of right-of-way along the Richardson Highway mainline. The frontage road would require right-of-way acquisition.

## **Summary of Recommendations**

The Value Analysis team evaluated five different alternatives representing a range of appropriate solutions. The alternatives were evaluated through the Choosing by Advantage (CBA) process. Using this process, the team recommends Alternative 2A<sub>1</sub> which provides the greatest combination of benefits for the most reasonable cost.

The advantages of the recommended alternative over the others include the following:

- Alternative 2A provides the least delay in transportation operations within the highway corridor.
- Alternative 2A meets access requirements with the least disruption to existing connections without precluding future access north of the Richardson Highway.



- Alternative 2A involves the least disruption to existing and future land uses.
- Alternative 2A has the least change to cost in that no additional effort is required related to approved funding sources.
- Alternative 2A fewer safety conflicts than Alternative 1 and 2B but not as much as Alternative 3A and 3B.
- Alternative 2A is more feasible to construct than 2B, 3A, and 3b, but less than the very simple Alternative 1.
- Alternative 2A is less maintenance than 2B, 3A, and 3b, but more than the very simple Alternative 1.
- Alternative 2A is less impact on the environment than 2B, 3A, and 3b based on footprint, but more impact than Alternative 1.

Alternative 1 Median Closure had an excellent benefit to cost ratio in the CBA analysis due mainly to very low initial cost of construction and low life cycle cost. However, Alternative 1 is not recommended by the VA team because it creates the greatest transportation operational delays along this segment of the highway corridor and is most disruptive to accessibility and connectivity of the area. Ultimately, the VA team felt the additional cost and additional benefit of Alternative 2A outweighed the lower costs of Alternative 1. The difference between the benefit scores (342 versus 506) along with the already budgeted and approved higher capital investment and manageable life cycle costs was acceptable. Therefore, the VA team felt that the additional \$15,650,000 in initial cost and \$244,480 in life cycle costs for Alternative 2A was worth the benefit of enhanced, safer interchange over the next fifty years.

Alternative 2B had higher cost for less benefit than Alternative 2A and Alternatives 3A, and 3B all had higher costs for less benefit due to the more extensive development and a change in approved budget that was eligible for the current fund source.

Additional recommendations if it is decided to construct Alternative 2A are as follows:

- Consider integrating an automated bridge de-icing system at a cost of about \$200K (2017)
- Although not available with the current fund source, consider constructing frontage road west to the 3A/3B interchange location to improve accessibility and prepare for additional anticipated growth in the immediate area.
- Either close the Richardson Highway crossover at Peridot Street (which would require further functional analysis) or limit the crossover to east bound left turns only on to Peridot and eliminating left turns from Peridot on to the Richardson Highway; need to address this location independently in the near future.
- Update the circa 1980 Richardson Highway Corridor Study to confirm the importance and context of this project and to reaffirm other needs.
- Re-evaluate how to minimize impacts to the railroad right-of-way north of the proposed interchange, including use of retaining walls, median narrowing, etc.).
- Final design should consider future development north of the interchange.
- Consider applying high friction surface treatment to all approaches and acceleration/deceleration lanes at the proposed interchange.
- Collect and exchange crash data from both ADOT&PF and the City of North Pole.

value analysis study

## **STUDY SPECIFICS AND OBJECTIVES**

The VA team consisted of staff from the State of Alaska Department of Transportation and Public Facilities (ADOT&PF) and the City of North Pole (CNP). A list of VA team participants is included on the following page.

The study team was composed of a mix of professional disciplines and individuals with experience in transportation planning, design, traffic and safety, highway and bridge engineering, operations and maintenance, municipal administration, and local emergency services. Members of the ADOT&PF staff grounded the team with knowledge of the intricacies of managing current issues at this site. None of the team members had experience working on prior VA studies so this was a learning experience as well as a determination of project value. It should be mentioned that consideration of a value analysis and use of the Choosing by Advantage methodology was also being considered for its merits and application for other ADOT&PF projects or program prioritization.

The specific value analysis objectives of this study included:

- Value enhancements including risk mitigation, quality/performance improvements, schedule/phasing coordination, etc.
- Improvements to the cost effectiveness of the project
- Creation of a higher level of confidence in the scope and implementation strategies for the project
- Identification of further opportunities for sustainability improvements

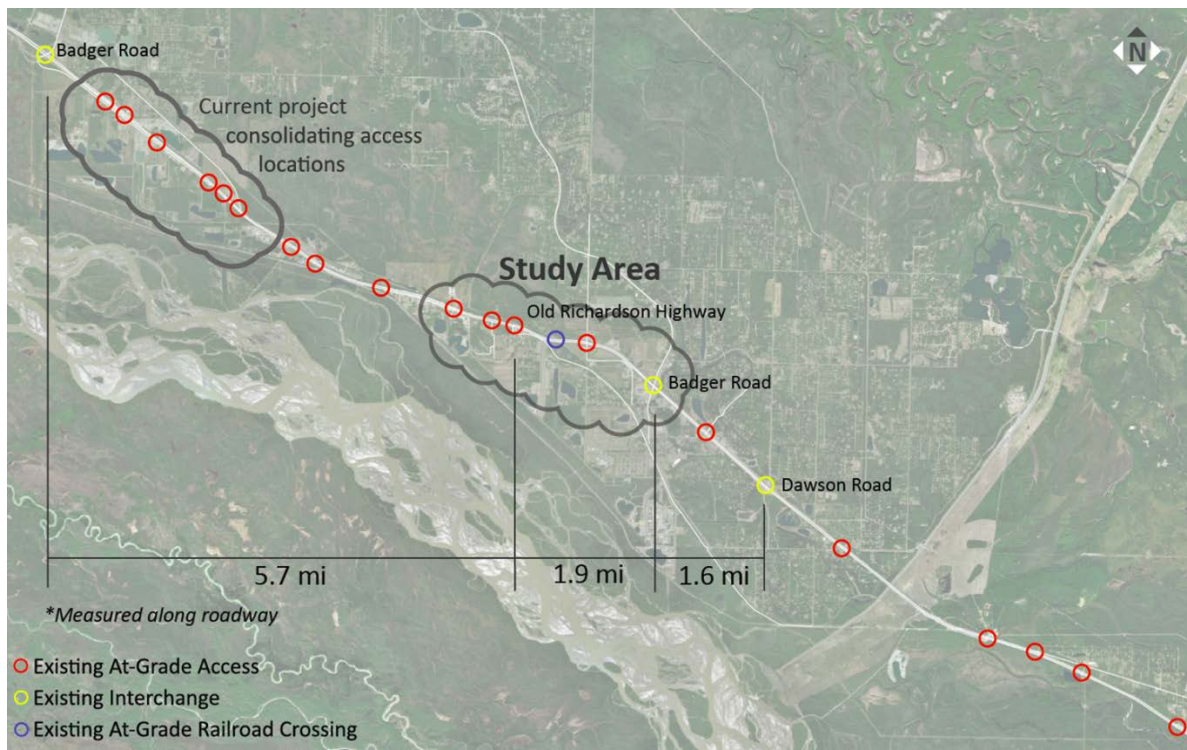
The team reviewed the design documents and budgetary cost estimates prepared by the project design team and the project consultant (Kittelson and Associates) as part of the workshop.



