

## **3.0 Traffic Engineering**

### **3.2 Interchanges and Grade Separated Intersections**

#### **3.21 Policy**

Wisconsin state law, State Statute 66.0701, gives cities the power to, by local ordinance, provide that the cost of installing or constructing any public work or improvement be charged in whole or in part to the property benefited, and make an assessment against the property benefited in the manner that the governing body determines. The City of Madison has enacted Madison General Ordinances Section 4.09, which declares it the policy of the City to protect the health, safety and property of its citizens and promote the general welfare through the installation, construction or reconstruction of public improvements, including major interchanges, and assessing all or a portion of the cost to benefiting properties.

It is the longstanding policy of the City of Madison to assess property owners benefitting from public improvement projects a pro rata share or percentage of project cost, and it is consistent with this policy and the City Ordinances to assess benefitting property owners for improvements associated with intersection improvements, including major interchanges or grade separations. The City has also found that, in determining how to best assess property owners who benefit from the major interchanges, the trip generation method is the most equitable way to apportion the costs of the interchange project as this method best captures a property's impact on intersection capacity and safety concerns. This method estimates traffic trips generated by uses or proposed uses of benefited property, and apportions the project's costs by the parcel's share of total trips.

#### **3.22 Purpose**

The purpose of this section is to provide a mechanism to identify property owners benefitting from interchanges and develop a procedure to reasonably and equitably assign project costs to the properties benefiting from the improvement.

### 3.23 Scope of Benefits

- a. Traffic interchanges are advanced level intersections, typically sought to increase capacity and safety above and beyond typical at-grade intersections.
- b. Intersections at-grade can be or may need to be eliminated by the use of grade separation structures that permit the cross flow of traffic at different levels without interruption. The advantage of such separation is the freedom from cross traffic interference with resulting savings of time and increase in safety for traffic movements.
- c. There are many types and forms of interchanges and ramp layouts used in the United States.
- d. Grade separations and interchanges may be warranted (1) as part of an express highway system designed to carry higher volumes of traffic; (2) to eliminate bottlenecks; (3) to prevent crashes; (4) where the topography is such that other types of design are not feasible; (5) where the volumes to be serviced would require the design of an at-grade intersection of unreasonable size; and (6) where the road user experiences unacceptable delays at an at-grade intersection.

### 3.24 Identifying the Area of Influence

The general area of influence and/or service area of an interchange is approximately 1-3 miles. Interchanges have a far reach and benefit to a large number of parcels and area. The specific area is determined for each, individual project, based upon and modified by such factors as the surrounding road network, other traffic facilities and interchanges, and surrounding land pattern and land types.

It is the general policy of the City of Madison to assess property owners within the interchange's identified area of influence, also referred to as the Assessment District. Traffic Engineering Staff will determine the interchange assessment district and will consider the following:

- a. The assessment district will be determined based on the geographical layout of streets and properties. Staff will consider existing and future travel patterns associated with access and service provided by the grade separation or interchange. Staff will identify properties that can be reasonably shown to use the new interchange or be benefitted by the interchange.
- b. The area of influence will generally encompass all properties within a 1-3 mile radius from the interchange. The area of

influence can be modified considering previous assessment districts and other factors such as nearby interchanges, traffic patterns, alternate access routes, spacing, geographic constraints, and other considerations such as land use or neighborhood plans.

### **3.25 Properties Benefited**

In determining how the project costs of the public improvement will be apportioned, it is necessary to determine which properties are benefited from the improvement within the Assessment District. In making this determination, properties will be considered based upon their whole, not in parts. Hence, a multi-family building on a single lot will be treated as one property for the purposes of determining the benefit received by the property as a whole as a result of the public improvement.

### **3.26 Cost Apportionment**

An interchange's total project cost will need to be determined with the City Engineer, Traffic Engineer and other agencies such as the Federal Highway Administration (FHWA) and Wisconsin Department of Transportation, typically involving special reports and assessments. Costs that are not assessable as part of the interchange project but that are included within the scope of a larger public works project will be excluded from this calculation, although they may be otherwise assessable. Assessable interchange project costs will be apportioned and assigned to each tax parcel in the Assessment District according to the following procedures:

- a. Using the latest Institute of Transportation Engineers (ITE) trip generation manual, TE staff will quantify generated traffic trips based on the current land use of each benefited property. If the property is vacant, underutilized or in agricultural use the City will estimate trip generation based on either the appropriate City Land Use Plan or an approved developers plan on file with the City.
- b. In determining the total trips per property, the City may apply distance factors of 0.25, 0.50, 0.75, and 1.00 as determined based on engineering judgment to account for differences in the relative benefit provided by the traffic improvement to properties within the assessment district.
- c. New development which requires a new interchange will be assessed 100% of the cost of the interchange. Interchanges that replace an existing access, replace an existing at grade intersection, or constitute a major upgrade of an existing interchange may be assessed at 50% of the cost of the interchange.

- d. The City will calculate the number of trips generated per property and will deduct from this amount a trip generation discount. The trip generation discount will be the greater of the following; 10 trips per parcel, or 40 trips/acre or if the average single family residential density is greater than 4 dwelling units/acre within the assessment district the trip generation discount will be the product of average single family density and 10 trips per dwelling unit.
- e. The summation of the trip deduction as applied to all benefiting properties within the assessment district area will be considered the City's minimum share of the project cost. The City will total all trips within the Assessment District, as well as by property. After applying the trip discount as set forth in Sec. 3.26.d, each tax parcel's percentage share of the total trips will be calculated and this percentage shall be applied to the total project cost to determine the share of the total project cost that shall be assessed against the tax parcel. In making these calculations, each tax parcel shall be credited with its proportionate share of its benefited property's trip deduction.