2009 Pennsylvania Traffic Data

Bureau of Planning and Research
Transportation Planning Information Division

In cooperation with:
US Department of Transportation
Federal Highway Administration
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pennsylvania
DEPARTMENT OF TRANSPORTATION

On The Cover:
Aerial view of the City of Harrisburg

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Introduction

The “Pennsylvania Traffic Data Book” documents procedures for developing accurate estimates of highway traffic volumes based on sample traffic counts.

Traffic information is critical in transportation decision-making related to highway funding, traffic engineering, highway design, air quality analysis, planning and programming, as well as winter services, highway maintenance and construction.

The “Pennsylvania Traffic Data Book” provides current traffic expansion factors through the use of tables, charts, and graphs. Expansion factors allow the traffic professional to use a sample traffic count and develop reliable and comparable Annual Average Daily Traffic (AADT) estimates. All tables & charts in the “Pennsylvania Traffic Data Book” are derived from the data of 59 permanent sites.

Some of the permanent sites are excluded on a year to year basis. If it is determined a permanent site has less than 50% of the current year’s data, it is not used for the factors. Reasons for a permanent site having less than 50% of the current year’s data would be construction projects or equipment malfunction.

How to Use this Booklet

This booklet provides current traffic expansion factors through the use of tables, charts, and graphs. All of the tables, charts, and graphs are listed in the Table of Contents. Refer to the description provided with each table, chart, and graph to ensure that the data presented is what you need.

Acronyms are used quite often throughout this publication. A complete list of acronyms and their meanings are located in the back of the booklet. In addition, an index was created for this booklet to help you find a particular topic quickly.

We would appreciate any comments or suggestions you can provide on information presented in this booklet. Questions or comments relating to data presented in this publication can be directed to:

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The 2008 Traffic Data Book and County Traffic Volume Maps are available free on our website!

www.dot.state.pa.us
Select: More Links...
Scroll to: Transportation Planning
Select: Traffic Information
Select: Traffic Volume Maps or Traffic Data Report

Traffic Volume Maps can be purchased through our Maps and Publications Sales Store by calling (717) 787-6746.

New Developments and Enhancements

ATR/CAVC Conversion Project
The Bureau of Planning and Research (BPR) continues the process of converting Automatic Traffic Recorder (ATR) sites which only collect vehicle volume to Continuous Automatic Vehicle Classification (CAVC) sites. The upgrade/conversion will allow BPR to collect 13 different vehicle classifications required by the Federal Highway Administration (FHWA); including collection and reporting of motorcycle travel data. In addition, FHWA has amended the Traffic Monitoring Guide (TMG) and added new requirements for motorcycle correction factors. To be able to meet the new requirements, it is recommended that PennDOT have at least 5 Continuous Automatic Vehicle Classification (CAVC) sites per traffic pattern group (TPG). To date, BPR has been able to upgrade/convert 18 Automatic Traffic Recorder (ATR) sites to Continuous Automatic Vehicle Classification (CAVC) sites.

Local Road Traffic Counting Project
Pennsylvania's 2,562 municipalities own 76,834 linear miles of road of which 3,488 linear miles of municipal owned roads are on the Federal-Aid System. These roads on the Federal-Aid System are scheduled for traffic counts on a five year cycle. However, the remaining 73,346 linear miles did not have traffic counts taken on a regular basis.

Approximately 7,200 local road traffic counts were set in 2009 to develop a baseline for this new data. Beginning in 2010, the local road sites will be collected on a 10 year cycle.

Ramp Traffic Counting Project
Pennsylvania has approximately 4,320 interchange ramps. In 2010, BPR began scheduling traffic counts to be set on all interchange ramps statewide. Approximately 2,030 sites classified as Interstate ramps will be set during the 2010 traffic count season. The data will be collected by the vendors on the statewide contract and a BPR field person. In the years to follow, BPR will schedule the remaining sites that are classified as US, PA and State route interchange ramps.