# PHASE I – INFORMATION

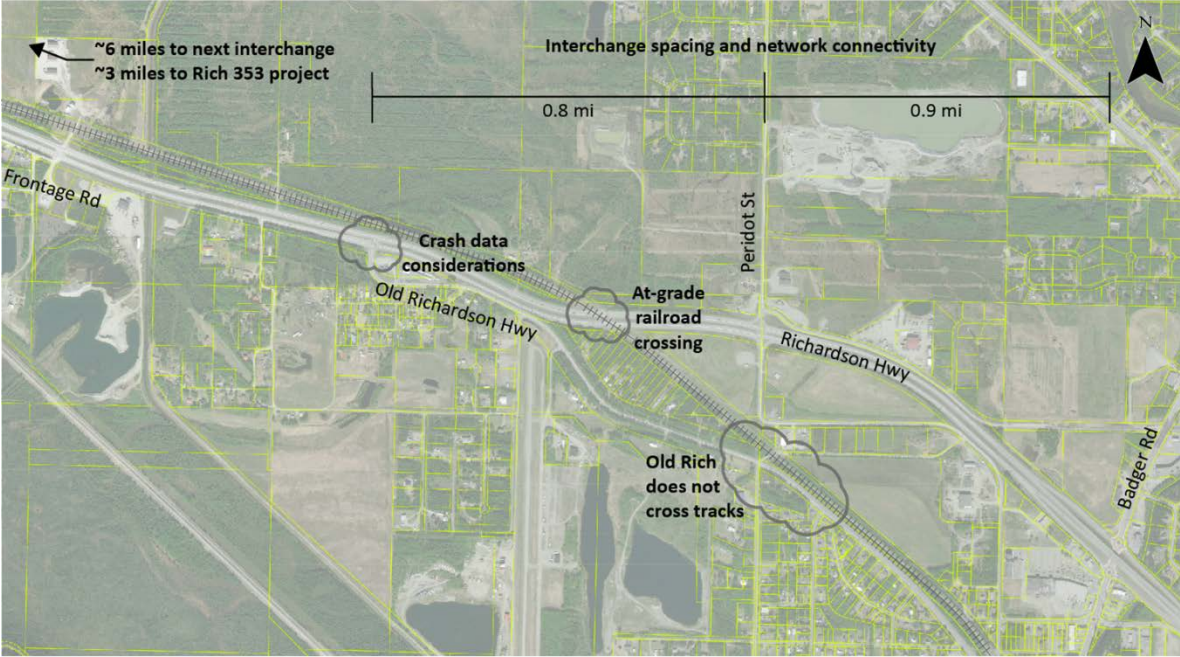
## Background

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Project Study Area Location

According to the Alaska Highway Safety Improvement Plan (HSIP), crash data at this intersection indicates 24 multi-vehicle crashes at this intersection from 2008 to 2012, including 8 minor injury crashes and 1 fatal crash. Overall, the intersection has experienced a crash rate 2.5 times higher than the statewide average for similar intersections. From a pure capacity standpoint, the existing interchange form is adequate to support existing development along the corridor. As a result of the intersection's crash history, this intersection has been included in the Alaska HSIP and an Interstate Access Change Request (IACR, also known as an Interchange Justification Report) has been requested.



Project Study Area Setting

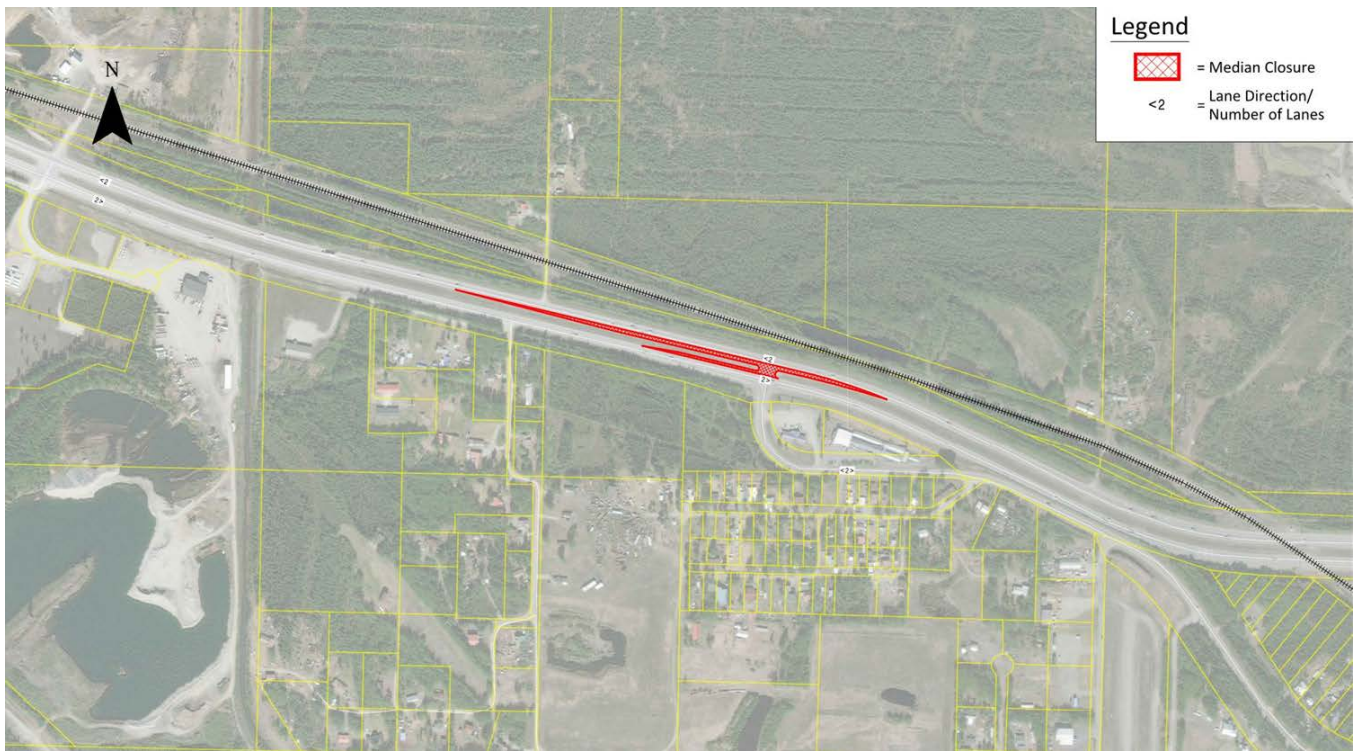


## Alternatives Considered

The Value Analysis Team evaluated five different alternatives for resolving safety problems at MP 351 of the Richardson Highway.

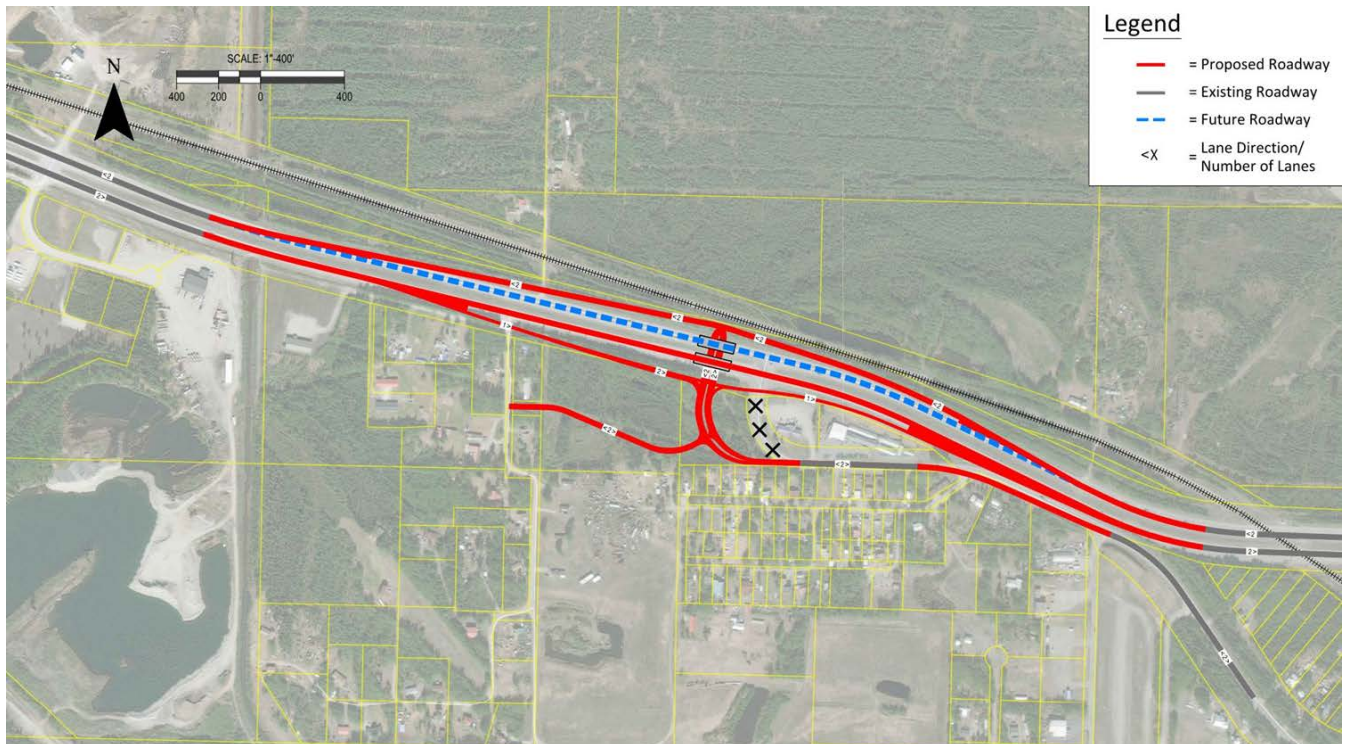
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**Alternative 2A: Interchange at Old Richardson Highway/Richardson Highway (MP 351)**  
**(HSIP Project Nomination)**

