

## INTERCHANGE MODIFICATION REPORT (IMR)

SR 9/I-95 from S. of Woolbright Road to N. of Woolbright Road  
Project Development and Environment Study  
FPID: 437279-1-22-02

the safety benefits of the proposed improvements. Since the Build alternative does require significant changes in the geometric configuration, the predictive safety analysis did not utilize the Empirical-Bayes Method for the No-Build or Build Alternative, as recommended in the Safety Guidance. The following quantitative safety analysis compares the No-Build and Build Alternative for Woolbright Road interchange improvements. I-95 mainline was not included in this analysis since no improvements are proposed on the I-95 mainline. **Appendix H** presents the input data used to perform the analysis and output summary for the No-Build and Build Alternative.

### **Woolbright Road Interchange – Alternative 1 (TDI)**

Predictive safety analysis was performed for Build Alternative 1. The improvements to the I-95 Northbound and Southbound ramp terminals were coded in the Build alternative. **Table 8-13**, presented below, shows the expected crash frequencies for the No-Build and Build Alternative.

**Table 8-13: Predicted Crash Frequency at the I-95 and Woolbright Road Interchange (Crashes/Year)**

Ramp Terminal	Alternative	K	A	B	C	PDO	Total
Northbound Ramp Terminal	No-Build	0.2	1.0	3.0	5.2	14.7	24.0
	Build	0.2	1.0	3.0	5.2	14.7	24.0
	<i>Change</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>
Southbound Ramp Terminal	No-Build	0.2	1.2	3.7	6.5	18.4	30.1
	Build	0.2	1.2	3.7	6.4	18.1	29.6
	<i>Change</i>	<i>0.0</i>	<i>0.0</i>	<i>0.1</i>	<i>0.1</i>	<i>0.3</i>	<i>0.5</i>
Total	No-Build	0.4	2.2	6.7	11.8	33.1	54.2
	Build	0.4	2.2	6.7	11.6	32.8	53.7
	<i>Change</i>	<i>0.0</i>	<i>0.0</i>	<i>0.1</i>	<i>0.1</i>	<i>0.3</i>	<i>0.5</i>

The analysis shows the improvements provided at the Southbound ramp terminal should reduce the number of crashes by 0.5 crashes/year. The analysis also shows the improvements provided at the Northbound ramp terminal show no reduction in crashes and the number of crashes/year remain the same as the No-Build. Overall, the improvements at the I-95 and Woolbright Road interchange should reduce the number of crashes by 0.5 crashes/year.

### **Woolbright Road Interchange – Alternative 2 (DDI)**

Predictive safety analysis was performed for Build Alternative 1. For Build Alternative 2, a CMF of 0.592 for converting a diamond interchange to a diverging diamond interchange (CMF ID: 9104) was applied to

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observed crashes. **Table 8-14** also shows the average predicted crashes per year at Woolbright Road interchange.

**Table 8-14: Predicted Number of Crashes for DDI**

Ramp Terminal	Observed Crash Frequency		CMF	Build Expected Crash Frequency		Reduction in Crashes	
	FI	PDO		FI	PDO	FI	PDO
Northbound Ramp Terminal	7.6	7.2	0.592	4.5	4.3	3.1	2.9
Southbound Ramp Terminal	7.8	12.8	0.592	4.6	7.6	3.2	5.2
<b>Total</b>	<b>15.4</b>	<b>20</b>		<b>9.1</b>	<b>11.9</b>	<b>6.3</b>	<b>8.1</b>

**Table 8-14** results show the Build Alternative 2 (DDI) will have a crash reduction of 40.8% compared to the existing crashes at I-95 and Woolbright Road Interchange.

### 8.5.2 Qualitative Safety Analysis

The HSM Part C methodology and CMF methodology cannot always account for unique configurations and as a result, quantitative predictive safety analysis cannot be performed. However, to still account for the proposed improvements that cannot be analyzed using HSM Part C or with CMFs, a qualitative safety analysis has been performed for these applicable improvements.

#### Woolbright Road Interchange – Alternative 3 (SPUI)

It is proposed that the existing diamond interchange be converted to a SPUI at the study interchange for Alternative 3. This improvement cannot be accounted for using the HSM Part C methodology or CMF methodology. Since there are no other ways to quantify this improvement, a qualitative discussion has been provided. The qualitative safety benefits of a SPUI interchange include:

- Reduction of overall interchange delay due to the main intersection operates with three traffic signal phases rather than four phases in a diamond interchange.
- Improve the safety of the overall intersection due to having one signalized intersection and vehicles only cross paths at one location.
- The SPUI design allows left-turns to be made at higher speeds, increasing the main intersection's capacity.
- Improve travel times on the arterial due to having one signalized intersection.

## **Woolbright Road at SW 8th Street Intersection**

It is recommended to provide dual left-turn lanes on the eastbound and westbound approaches of the intersection. The proposed design modifications at this study intersection will provide additional storage and improve intersection delay and queues. The additional storage and operational improvements should result in a reduction of crashes as a result of reduced congestion.

## **Segment between I-95 SB ramp terminal intersection to SW 8th Street intersection**

It is recommended to provide one additional through lane along Woolbright Road for the westbound movement. The proposed modification will provide additional capacity and improve travel times and queues at this segment. The additional capacity and operational improvement should result in a reduction of crashes as a result of reduced congestion.

## 8.6 Alternatives Comparison

The No-Build Alternative and the Build Alternatives were compared, and a summary is provided in the sections below.

### 8.6.1 Operational Comparison

This section compares the intersections traffic operational performance of the No-Build and Build Alternatives.

In the No-Build Alternative, all the study intersections operate at failing LOS F in the AM and PM peak hours by the Design Year 2045. The traffic operations at these intersections improve with the implementation of the Build Alternatives except the Woolbright Road and Seacrest Boulevard intersection. Since no improvements were considered for Woolbright Road and Seacrest Boulevard intersection in the Build Alternative except a committed exclusive EBR turn lane which is considered in both No-Build and Build Alternatives, therefore the delay and LOS for this intersection are similar to the No-Build Alternative. All the three Build Alternatives (TDI, DDI and SPUI) will provide acceptable LOS D or better for terminal intersections by the Design Year 2045. The proposed improvements at the Woolbright Road/Corporate Drive intersection will provide acceptable LOS D in Opening Year 2025 in both AM and PM peak hours; however, in the Design Year 2045 LOS at this intersection will be “E” in the AM peak hour and “D” in the PM peak hour. The Woolbright Road at Seacrest Boulevard intersection will operate at LOS E and F in the 2025 and 2045 AM (PM) peak hours respectively.