



SEGMENT ANALYSIS MATRIX

US 380 FROM COIT ROAD TO FM 1827
CSJs: 0135-02-065, 0135-03-053, AND 0135-15-002



*All references to "with Spur 399 Extension connection" refer to impacts that would be caused should the separate Spur 399 Extension project be constructed.

SCREENING/ EVALUATION CATEGORY	SEGMENT A & SEGMENT A SHIFT* (MCKINNEY-WEST) COIT ROAD TO CR 161/RIDGE ROAD <small>*The Segment A shift provides for an alternative design near University Drive and future US 380 intersection to better accommodate future developments.</small>	SEGMENT B (PROSPER - FURTHEST WEST) COIT ROAD TO CR 161/RIDGE ROAD	SEGMENT E (BLOOMDALE) CR 161/RIDGE ROAD TO SH 5 <small>COMMON TO ALL ALTERNATIVES</small>	SEGMENT C (MCKINNEY FURTHEST EAST) SH 5 TO FM 1827	SEGMENT D (MCKINNEY - EAST) SH 5 TO FM 1827	NO-BUILD ALTERNATIVE (NO FREEWAY) COIT ROAD TO FM 1827	KEY TAKEAWAYS
Purpose & Need Manage Congestion - Travel Time <small>Measured by the projected time in minutes (min) it takes a motorist to drive the segment in the year 2050 (TxDOT Design Year). Noted for the morning and evening rush hour and traveling both eastbound and westbound.</small> <small>Derived from Highway Capacity Software using TxDOT approved projections based on the NCTCOG Travel Demand Model, historical roadway volumes, future growth projections, and census data.</small> Manage Congestion - Average Moving Speed <small>Measured by the average projected speed in miles per hour (MPH) it takes a motorist to drive the segment in the year 2050 (TxDOT Design Year). Noted for the morning and evening rush hour and traveling eastbound and westbound.</small> <small>Derived from Highway Capacity Software using TxDOT approved projections based on the NCTCOG Travel Demand Model, historical roadway volumes, future growth projections, and census data.</small> Improve East-West Mobility - Average Level of Service (LOS) <small>2050 (TxDOT Design Year) Average LOS using a scale of A to F.</small> <small>Level of Service measures the quality of vehicle traffic service based on performance measures like vehicle speed, density, and congestion. For example, a LOS "F" is a rating assigned to roadways with breakdown flow which means that there are high traffic volumes and limited capacity on the roadway. A LOS "A" is a rating that means free flow conditions with low traffic volumes and greater roadway capacity available.</small> <small>Derived from Highway Capacity Software using TxDOT approved projections based on the NCTCOG Travel Demand Model, historical roadway volumes, future growth projections, and census data. The LOS for each roadway direction is an average derived from different locations along the segment.</small> Improve Safety (Comparing to existing US 380) <small>2050 Mainlane Predictive Crashes are for traveling on mainlanes only from the beginning to the end of each segment.</small>	Morning Rush Hour 4.3 min (Eastbound) 5 min (Westbound) <small>There would be no significant change expected for the shift option.</small>	Morning Rush Hour 3.7 min (Eastbound) 3.9 min (Westbound)	Morning Rush Hour 5.6 min (Eastbound) 6.3 min (Westbound)	Morning Rush Hour 4.3 min (Eastbound) 4.3 min (Westbound)	Morning Rush Hour 4.4 min (Eastbound) 4.5 min (Westbound)	Morning Rush Hour 70.9 min (Eastbound) 91.5 min (Westbound)	There is not a substantial difference in travel times between Segments A and B and between Segments C and D. Segment A experiences a slightly longer travel time than Segment B due to the additional segment length.
	Evening Rush Hour 4.3 min (Eastbound) 5 min (Westbound) <small>There would be no significant change expected for the shift option.</small>	Evening Rush Hour 3.8 min (Eastbound) 3.8 min (Westbound)	Evening Rush Hour 5.7 min (Eastbound) 6.2 min (Westbound)	Evening Rush Hour 4.5 min (Eastbound) 4.2 min (Westbound)	Evening Rush Hour 4.5 min (Eastbound) 4.4 min (Westbound)	Evening Rush Hour 118.8 min (Eastbound) 108.3 min (Westbound)	
	Morning Rush Hour 67.8 MPH (Eastbound) 63 MPH (Westbound) <small>There would be no significant change expected for the shift option.</small>	Morning Rush Hour 67.7 MPH (Eastbound) 64 MPH (Westbound)	Morning Rush Hour 64.7 MPH (Eastbound) 59.5 MPH (Westbound)	Morning Rush Hour 65.6 MPH (Eastbound) 68 MPH (Westbound)	Morning Rush Hour 67.5 MPH (Eastbound) 67 MPH (Westbound)	Morning Rush Hour 14 MPH (Eastbound) 10 MPH (Westbound)	There is not a substantial difference in travel speeds between Segments A and B and between Segment C and D.
	Evening Rush Hour 67.7 MPH (Eastbound) 63.4 MPH (Westbound) <small>There would be no significant change expected for the shift option.</small>	Evening Rush Hour 66.8 MPH (Eastbound) 66.2 MPH (Westbound)	Evening Rush Hour 64.3 MPH (Eastbound) 60.6 MPH (Westbound)	Evening Rush Hour 64 MPH (Eastbound) 68.4 MPH (Westbound)	Evening Rush Hour 65.3 MPH (Eastbound) 67.8 MPH (Westbound)	Evening Rush Hour 10 MPH (Eastbound) 9 MPH (Westbound)	
	Morning Rush Hour LOS B (Eastbound) LOS C (Westbound) <small>There would be no significant change expected for the shift option.</small>	Morning Rush Hour LOS B (Eastbound) LOS C (Westbound)	Morning Rush Hour LOS B (Eastbound) LOS C (Westbound)	Morning Rush Hour LOS B (Eastbound) LOS B (Westbound)	Morning Rush Hour LOS B (Eastbound) LOS C (Westbound)	Morning Rush Hour LOS F (Eastbound) LOS F (Westbound)	There is not a substantial difference in LOS between Segments A and B.
Evening Rush Hour LOS B (Eastbound) LOS B (Westbound) <small>There would be no significant change expected for the shift option.</small>	Evening Rush Hour LOS B (Eastbound) LOS B (Westbound)	Evening Rush Hour LOS C (Eastbound) LOS B (Westbound)	Evening Rush Hour LOS B (Eastbound) LOS B (Westbound)	Evening Rush Hour LOS C (Eastbound) LOS B (Westbound)	Morning Rush Hour LOS F (Eastbound) LOS F (Westbound)		
There would be no significant change expected for the shift option.						The ability to provide safety improvements along existing US 380 is constrained by existing and proposed development.	2050 crashes were estimated using Interactive Highway Safety Model (IHSDM). Key differentiators that influenced the number of crashes between the mainlane build alternatives were alignments' curvature, traffic volumes, number of lanes, and barrier offsets. Only the mainlanes were modeled for the build scenarios. Mainlanes and intersections were modeled for the No-Build scenario.
Meet Purpose & Need	All Build Alternatives meet the project's Purpose and Need. The results of the traffic and safety analyses demonstrate that these alternatives are very similar by comparison.					Does not meet the project's Purpose and Need. Would not help manage congestion, improve east-west mobility, or improve safety.	