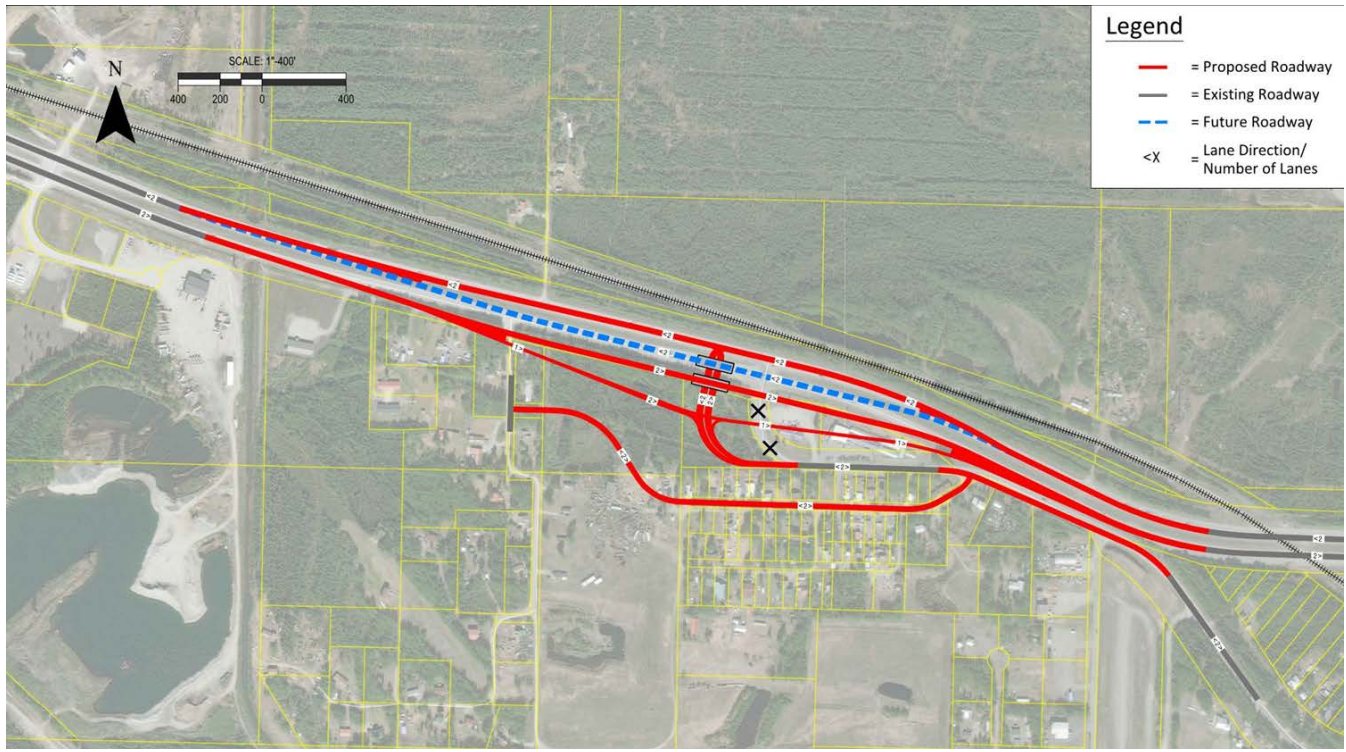
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**Alternative 2B: Interchange at Old Richardson Highway/Richardson Highway (MP 351)**  
**(Shifted Southwest)**

As with Concept 2A, the eastbound mainline of Richardson Highway is elevated to eliminate its conflict with Old Richardson Highway while the westbound mainline remains at grade. The concept is shifted south to provide greater separation from the existing railroad. This concept would require right-of-way acquisition to the south of the existing Richardson Highway right-of-way, including the existing 12 Mile Road House and Hawk's Greenhouse, as well as additional right-of-way to complete the frontage road system. Additionally, the Keeney Road access to Richardson Highway would be closed to accommodate the eastbound off-ramp.

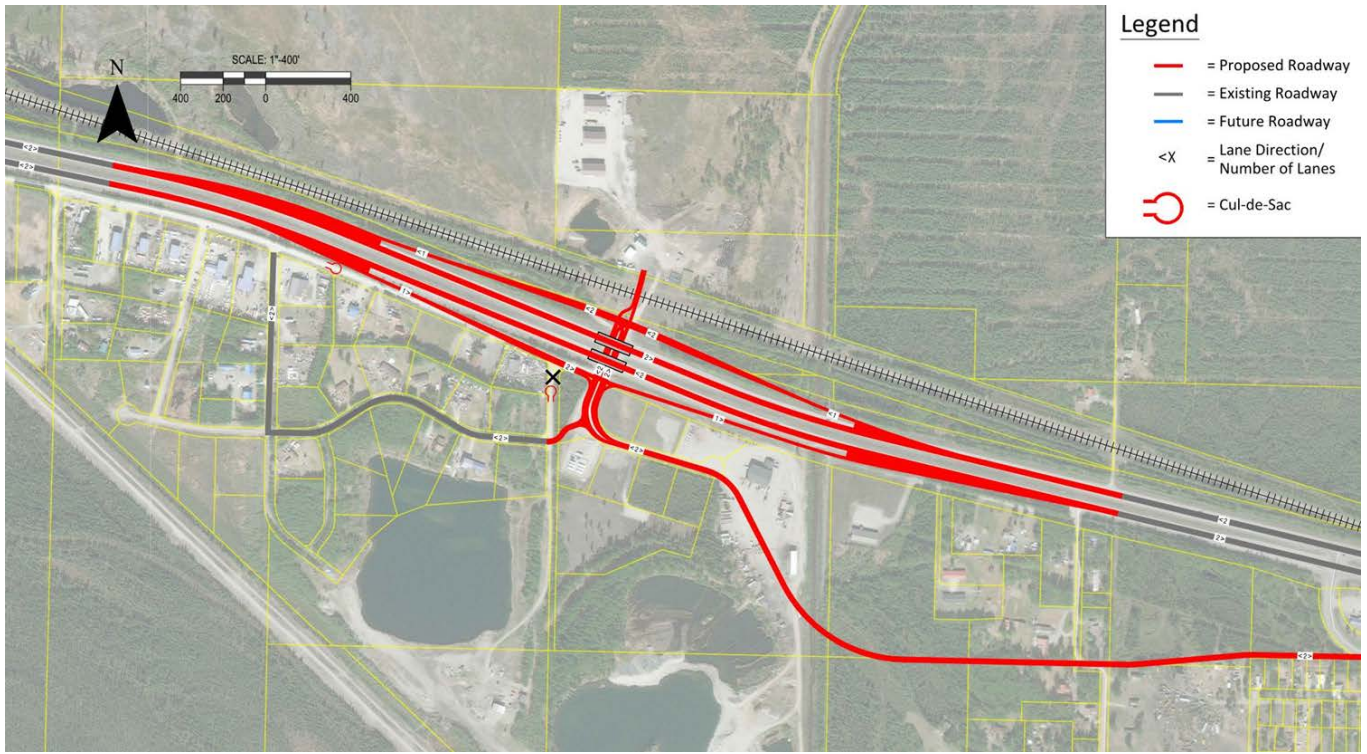






**Alternative 3B: Full Interchange at Frontage Road/Richardson Highway (MP 351.75)**  
**(Frontage Moves South)**

As with Concept 3B, a full interchange is implemented at the existing at grade intersection of Richardson Highway and Frontage Road. The interchange is shifted south to maintain the current alignment of Richardson Highway and create more space between the interchange and railroad. The frontage road connecting Old Richardson Highway and the new interchange is diverted south because of lack of right-of-way along the Richardson Highway mainline. The frontage road would require right-of-way acquisition.



## Engineering Pro Forma for All Alternatives

All three alternatives assume a 50 year life cycle cost.

Life cycle costs for all alternatives include annualized costs for repairing the systems assuming typical ADOT&PF maintenance practices.



