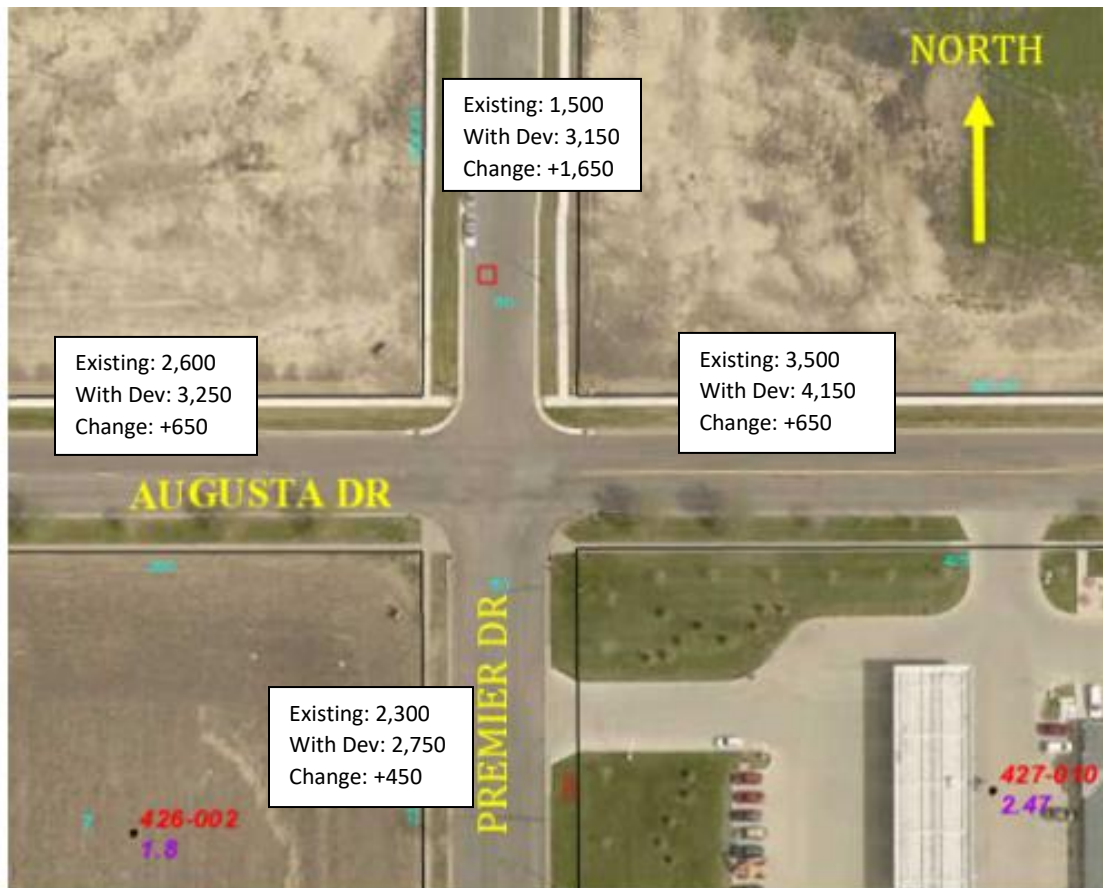


Traffic Estimates From Development

Total Traffic

- Traffic generated by development was estimated using the **Institute of Transportation Engineer's Trip Generation** manual – this is the industry standard.
 - Daily trips: 1,820
 - AM peak hour trips: 108 (26 in, 82 out)
 - PM peak hour trips: 138 (87 in, 51 out)

Daily Traffic – Before and After



Traffic Control

- A traffic signal is **not warranted**, even with added traffic from development
 - Future traffic growth from other development in the area could change this, but this would require significant growth, and is beyond the scope of this analysis
 - Signals are **typically** warranted when major roadway volumes are between 8,000 and 10,000 ADT and minor roadway volumes are between 4,500 and 6,000 ADT. **Note that this is based on generalized traffic data.**
- Traffic control warrants are based on guidance in the Minnesota Manual on Traffic Control Devices (MUTCD)
- Maintaining existing side street stop control (northbound/southbound) is recommended and will provide acceptable traffic operations

