Lessons Learned – The Roadway and Land Use Relationship

The Roadway and Land Use Relationship

As discussed briefly in the introduction to this guidebook, Iowa’s roadways play a dual role in serving through vehicle traffic while also providing access to adjacent land uses. For some roadways, such as cul-de-sacs and local residential streets, access to land is of higher relative importance. For freeways and expressways, movement of traffic is paramount. For arterial and collector roadways, access management provides a balance between land access and traffic flow. The movement of traffic is generally of higher importance for the major arterial roadways. Therefore, managing access at major arterial intersections should focus on allowing the roadways and intersections to serve through vehicular traffic foremost, while providing sensible, though not always direct, access to and circulation throughout adjacent developments.

Lesson #1:
A roadway should be viewed not as an individual, but as one piece of a system.

It is very important that each roadway be viewed as a portion of a hierarchical network of roads, rather than as an individual entity that is independent from its neighboring roads, as shown in Figure 12.

Different types of roadways serve different functions within this system and, therefore, have differing levels of vehicular mobility and land access. Access management seeks to limit and consolidate access points along major arterial intersections. This ensures that the roadways comprising and surrounding the intersection function harmoniously, with each providing its respective level of access to development and movement of traffic.
Figure 12. Schematic of an Urban Roadway Network
Lesson #2: Major arterial intersections are “crossroads” locations that often attract development; therefore, development should be expected and properly planned.

In order to provide reasonable access to land development while adequately serving through arterial traffic, local land use and roadway networks also need to be planned in conjunction with each other. The appropriate degree of access control varies according to the function and traffic characteristics of a roadway, the nature of the abutting land, and the long-term planning objectives. In the case of major arterial intersections, a key element of such a system should be the preservation of the functional integrity of the intersection. Figure 13 shows the physical area of an intersection as well as its functional area. If development is not planned for and land access is allowed to negatively impact the intersection, the result can be an increase in crash rates, congestion, and delays for motorists.

Figure 13. Functional Area of an Intersection
Lessons Learned – The Roadway and Land Use Relationship

Lesson #3: Much like the roadway system, developments should be viewed holistically (as nodes).

Any development adjacent to or near a major intersection should consider the impact it may have on the roadway network during the planning phase. This development inevitably will change the distribution of and usually generate increases in traffic throughout the area; therefore, it is imperative to properly plan access points to determine how to best load the system. The best way to do this is to plan development as a node—not as a strip. Figure 14 shows two simple examples: one of a central, clustered development and one of development spread-out. Developing as a strip generally requires that the arterial be used for each trip between different locations within the area, as shown in Figure 15. Nodal developments, however, provide internal circulatory roads with fewer access points to the arterial. This causes limited disruption to the through traffic, while continuing to allow for relatively good and easy access to the development, as is evident in Figure 16. Strip developments can be reconfigured as a node by providing cross and joint access or backage road systems between parcels.

Figure 14. Preferred Location of Development

<table>
<thead>
<tr>
<th>Preferred</th>
<th>Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>• More highway frontage</td>
<td>• Limited frontage on each street</td>
</tr>
<tr>
<td>• More depth of circulation system</td>
<td>• Inadequate depth for circulation</td>
</tr>
<tr>
<td>• More flexibility in site design</td>
<td>• Limited flexibility in site design</td>
</tr>
<tr>
<td>• Fewer access problems at intersection</td>
<td>• Numerous access drives in close proximity</td>
</tr>
</tbody>
</table>

Commercial Activity Center

[Diagram showing preferred and avoided locations]
Lessons Learned – The Roadway and Land Use Relationship

Figure 15. Strip Development (Not Preferred)

Well-planned access points depend most on two things:
- Strong local planning and subdivision review that coordinates transportation and land use decisions, and
- Limiting the number and type of driveways.

Figure 16. Node Development (Preferred)