## Stakeholders

In an effort to understand the context for this project, the following list of “stakeholders”, or persons with an active interest in the making of project decisions or the outcome of such decisions is provided:

#	Stakeholders	Primary Interest
1	<ul style="list-style-type: none"> <li>• <i>Motoring Public</i> <ul style="list-style-type: none"> <li>• <i>Independent Travelers</i></li> <li>• <i>Commuters</i></li> <li>• <i>Local Users</i></li> <li>• <i>Business and Commercial</i></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <i>Safe Driving Experience</i></li> <li>• <i>Unimpaired Access and Mobility</i></li> </ul>
2	<ul style="list-style-type: none"> <li>• <i>Neighborhood</i> <ul style="list-style-type: none"> <li>• <i>Residents</i></li> <li>• <i>Business and Commercial Operators</i></li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <i>Preventing Loss of Revenue Due to Lack of Access</i></li> <li>• <i>Traffic Movement</i></li> <li>• <i>Safety</i></li> </ul>
3	<ul style="list-style-type: none"> <li>• <i>Congressional Delegations</i></li> <li>• <i>Governor and Administration</i></li> <li>• <i>State Legislative Delegations</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Local Economy</i></li> <li>• <i>Project Cost</i></li> </ul>
4	<ul style="list-style-type: none"> <li>• <i>State Government (ADOT&amp;PF)</i></li> <li>• <i>City of North Pole</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Bridge Construction</i></li> <li>• <i>Safety Improvements</i></li> <li>• <i>Resident Use</i></li> <li>• <i>Local Economy</i></li> </ul>
5	<ul style="list-style-type: none"> <li>• <i>Alaska Railroad</i></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Integrity of Rail Traffic</i></li> <li>• <i>Separation from Highway and Interchange</i></li> </ul>

**RISK MODEL**

Richardson Highway MP 351 Interchange

ELEMENTS	RISK AREAS	N/A	LOW	MEDIUM	HIGH
A. MANAGEMENT, FINANCIAL & ADMINISTRATIVE RISKS					
	Changing government regulations (bridge inspection requirement)		Green		
	Public and political perspectives (user community concerns)				Red
	Budget limitations, approvals process, & other constraints				Red
	Budget sequencing				Red
	Permitting delays			Yellow	
	Agency jurisdictions and conflicts				Red
	Project mgt., organiz., decision-making processes, info flow			Green	
	Labor issues			Green	
B. ENVIRONMENTAL, GEOTECHNICAL RISKS	Other: staff workload			Yellow	
	Inclement weather, storms, floods			Yellow	
	Unanticipated hazardous waste			Green	
	Environ. restrictions (air quality, noise, toxic mat., etc.)			Green	
	Environmental Assessment schedule/decision			Green	
	Contaminated soils remediation			Yellow	
	Weed-free gravel acquisition			Green	
	Groundwater remediation			Green	
	Frozen ground construction			Yellow	
	Inadequate subgrade testing			Green	
	Unanticipated archaeological or historical findings			Green	
	Wildlife closures (nesting/moose)	Grey			
	Wetlands			Green	
	Backcountry zoning	Grey			
C. TECHNICAL RISKS	Other: Wildlife interaction		Green		
	Systems, processes, and material		Green		
	New, unproven systems, processes and materials		Green		
	Other:				
D. IMPLEMENTATION RISKS 1. Design					
	Design approvals and changes by departmental management			Yellow	
	Design errors and omissions (inadequate as-builts)			Green	
	Untested and unproven design features and innovations			Green	
	Insufficient design contingencies			Green	
2. Contractor	Other:				
	Availability of qualified contractors or skills (competitive environment)		Green		
	Construction material requirements		Green		
	Inadequate or unclear specs for mat'ls & workmanship		Green		
	Labor negotiations/work stoppages		Green		
	Operator training/certification		Green		
	Management of subcontracts (shortage of subcontractors)		Green		
	Low construction contingency		Green		
	Cost impact of special contracting		Green		
	Bidding climate		Green		
3. Change Orders	Other: Gas pipeline construction			Yellow	
	Design changes		Green		
	Field changes, owner directed		Green		
	Other: differing site conditions		Green		
4. Equipment/Material					
	Availability:		Green		
	Rejects, defects (items shipped)		Green		

**RISK MODEL**

Richardson Highway MP 351 Interchange

ELEMENTS	RISK AREAS	N/A	LOW	MEDIUM	HIGH
	Malfunctions or failures		■		
	Other: Haul distances		■		
5. Project Controls					
	Planning: scope evolution		■		
	Scheduling (future funding uncertainties)				■
	Accuracy of Estimating (SD, DD, CD)		■		
	Other:				
6. Logistics, Transportation					
	Laydown areas limitations		■		
	Traffic congestion at site or access to site (conflicts w/ local users)				■
	Transportation difficulties for construction mat'ls (deliveries)		■		
	Other: Contractor camp	■			
7. Interference and Maintenance of Services					
	Interference with other work (Other road projects)			■	
	Maintenance of certain essential services during const.		■		
	Tie-ins/cutovers with utilities			■	
	Other:				
8. Condition of Existing (For renovation, rehab. repair projects)					
	Condition of existing structure and material		■		
	Tie-ins		■		
	Removals or restoration		■		
	Other:				
9. Safety and Hazards During Construction					
	Safety to contractor personnel			■	
	Safety to owner and non-project personnel			■	
	Other:				
10. Process start-up and Commissioning					
	Testings and test planning and scheduling				
	Malfunctions and failures				
	Inadequate documentation and/or training				
	Adequacy of operating budget				
	Other:				

## Cost Projections

Cost projections summarizing the costs associated with the five alternatives was prepared to help focus on the elements of the design. This allowed the study team to identify and evaluate the major cost components contributing to alternatives.

Alternative	Description	Cost Estimate	New Proposed Lane Feet (Frontage/Ramps)
1	Median Closure	\$90,000	0
2A	Interchange at Old Rich/Rich Hwy (Project Nomination)	\$15,740,000	0.93
	Interchange at Old Rich/Rich Hwy (Full Interchange)	\$27,660,000	0.27
2B	Interchange at Old Rich/Rich Hwy (Shifted Southwest)	\$16,370,000	1.19
	Interchange at Old Rich/Rich Hwy (Shifted Southwest – Full Interchange)	\$28,840,000	1.97
3A	Full Interchange at Frontage Road/Rich Hwy (Mainline Moves North)	\$30,090,000	2.05
3B	Full Interchange at Frontage Road/Rich Hwy (Frontage Moves South)	\$29,690,000	2.44

## PHASE II – FORCE FIELD ANALYSIS/CREATIVITY

The value study team examined the five alternatives, evaluated the best and weakest features and developed proposals for improving the designs. The best features were identified so that they could be retained or incorporated into other alternatives. The weakest features were identified so that they could be improved. The findings are summarized on the following pages.



**VALUE OPPORTUNITIES**

Force Field Analysis

**Richardson Highway MP 351 Interchange**

**ADOT&PF Northern Region**

**Alternative 1: Median Closure**

**BEST FEATURES**

**WORST FEATURES**

1 quick to implement	1 reassignment of traffic to another location is inevitable
2 economical for ADOT&PF	2 may preclude future funding opportunities
3 improves safety	3 public response would be negative
4 leaves options open for grander plan	4 likely economic impact to private sector
5 lower maintenance costs	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15

**IDEAS FOR VALUE ENHANCEMENT**

- 1 doesn't preclude an overpass in the future
- 2 could still complete frontage roads if desired
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16
- 17
- 18
- 19



**VALUE OPPORTUNITIES**

Force Field Analysis

**Richardson Highway MP 351 Interchange**

**ADOT&PF Northern Region**

**Alternative 2A: Interchange at MP 351**

**BEST FEATURES**

- 1 addresses safety concern
- 2 could still be developed into full interchange
- 3 comparatively less ROW impact
- 4 removes two at grade intersections
- 5 good level of service (LOS)
- 6 fits within available funding today
- 7 allows for safe turning by trucks
- 8 \_\_\_\_\_
- 9 \_\_\_\_\_
- 10 \_\_\_\_\_
- 11 \_\_\_\_\_
- 12 \_\_\_\_\_
- 13 \_\_\_\_\_
- 14 \_\_\_\_\_
- 15 \_\_\_\_\_

**WORST FEATURES**

- 1 doesn't address at grade rail crossing
- 2 precludes future interchanges further west and at Peridot
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_
- 6 \_\_\_\_\_
- 7 \_\_\_\_\_
- 8 \_\_\_\_\_
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- 12 \_\_\_\_\_
- 13 \_\_\_\_\_
- 14 \_\_\_\_\_
- 15 \_\_\_\_\_

