

Project Description

This project focuses on transportation and urban planning design located at Arrowhead Center in Spanish Fork, Utah. The project required the team to create a formal Traffic Impact Study from traffic count data collected at five intersections determined by the team and modeled using Synchro Traffic 9 modeling software. The team was then asked to make transportation design recommendations in order to provide the appropriate level of service for streets surrounding the proposed new developments in the project area. New developments included single family units and multi-family residences.

Traffic Counts

Traffic counts were performed at five intersections surrounding the Arrowhead Center property during morning peak hours (7 am to 9 am) and evening peak hours (4 pm to 6 pm) during weekdays to satisfy Spanish Fork City requirements. An average Peak Hourly Factor (PHF) of 0.85 resulted from these counts.

Synchro Software Modeling

Traffic count data was input into Synchro software. Trip assignment, generation, and distribution as well as traffic volumes were determined using ITE Manuals and used to model existing, future 2022 and 2027 background, and future 2022 and 2027 background plus project conditions. Using Annual Average Daily Traffic (AADT) data provided by Utah Department of Transportation, an average growth rate of 3.6% was calculated for major roadways surrounding the project and applied to Synchro models.

Project Results

According to Spanish Fork's Master Plan, roadways are desired to operate at level of service (LOS) C. Based on the LOS reports generated by Synchro, 2 of the intersections surrounding the project are already failing in 2018. Both of the proposed intersections fail in future years, as well. Recommendations to improve LOS include disallowing through and left turn movements for the new intersections. The 2 existing failing intersections can be improved by the addition or manipulation of lanes or signals, as summarized in Table 1.

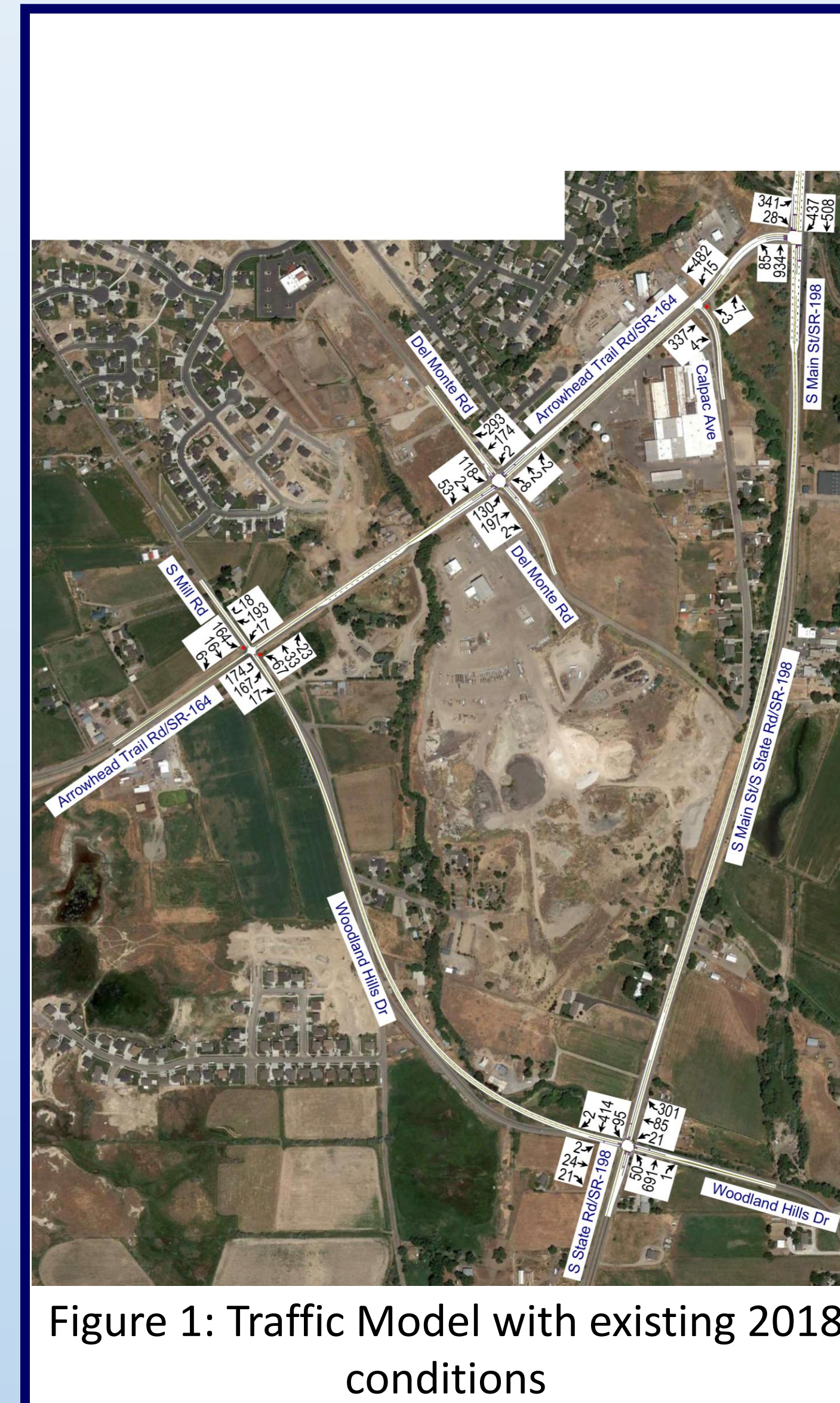


Figure 1: Traffic Model with existing 2018 conditions



Figure 2: Traffic Model with projected 2027 plus project conditions

Table 1: Summary of Peak Hour Level of Service							Recommendations based on Future 2027 Plus Project Volumes
Intersection	Existing 2018 Background	Future 2022 Background	Future 2022 Plus Project	Future 2027 Background	Future 2027 Plus Project	Future 2027 Plus Project - Mitigated	
Del Monte Road and SR-164 Arrowhead Trail Road	C	C	C	C	C	-	-
Calpac Avenue and SR-164 Arrowhead Trail Road	B	B	B	B	B	-	-
Woodland Hills Drive and SR-198	F	F	F	F	F	C	Convert Westbound segment to 1 combined through and left turn lane with 2 right turn pockets Increase minimum initial green time, increase max split time
South Mill Road and Arrowhead Trail Road	F	F	F	F	F	B	Signalize intersection
SR-164 Arrowhead and Main street	B	B	B	B	B	-	-
New 3-Way Intersection with SR-198	-	-	D	-	F	C	Disallow through and left turn movements
New 4-Way Intersection with SR-198	-	-	F	-	F	C	Disallow through and left turn movements