

So You Need a Driveway (Access Management Explained)

By Mike Spack, PE

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Driving is a means to an end. People overwhelmingly choose to drive their cars to get somewhere – to work, the grocery store, home, daycare, the movie theater, etc. Developers are in the business of building these destinations. We need to get people into our developments in order for the developments to thrive, whether they are office buildings, retailers, or subdivisions.

Our structures have doors for people to walk through, which may be enough access if the development is downtown or at a light rail station where everyone is arriving on foot via transit. Most of the time however, we need driveways so patrons can park at the destinations we have created. For large developments, we may need to build public streets so cars can get to our driveways. On really large projects, like Stones Throw, we may need a freeway interchange so people can ultimately get to our driveways.

All successful developers have learned that access is very important for a good project. People need to be able to conveniently get in and out. The value of raw land is dependent on the convenience of its access.

So if driving is a means to an end, why don't government agencies let us build driveways wherever people want to go? Agencies used to be pretty loose with letting driveways go in wherever they were wanted. A good example was Highway 169 in Belle Plaine. Businesses had hundred foot long driveways to get cars in and out wherever they wanted. This led to cars cutting in front of each other, resulting in a lot of crashes. Over the last decade driveways were combined, narrowed, or closed on Highway 169 to limit the places cars could cut in front of each other as a way to make the road safer. The city has been working on an interchange plan to ultimately convert Highway 169 to a freeway. We creative traffic engineers call this *access management*.

Access Management History

The concept of access management isn't something traffic engineers recently invented. It is a concept that has been evolving since the 1870's. In the first part of the twentieth century, American cities started building boulevards patterned after those in Paris. The Minneapolis parkway system designed by Frederick Law Olmsted is a good example of the boulevard system with limited cross streets and direct access. From about 1910 to 1940, we saw the rise of parkways like Lilac Way (Highway 100). The parkways had even less access

than the boulevards. These were the first thoroughfares built exclusively to move automobiles. They were the precursor to the modern highways, freeways, and interstates. After World War II we moved into the era of freeways, which provide the ultimate in access management.

Planning roadway systems with limiting access matured along with the construction of the suburbs. In 1954, one of the first instances of no direct left turns into a development was built at the Northland Shopping Center in Detroit, Michigan. In 1962 Herbert Levinson took access planning to a citywide level in his paper *Operational Measures-Future*. In it he described how major street intersections should be spaced at half mile intervals with minor access intersections placed at quarter mile points. Spacing traffic signals at quarter mile intervals allowed traffic to move progressively through the traffic signals at 25 to 30 mph with the signal technology of the day.

During the 1980's, access management systems were developed in several states. According to *Access Management: Past, Present, and Future*, July 14, 2008, by Williams and Levinson, these systems had five common features:

“(1) an access classification system that builds upon the roadway functional classification system; (2) permitted access for each access class; (3) signalized and unsignalized access spacing; (4) means of enforcement; and, (5) provisions for variances.”

Current Access Management Practice

Key to access management is a system of complimentary roadways that provide varying degrees of access, from local streets with driveways seventy five feet apart to freeways with interchanges every half mile to two miles. In between are collectors (county roads or city streets) and minor arterials (typically county roads). Collector streets provide mobility for people to get out of neighborhoods and have fewer driveways than local streets. Minor arterials are used for people to get across town or to get to a freeway interchange.

According to the Transportation Research Board's *Access Management Manual*, “an effective access management program can reduce crashes as a much as 50%, increase roadway capacity by 23% to 45%, and reduce travel time and delay as much as 40% to 60%.” These public benefits have led planners and engineers to develop comprehensive transportation plans for their jurisdictions. MnDOT, the Metropolitan Council, Counties and most cities have them now. These plans are usually a subset of the agency's Comprehensive Plan.

The Transportation Research Board's *Access Management Manual* provides the following model access spacing guidelines:

Example of Guidelines for Access Spacing (ft) on Suburban Roads

Functional Class of Roadway	Undivided Roadway	Divided Roadway		
		Full Median Opening	Right In/Out Only	Directional Median Opening
Strategic arterial	Not applicable	2640	Typically not permitted	
Principal arterial	2640	2640	1320	1320
Minor arterial	660	1320	330	660
Collector	330	Not applicable, medians typically not used		
Local Road	100			

Source: Transportation Research Board's 2003 *Access Management Manual*, Table 9-11

Each jurisdiction has taken these guidelines and modified them for their own use, some more conservative/some more liberal.

Economic Impacts Of Access Management

Iowa State University did a series of case studies on the effects of access management on safety, traffic operations, and business vitality. In most instances, they found business improved in access managed corridors because motorists found the fifteen minute drive to the development was better, even if it took them thirty extra seconds to get into the development. The economic findings from the *Access Management Research and Awareness Program Phase IV Final Report*, November 1999 were:

“(1) Access managed corridors generally had lower rates of business turnover than other parts of their communities. (2) They had more rapid growth in retail sales once projects were completed. (3) Far more business owners, when surveyed, indicated that their sales had been stable or increased following project completion than reported sales losses.”

These were interesting findings, but that was Iowa and we are in Minnesota. MnDOT was curious to see if the same business conclusions could be drawn from access management projects in Minnesota. They hired a local consultant and Iowa State University's Center for Transportation Research and Education to perform a study of one of the biggest access management projects in Minnesota history – the conversion of Highway 12 to Interstate 394. The findings are documented in *Interstate 394 Business Impact Study Research Summary and Key Findings*, June 2007.

Even though traffic has doubled along the I-394 corridor since its conversion to a freeway in 1993, fatal crashes have been cut in half and travel times are two to twenty-five miles per hour faster (depending on the segment). From a traffic engineering perspective the conversion was a clear success.

The business impacts aren't quite as clear cut. There were a few specific businesses harmed by the limited access. However there were no trends that

showed all businesses of a specific category were hurt, for instance that all restaurants were harmed. The major conclusions regarding the business impacts from the I-394 Corridor Study are:

- Converting US 12 to I-394 supported economic development and improved the vitality of the corridor. Land values increased, employment increased, there are few vacant parcels in the corridor, and business turnover, while not zero, is less than the statewide average.
- These results are remarkably similar to those reported in the literature in other studies (Kansas, Texas, Iowa, and Florida).
- The success or failure of individual businesses appears to be more related to the ability of the owner to adapt to changes in the global, national, regional, state, and local economies, than to the micro-level changes in accessibility.

VariANCES

Does all of this data mean there is no bending in the access management guidelines jurisdictions have adopted in their transportation plans? Not quite. Dakota County was an early adopter of access management and is a national leader in the area. However, Kristi Sebastian (Dakota County Traffic Engineer) detailed in her 2008 presentation *Implementing Dakota County's Access Management Plan* a case where access was granted on an interim basis from Cedar Avenue and Dodd Boulevard even though the development driveways did not meet the County's access spacing guidelines. Mr. Spack assisted with this development.

The direct access will be removed, per the Developer's Agreements, when the adjacent parcels are developed and access can be provided via the future frontage roads. Most jurisdictions in Minnesota are open to discussing variances as long as the engineering case can be made that the substandard driveway will not be detrimental and as an interim situation with triggers resulting in conformance to the spacing guidelines.

CONCLUSIONS

The safety, traffic operations, and business operations benefits of following access management are well established. Developers should factor access spacing requirements into their projects. Don't pay a premium for land assuming you can get a variance as the days of direct access for every parcel are over.