3.0 EXISTING CONDITIONS

To address traffic impacts from congestion related to the proposed project, an understanding of the existing conditions is necessary. The traffic operations analysis for the Year 2004 Existing Condition looked at each of the key intersections turning movement volumes, overall intersection LOS, and individual movement LOS for a typical weekday during the AM and PM peak periods. The peak periods of analysis were discussed previously in Section 2.3.2. Also included in the analysis were the intersection 95th percentile queue lengths.

This section documents how the existing roadway and intersection geometrics, traffic control and signal operations accommodate current traffic volumes. Deficiencies were identified based on the criteria listed in Section 2.7.3. Only those intersection movements or intersections identified as being deficient are discussed and considered in the future improvement alternatives evaluation.

3.1 Existing Geometry, Traffic Control and Traffic Volumes

Section 2.4 documented specific details regarding data collection of the existing geometry, traffic control and intersection turning movement volumes. **Figure 3-1** documents the existing intersection lane geometrics and traffic control at each of the key intersections included in the TIS. **Figure 3-2** presents roadway ADT for various segments surrounding the proposed Mining Area. **Figures 3-3** and **3-4** present the AM and PM peak hour turning movement volumes at each of the key intersections, respectively.

Critical to the traffic operation analysis and to support the Mining Area impact evaluation, heavy commercial truck traffic was collected as discussed previously in Section 2.4. **Table 3-1** summarizes the AM peak hour, PM peak hour and daily truck percentages for various roadway segments surrounding the Mining Area. Table 2-14 identified the truck percentages collected at the existing mining company access points. The commercial truck percentages for the roadway segments and mining company access points were included in the traffic operation analysis as a factor in determining the existing intersection capacity and LOS.

Table 3 - 1. Existing Condition Commercial Truck Percentage – Surrounding Roadway Segments

Roadway	Truck Percentage		
	Daily	AM Peak Hour	PM Peak Hour
TH 3	7%	7%	7%
160th Street, E of Diamond Path	19%	22%	16%
160th Street, W of Pilot Knob Road	23%	28%	23%
Pilot Knob Road, N of 160th Street	14%	20%	13%
Pilot Knob Road, S of Dodd Boulevard	24%	27%	20%
170th Street Between Pilot Knob Road and TH 3	10%	11%	8%
Dodd Boulevard, West of Pilot Knob Road	24%	27%	20%

Source:
URS Corporation, field data collection in June, July and September 2004
Mn/DOT 2002 Traffic Flow Maps (TH 3).

3.2 Analysis and Results

3.2.1 AM Peak Hour

The existing AM peak hour turning movement LOS and overall intersection LOS for each of the key intersections are shown in **Figure 3-5**. Generally, unsignalized intersections will display a LOS A, because the higher volume movements are not stopped, so they contribute zero delay to the overall intersection delay calculation. The minor, or stopped approach, is the critical movement in consideration. Therefore, at each unsignalized intersection the critical movement vehicle delay (seconds per vehicle) is also shown in **Figure 3-5.**

The traffic operation analysis indicated that all the key intersections in the study area are currently operating at acceptable levels (i.e., LOS D or better).

The results of the queuing analysis showed that during the AM peak hour, there are no regular issues with vehicles spilling through adjacent intersections or queues extending out of turn bays and blocking through traffic.

3.2.2 PM Peak Hour

The existing PM peak hour turning movement LOS and overall intersection LOS for each of the key intersections are shown in **Figure 3-6**. Similar to the AM peak hour, the stopped approach at each unsignalized intersection also shows the critical movement vehicle delay (seconds per vehicle).

The traffic operation analysis indicated that all of the key intersections in the study area are currently operating at acceptable levels (i.e., LOS D or better). Although several intersection movements were reported to operate at a LOS E or F under the existing conditions, these movements do not indicate serious traffic operation deficiencies at this time. However, at Cedar and 160th Street the existing condition traffic operation is expected to become problematic in the future condition analyses. The Cedar Avenue/160th Street intersection operates near capacity. Although an overall intersection LOS D was reported, several movements operate at LOS E or F, including the southbound through movement.

Cedar Avenue has been a subject of study in the past and no doubt will be further studied by the County in the future. Significant background growth in both commercial and commuter traffic is expected along this corridor as it is a major arterial link to Minneapolis and surrounding communities. Improvement strategies can be expected to follow in the future. As such, the poor operation conditions identified under 2004 traffic volumes was considered acceptable at this time, since Cedar Avenue has operated poorly for many years. Forecast conditions are likely to find significant congestion at Cedar Avenue and 160th Street; therefore, the purpose of identifying this intersection deficiency was to note it as a pre-existing condition.

The results of the queuing analysis showed that during the PM peak hour, there are no regular issues with vehicles spilling through adjacent intersections or queues extending out of turn bays and blocking through traffic. However, the analysis indicated that queue lengths on the north approach to the Cedar Avenue/160th Street intersection extend beyond available storage distances from time to time during the PM peak hour.

3.2.3 Railroad Grade Crossing

The railroad grade crossing analysis estimated the expected vehicle queue length as a result of a train event. Vehicle delays are expected when trains are present; therefore, there is no reason to associate a LOS. The consideration in the railroad grade crossing queue analysis was to determine if the train crossings will produce a vehicle queue long enough to impact adjacent intersection operations. The methodology employed considers the duration of the assumed train event, the percent of trucks and the hourly vehicle volume to estimate the queue length. **Table 3-2** resents the results of the railroad grade crossing analysis.

Table 3 - 2. Existing Condition Railroad Grade Crossing Queue Lengths

			160th Street Railroad Crossing	170th Street Railroad Crossing
Mean Queue Length (ft)	AM	EB	204	172
		WB	150	85
	PM	EB	220	127
		WB	189	179
Storage Space		EB	5250(1)	8070(3)
		WB	1750(2)	2130(4)

Note: (1) - The distance from 160th Street railroad crossing to Diamond Path

(2) - The distance from 160th Street railroad crossing to TH 3

(3) - The distance from 170th Street railroad crossing to Pilot Knob Road

(4) - The distance from 170th Street railroad crossing to TH 3

As indicated in **Table 3-2**, a train event under the existing conditions does not currently generate any impacts to adjacent intersections during the AM or PM peak hours.