## Case Studies – Case 10

### Case 10

#### Background
The next case study is located at the intersection of two U.S. highways in one of the state’s smaller metropolitan areas. This location is also at the center of one of the community’s major commercial areas. These two highways meet at a partial cloverleaf interchange, as shown in Figure 10.

#### Roadway and Land Use Characteristics
At this interchange, neither ramp terminal is signalized, but both of the intersections just to the north and to the south are signalized. Traffic volumes on the east-west U.S. highway vary between approximately 13,200 vehicles per day (VPD) west of the interchange to 17,100 VPD to the east. Volumes on the north-south U.S. highway vary from approximately 15,000 VPD north of the interchange to 18,700 VPD between the interchange and the next intersection to the south, which is with a local major arterial. Volumes on the U.S. highway south of the major arterial are approximately 16,600 VPD. Volumes on this arterial vary from approximately 13,000 VPD west of the interchange to about 10,000 VPD to the east. The east-west highway is a grade-separated freeway design throughout the area and is posted at 55 mph. The north-south highway is an at-grade four-lane divided facility posted at 40 mph. The local arterial speed limit is posted at 30 mph. As shown in Figure 10, there are a variety of land uses within this study area. These uses include several big box retailers, a gas station/convenience store, hotels, various strip-development retailers, and a number of both sit-down and fast-food restaurants. Besides these commercial uses, the southeast area of the intersection is largely made up of residential uses.

#### Access Characteristics
Access is well-managed throughout this area. The east-west freeway, by definition, is completely access-controlled. The north-south highway is also well-managed throughout the study area, with a continuous raised median and all access beyond the interchange limited to signalized intersections. North of the interchange, development in the northwest quadrant of the study area accesses a signalized intersection about 450 feet north of the northern ramp terminal. In the northeast quadrant, development accesses onto a two-lane supporting collector and this same intersection. South of the interchange, along the east-west minor arterial, access is managed through the use of raised medians. Along the west leg of the arterial, accesses serve development on both sides of the roadway approximately 400, 750, and 1,050 feet from its intersection with the U.S. highway. A median break is located at the drives 750 feet from the intersection to allow left turns onto the arterial. Development south of the arterial can also access the north-south U.S. highway at a signalized intersection farther south. Frontage roads and cross access between parcels provides internal circulation for development in this area.

On the eastern leg, a right-in, right-out only driveway is located about 300 feet from the intersection, with a
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Figure 10. Case Study 10
median break and driveways on both sides of the roadway another 200 feet east. The median ends approximately 800 feet from the intersection, with more driveways accessing the minor arterial from this point east.

Observations

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

- Use of grade separation at the intersection of two major highways;
- Use of raised medians throughout the study area to delineate travel lanes and remove most left turns from the through traffic stream;
- Restriction of all direct driveway accesses along the very high-volume U.S. highways;
- Use of left-turn bays at signalized intersections on the high-volume north and south legs;
- Alignment of driveways across from each other at full-access (median break) locations;
- Use of supporting roads and cross access between land uses to improve on-site traffic circulation off the main roadways;
- Consolidation of access for several businesses into relatively few access points; and
- Use of frontage roads and “jug handles” at intersection along the north-south U.S. highway south of the major arterial.

Negatives for this case study, as well as possible remedies, include

- Relatively short distance from the intersection to the first driveways on the east leg of the minor arterial—the westernmost driveway on the south side could be relocated farther west; and
- Access density along the minor arterial is somewhat high and could become problematic if traffic increases—driveways could be consolidated and/or cross access used to connect properties and businesses in this area.

In summary, this case study demonstrates mostly good access management practice. An analysis of crash data shows few access-related crashes throughout most of the study area. It can be noted that this case study location is very similar to Case Study 2, with one notable exception. A raised median is used along the entire U.S. highway, and as a result, access-related crashes are much less common at this location than at the Case Study 2 location. As with many locations, access management improvements could still be made, especially as traffic volumes increase with further development.