and southbound left movements. The increase in average queue lengths at several of these locations can be attributed to changes in intersection characteristics such as making an unsignalized intersection signalized, serving additional volumes than the No-Build Alternative, and eliminating free-flow right turn lanes making ramp terminal right turns part of the signal. Future improvements such as the planned I-295 from SR 13 to SR 21 PD&E study will address these queue length concerns by adding capacity to mainline I-295 and key ramp terminal intersections.

The Build Alternative evaluated for this project improves traffic operations along the study area. All metrics from the No-Build and Build Conditions VISSIM models show that the Build Alternative provide superior traffic operations when compared to the No-Build Alternative. Visual audits of the microscopic VISSIM simulations for the Build Alternative revealed no queues or backups spilling onto mainline I-295 from the arterial ramp terminal intersection past Hour 4 of the Design Year (2040) models.

5.2 Cost Comparison

A cost comparison of the No-Build Alternative and Build Alternative is provided in **Table 5-21**. The construction costs, without unknowns factored in, for the I-295 at SR 15 to south of Wells Road is estimated to be approximately $12.3 million. **Appendix H** shows the Long Range Estimate (LRE) cost for this project.

Table 5-21: Comparison of Alternative Cost

Item	No-Build Alternative	Build Alternative
Estimated Construction Costs	$0	$12,316,828.00
Engineering Costs (10%)	$0	$1,231,682.00
Construction Engineering and Inspection (12%)	$0	$1,478,019.00
Estimated Right of Way Costs	$0	$2,009,869.00
Total Costs (1)	**$0**	**$17,036,398.00**

(1) Total Cost = LRE Construction Costs + Engineering Costs + CEI + Estimated Right of Way Costs

5.3 Build Alternative Safety Evaluation

As discussed in Section 3 of this IOAR, a large proportion of the crashes experienced within the study area were associated with congested traffic operational conditions. The improvements proposed through the Build Alternative for the I-295 at SR 15 to south of Wells Road PD&E study improves traffic operations along the mainline SR 15 and at the interchange to I-295 and will reduce congestion related crashes.

The Build Alternative will adequately address the predominant crash types observed within the study area and will reduce them significantly. Crash Reduction Analysis System Hub (CRASH) provided by the FDOT Safety Office summarizes anticipated Crash Reduction Factors (CRF) for specific roadway improvements.

Appendix I shows the CRFs that are applicable to improvements proposed with the Build Alternative. A summary of these anticipated CRFs is provided in **Table 5-22**.

Table 5-22: Build Alternative Crash Reduction Factors

Improvement	Crash Reduction Factor (percent)							
	Fatal	Injury	PDO*	Rear-End	Angle	Left-Turn	Sideswipe	Total
Add turn lane(s) & pavement resurfacing	3	47	21	49	20	53	-15	35
Modify intersection at signalized intersection	-24	13	0	7	10	28	3	6
Modify signal timing and phasing	0	30	-1	-22	31	66	-17	14
Total**	-20	68	20	42	50	88	-31	47

*Property Damage Only. ** CRF = CRF1 + (1-CRF1) CRF2 + (1-CRF1)(1-CRF2)CRF3 + …

The Build Alternative may reduce rear-end crashes by approximately 42 percent, angle crashes by approximately 50 percent, and left-turn crashes by approximately 88 percent. Sideswipe crashes are anticipated to increase by approximately 31 percent.

A high-level safety B/C analysis was prepared for the Build Alternative utilizing the FDOT Roadway Design Benefit-Cost Analyses Spreadsheets. A summary of this analysis is provided in **Table 5-23**

Table 5-23: Build Alternative Safety Benefit-Cost Analysis

Alternative	Total Project Cost	Annual Project Cost	Total CRF	Annual Safety Benefit	B/C Ratio*
Build Alternative	$17,036,398.00	$1,212,046.96	47.45%	$1,588,352.12	1.31

*Refer to Benefit-Cost Spreadsheet

For the I-295 at SR 15 to south of Wells Road PD&E study, the Build Alternative resulted a safety B/C ratio greater than 1.00 indicative that the safety benefits perceived are greater than the cost of the project. The Build Alternative's B/C spreadsheet detailing the analysis performed is provided in **Appendix I**.

5.4 Project Schedule and Funding Plan

The improvements proposed as part of the Build Alternative at the I-295 interchange with SR 15 to south of Wells Road are performed under the Programmatic agreement with FHWA. Therefore, FDOT Central Office will conduct necessary review and assessment of the justification for the proposed changes to the interstate access. This project is funded for design in Fiscal Year (FY) 2018/2019, right of way in FY 2019/2022, and construction in FY 2022/2023 in the FDOT Work Program as Financial Project Identification Number (FIN) 435575-1-32-01. Funding is summarized in **Table 5-24**.