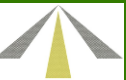


# New Seward & Tudor Road Interchange



presented by HIT Engineers, Inc.

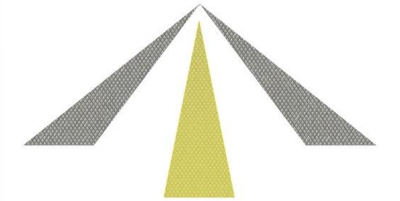


# Project Personnel



**Christopher L. Post, P.E.**  
DOT&PF, Clientele

**Kristina Busch, P.E.**  
DOT&PF, Clientele



HIT Engineers Inc.

**Dr. Osama Abaza, Ph.D., P.E.**  
Faculty Advisor

**Joe Taylor, P.E.**  
Professional Mentor

**David Gamez, P.E.**  
Professional Mentor

**Mar Angelo E. Fernandez, E.I.T.**  
HIT, Project Consultant

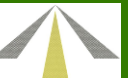
**R. Vince Flack**  
HIT, Project Manager

**Anh Huynh, E.I.T.**  
HIT, Designer

**Jeremiah Gingrich**  
HIT, Designer

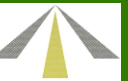
**Jonathan Horst**  
HIT, Designer

**Brian Pearson, E.I.T.**  
HIT, Designer



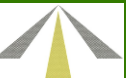
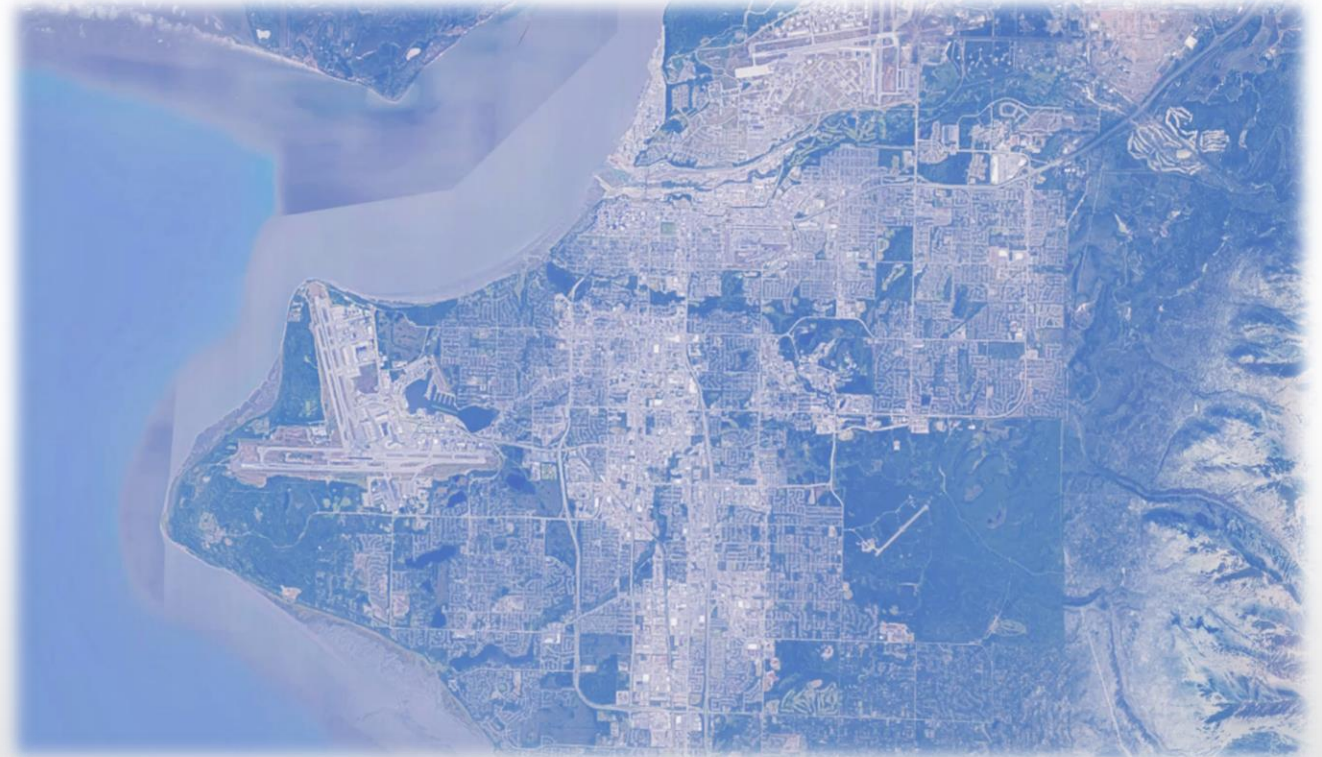
# Project Overview

- ❖ Project Background
- ❖ Project Scope
- ❖ Data Analysis
- ❖ Planning and Conceptual Design
- ❖ Estimated Project Budget



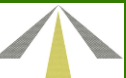
# Current Interchange Design

- ❖ Project location
- ❖ Tight Diamond Interchange with through frontage roads



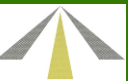
# Project Background

- ❖ Built in 1975 by the Alaska DOT&PF
- ❖ January 3, 2019 – interchange was damaged by dump truck
- ❖ March 20, 2019 – interchange repaired
- ❖ Plans underway to improve the interchange



# Project Scope

- ❖ 10% Preliminary Design of interchange
- ❖ Select preferred alternative
- ❖ Conduct traffic analysis
- ❖ Drafting and design finalization
- ❖ Project cost estimation and design study report



# Level of Service

What is Level of Service?