Route 34 Bridge – Carlisle, PA (ARRA Funded Project). Recently recognized as the "Best Recovery Act Project" in the small project category as part of the America's Transportation Awards program sponsored by AASHTO.

Traffic Data Collection

Traffic data is collected on 40,000 miles of PennDOT owned roads and 3,300 miles of local federal aid roads in Pennsylvania. Approximately 7,000 raw traffic counts are collected per year by:

- BPR Field Staff
- PennDOT Engineering District 1-0
- 15 Metropolitan Planning Organizations (MPOs)
- 2 Rural Planning Organizations (RPOs)
- Contractors

Volume: The majority of the counts taken as part of our statewide count program record volume of traffic on a roadway. Volume is usually expressed as Annual Average Daily Traffic, (AADT) which represents traffic volume over an average 24-hour period.

Classification: One method of data collection used for our count program is vehicle classification. Vehicles are classified into 13 classes ranging from cars to trucks in accordance with the Federal Highway Administration vehicle classification scheme.

Weight: Truck weight data is collected from 13 Weigh-In-Motion stations.

Speed: Speed data is collected from Permanent Traffic Recorders.

Traffic Count set in Millersburg, PA (Dauphin County)

Traffic Data Collection Sources

Automatic Traffic Recorders (ATRs)

47 ATRs strategically located throughout the state count volume and speed data on a continuous basis 365 days per year. A map showing the locations of ATRs throughout the state is provided on page 11.

Short-Term In-Pavement Sites (STIP)

Approximately 200 inductive loop sites, referred to as STIP sites are installed throughout the state of Pennsylvania. Volume data is collected from these permanent sites for a 24-hour period, once a year.

Continuous Automatic Vehicle Classifier (CAVC)

23 CAVC sites collect continuous vehicle classification data. A map showing CAVC locations are provided on page 11.

Weigh-In-Motion (WIM)

13 WIM stations provide continuous truck weight and vehicle classification data. WIM stations are shown on the map on page 11.

Pneumatic Tubes

The majority of the counts are collected using pneumatic tubes. Axle counts are collected using a traffic counting device in association with a single pneumatic tube stretched across the roadway. An axle correction factor is applied to adjust vehicle axle base data for the incidence of vehicles with more than two axles.

Two tubes are used to count and classify vehicles by type based on axle configuration.

Manual Counts

Manual counts are taken on sections of roadways that are not accessible to automated data collection equipment or have safety limitations. Observers classify vehicles by type based on axle configuration.

Toll Receipts

The Delaware River Joint Toll Bridge Commission and the Delaware River Port Authority document traffic between Pennsylvania and New Jersey.

The Pennsylvania Turnpike Commission toll receipt surveys provide automobile and truck data on the Commonwealth's toll roads.

Permanent Traffic Recorders

Pennsylvania maintains permanent traffic recorders at 59 strategically selected locations throughout the state. These permanent sites collect traffic volume data on a continuous basis throughout the year. This data is used to develop daily and seasonal factors, as well as to identify changes in traffic patterns. Based on a research study performed by Pennsylvania State University and West Virginia University, it was determined that PennDOT locations in the traffic pattern groups were acceptable according to the FHWA Traffic Monitoring Guide.

CAVC 803 in Adams County

The permanent sites use magnetic loops embedded in the pavement for vehicle detection. The data is stored on site in traffic counters, prior to being automatically polled every night through the use of modems located at each permanent site.

Traffic Pattern Group (TPG)

Highway traffic characteristics can vary by geographical area, roadway type, and population density. Therefore, individual traffic volume counts are categorized into one of ten Traffic Pattern Groups (TPGs). The TPGs are based on highway functional classification, geographic area, and urban/rural characteristics. (See map on pg. 11) Each permanent site is associated with one of the ten TPGs listed below.