**IDEAS FOR VALUE ENHANCEMENT**

- 1 frontage road extension possibilities
- 2 automatic bridge de-icer
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_
- 6 \_\_\_\_\_
- 7 \_\_\_\_\_
- 8 \_\_\_\_\_
- 9 \_\_\_\_\_
- 10 \_\_\_\_\_
- 11 \_\_\_\_\_
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- 16 \_\_\_\_\_
- 17 \_\_\_\_\_
- 18 \_\_\_\_\_
- 19 \_\_\_\_\_

**VALUE OPPORTUNITIES**

Force Field Analysis

**Richardson Highway MP 351 Interchange**

**ADOT&PF Northern Region**

**Alternative 2B: Interchange at MP 351 - Shifted West Half or Full**

**BEST FEATURES**

**WORST FEATURES**

1 curve flattening (horizontal)	1 takes out two businesses and houses
2 further from rail ROW	2 significant frontage road impacts
3	3 larger acquisition of private lands required
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15

**IDEAS FOR VALUE ENHANCEMENT**

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_
- 6 \_\_\_\_\_
- 7 \_\_\_\_\_
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- 19 \_\_\_\_\_

**VALUE OPPORTUNITIES**

Force Field Analysis

**Richardson Highway MP 351 Interchange**

**ADOT&PF Northern Region**

**Alternative 3A: Interchange at MP 351.75 - Mainline Moves North**

**BEST FEATURES**

**WORST FEATURES**

1 <u>unifies entire area between dike and highway</u>	1 <u>more involvement in rail ROW</u>
2 <u>good interchange for local traffic heading to Fairbanks</u>	2 <u>longer connection for locals and trucks to Richardson Highway</u>
3 <u>additional frontage roads provides better access for commercial and trucking to west of interchange</u>	3 <u>will bring more commercial traffic into residential area</u>
4 <u>encourages thoughtful economic development</u>	4 <u>legitimizes at grade crossing to north</u>
5 <u>adds desired acceleration lanes</u>	5 _____
6 <u>more space between future interchanges</u>	6 _____
7 <u>eliminates three (maybe four) at grade intersections</u>	7 _____
8 <u>creates opportunity for development north of Richardson Highway</u>	8 _____
9 _____	9 _____
10 _____	10 _____
11 _____	11 _____
12 _____	12 _____
13 _____	13 _____
14 _____	14 _____
15 _____	15 _____

**IDEAS FOR VALUE ENHANCEMENT**

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_
- 6 \_\_\_\_\_
- 7 \_\_\_\_\_
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- 18 \_\_\_\_\_
- 19 \_\_\_\_\_

**VALUE OPPORTUNITIES**

Force Field Analysis

**Richardson Highway MP 351 Interchange**

**ADOT&PF Northern Region**

**Alternative 3A: Interchange at MP 351.75 - Frontage Moves South**

**BEST FEATURES**

**WORST FEATURES**

1	1 major impact on residential properties
2	2 legitimizes at grade crossing to north
3	3 time required to implement (restarts the project process)
4	4
5	5
6	6
7	7
8	8
9	9
10	10
11	11
12	12
13	13
14	14
15	15

**IDEAS FOR VALUE ENHANCEMENT**

- 1 \_\_\_\_\_
- 2 \_\_\_\_\_
- 3 \_\_\_\_\_
- 4 \_\_\_\_\_
- 5 \_\_\_\_\_
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- 19 \_\_\_\_\_

## **PHASE III - EVALUATION (Part 1 - Evaluation Factors)**

As the first task of the evaluation phase the team developed and discussed the factors which would be used to evaluate the alternatives.

The ADOT&PF Objectives and Factors 1-9 shown below were established for the ADOT&PF Interchange Access Justification Report on the HSIP: Richardson Highway MP 351 Interchange Project priority setting process and formed a framework for evaluation.

The study team defined specific project considerations and subfactors to tailor the evaluation factors to the needs of this project.

### Factor 1: Enhance Safety Performance

Advantages in Protecting Public Health, Safety and Welfare  
Advantages in Protecting Employee Health, Safety and Welfare

### Factor 2: Enhance Transportation Operations Level of Performance

Advantages in Improving Effectiveness of Level of Service  
Advantages in Improving Effectiveness of Volume to Capacity Ratio

### Factor 3: Improve Access and Connectivity

Advantages in Improving Access Spacing Requirements  
Advantages in Improving Local Roadway Connectivity  
Advantages in Improving Access to Currently Developed Properties  
Advantages in Accommodating Future Access for Undeveloped Properties

### Factor 4: Improve Constructability

Advantages in Ability to Construct Improvements in Phases  
Advantages in Minimizing Local Impacts During Construction

### Factor 5: Improve the Efficiency and Reliability of Maintenance and Operations

Advantages in Level of Effort to Maintain  
Advantages in Reliability of Improvements with Longer Anticipated Lifetimes

### Factor 6: Protect Existing and Proposed Land Uses

Advantages in Minimizing Right-of-Way Impacts  
Advantages in Maintaining or Enhancing Consistency with Adopted Land Use and Economic Development Plans  
Advantages in Minimizing Impacts to Utilities  
Advantages in Minimizing Impacts to Existing Businesses/Developments

Advantages in Minimizing Impacts to the Alaska Railroad

Factor 7: Improve Multimodal Accessibility

Advantages in Enhancing Pedestrian and Bicycle Accessibility

Factor 8: Minimize Environmental Impact

Advantages in Minimizing Area of Disturbance

Factor 9: Minimize the Relative Cost of Construction

Advantages in Minimizing Cost of Construction  
Advantages in Optimizing Applicable Fund Sources



# PHASE III - EVALUATION (Part 2 - Choosing by Advantages)

After evaluating the best and worst features of each of the alternatives and the evaluation factors, it was determined that all five alternatives were viable.

The alternatives were further evaluated using a process called Choosing by Advantages, where decisions are based on the importance of advantages between alternatives. The evaluation involves the identification of the attributes or characteristics of each alternative relative to the evaluation criteria, a determination of the advantages for each alternative within each evaluation factor, and then the weighing of importance of each advantage.

The highest importance advantage is identified in each factor. The paramount advantage, across factors, was determined and assigned a weight of 100. Remaining advantages were rated on the same scale. Rough cost estimates (Class C-) were developed for each alternative. Recommendations are based on a balance of cost and importance.

The evaluation sheets form the basis for presenting the location alternatives. The evaluation tables present many types of information. Attributes of an alternative are shown above the dotted line in the tables. Advantages between alternatives are shown below the dotted line. An anchor statement summarizes those advantages. The advantage with the highest importance within a factor is indicated by a bolding the text in the advantage cell. The advantages are all rated on a common scale.

FACTOR	ALTERNATIVE 1A (MEDIAN CLOSURE)	ALTERNATIVE 2A (INTERCHANGE @ HP 95)	ALTERNATIVE 2B (INTERCHANGE @ HP 95) (SPLIT WEST - HALF OR FULL)	ALTERNATIVE 3A (INTERCHANGE @ 95/10) (HARPER RIVER NORTH)	ALTERNATIVE 3B (INTERCHANGE @ 95/10) (HARPER RIVER SOUTH)
1. SAFETY	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...
2. TRANSPORTATION OPS	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...
3. ACCESSIBILITY + CONNECTIVITY	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...
4. CONSTRUCTION	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...
5. MAINTENANCE	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...
6. LAND USE	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...
7. RECREATIONAL ACCESSIBILITY	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...
8. ENVIRONMENTAL IMPACT	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...
9. COST	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...	... (handwritten notes) ...
TOTAL IMPORTANCE TO INTERCHANGE @ HP 95	...	...	...	...	...
TOTAL IMPORTANCE TO INTERCHANGE @ 95/10	...	...	...	...	...
TOTAL COST (\$)	...	...	...	...	...
PRECISE COST (\$)	...	...	...	...	...
SAVED TO US BY MAINTENANCE COST REDUCTION	...	...	...	...	...
SAVED TO US BY MAINTENANCE COST REDUCTION	...	...	...	...	...