A metric indicating flow speed, and delay



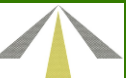
LOS A



LOS C

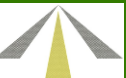


LOS F

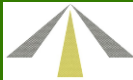
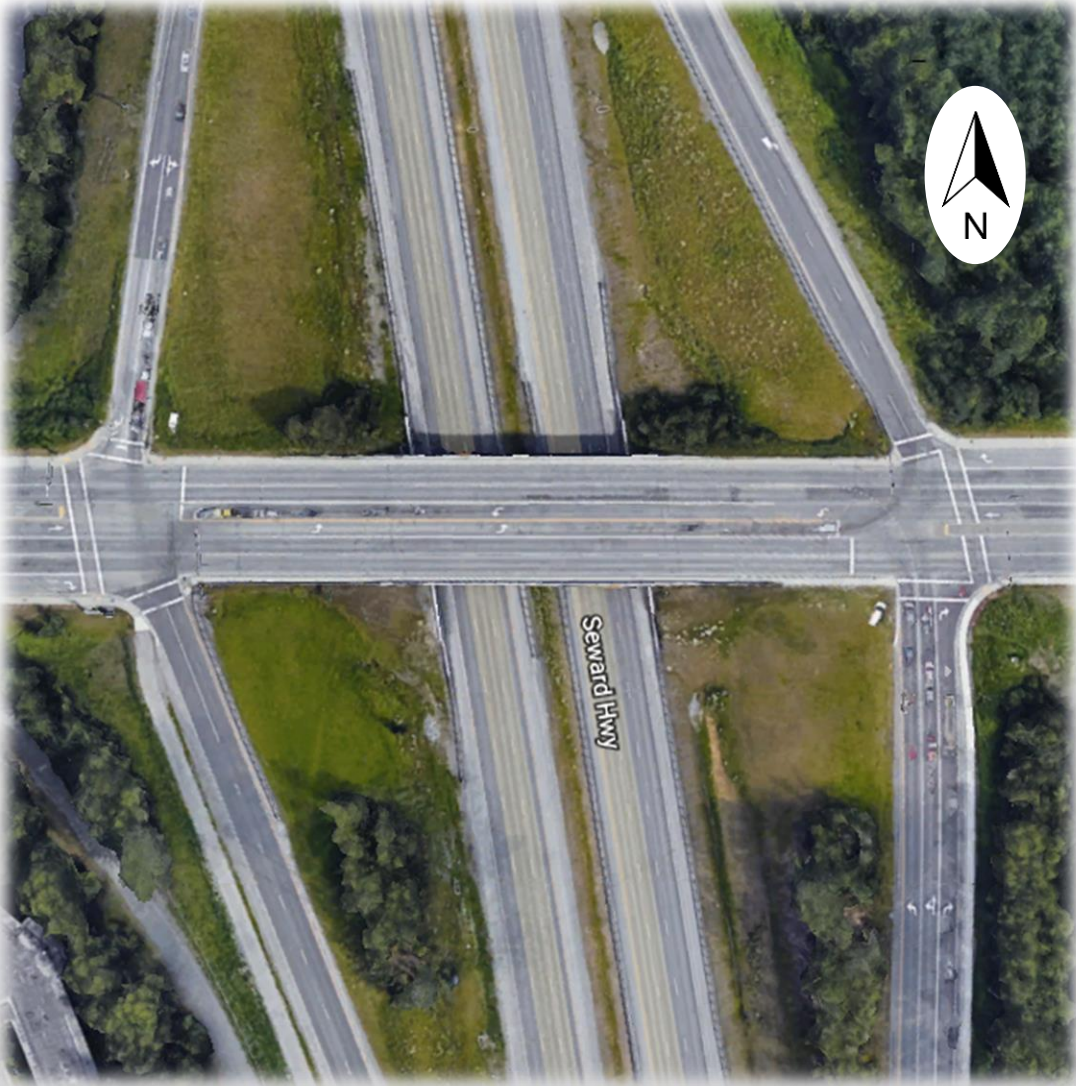


# Preliminary Traffic Data Analysis

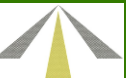
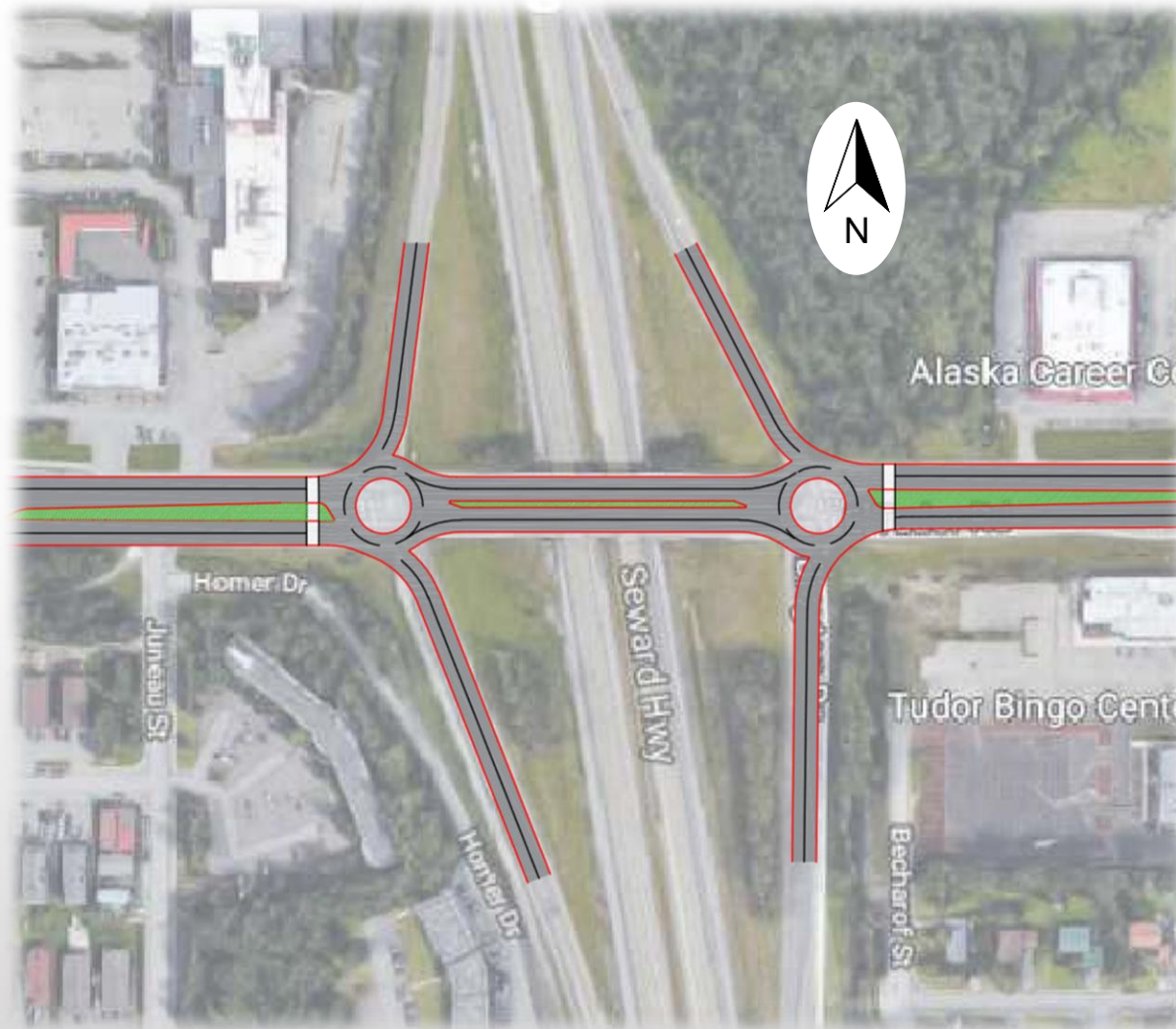
	Existing Conditions	
	LOS	Intersection Delay, sec
<b>Interchange</b>	<b>E</b>	N/A
<b>Tudor Eastward</b>	C	17
<b>Tudor Westward</b>	C	17
<b>Left Turn On NB Ramp</b>	C	15
<b>Left Turn On SB Ramp</b>	<b>E</b>	<b>41</b>



