INTRODUCTION

With the advent of automation, the acquisition, transmission, storage, analysis, and presentation of traffic data has changed over the years. The Traffic Monitoring System (TMS) in DelDOT is substantially different from what it was just a short time ago. Division of Planning uses High Desert's Jackalope and International Road Dynamic's software to retrieve and analyze traffic data collected in the field. The use of these two programs ensures that the Traffic Count Program is in compliance with the principles of 'Truth-in-Data' reporting required by the Federal Highway Administration and conforms to all federal reporting standards. This report contains traffic data for all roadway segments under DelDOT's jurisdiction, which represents approximately 90% of all roadways in the State of Delaware. The details of the collection process, analysis, and reporting of traffic data, along with other features relevant to traffic monitoring, are outlined in this document.

ROAD NETWORK

Delaware roads have been grouped into functional classes or systems as required by the Federal Highway Administration. The Functional Classification Systems are based on traffic characteristics and the function that each roadway serves as part of the entire network. The Functional Classification Map can be found in the home page of the Vehicle Volume Summary under the Diurnal Distribution Tables link. The Highway Network for each of the three counties are continually updated as required by the Federal Highway Administration.

TRAFFIC DATA COLLECTION AND DEVICES

Automatic Traffic Recorder or ATR Stations

The Automatic Traffic Recorders or ATR stations are devices that collect only traffic volume data for 365 days a year. They are permanently installed throughout the state covering all traffic pattern groups. Equipped with in-ground loop detectors, these ATR stations count the number of vehicles passing through each location

continuously throughout the year and transmit the recorded data to a traffic monitoring program and then processed and reviewed for accuracy. The data collected by these permanent counters is used to create growth factors that are then applied to any road segments that were not counted during the count year and any short-term count taken during the count year. A minimum of eight months of data from a permanent counter is needed to create a growth factor.

Weight In Motion station or WIM's

Weight In Motion stations or WIM's are specializes Automatic Traffic Recorders devices that collect traffic volume, class and weight data. These devices are also equipped with in-ground loop detectors permanently installed throughout the state covering all traffic pattern groups as required by federal law. The data collected by these permanent counters is also used to create growth factors that are then applied to any road segments that were not counted during the count year and any short-term count taken during the count year. A minimum of eight months of data from a permanent counter is needed to create a growth factor.

Wavetronix Device

Wavetronix Traffic Detection Devices are radar detectors used for collecting vehicle volumes and limited vehicle class data with the advantage of being a non-intrusive detection system. Wavetronix are used to collect data along segments of roads where high traffic volumes make it impossible to use pneumatic tubes or prevents the installation of Automatic Traffic Recorders (ATR). The data collected by the Wavetronix devices include both volume and class. The vehicle class is determined by vehicle length and not axle length. The classes are separated into three length-based groups and approved by FHWA. The data collected by these permanent counters is also used to create growth factors that are then applied to any road segments that were not counted during the count year and any short-term count taken during the count year. A minimum of eight months of data from a permanent counter is needed to create a growth factor.

System Detectors

System Detectors are devices located at traffic intersections throughout the state used for collecting volume

only data using in-pavement loop sensors. These devices are highly reliable and were added to Delaware's Traffic Counts program in 2022. The data collected by these permanent counters is also used to create growth factors that are then applied to any road segments that were not counted during the count year and any short-term count taken during the count year. A minimum of eight months of data from a permanent counter is needed to create a growth factor.

ROAD SEGMENT DESIGNATIONS

Restricted

Restricted sites are road segments that cannot be counted using pneumatic rubber hoses due to safety concerns or extremely high volumes. These sites are also in areas where in-pavement counters cannot be installed or are not available. These road segments are given an AADT created by using growth factors.

Continuous

Continuous sites are road segments that contain either an Automatic Traffic Recorder (ATR), Weight-in-Motion station, Wavetronix device or a System Detector that collects data year-round.

Short Term

Short Term sites are road segments that are counted by using pneumatic rubber hoses for a period of seven days. These road segments are in a three to six year count cycle.

Short Term Count Program

There were 3,614 roadway segments on the Road Inventory Network of DelDOT in 2024. Of these, 122 segments have permanent counters collecting data. For the remaining 3,492 segments, the AADT or Annual Average Daily Traffic data was calculated using a seven-day short-term traffic count or applying a growth factor.

The Short-Term Counts Program collects seven-day class counts through the state covering any road without a permanent counter or not labeled as restricted. The short-term counts are in a three to six year cycle. The advent of this schedule of traffic data collection requirement insures accurate data on all roadway segments in

the Road Inventory Network. On average, there are approximately 700 short-term counts performed annually. Short term counts are performed for a one-week period using pneumatic rubber hoses which count axles and collect both volume and class data. 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.

