Growth Factors

The AADT of each ATR station for 2007 was compared with the previous year's AADT respectively, and the rate of change of AADT, was developed into a factor. Such changes at all ATR stations under each TPG, termed as Growth Factor, are presented below.

TPG:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Growth Factor:	0.98	0.98	1.09	1.09	1.02	0.99	1.00	1.02

Coverage Count Program

There were 3,286 roadway segments or links on the Road Inventory network of DelDOT in 2007. Of these, there are 74 links where the ATR stations were operational, accurate hour-by-hour traffic volume data were continuously recorded throughout the year, processed, and analyzed. For the remaining 3,212 links, the annual traffic data was estimated on the basis of a short-term traffic count or coverage count program. Growth, seasonal, and axle correction factors are then applied. These factors are generated along with the statistical information acquired from the permanent ATR station software logarithms.

The coverage count program in Delaware has recently been revised, allowing for complete coverage of the Road inventory network on either an annual, three or six year cycle. The advent of this schedule of traffic data collection requirements insures accurate data on all roadway segments in the Road inventory network. On average, there are approximately 800 short-duration counts performed annually. Most volume counts are performed for a one-week period. Approximately 100 counts are vehicle classification counts, performed for a 48-hour duration, mainly at HPMS locations. Pneumatic rubber hoses, which count axles and not vehicles, are employed in the coverage count program. Since the number of axles in motor vehicles are variable, appropriate Axle Correction Factors (ACF) are applied to convert the counted axles into the number of vehicles. The Axle Correction Factors are derived from the vehicle classification program, at both short-term and permanent sites.

Furthermore, the ADT over a period of one week is obtained in the coverage count program. In order to estimate the AADT, there is a need to multiply by Seasonal Adjustment Factors (SAF), because the weekly traffic varies over the span of a year.

$$\text{Thus, ADT = Coverage Count * ACF}$$

$$\text{And, AADT = ADT * SAF}$$

The SAF in this case pertains to the particular month of the year in which the coverage count is conducted. Based on the recorded data retrieved from ATR stations, the SAF for each of the 12 months of the year, computed for all Traffic Pattern Groups, is calculated and stored in the traffic-monitoring database. The applicable SAF was used in the determination of AADT at all coverage count sites for 2007. For those highway links that were not counted in 2007, the AADT data were obtained by multiplying previous year's AADT with the applicable Growth Factor.

TRAFFIC VOLUME DATA

AADT

As explained in the foregoing, the AADT has been determined for each of the 3,286 links of the Road Inventory network, and the results are tabulated on pages 1 through 177. Details of the AADT tables are as follows.

Column 1:   Maintenance Road Number as indicated on the Functional Classification Highway Maps.

Column 2:   Route Number, road name, or street name as shown on the above maps, and is the frequently used name.

Column 3:   Ending mileage of the section or roadway link, which is the distance to the nearest of 0.01 mile from the beginning of the maintenance road, or from the end of the previous link's break point to the end of this link.

Column 4:   Beginning point or break point identifier in which the first entry in every road number indicates where the road begins. Thereafter each entry describes the point at which the link ends.

Column 5:   Annual Average Daily Traffic in vehicles per day for the roadway section or link for the year 2007.

Column 6:   Year of last count is indicated.

Column 7:   Traffic Pattern Group of the roadway link.

Of particular interest is the AADT for 2007 on the Interstate Highways in Delaware. The Interstate Highways constitute only 1.04% of the Road Inventory mileage, but carry 17.14% of the total traffic. A comparison of the AADT for the years 2006 and 2007 at the operational permanent traffic counter stations on the Interstate Highway, inclusive of the Delaware Turnpike, is presented below.

LOCATION	2006 AADT	2007 AADT	CHANGE (%)
1. JFK Memorial Highway Toll Plaza	74,025	74,077	0
2. Delaware Memorial Bridge Western Approach	96,974	96,584	0
3. I-495 near Naamans Road Interchange	64,966	64,830	0

As the foregoing table indicates, the traffic at all three crossings has increased or decreased by less than 1%, so the changes have been rounded to 0.

K and D Factors

K is the proportion of AADT on a roadway segment or link during the Design Hour, i.e. the hour in which the 30th highest hourly traffic flow of the year takes place.

The Design Hourly Volume of a roadway segment or link is its 30th highest hourly traffic volume of the year in vehicles per hour, and is denoted by DHV.

Thus the **K** factor is given by,

$$DHV = \textbf{K} * AADT$$

D is the proportion of DHV occurring in the heavier direction, and is called the Directional Split. Thus **D** $\geq$ 0.5

The Directional Design Hourly Volume, denoted by DDHV, is given by,

$$DDHV = \textbf{D} * DHV$$

From the database of ATR stations, the average values for the 30th Highest Hourly Volume as well as the corresponding Directional Split for each Traffic Pattern Group for 2007.

To determine the K and D values of a roadway segment or link, the first course of action is to obtain its TPG. Having known the TPG of the roadway segment or link, its K and D values can be determined for 2007.