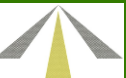
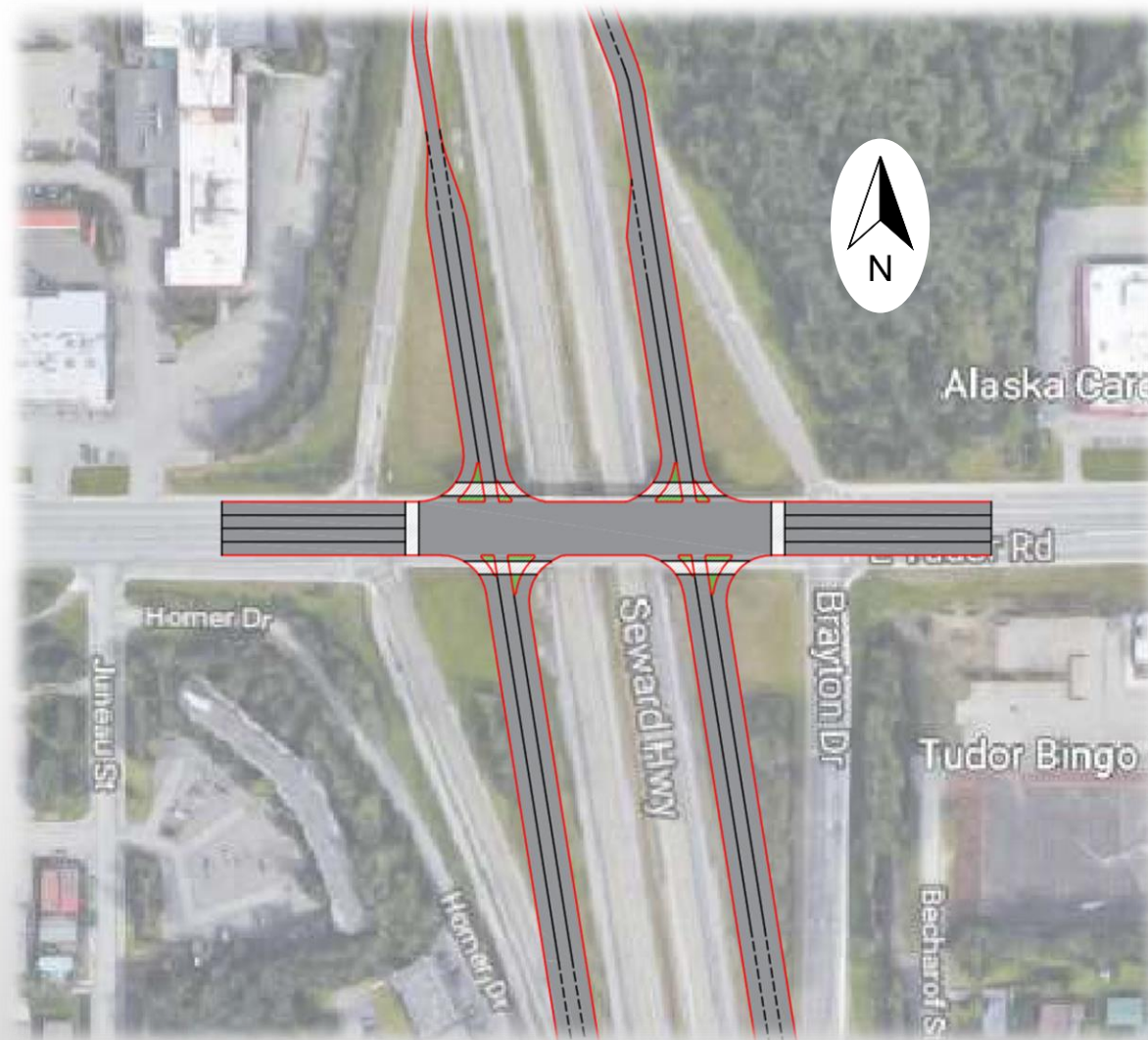
# Alternative I – “No-Build”



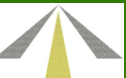
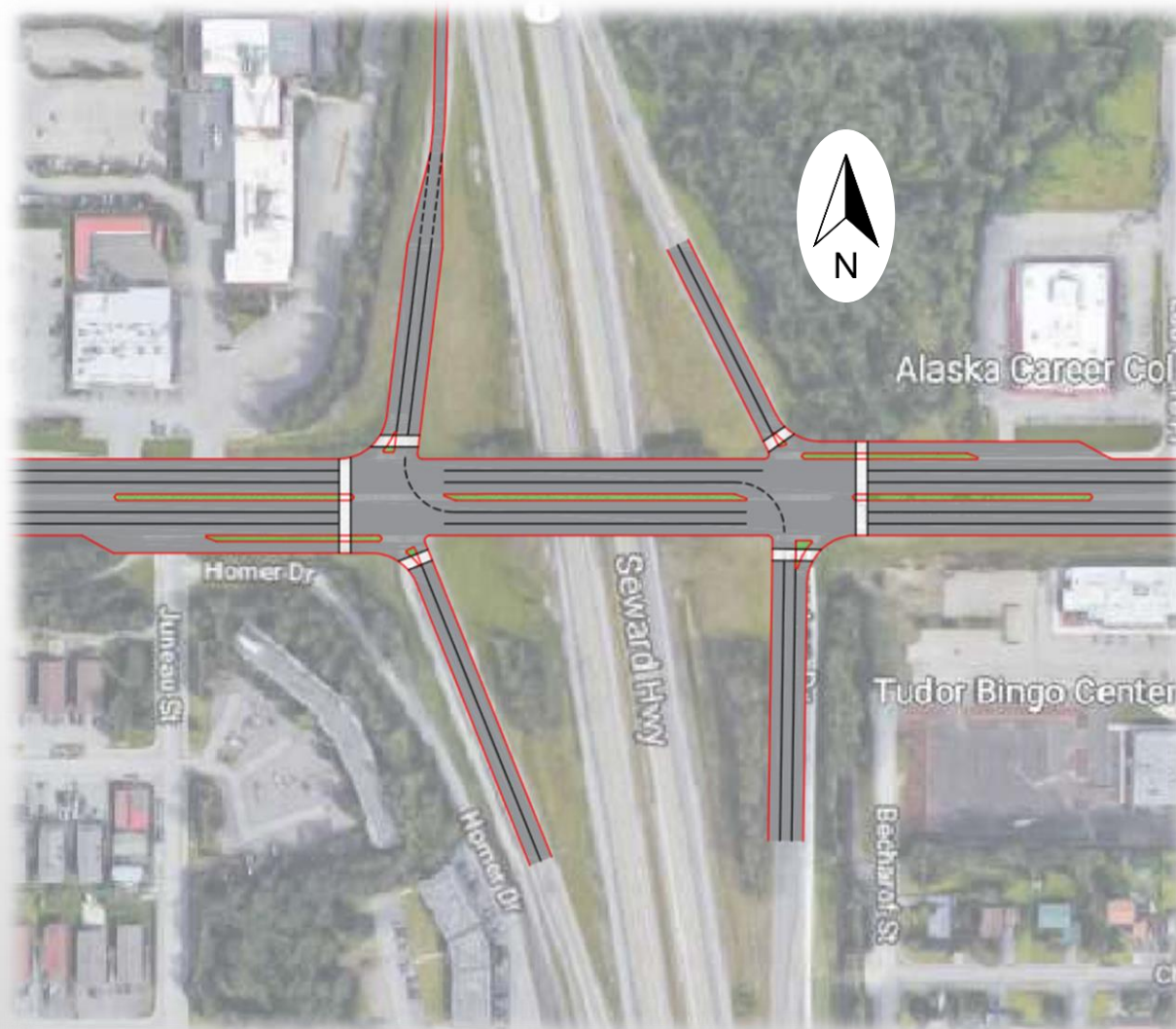
# Alternative II – Roundabout



