Growth Factors

The AADT of each ATR station for 2004 was compared with the previous year's AADT, and the rate of change of AADT was developed into a factor. Such changes at all ATR stations under each TPG, termed as Growth Factors, are presented below.

TPG:	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Growth Factor:	1.018	1.028	1.057	1.057	1.034	1.024	1.011	1.033

The Growth Factor for TPG 4 is assumed to be 1.057.

AADT 2004 = AADT 2003 * GROWTH FACTOR

Coverage Count Program

There were 3,362 roadway segments or links on the Road Inventory network of DelDOT in 2004. Of these, there are 75 links where the ATR stations were operational, accurate hour-by-hour traffic volume data was recorded continuously, processed, and analyzed throughout the year. For the remaining 3,287 links, the annual traffic data was estimated on the basis of a short-term traffic count or coverage count program along with the statistical information acquired from the permanent ATR stations.

The coverage count program in Delaware has been revised recently, 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 ensures accurate data on all roadway segments in the Road Inventory network. This schedule still allows for an average of 800 short-duration data collection sites, of which approximately 600 are volume counts performed for a one week period. The remaining 200 counts are vehicle classification counts, performed for a 48 hour duration, mainly at HPMS locations. This schedule of data collection requirements will result in greater than 800 short-duration data collection sites per year throughout the roadway network, and will ensure the availability of timely traffic data. 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, both at short-term and at 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 the ADT by the Seasonal Adjustment Factors (SAF), because the weekly traffic varies over the span of a year.

Thus, ADT = Coverage Count * ACF

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 of the 650 + coverage count sites for 2004. For those highway links of the Road Inventory network not counted in 2004, the AADT data were obtained by multiplying previous year's AADT with the applicable Growth Factor.

AADT

As explained in the foregoing, the AADT has been determined for each of the 3,362 links of the Road Inventory network, and the results are tabulated on pages 1 through 181. 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 2004.

Column 6: Year of last count is indicated for sections. Where 2005 is provided, these sections have been adjusted, based on engineering judgment, to reflect changes in traffic patterns.

Column 7: Traffic Pattern Group of the roadway link.

Of particular interest is the AADT for 2004 on the Interstate Highways in Delaware. As stated before, the Interstate Highways constitute only 1.04% of the Road Inventory mileage, but carry 17.21% of the total traffic. A comparison of the AADT for the years 2003 and 2004 at all of the four permanent traffic counter stations on the Interstate Highway, inclusive of the Delaware Turnpike, is presented below.

LOCATION	2003 AADT	2004 AADT	CHANGE (%)
1. JFK Memorial Highway Toll Plaza	76,773	77,730	+1.25
2. Delaware Memorial Bridge Western Approach	94,331	97,003	+2.83
3. I-95 near Naamans Road Interchange	59,238	58,211	-1.73
4. I-495 near Naamans Road Interchange	68,668	68,631	-0.05
Total of Locations 3 & 4	**127,906**	**126,842**	**-0.83**

As the foregoing table indicates, the traffic at JFK Memorial Highway Toll Plaza increased by 1.24% in 2004, and the traffic at the western approach of Delaware Memorial Bridge increased by 2.83%.

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,

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

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

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

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

From the database of ATR stations, the average values for the 30th Highest Hourly Volume, as well as the corresponding Directional Split, each Traffic Pattern Group for 2004 is provided on page xxiii.

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 2004.