## Case Studies – Case 3

### Case 3

#### Background

The third case study is centered on the at-grade intersection of a U.S. highway and a local major arterial near the heart of another small metropolitan area. This location is also at the intersection of two of the area’s densest commercial corridors. Furthermore, these two roadways intersect very close to a high-volume at-grade railroad crossing, as shown in Figure 3.

#### Roadway and Land Use Characteristics

The intersection at the center of this case study is signalized. Traffic volumes on the east-west arterial vary between approximately 14,000 vehicles per day (VPD) west of the intersection to nearly 13,000 VPD to the east. Volumes on the north-south leg vary from approximately 21,000 VPD south of the intersection to 16,000 VPD to the north. Both roadways are four-lane facilities. The north-south highway has a center two-way left-turn lane, while the east-west roadway does not have any dedicated turn lanes. The speed limit on the west and south legs of the intersection are posted at 30 mph, while the east leg is posted at 35 mph. The speed limit on the north leg transitions from 30 mph around the intersection to 25 mph about 400 feet north of the intersection. As shown in Figure 3, there are several different land uses within the study area. Businesses include several gas station/convenience stores, various commercial/retail stores, car care/service-oriented businesses, motels, and a number of both sit-down and fast-food restaurants. In addition to these land uses, the northeast and northwest quadrants of the intersection also contain some light industrial uses.

#### Access Characteristics

Overall, access is very poorly managed throughout this case study location. Specifically, the high-volume western leg of this study intersection lacks any significant access control, with nearly a dozen access points located within 750 feet of the intersection. On the higher-volume south leg, even though there is a center left-turn lane provided, there are numerous access points along each side, starting less than 150 feet from the intersection. To the east, several more accesses can be found on both sides of the roadway, beginning at 175 feet from the intersection and again every 100 to 150 feet thereafter. The northern leg of the case study is bisected by a high-volume railroad line approximately 650 feet north of the intersection. In addition, there are several access points between the intersection and the railroad crossing. Most of the development north of the study intersection also accesses onto alleys and minor local roads, but many of the connections between parcels are somewhat circuitous and these connections are underutilized, as shown in Figure 3.
Figure 3. Case Study 3
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Observations

Overall, access is very poorly managed at the third case study location. However, a couple positive applications of access management can be seen at this location:

+ Use of left-turn lanes on the north and south legs, and
+ The existence of alleys and minor local roads in portions of the study area that could potentially improve internal traffic circulation for area development.

There are many potential areas of improvement at this location. Negatives for this case study, as well as possible remedies, include the following:

− Relatively short distance from the intersection to the first driveways on all legs and, overall, too many driveway accesses—consolidation of access points could reduce turning traffic delays and conflicts;
− Poor internal circulation—introduction of better cross access could redirect traffic to signalized intersections;
− Lack of left-turn lanes along east-west arterial—better utilization of alleys and minor supporting roadways and/or addition of left-turn lanes or a raised median could reduce turning traffic delays and conflicts; and
− Lack of raised medians to reduce left turns throughout the study area—addition of a median would delineate travel lanes and eliminate most left turns from the traffic stream.

An analysis of crashes at this location clearly indicates access-related safety issues. In summary, this case study demonstrates overall poor access management practice. Access management could greatly improve traffic operations and safety at this location.