# Alternative III – Single-Point Diamond

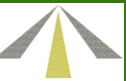
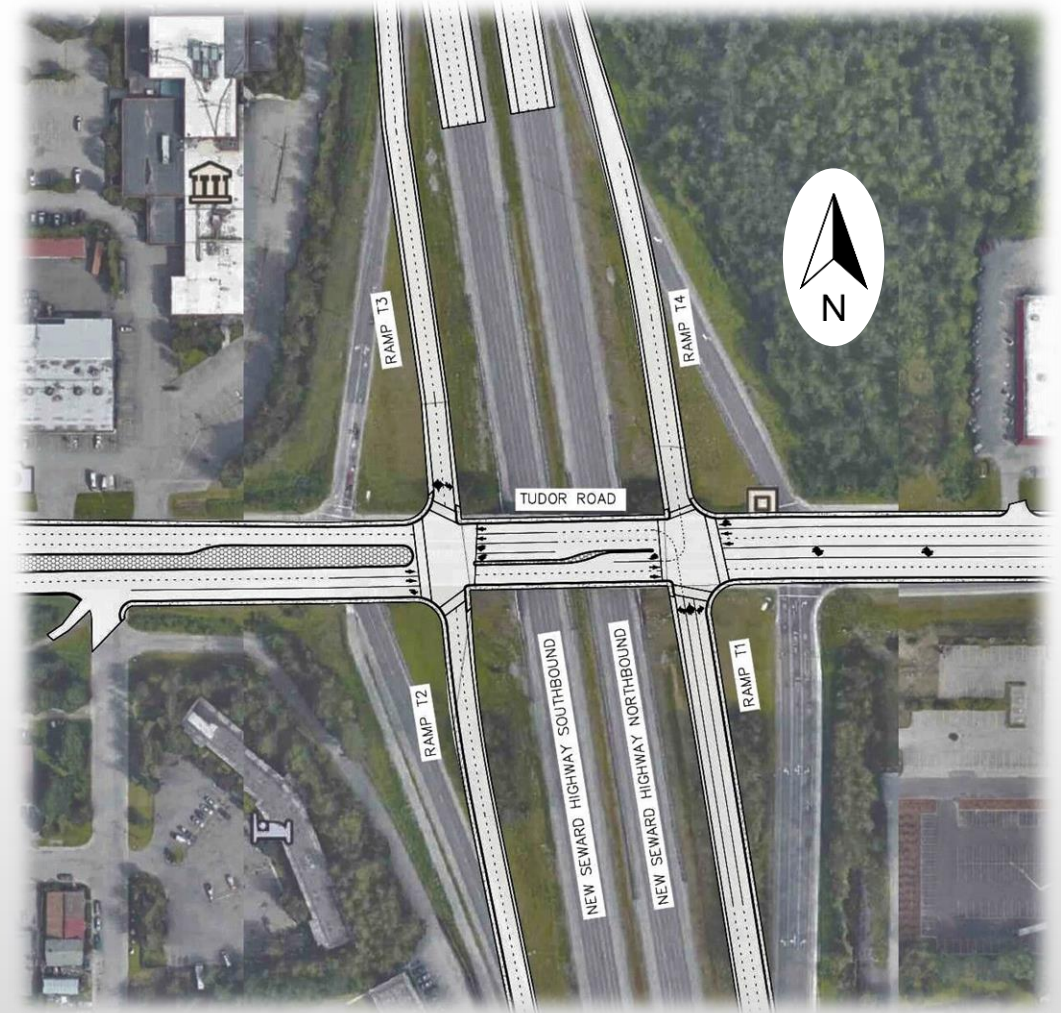


# Alternative IV – Tight Diamond



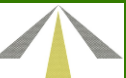
# Final Design

- ❖ Tight Diamond Interchange
- ❖ Span between intersections decreased from 400 feet to **250 feet**
- ❖ Implementation of an **additional left turn lane (dual turning lane)**
- ❖ Inclusion of a **raised median**