Richardson Highway MP 351 Interchange  
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Evaluation Matrix	Alternative 1		Alternative 2A		Alternative 2B		Alternative 3A		Alternative 3B	
	Median Closure		Interchange at MP 351		Interchange at MP 351		Interchange at MP 351.75		Interchange at MP 351.75	
					Shifted West-Half or Full		Mainline Moves North		Frontage Moves South	

Factor		Weight	Importance Score	Weighted Score	Importance Score	Weighted Score	Importance Score	Weighted Score	Importance Score	Weighted Score	Importance Score	Weighted Score
<b>1 Safety:</b>												
To enhance safety performance near the proximity of the intersection of Richardson Highway and Old Richardson Highway based on anticipated impact of design which is based on crash history	Attributes		<ul style="list-style-type: none"> <li>eliminates left turns and relocates turning maneuvers elsewhere (lower speed but still crossing)</li> <li>improves mainline safety</li> </ul>		<ul style="list-style-type: none"> <li>eliminates east versus north conflict for left turns</li> <li>no relocation of turning elsewhere</li> <li>improves mainline safety</li> <li>removes at-grade intersection on Richardson Highway and eastbound intersection on a frontage road (2) and introduces new intersection on Old Richardson (1)</li> <li>merging traffic directly on the mainline</li> </ul>		<ul style="list-style-type: none"> <li>eliminates east versus north conflict for left turns</li> <li>relocation of turning elsewhere</li> <li>improves mainline safety</li> <li>removes at-grade intersection on Richardson Highway and eastbound intersection on a frontage road (2) and increases traffic on Old Richardson</li> <li>creates conflicts with driveway on frontage road</li> <li>flattens 's' curve on mainline</li> <li>merging traffic directly on the mainline</li> </ul>		<ul style="list-style-type: none"> <li>eliminates east versus north conflict for left turns</li> <li>relocates turning due to consolidation of access</li> <li>improves mainline safety</li> <li>removes 3 at-grade crossings</li> <li>allows local traffic to stay on frontage road network</li> <li>creates at-grade rail crossing on the interchange that might become public</li> <li>separation of westbound ramp and acceleration lane onto Richardson Highway</li> <li>creates option to close 4th access</li> </ul>		<ul style="list-style-type: none"> <li>eliminates east versus north conflict for left turns</li> <li>relocates turning due to consolidation of access</li> <li>improves mainline safety</li> <li>removes 3 at-grade crossings</li> <li>allows local traffic to stay on frontage road network</li> <li>creates at-grade rail crossing on the interchange that might become public</li> <li>separation of westbound ramp and acceleration lane onto Richardson Highway</li> <li>creates option to close 4th access</li> </ul>	
	Advantages		<ul style="list-style-type: none"> <li>immediate treatment</li> <li>number of high speed conflicts reduced from 9 to 2</li> </ul>	<ul style="list-style-type: none"> <li>safe</li> </ul>	<ul style="list-style-type: none"> <li>number of high speed conflicts reduced from 27 to 13 for 3 access points</li> <li>less exposure to frontage</li> <li>more safe alternative</li> </ul>	<ul style="list-style-type: none"> <li>number of high speed conflicts reduced from 27 to 13 for 3 access points</li> <li>less exposure to frontage</li> <li>not as safe alternative</li> </ul>	<ul style="list-style-type: none"> <li>number of high speed conflicts reduced from 27 to 4 for 3 access points</li> <li>more traditional look and more acceptable by public</li> <li>removes more at-grade crossings</li> <li>safer alternative</li> </ul>	<ul style="list-style-type: none"> <li>number of high speed conflicts reduced from 27 to 4 for 3 access points</li> <li>removes more at-grade crossings</li> <li>safest alternative</li> </ul>				
		1		70		88		0		93		100

<b>2 Transportation Operations:</b>												
(To effectively) perform at a (set) level of service and volume to capacity ratio, accommodating current and anticipated future traffic volumes	Attributes		All Worst Hour: <ul style="list-style-type: none"> <li>Main LOS = A</li> <li>Badger Roundie LOS = F+ (v/c 1.28 to 1.36)</li> <li>Badger EB Ramp LOS = E to F</li> <li>Old Rich LOS = A</li> <li>2020 data indicates median closure will fail Badger interchange (1.14 v/c), adversely affect travel, and create additional delay at Badger</li> </ul>		<ul style="list-style-type: none"> <li>Main LOS = A</li> <li>Badger (v/c 1.28+)</li> <li>Old Rich LOS = C (A for full interchange) (v/c 0.26)</li> <li>majority of cars at Old Rich results in least out of distance travel</li> </ul>		<ul style="list-style-type: none"> <li>Main LOS = A</li> <li>Badger (v/c 1.28+)</li> <li>Old Rich LOS = C (A for full interchange) (v/c 0.26)</li> <li>majority of cars at Old Rich results in least out of distance travel</li> </ul>		<ul style="list-style-type: none"> <li>Main LOS = A</li> <li>Badger (v/c 1.28-)</li> <li>Frontage Road LOS = B (v/c 0.05)</li> </ul>		<ul style="list-style-type: none"> <li>Main LOS = A</li> <li>Badger (v/c 1.28-)</li> <li>Frontage Road LOS = B (v/c 0.05)</li> </ul>	
	Advantages		<ul style="list-style-type: none"> <li>most delay to corridor traffic</li> </ul>	<ul style="list-style-type: none"> <li>least delay to corridor traffic (best)</li> </ul>	<ul style="list-style-type: none"> <li>less delay to corridor traffic</li> </ul>	<ul style="list-style-type: none"> <li>somewhat worse delay to corridor traffic</li> </ul>	<ul style="list-style-type: none"> <li>somewhat better delay to corridor traffic</li> </ul>					
		1		0		91		86		63		69



To consider right-of-way impacts, consistency with adopted land use and economic development plans, impacts to utilities, impacts to existing businesses/developments and impacts to railroad	Attributes		<ul style="list-style-type: none"> <li>• not consistent with local land use and economic development plans</li> <li>• no impacts to utilities, existing businesses or railroad</li> </ul>	<ul style="list-style-type: none"> <li>• grow and support businesses, connect transportation system, and improve safety</li> <li>• consistent with local land use and economic development plans</li> <li>• utility impacts exist</li> <li>• impacts to existing businesses/developments and potential impacts to railroad</li> </ul>	<ul style="list-style-type: none"> <li>• consistent with local land use and economic development plans</li> <li>• utility impacts exist</li> <li>• impacts to existing businesses/developments and potential impacts to railroad</li> </ul>	<ul style="list-style-type: none"> <li>• consistent with local land use and economic development plans</li> <li>• utility impacts exist</li> <li>• impacts to existing businesses/developments and potential impacts to railroad</li> </ul>	<ul style="list-style-type: none"> <li>• consistent with local land use and economic development plans</li> <li>• utility impacts exist</li> <li>• impacts to existing businesses/developments and potential impacts to railroad</li> </ul>
	Advantages		• disruptive to existing and future land use	• least disruptive to existing and future land use	• most disruptive to existing and future land use	• somewhat disruptive to existing and future land use	• more disruptive to existing and future land use
		1	73	77	0	64	59

<b>7 Multimodal Accessibility:</b>							
(To consider) accessibility as well as quality of facilities for pedestrians and bicyclists, including any impacts to existing pedestrian or bicycle facilities of cross streets (not considered)	Attributes						
	Advantages						
		1	0	0	0	0	0

<b>8 Environmental Impact:</b>							
(To consider) impacts on the local environment (as measured by) the smallest footprint	Attributes		<ul style="list-style-type: none"> <li>• ROW: 0 KSF</li> <li>• new lane miles: 0</li> </ul>	<ul style="list-style-type: none"> <li>• 224 KSF</li> <li>• 1.36 lane miles</li> </ul>	<ul style="list-style-type: none"> <li>• 665 KSF</li> <li>• 2.04 lane miles</li> </ul>	312 KSF, 3.33 lane miles	476 KSF, 2.44 lane miles
	Advantages		• least impact	• less impact	• most impact	• somewhat less	• somewhat more
		1	25	14	0	10	6

<b>9 Cost:</b>							
(To consider) expected relative cost between alternatives, including applicability of funding sources	Attributes		<ul style="list-style-type: none"> <li>• could fit under current funding, some leg work required</li> </ul>	<ul style="list-style-type: none"> <li>• fits under current funding, no additional effort required</li> </ul>	<ul style="list-style-type: none"> <li>• fits under current funding, costs \$630K more than 2A</li> </ul>	<ul style="list-style-type: none"> <li>• requires new funding source, costs \$3.4M more than 3B</li> </ul>	<ul style="list-style-type: none"> <li>• requires new funding source</li> </ul>
	Advantages		• some change to project cost	• least change to project cost	• less change to project cost	• most change to project cost	• more change to project cost
		1	41	51	45	0	13

