Results of Modeling

188th Street

AM Peak	Existing	With Improved Signal at CH 60	With Roundabout at CH 60	With Roundabout at 60 & Signal at 192nd Street	4-Lane Roadway & Roundabout at CH 60	Future (3/4 Access)
# Vehicles *(Volume Demand)*	45	45	45	45	45	55
Average Number of Gaps	83	86	73	85	120	53
Number of vehicles that can access Highway 50 with these gaps	174	181	140	199	270	102
Side Street Delay *(Level of Service and Average Delay in Seconds)*	LOS C (16 sec)	LOS C (15 sec)	LOS C (16 sec)	LOS C (17 sec)	LOS B (12 sec)	LOS B (10 sec)

PM Peak	Existing	With Improved Signal at CH 60	With Roundabout at CH 60	With Roundabout at 60 & Signal at 192nd Street	4-Lane Roadway & Roundabout at CH 60	Future (3/4 Access)
# Vehicles *(Volume Demand)*	20	20	20	20	20	25
Average Number of Gaps	59	70	44	50	73	36
Number of vehicles that can access Highway 50 with these gaps	147	161	78	99	136	63
Side Street Delay *(Level of Service and Average Delay in Seconds)*	LOS D (29 sec)	LOS B (13 sec)	LOS C (22 sec)	LOS C (24 sec)	LOS C (16 sec)	LOS B (10 sec)

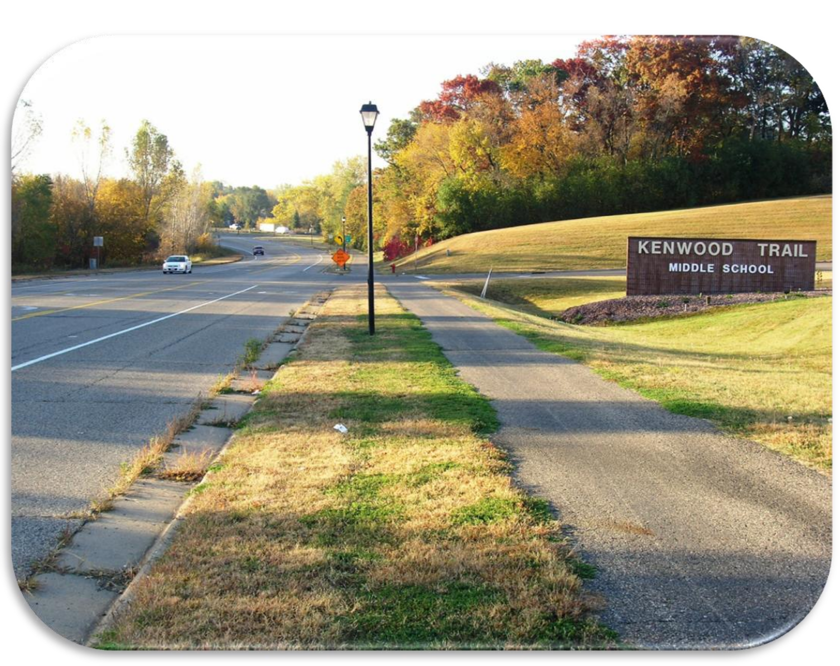
MODEL RESULTS

Results of Modeling

192nd Street

AM Peak	Existing	With Improved Signal at CH 60	With Roundabout at CH 60	With Roundabout at 60 & Signal at 192nd Street	4-Lane Roadway & Roundabout at CH 60	Future
# Vehicles *(Volume Demand)*	140	140	140	140	140	300
Average Number of Gaps	93	98	92	Signal	98	Signal
Number of vehicles that can access Highway 50 with these gaps	225	242	199	NA	215	NA
Side Street Delay *(Level of Service and Average Delay in Seconds)*	LOS D (28 sec)	LOS C (24 sec)	LOS D (31 sec)	LOS C (28 sec)	LOS C (18 sec)	LOS B (14 sec)

PM Peak	Existing	With Improved Signal at CH 60	With Roundabout at CH 60	With Roundabout at 60 & Signal at 192nd Street	4-Lane Roadway & Roundabout at CH 60	Future
# Vehicles *(Volume Demand)*	110	110	110	110	110	215
Average Number of Gaps	67	71	59	Signal	62	Signal
Number of vehicles that can access Highway 50 with these gaps	162	173	107	NA	114	NA
Side Street Delay *(Level of Service and Average Delay in Seconds)*	LOS D (29 sec)	LOS C (24 sec)	LOS D (28 sec)	LOS C (28 sec)	LOS C (22 sec)	LOS B (10 sec)



Why are the delays in the AM peak hour so different between 192nd and Jaguar when they have similar volumes? 192nd Street is a 4-leg intersection while Jaguar Ave is a T-intersection. So when turning (especially when turning left) at 192nd Street from one of the side streets, the vehicles may have to not only wait for an appropriate gap, but yield to an opposing vehicle turning left or going straight. For example, there are 90 southbound vehicles turning left at 192nd Street in the peak hour, and vehicles turning left from the school driveway have to yield to these vehicles.