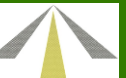
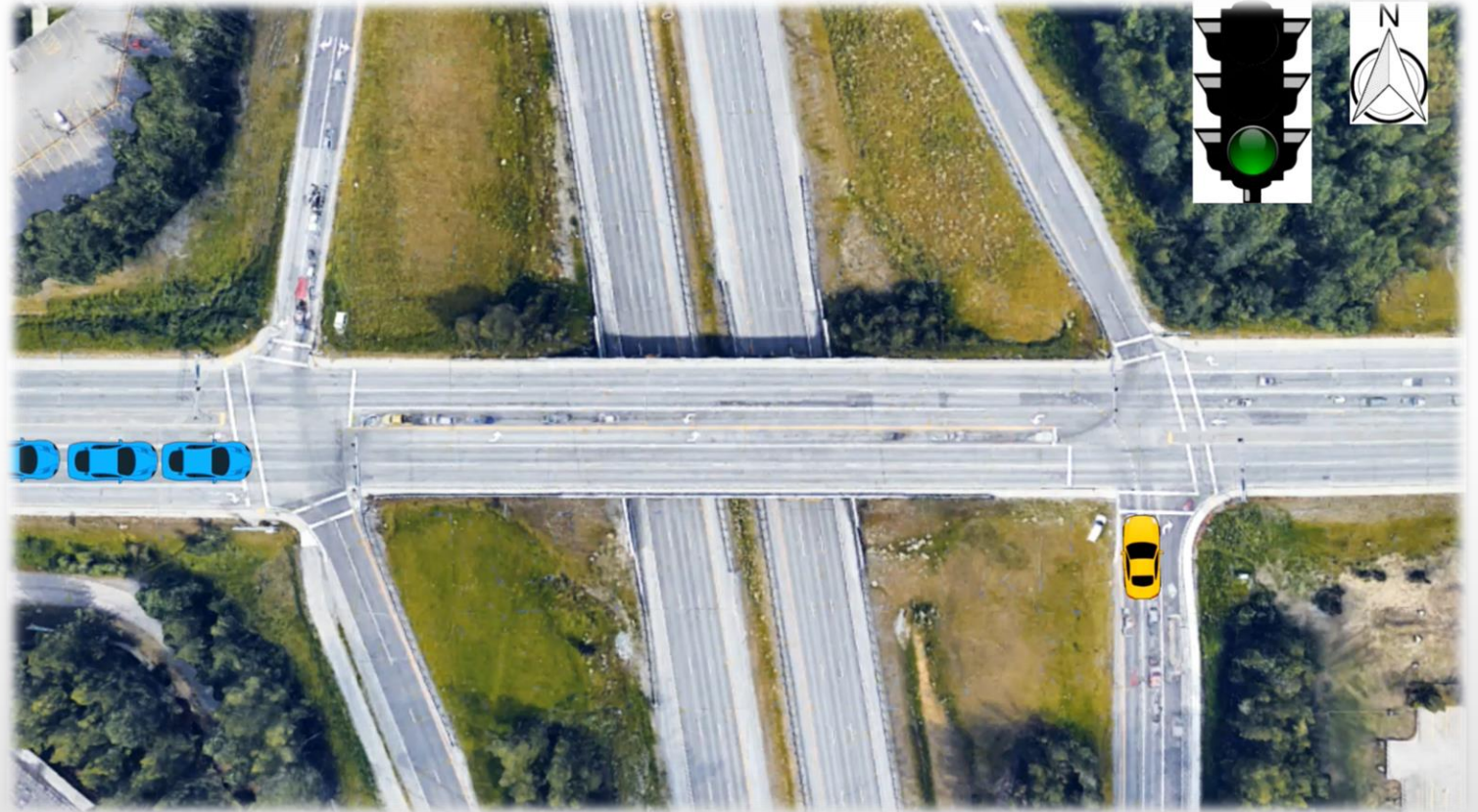
# Post Traffic Data Analysis

	Existing Conditions		Preferred Alternative	
	LOS	Intersection Delay, sec	LOS	Intersection Delay, sec
<b>Interchange</b>	<b>E</b>	N/A	<b>C</b>	N/A
<b>Tudor Eastward</b>	C	17	C	17
<b>Tudor Westward</b>	C	17	C	17
<b>Left Turn On NB Ramp</b>	C	15	C	15
<b>Left Turn On SB Ramp</b>	<b>E</b>	<b>41</b>	<b>C</b>	<b>17</b>



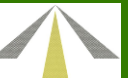
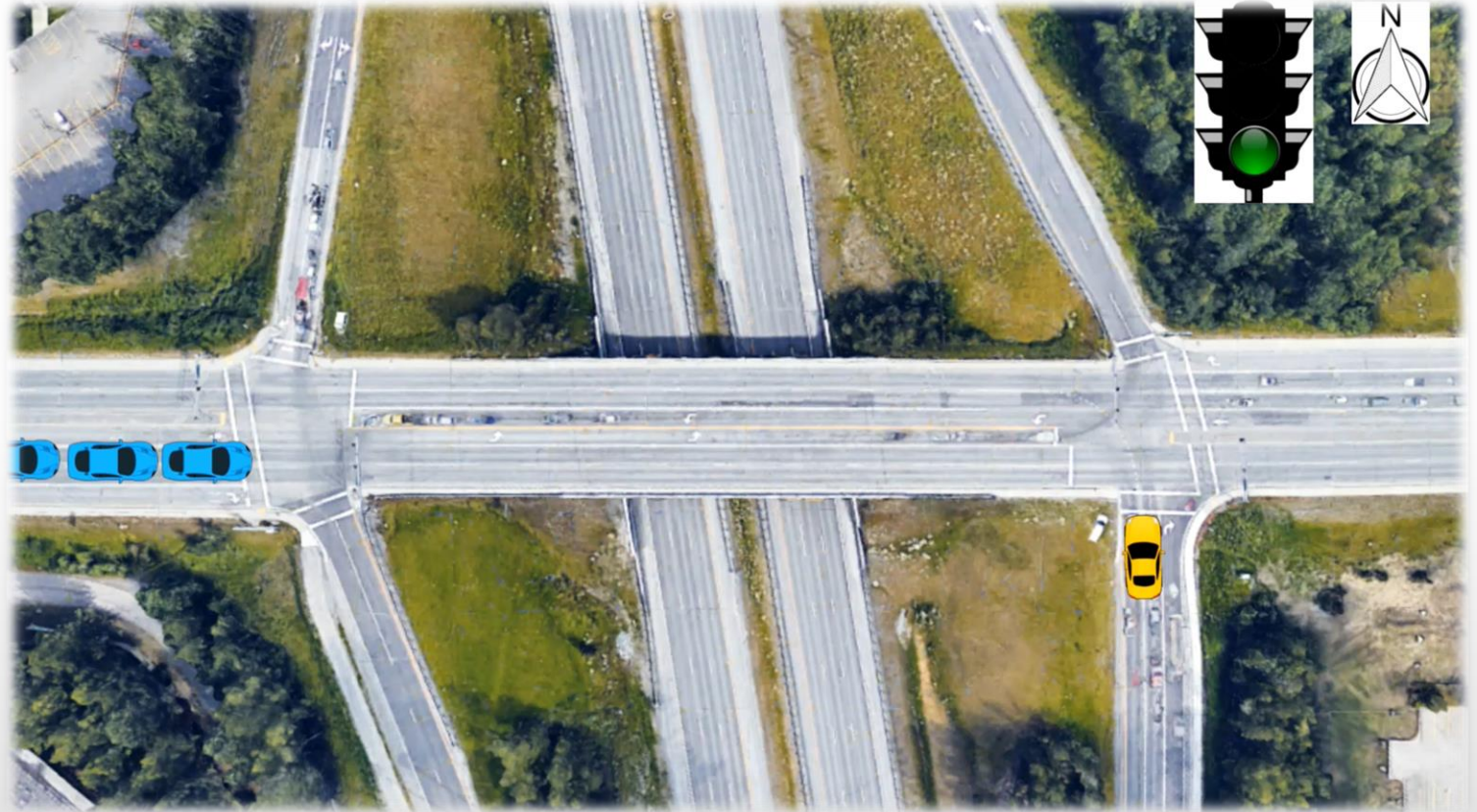
# Existing Bridge