<b>Total Importance with Maintenance and Cost Factors</b>	342	506	241	328	356
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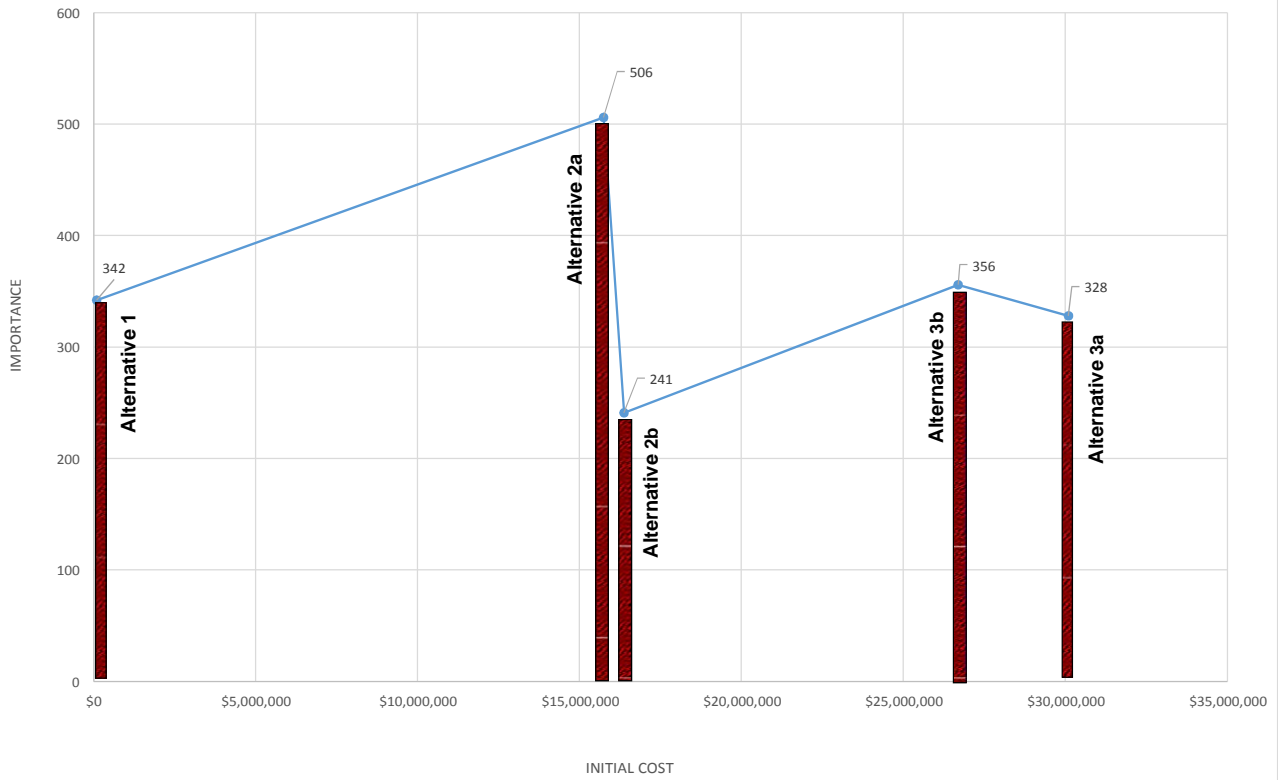
<b>Total Importance without Maintenance and Cost</b>	231	405	153	328.0	309
--	-----	-----	-----	-------	-----

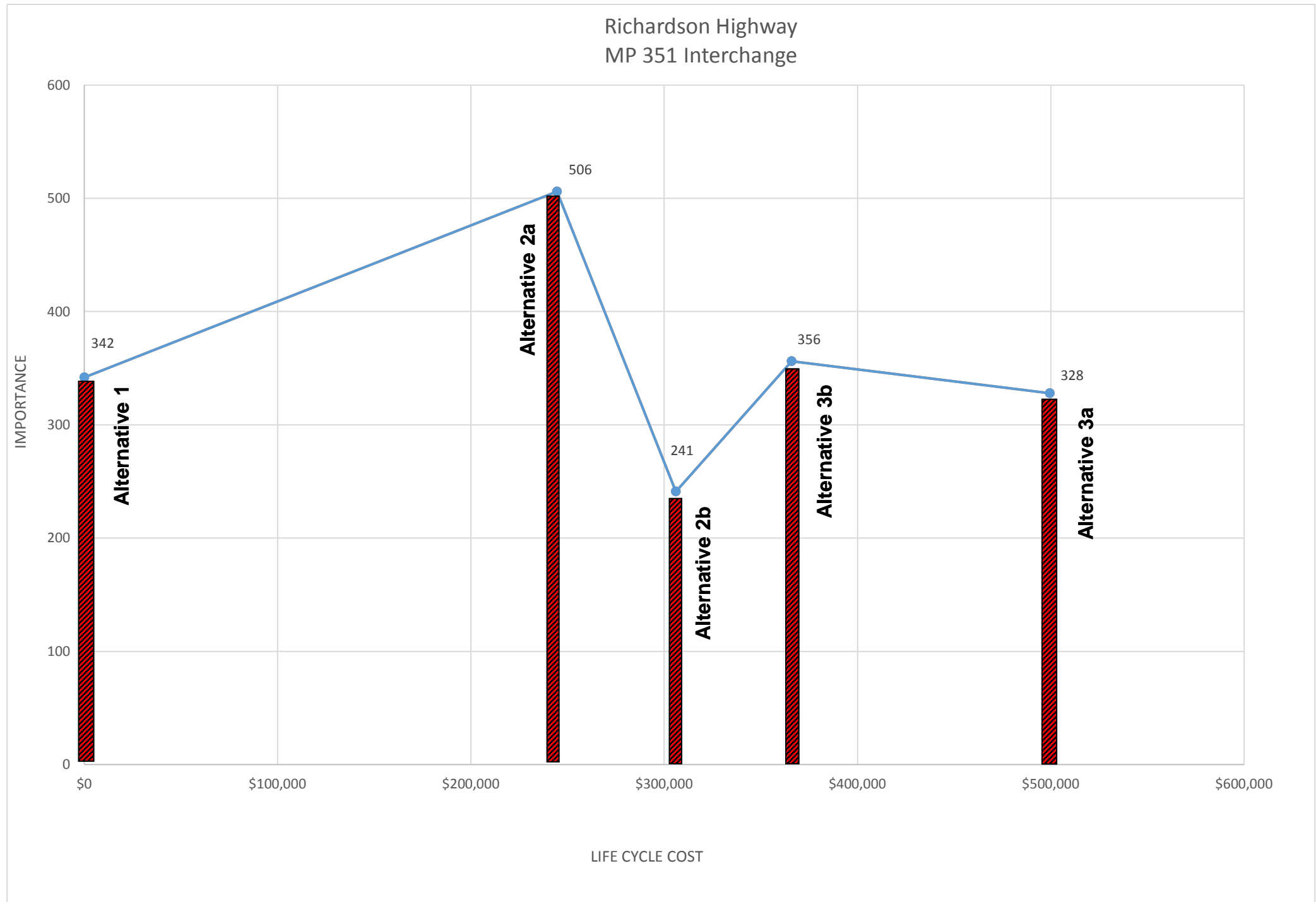
Initial Cost	\$90,000	\$15,740,000	\$16,370,000	\$30,090,000	\$26,690,000
Life Cycle Cost	\$20	\$244,500	\$306,000	\$499,500	\$366,000

<b>Benefit to Initial Cost without Maintenance and Cost Factors</b>	256.67	2.57	0.93	1.09	1.16
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<b>Benefit to Life Cycle Cost without Maintenance and Cost Factors</b>	1155000.00	165.64	50.00	65.67	84.43
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Richardson Highway  
MP 351 Interchange





## ANALYSIS

The study team evaluated the benefit or importance of the advantages to be realized from each alternative, as well as the initial costs and life cycle costs. The results were graphed with importance or benefit on the vertical scale and cost on the horizontal scale. The analysis was performed using initial cost and life cycle cost separately. The results are summarized on charts in the preceding pages.

The negative slope of the increment from Alternative 1 to Alternative 2A indicates moderate value for the additional capital investment. This holds true when evaluating both initial costs and for life cycle costs. The positive slope from Alternative 1 to Alternative 2A at a higher cost merits consideration for the gain in the importance of the advantages.

Alternative 1 had the highest benefit to cost ratio in the CBA analysis due mainly to very low initial cost of construction and low life cycle cost. It is likely that the estimated life cycle cost does not adequately take into account the continued maintenance and redistributed traffic volumes that could occur to the area over a 50 year lifespan under this limited improvement. Alternative 1 is not recommended by the VA team because it causes the most transportation operational delays to corridor traffic; causes the most disruption to local connectivity, as well as existing and future development; and precludes access to the north and limits access to the south. Ultimately, the additional cost and additional benefit of Alternative 2A outweighs the lower costs of Alternative 1 (see Tables 4 and 5 on the preceding pages).