Level of Service (LOS)

Background

- Level of service (LOS) is the standard way to describe traffic delays
- LOS is presented in letter grades between LOS A (good) LOS F (bad)
 - LOS D and better is typically considered acceptable in Mankato and Minnesota in general
- For two-way stop controlled intersections, the stop-controlled approach with the worst delays is used to identify level of service
- Delay to LOS thresholds are shown below
 - Example: If a stop-controlled approach experiences 14 seconds of delay, that would be LOS B. If it experienced 22 seconds of delay it would be LOS C

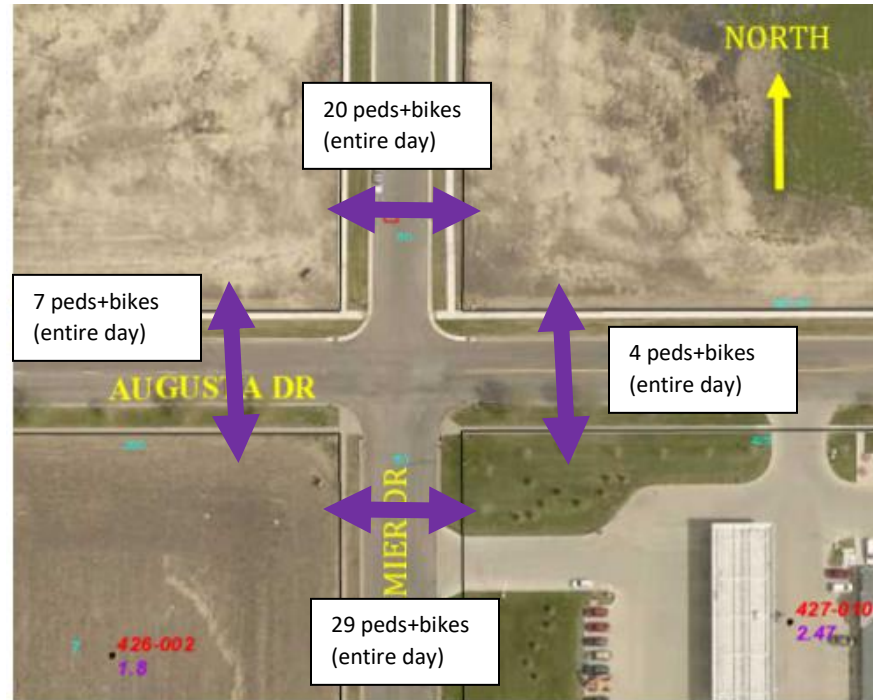
LOS	Control Delay (seconds)	
	Signals	Stop Control
A	Less than 10	Less than 10
B	10 to 20	10 to 15
C	20 to 35	15 to 25
D	35 to 55	25 to 35
E	55 to 80	35 to 50
F	80 or more	50 or more

Analysis Results

- Existing
 - LOS B on northbound and southbound approaches in AM and PM peak hours
- With Development
 - LOS B on northbound and southbound approaches in AM peak hour
 - LOS C on southbound approach in PM peak hour, but this is only an extra 3.5 seconds of delay experienced by each vehicle (still well within acceptable limits)
 - LOS B on northbound approach in PM peak hour
- **General conclusion**
 - **Traffic operations remain well within acceptable limits with new development**

Existing Pedestrian/Bike Volumes

- Existing pedestrian and bike activity is low (and this data was collected in June, when conditions are good)
- Data below shows average ped+bike crossings, using the average of two days of June data



Potential for Adding Turn Lanes

- Eastbound and westbound left turn lanes can be considered to reduce crash potential caused by vehicles stopped waiting to turn, and can also provide some traffic flow benefits
- Northbound and southbound right turn lanes can be considered for minor traffic flow benefits since these would allow right turns their own space. Right turns have the fewest traffic conflicts and can proceed with the least delays, and it can be frustrating when you are turning right and are stuck behind a left turning or through moving vehicle that has more conflicts to evaluated
- It appears that turn lanes can be added with simple striping since roads are wide enough