- ❖ 400 feet between both intersections
- ❖ Increased delay



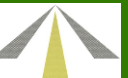
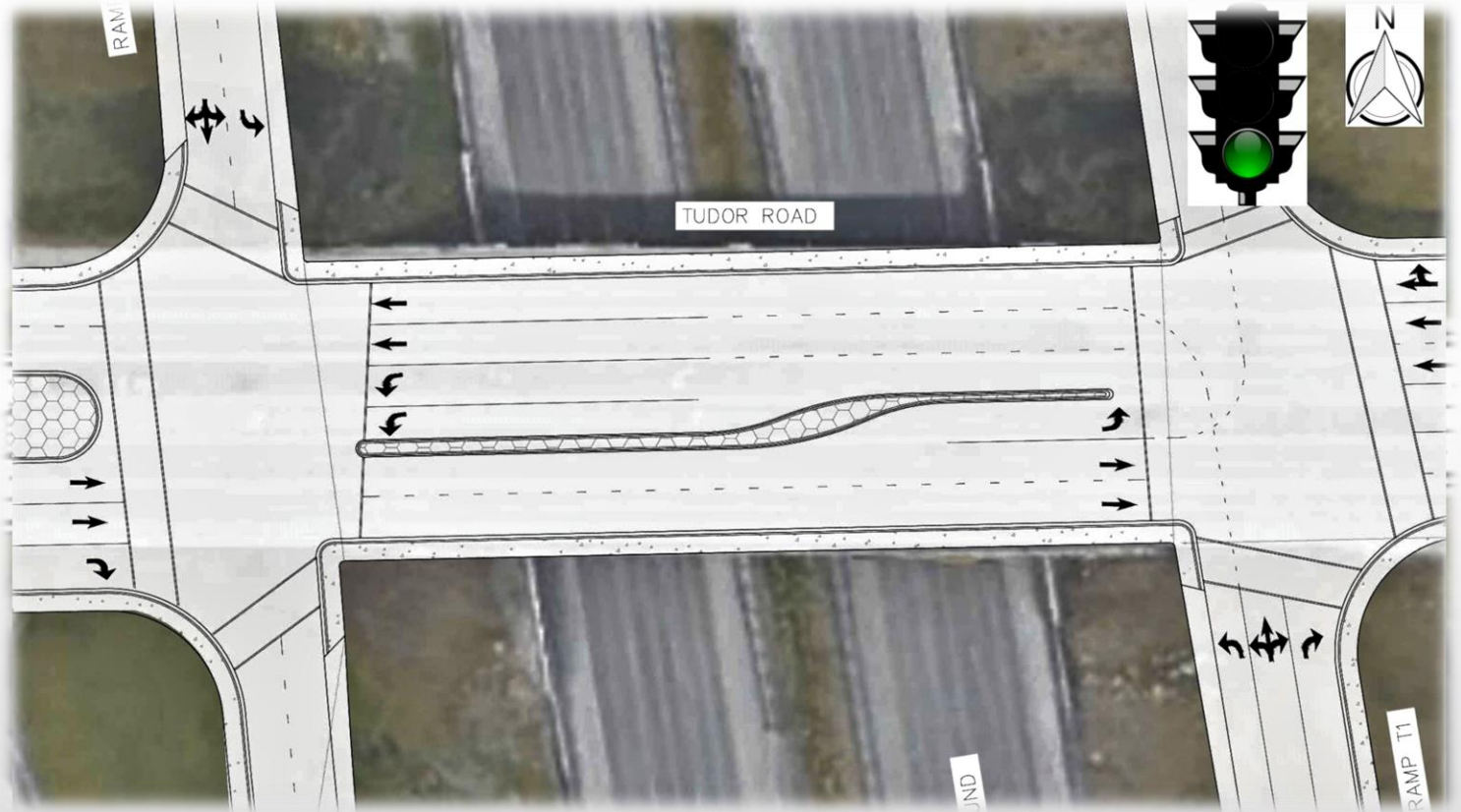
# Proposed Bridge

- ❖ Tightened to 250' between intersections
- ❖ Shortened to 250 feet between both intersections
- ❖ Decreased delay