Furthermore, the Average Daily Traffic or ADT is calculated after the period of one week is counted. To estimate the AADT, Seasonal Adjustment Factors are applied to count for traffic variations over the course of the year.

AADT

The AADT or Average Annual Daily Traffic has been determined for each of the 3,614 segments of the Road Inventory network by several different methods. One way is by collecting data from a continuous counter for a minimum of eight months. The other method is by taking a seven-day short term count and then applying a growth factor to the final count. The third way is by applying a growth factor to any road segment that was not able to be collected in the count year or are labeled as restricted. As of 2022 the traffic counts data was made available through an interactive map created by DelDOT called **Gateway**. Each segment will include 10 years of historical data, inventory road numbers, mile points and road names among other information concerning each specific segment of road. A link to DelDOT's Gateway interactive map and instructions on how to use the map are available on the Vehicle Volume Summary home page.

VOLUME DATA

Vehicle volume data is collected by all data collection devices. Traffic volume data refers to the number of vehicles traveling on a road and it's used to create a roads Annual Average Daily Traffic or AADT.

CLASS DATA

Vehicle classification data is collected from both permanent counters and short-term counts. The class data is classified in accordance with the current FHWA Vehicle Classification scheme. This includes 13 vehicle

classes collected from ATR's, WIM's and short-term counts using axle spacing to determine the vehicle classes. The class data collected from Wavetronix devices is grouped into three different groups and it's determined by vehicle length instead of axle spacing. These three class groups are approved by FHWA. It is important to note that not all permanent counters collect class data.

Traffic Pattern Group (TPG)

Six groups have been established to represent the traffic characteristics of all roads on Delaware's Road Inventory network. These Traffic Pattern Groups, ranging from TPG 1 through TPG 8 along with the permanent counting stations covered under each TPG are reflected in the Traffic Pattern Group table shown below. The Functional Classification for state-maintained roads can be found in Delaware's Gateway Interactive Map and under the Diurnal Tables page located in the Vehicle Volume Summary page.

Relation between Traffic Pattern Group and Functional Classification and

TPG

1.   Interstate, Freeways & Expressway = Urban interstate, Urban Other Expressways/Freeway, Rural Other Expressways/Freeway.

2.   Urban Non Local = Urban major collector, minor arterial, urban other principal arterials.

3.   Urban Local = Urban local, urban minor collector.

4.   Rural Non Local = Rural major collector, rural minor arterial, rural other principal arterials.

5.   Rural Local = Rural Local, rural minor collector.

6.   Recreational = contains all Functional Classes.

CONTINUOUS SITE DISTRIBUTION ACROSS TRAFFIC PATTERN GROUPS

TPG	TYPE ROUTE	STATIONS

Legend: WIM | CLASS/VOL | VOLUME | TOLL | SYSTEM DETECTOR | WAVETRONIX

TPG	TYPE ROUTE	STATIONS
1	Interstate, Freeways & Expressways	T8000 T8001 T8002 T8051 8004 81042
		KD0035 KD0007 KD0001 ND0024 ND0027
		ND0030 ND0032 ND0034 ND0075 ND0077
		ND0078 ND0090 ND0091 ND0097 ND0104
		ND0106 ND0120 ND0124 ND0128 ND0147
		ND0148 ND0194 ND0224 ND0228 ND0232
		ND0016 ND0067 ND0031 ND0087 ND0211
		ND0185 ND0052 ND0068 ND0028 ND0029
		ND9999
2	Urban Non-Local	8015 8050 8096
		K109 K110 K001P K169 K242 K315 K246 K180 K181 K287 K205
		N374 N033P N293 N358 N483 N531 N784 N811 N495 N160
		N850 N640 N480 N407 N769 N353 N026P N285 N190 N741
		N784 N811 N850 N547 S328 S315 S029P N354
		ND0004 KD011
4	Urban Local	NO ATR/WIM
		N358 N359 K185 K301

5	Rural Arterials	8053 8074 8095
		8068 8085 8088
		SD0016 KD0014
		N511T N825 N511T N825 N936 K292 K178 K220 K295 K343
		S133 S113 S214 S128 S105 S437 S101
		S248 S247

7	Rural Minor Collectors	NO WIM
		8065 8066 8098
		N899

8	Recreational	8073 8075 8076
		8084
		S338 S115 S124 S232 S275 S137 S116 S161 S140
		S220 S265 S035P S224P S279 S395 S189P S131 S139
		S114 S299 S169 S349
		SD0007 SD0020