Case 6

Background

This case study is located at the intersection of an Interstate highway and a U.S. highway in a suburb of a large metropolitan area. The two roadways meet at a diamond interchange with intersections located approximately ¼ mile to both the east and west, as shown in Figure 6. This location is also part of the metropolitan area with significant residential growth. As a result, the east-west U.S. highway has become a major commuting route in recent years.

Roadway and Land Use Characteristics

At this interchange, both the east and west ramp terminals are signalized, as are the intersections to the east and to the west. Traffic on the north-south Interstate averages nearly 97,000 vehicles per day (VPD). Volumes on the east-west highway vary between approximately 39,200 VPD west of the interchange and more than 30,000 VPD to the east. While the Interstate is a grade-separated freeway design, the U.S. highway is a four-lane divided facility with median breaks at signalized intersections throughout the study area. The freeway has a posted speed limit of 65 mph, and the east-west highway is posted at 50 mph. As shown in Figure 6, land uses in this area include a truck stop, hotels, auto dealerships, big box retail, office space, restaurants, a regional tourist attraction, and a mix of other retail and warehousing uses.

Access Characteristics

Overall, access is well-managed at this case study location. The Interstate is completely access-controlled, while the U.S. highway is well-managed through the use of medians, turning lanes, and minimal access points. To the west of the interchange, a continuous raised median is found along the arterial through the study area, with median breaks at the west interchange ramp terminal and at an intersection approximately 1,000 feet farther west. Both of these access points are signalized, as noted before. The westernmost intersection provides access for all land development in the southwest quadrant of the study area, which includes a large truck stop and a big box retail store. Other supporting roadways/drives connect to the single access and serve these businesses. No other access is provided within 2,000 feet west of the interchange. Similar access treatments are found to the east of the interchange. A median is used along the arterial, with median breaks at the signalized east interchange ramp terminal, at a signalized intersection approximately 1,200 feet farther east, and at an unsignalized intersection another 1,700 feet farther east. In addition, the median transitions from a raised median to a wider depressed median between the latter two intersections. Development north of this leg is served by a frontage road that connects the hotels, restaurant, and tourist attraction to both access points mentioned above. South of the east leg, development is served by a similar frontage road and supporting road system connecting the two accesses to development in the study area and farther south.
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Figure 6. Case Study 6
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Observations

As noted, access is largely well-managed at this case study location. Positive applications of access management here include

+ Use of grade separation at the intersection of two major highways;

+ Use of raised or depressed medians throughout the study area to delineate travel lanes and remove most left turns from the through traffic stream;

+ Consolidation of access into relatively few access points;

+ Use of protected left turns and turn lanes at signalized intersections on the east and west legs; and

+ Use of supporting roadways, frontage roads, and cross access between land uses to improve on-site traffic circulation off the main roadways.

A few possible areas of improvement at this location do exist. Negatives for this case study, as well as possible remedies, include

- Lack of connectivity between development on the northeast quadrant and development directly to the east—cross access could be provided, eliminating the need for traffic using the arterial to access between adjacent, similar developments;

- Lack of connectivity between development on the southeast quadrant and development directly to the east—cross access could be provided, eliminating the need for traffic using the arterial to access between adjacent, similar developments; and

- Close proximity of the south frontage road along the east leg to the U.S. highway could cause backups at the signal both along the arterial as well as the frontage road—a backage road could eliminate traffic backups.

In summary, this case study demonstrates good access management practice. Nonetheless, as with many locations, access management improvements could still be made, especially as traffic volumes increase as development grows.