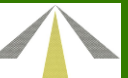
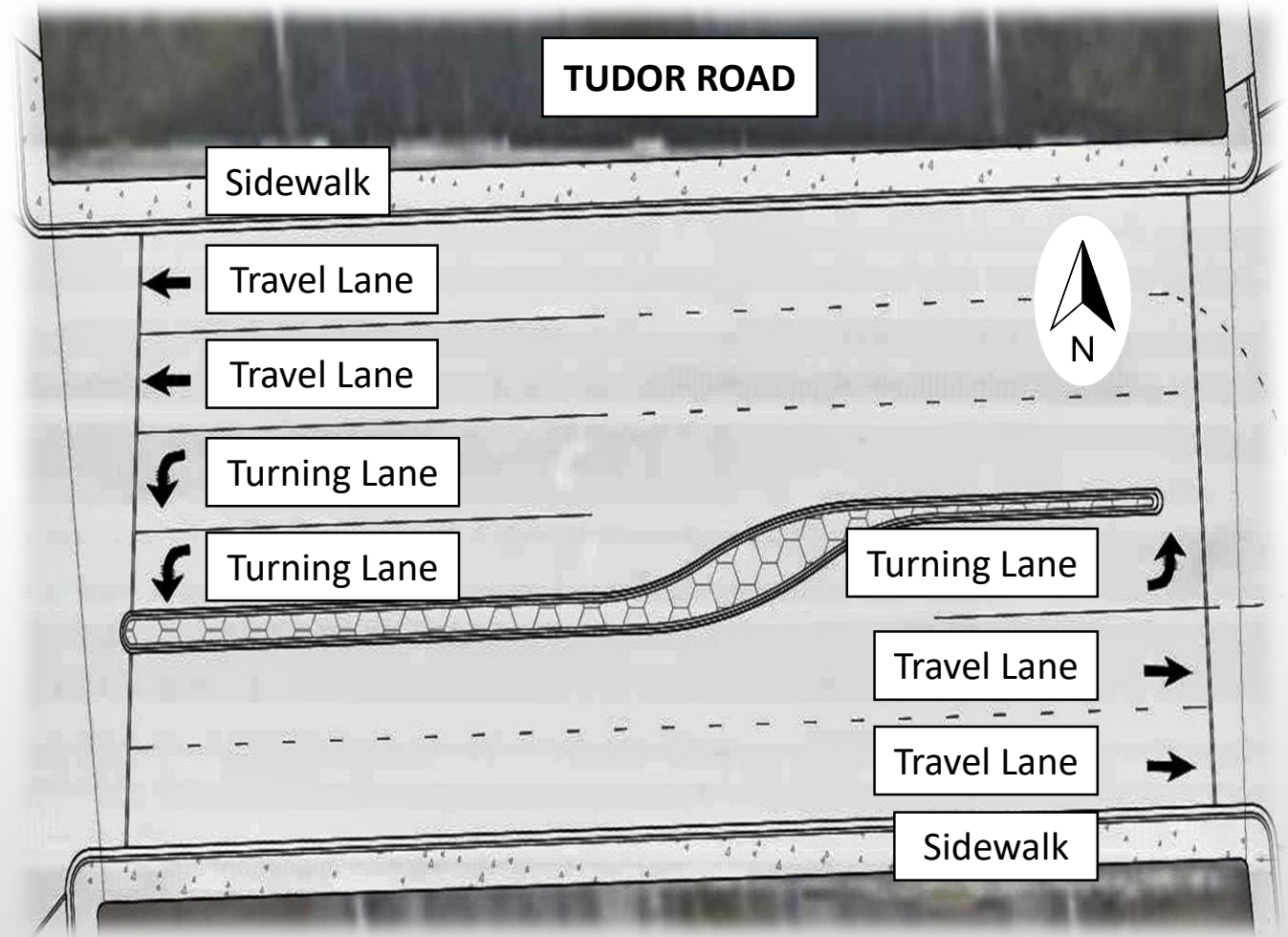
# Dual-Turning Left Turns

- ❖ Added left turn lane for westbound through lanes exiting the interchange

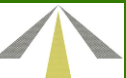


# Bridge Characteristics

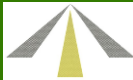
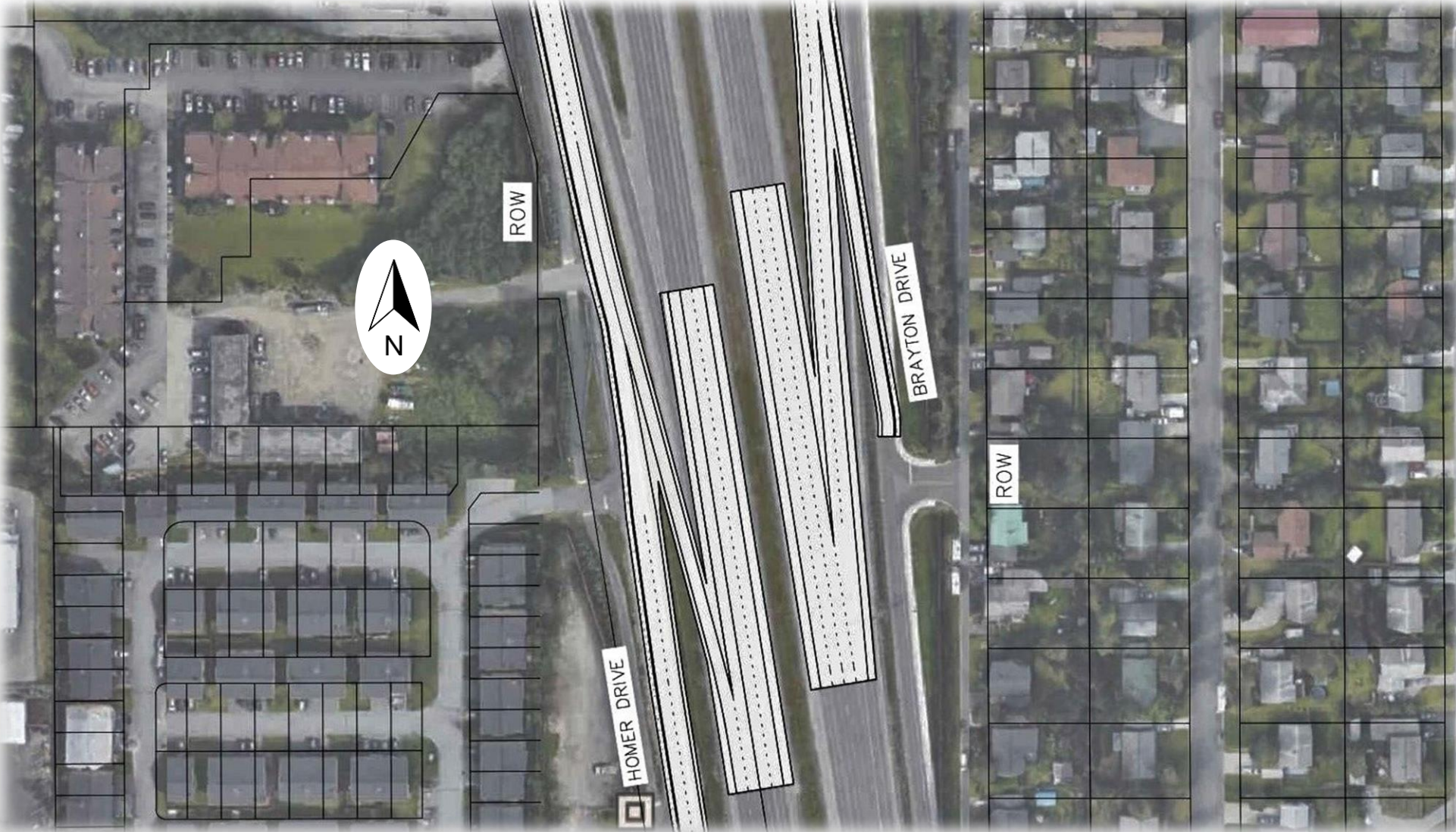
- ❖ Total width 87 feet
- ❖ 12 feet travel lanes
- ❖ Raised, 5 feet wide, median
- ❖ Dual left turn lanes