Alternatives 2A provides greater benefit at an additional cost that better meets the purpose and need for the project into the foreseeable future. The VA team felt that the difference between the ratios (506 versus 342) made it well worthwhile to pursue this level of development. The VA team felt that the additional \$15,650,000 in initial cost and \$244,480 in life cycle costs for Alternative 2A was worth the benefit of improving the location to provide the best value solution over the next fifty years.

The VA team recommends Alternative 2A: Interchange at MP 351, which provides the greatest combination of benefits for reasonable cost.



## **PHASE IV - DEVELOPMENT**

The alternatives were considered sufficiently developed for design concepts. Each alternative was refined by the suggested ideas for value enhancement developed during the Creativity phase of the value study.

The team also developed a model to identify potential risks to the project and ways to mitigate those risks. Further development of risk mitigation may be necessary by the project management to implement a successful project.

## **PHASE V - RECOMMENDATIONS/ WRAP-UP**

Specific recommendations for additional value enhancement included the following items:

- Consider integrating an automated bridge de-icing system at a cost of about \$200K (2017)
- Although not available with the current fund source, consider constructing frontage road west to the 3A/3B interchange location to improve accessibility and prepare for additional anticipated growth in the immediate area.
- Either close the Richardson Highway crossover at Peridot Street (which would require further functional analysis) or limit the crossover to east bound left turns only on to Peridot and eliminating left turns from Peridot on to the Richardson Highway; need to address this location independently in the near future.
- Update the circa 1980 Richardson Highway Corridor Study to confirm the importance and context of this project and to reaffirm other needs.
- Re-evaluate how to minimize impacts to the railroad right-of-way north of the proposed interchange, including use of retaining walls, median narrowing, etc.).
- Final design should consider future development north of the interchange.
- Consider applying high friction surface treatment to all approaches and acceleration/deceleration lanes at the proposed interchange.
- Collect and exchange crash data from both ADOT&PF and the City of North Pole.

## **PHASE VI - IMPLEMENTATION**

Implementation of the value study recommendations will rest with the project team, as work progresses on the next stages. Additional value analysis studies (mini-VA's) may be performed to evaluate specific project components such as road and bridge construction, buffering from the railroad ROW, and other interchange enhancements.

# APPENDICES

- A. Value Study Agenda
- B. Project Fact Sheet

# Appendix A.

Value Study Agenda

## Value Analysis: Richardson Highway MP 351 Interchange

Alaska Department of Transportation and Public Facilities – Northern Region

December 19 – 21, 2017

ADOT&PF Northern Region Headquarters

2301 Peger Road

Fairbanks, AK 99709

Participants:

Paul Schrooten, NPS facilitator

### Value Analysis Team

**Erik Brunner**, ADOT&PF, team member (design)

**Geoff Coon**, City of North Pole, team member (fire chief/emergency medical services)

**Pam Golden**, ADOT&PF, team member (traffic and safety)

**Randi Motsko**, ADOT&PF, team member (planning)

**Dan Schacher**, ADOT&PF, team member (maintenance and operations)

**Bryce Ward**, City of North Pole, team member (mayor)

Tuesday, December 19, 2017

8:00a      **Project Meeting Purpose**

Opening Remarks/Introductions  
Agenda Review  
Meeting Overview

8:30a      **Information Sharing/Gathering**

Project Site Overview (Photos and Mapping)  
ADOT&PF Project Description

9:00a      **Planning and Design Options**

Project Need  
Background Information and Analysis  
Introduction of Alternatives

9:30a      *Break*

9:45a      **Value Analysis Phase I: Introduction/Information**

Value Analysis Process Overview  
Objectives of Study  
Summary of Area (Physical, Land Use, Socioeconomic Setting)

11:15a      **Value Analysis Phase II and III: Function/Speculation/Creativity**

Detailed Presentation of Site Alternatives and Cost Estimates  
Brainstorm other Site Alternatives  
Cost Model/Risk Model

12:30p      *Lunch*

2:00p      **Site Visit**

Caravan to Project Site  
Tour Key Locations  
Q&A

4:00p      Close for the day

Wednesday, December 20, 2017

8:00a      **Value Analysis Phase III: Speculation/Creativity (continued)**

Best Site Features  
Weakest Site Features  
Ideas to Enhance Alternatives  
Identify High Cost Elements for Value Enhancement  
Modify and Combine Ideas and Alternatives

9:45a      *Break*

10:00a      **Value Analysis Phase IV: Analysis/Evaluation of Alternatives**

Review of Standards, Criteria, and Regulatory Requirements  
Evaluation of Alternatives (modified Choosing By Advantages)  
    Review and Confirm Evaluation Factors and Ratings  
    List Attributes  
    List Advantages

11:00a      *Lunch (extended midday break)*

3:00p      **Value Analysis Phase IV: Analysis/Evaluation of Alternatives (continued)**

Evaluation of Alternatives (modified Choosing By Advantages)  
    List Attributes  
    List Advantages

4:30p      Adjourn

Thursday, December 21, 2017

8:30a        **Value Analysis Phase IV: Analysis/Evaluation of Alternatives (continued)**

Evaluation of Alternatives (modified Choosing By Advantages)  
    Decide Importance  
    Determine Total Importance  
Identification/Confirmation of Best Value Alternative

9:45a        *Break*

10:00a       **Value Analysis Phase V: Development of Preferred Alternative**

Develop/Rank Ideas for Further Development (Mini-VA's)  
    Aesthetics  
    Sustainability Enhancements  
    Other Value Enhancements

12:00 noon   *Lunch*

1:30p        **Value Analysis Phase VI: Summary Findings/Implementation**

Summary of Value Enhancement and Potential Cost Savings  
Adjustments to Project Options (Funding, Planning and Design, Construction and  
    Construction Management)  
Presentation of findings/recommendations to others

3:30p        Adjourn



# Appendix B.

Project Fact Sheet



# Fact Sheet



## HSIP: Richardson Hwy MP 351 Interchange Project Project No. NFWHY00097/0A24034

The State of Alaska Department of Transportation & Public Facilities (DOT), in cooperation with the Federal Highway Administration (FHWA) is proposing to construct intersection improvements at the MP 351 Richardson Highway/Old Richardson Highway intersection under the Highway Safety Improvement Program (HSIP). The project is intended to reduce severe crashes at this intersection on the Interstate Highway System.

### Project Study Area



**Project Purpose:** Reduce crashes at the intersection of Richardson Highway and Old Richardson Highway near MP 351.

**Current Status:** The project team has conducted an initial safety and operational assessment of Richardson Highway within the study area. The project team worked with a Technical Advisory Committee to identify three design concepts to meet the project purpose: median closure, interchange at the MP 351 intersection, and interchange near MP 352. More information on the alternatives process is provided on the back of this handout.

### Schedule:

Phase	Date
Startup and Scoping	March 2017 – June 2017 (complete)
Existing Conditions Analysis	May 2017 – September 2017 (complete)
Alternative Development and Evaluation	May 2017 – October 2017 (in-process)
Preferred Alternative Refinement	October 2017 – December 2017
IACR Report	November 2017 – February 2018

*Public Meeting #2 – Early December 2017*

### For more information please contact:

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# Fact Sheet



HSIP: Richardson Hwy MP 351 Interchange Project  
Project No. NFWHY00097/0A24034

## Interstate Access Changes

The FHWA requires that modifications to access on the Interstate system be reviewed from a corridor safety and operations standpoint. Part of this project is evaluating an interchange or other access modifications at MP 351 for impacts to the Richardson Highway with regards to future development and interchange locations.

## Alternatives Development and Evaluation

The three design concepts presented tonight were developed by considering the project objectives and criteria that will be used to evaluate proposed improvements, both provided below. In addition, the overall corridor context was considered to assess whether alternatives are consistent with guidelines for interchange spacing (>1 mile) as Richardson Highway is upgraded over time to a freeway with access provided only via interchanges. The current interchange spacing is shown on the graphic below.

### Interstate Access Change Objectives:

- Support the vision of Richardson Highway in the study area to be grade-separated
- Consider the potential to provide a full interchange in the study area in the future
- Consider future access and interchange spacing on Richardson Highway within the study area

### Evaluation Criteria:

- Safety
- Transportation Operations
- Accessibility and Connectivity
- Constructability
- Maintenance
- Land Use
- Multimodal Accessibility
- Environmental Impact
- Cost