Results of Modeling

Jaguar Avenue

AM Peak	Existing	With Improved Signal at CH 60	With Roundabout at CH 60	With Roundabout at 60 & Signal at 192nd Street	4-Lane Roadway & Roundabout at CH 60	Future (3/4 Access)*
# Vehicles *(Volume Demand)*	120	120	120	120	120	75
Average Number of Gaps	115	116	117	116	146	114
Number of vehicles that can access Highway 50 with these gaps	320	311	303	324	406	334
Side Street Delay *(Level of Service and Average Delay in Seconds)*	LOS C (16 sec)	LOS B (15 sec)	LOS B (14 sec)	LOS C (16 sec)	LOS B (11 sec)	LOS A (7 sec)

PM Peak	Existing	With Improved Signal at CH 60	With Roundabout at CH 60	With Roundabout at 60 & Signal at 192nd Street	4-Lane Roadway & Roundabout at CH 60	Future (3/4 Access)*
# Vehicles *(Volume Demand)*	70	70	70	70	70	50
Average Number of Gaps	75	71	68	77	92	89
Number of vehicles that can access Highway 50 with these gaps	192	177	135	199	185	254
Side Street Delay *(Level of Service and Average Delay in Seconds)*	LOS C (25 sec)	LOS C (25 sec)	LOS C (22 sec)	LOS C (22 sec)	LOS B (14 sec)	LOS A (9 sec)

***Future Scenario assumes local street connection to Ipava.**

Why are the delays at Jaguar generally the same with and without a signal at 192nd when the gapping data shows differences? There are two measures associated with gaps. First, how many are there. Second, how many vehicles can be served. While the number of gaps changes as well as the number of vehicles that can be served, the vehicles that can be served is well above the demand volume. In the videos it illustrates that there is a difference in delay for some vehicles. However, some vehicles wait less, others have to wait more. So by the time these differences are averaged over 10 model runs, the intersections operate about the same for the two scenarios.

MODEL RESULTS

How do the proposed changes in access and roadway cross-section compare?

Performance Measures		EXISTING	EXISTING WITH IMPROVED SIGNAL AT CH 60	EXISTING WITH ROUNDABOUT AT CH 60	EXISTING WITH ROUNDABOUT AT CH 60 & SIGNAL AT 192ND	EXISTING WITH ROUNDABOUT AT CH 60 & FOUR-LANES	FUTURE
Average Corridor Speed		41 mph (NB AM Peak) 35 mph (SB PM Peak)	44 mph (NB AM Peak) 41 mph (SB PM Peak)	44 mph (NB AM Peak) 41 mph (SB PM Peak)	42 mph (NB AM Peak) 40 mph (SB PM Peak)	45 mph (NB AM Peak) 43 mph (SB PM Peak)	37 mph (NB AM Peak) 32 mph (SB PM Peak)
Average Travel Time		4.0 min (NB AM Peak) 4.7 min (SB PM Peak)	4.0 min (NB AM Peak) 4.7 min (SB PM Peak)	3.7 min (NB AM Peak) 4.0 min (SB PM Peak)	3.9 min (NB AM Peak) 4.1 min (SB PM Peak)	3.6 min (NB AM Peak) 3.8 min (SB PM Peak)	4.4 min (NB AM Peak) 5.2 min (SB PM Peak)
Safety Performance vs. Existing		Current crash rate = 1.4 crashes per million vehicle miles Lower than the expected rate of 2.5 crashes per million vehicle miles	• Same safety performance as existing– no reduction in crashes expected	• Reduction in severity of crashes with roundabout at CH 60	• Reduction in severity of crashes with roundabout at CH 60 • Increase in crashes expected with signal at 192nd Street	• Reduction in severity of crashes with roundabout at CH 60 • Reduction in head-on crashes with 4-lane roadway • Reduction in right-angle crashes with reduced-access intersections	• Reduction in severity of crashes with roundabout at CH 60 • Reduction in head-on crashes with 4-lane roadway • Reduction in right-angle crashes with reduced-access intersections
Cost		NA	$8.3 million*	$3.5 million*	Additional $250,000 for signal installation	$12 million (based on $4.5 million/mile reconstruction costs)	$12 million (based on $4.5 million/mile reconstruction costs)
Traffic Volumes (vehicles per day)	CH 60 – 192nd	17,800	17,800	17,800	17,800	17,800	27,000
	192nd to Dodd	13,500	13,500	13,500	13,500	13,500	19,000

**Source: CSAH 50/Kenwood Trail and CSAH 60/185th Street Intersection Study, July 2011*