goal of the Abu Dhabi Municipality to establish a permanent automated traffic data collection system for the Municipality. However, until this system is fully developed and implemented, the specific procedures outlined in this section shall be followed in the collection of traffic data for roadway and bridge projects.

The procedures which follow establish the minimum requirements; however, this does not preclude the Engineer from using more sophisticated procedures if available.

203.03.02 Traffic Projections

The Abu Dhabi Municipality's roadways are designed to serve the traffic volume anticipated during the next 20 years. Therefore, the existing Average Daily Traffic (ADT) must be projected over a 20-year time frame. For the 20-year travel forecast, variables such as an increase in auto ownership and vehicle registration, population, employment, and residential/ commercial/ industrial land uses which strongly influence the future traffic volume shall be taken into consideration. Presently, a long historical record of past growth trends does not exist. The Abu Dhabi Municipality will use the transportation modeling software for the City of Abu Dhabi. This model shall be the primary source for projected traffic volumes over different time frames. The projected traffic volumes of this transportation modeling software will be based on changes in socioeconomic data for the concerned time period.

In case the transportation modeling software is unavailable, then the following formulas shall be used to determine the ADT for a 20-year time frame ADT (20). The Engineer is required to the collect data to determine the current ADT. In addition, the Engineer must provide his rationale for the estimated traffic growth anticipated for the next 20 years by considering all previously acquired data regarding all activity growth in the proximity of the highway improvement.

The following formulas may be applied under assumptions of increasing, decreasing, or equal percentages of traffic growth over the 20-year projection. Formula A shall be used when the Engineer judges that the traffic volume over the next 20 years will increase exponentially. Formula B shall be used when the Engineer judges that the traffic volume will increase linearly.

Formula A:

$$ADT\ (20) = ADT\ Present \times Growth\ Factor\ (GF)$$

$$\text{Where } GF = \left[1 + \frac{\text{Annual \% Traffic Growth}}{100}\right]^{20}$$

Formula B:

$$ADT\ (20) = ADT\ present + \frac{\text{Annual \% Traffic Growth} \times ADT\ Present \times 20}{100}$$

Examples:

The following is an example of the use of the two formulas when the annual percent of traffic growth is anticipated to be 10 percent and the ADT at present is 4,000.

Formula A:

$$ADT\ (20) = 4{,}000 \times \left[1 + \frac{10}{100}\right]^{20}$$
$$= (4{,}000) \times (6.73)$$
$$= 26{,}920$$

Formula B:

$$ADT\ (20) = 4{,}000 + \left[\frac{10 \times 4{,}000}{100}\right] \times 20$$
$$= 4{,}000 + 8{,}000$$
$$= 12{,}000$$

The following is an example of the use of the two formulas when the annual percent of traffic growth is anticipated to be 15 percent over the first 5-year period and 10 percent over the last 15-year period. The ADT present equals 4,000.

Formula A:

$$ADT\ (20) = 4{,}000 \times \left(1 + \frac{15}{100}\right)^{5} + \left(1 + \frac{10}{100}\right)^{15}$$
$$= 4{,}000\ [(1.15)^{5} + (1.10)^{15}]$$
$$= 4{,}000\ [(2.01) + (4.18)]$$
$$= 24{,}760$$