New Seward Highway and Tudor Road Interchange

HIT Engineers Inc.

COMMUNITY PARTNERS

This project was prepared for the Alaska Department of Transportation and Public Facilities (DOT&PF). In addition, professional guidance was provided by our faculty advisor and professional mentors.

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PROJECT BACKGROUND

The New Seward Highway and Tudor Road Interchange was built in 1975 with a design life of 50 years. The purpose of the tight diamond interchange is to provide access to Anchorage's Midtown and Tudor areas.

With the interchange reaching the end of its design life and an increase in land development from the adjacent areas, a new design which will reconfigure the interchange is needed to accommodate the heavy traffic volumes and delays.

PROJECT PURPOSE AND SCOPE

The purpose of the project is to improve the overall travel efficiency of the interchange by decreasing the traffic delays for both through/travel lanes on Tudor Road and accommodating the westbound left turn lane exiting onto the New Seward Highway.

The scope and timeline of the project is as follows:

- Conduct traffic analysis
- Select and design a preferable interchange type
- Perform post-design traffic analysis
- Finalize design

The main factor in consideration to satisfy the purpose and needs of the project is to meet an acceptable **level-of-service (LOS)** for the interchange. As a result, a traffic analysis was conducted to determine the present LOS and ways to increase it a tolerable level.

PRE-TRAFFIC ANALYSIS

The current LOS of the interchange was determined based on existing conditions and factors for each approach. This includes (but not limited to): the number of lanes for each direction, lane width, peak hour volumes, and percentage of heavy vehicles (i.e. – RVs and trucks).

Shown in **Table 1** is the determined LOS each approach. Based on the results, the Left Turn On Southbound (SB) Ramp experiences a LOS of E. Consequently, this affects the overall performance of the interchange, which results with an LOS of E.

Table 1: Level-Of-Service calculations of existing interchange configuration

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

* LOS calculations based only on individual movements in one direction

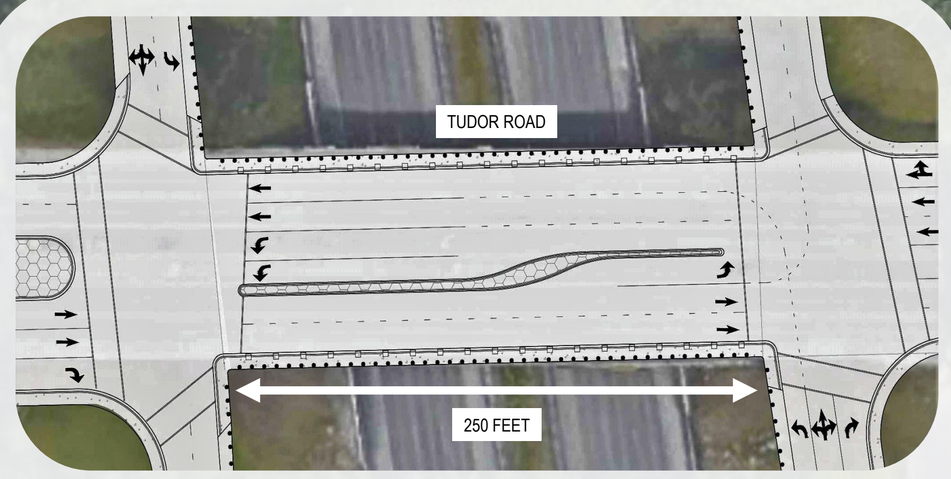

Figure 1: Reconfigured design of the interchange with shortened span bridge and dual-left turning lanes on

PROJECT DESIGN

To address the issues experienced in the interchange, design accommodations to the existing tight diamond, as seen in **Figure 1**, were integrated in the reconfiguration of the interchange:

- **Shortened span bridge** – by decreasing the span of the bridge from 400 feet to 250 feet, better through traffic flow would occur;
- **Dual-left turning lanes** – an additional left turn lane for vehicles exiting onto the SB Ramp from Tudor Road would alleviate the congested traffic;
- **Raised median** – implementing a raised median on the interchange would ensure driver comfortability and channelization.

POST-TRAFFIC ANALYSIS

Table 2: Level-Of-Service calculations for Proposed Alternative

	Proposed Alternative	
	LOS	Intersection Delay, sec
Interchange	**C**	N/A*
Tudor Eastward	C	17
Tudor Westward	C	17
Left Turn On NB Ramp	C	15
Left Turn On SB Ramp	**C**	**17**

* LOS calculations based only on individual movements in one direction

Based on **Table 2**, the proposed design alternative would decrease the intersection delay for the Left Turn SB Ramp approach from 41 seconds to 17, and increase its LOS from E to C. Overall, these improvements to the interchange would increase the LOS from E to C, meeting the purpose and needs of the project.

PROJECT SIGNIFICANCE

By incorporating the new design modifications to the New Seward Highway and Tudor Road Interchange, driver experience and commute times enhances significantly.

New Seward and Tudor Road Interchange Team

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