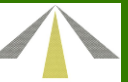
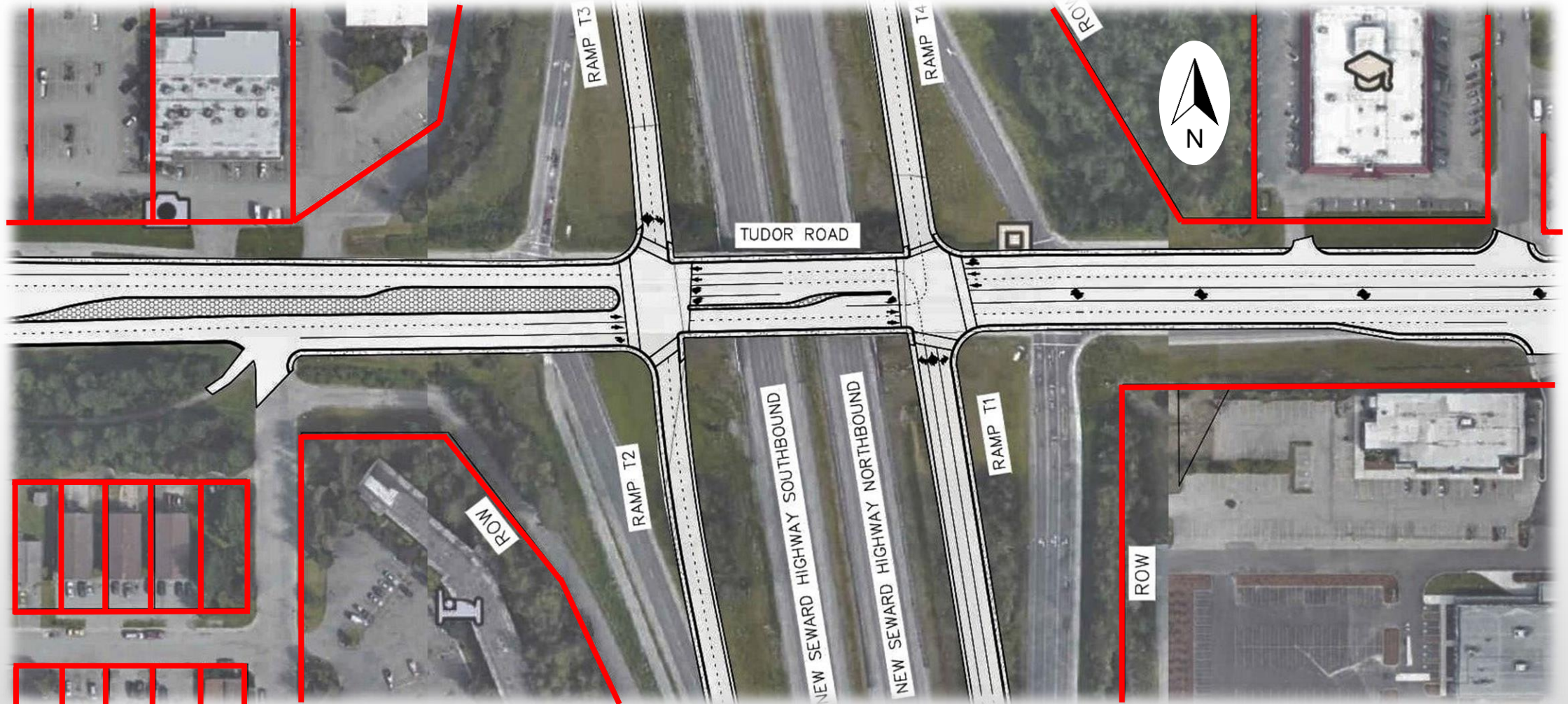
# North Ramp Tie-Ins



# South Ramp Tie-Ins

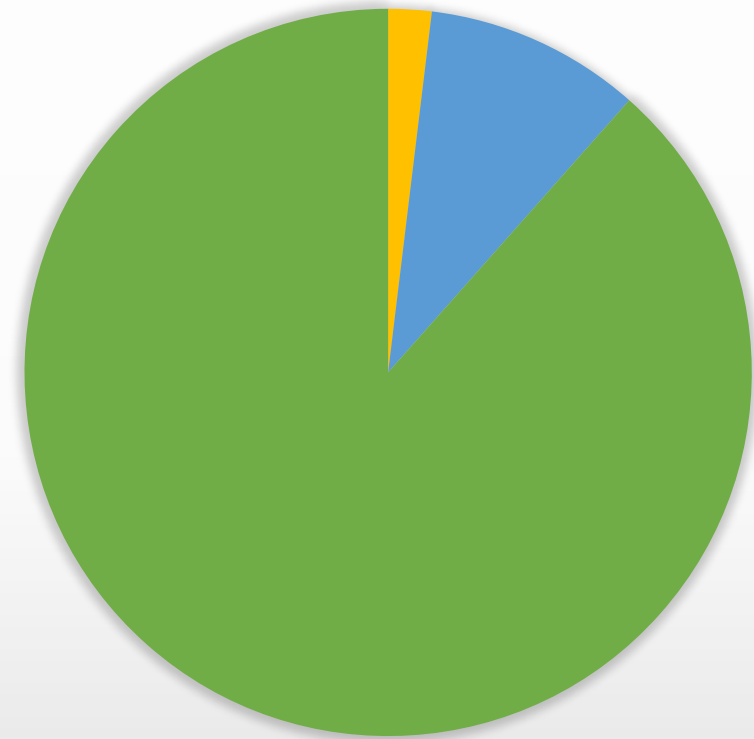


# Right-of-Way



# Estimated Project Costs

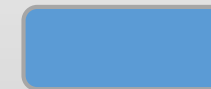
- ❖ Engineering: \$100,000
- ❖ ROW acquisition: \$0
- ❖ Utility Relocation: \$500,000
- ❖ Construction: \$4,600,000
- ❖ Total cost: \$5,200,000



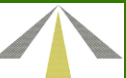
**Engineering**



**Utility Relocation**

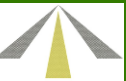


**Construction**

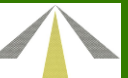


# Recap

- ❖ Purpose and Need
- ❖ Tight Diamond Interchange
- ❖ Final Design
- ❖ Project Cost Estimation

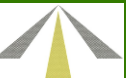


# Questions or Comments?



# Right-Of-Way and Utilities

- ❖ Due to shortening of bridge, little to no land acquisition
- ❖ Minor impacts on utility companies (i.e. – ENSTAR Inc., AWWU, CEA, etc.)
- ❖ Decrease in project costs



# Environmental Considerations

- ❖ No significant impacts
- ❖ Contractor will prepare a SWPPP
- ❖ Contractor dispose of solid waste at approved landfills



**SWPPP**  
**www.swppp.com**