TRAFFIC PATTERN GROUP	DESCRIPTION
TPG 1	URBAN - INTERSTATE
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Permanent Site data is used in computing:

- Daily, monthly, and seasonal adjustment factors by highway functional classification and geographic location.
- Yearly growth factors which are used to update older counts in the Department's Roadway Management System (RMS).
- Design hour factors (peak hour, 30th highest and 50th highest hour) used for the design of highways.

Permanent Site Locations

This chart lists the permanent site stations by number, county, municipality, traffic route number, state route (SR), segment, and also by a physical description of where the permanent site is located in the state.

** Indicates CAVC site*
*** Indicates road is not a PA, US, or Interstate Route*

SITE #	COUNTY	MUNICIPALITY	ROUTE	SR	SEGMENT	LOCATION
1 *	Erie	Springfield Twp.	US 20	20	10	0.4 mi. E of Ohio/Pennsylvania Line (West Springfield)
2	Crawford	Richmond Twp.	PA 77	77	270	0.5 mi. W of PA 408 (New Richmond)
3	Clearfield	Huston Twp.	PA 255	255	280	1.4 mi. N of PA 153 (Penfield)
4	Tioga	Delmar Twp.	US 6	6	400	0.9 mi. W of PA 287 (Wellsboro)
5 *	Bradford	Wysox Twp.	SR 1043	1043	10	0.1 mi. NW of SR 1041 (North Towanda)
8	Montgomery	Whitemarsh Twp.	PA 73	73	530	1.4 mi. NW of PA 309-Skippack Pike (Whitemarsh)
15	Fulton	Todd Twp.	US 522	522	540	1.2 mi. N of US 30 (McConnellsburg)
18	Butler	Summitt Twp.	PA 38	38	20	0.7 mi. NW of PA 68 (Butler)
19	Washington	Union Twp.	PA 88	88	750	0.4 mi. S of SR1006-Washington Ave. (Finleyville)
20 *	Lawrence	Shenango Twp.	PA 65	65	264	1.1 mi. S of US 422 (New Castle)
24 *	West Moreland	Derry Twp.	US 22	22	340	1.0 mi. E of PA 981 (New Alexandria)
27	Elk	Highland Twp.	PA 66/948	66	60	1.1 mi. E of PA 948 (Russell City)
29	Susquehanna	Rush Twp.	PA 267	267	190	0.7 mi. S of PA 367 (Lawton)
40 *	Schuylkill	Schuylkill Twp.	US 209	209	860	0.7 mi. S of PA 309 (Tamaqua)
48 *	Susquehanna	New Milford Twp.	US 11	11	420	0.8 mi. SW of PA 848 (New Milford)
51	Potter	Eulalia Twp.	PA 44	44	700	1.3 mi. SW of PA 49 (Coudersport)
126 *	Jefferson	Pine Creek Twp.	I-80	80	790	0.6 mi. E of PA 36 (Brookville)
203	Allegheny	Leetsdale	PA 65	65	270	1.0 mi. S of SR 4036 (Leetsdale)
205 *	York	Manchester Twp.	**	83	220	1.4 mi. S of PA 238 (North York)
206	Cumberland	Wormleysburg	**	1014	30	Harvey Taylor Bridge on west approach (Wormleysburg)
207	Erie	Springfield Twp.	I-90	90	10	1.1 mi. E of Ohio/Pennsylvania Line (West Springfield)
208	Allegheny	Monroeville	I-376	376	820	2.0 mi. W of PA 48 (Monroeville)
210	Cumberland	Lemoyne	I-83	83	416	0.6 mi. NE of PA 581 on John Harris Bridge (South Bridge)
216	Susquehanna	Great Bend Twp.	I-81	81	2314	1.1 mi. N of PA 171 (Hallstead)
301	Erie	Lawrence Park Twp.	PA 5	5	680	0.5 mi. W of PA 955 (Erie)
304	Lycoming	S. Williamsport	US 15	15	250	0.3 mi. S of I-80 (Williamsport)
306 *	Pike	Palmyra Twp.	PA 507	507	280	0.7 mi. N of PA 390 (Hawley)
323	Bedford	Bedford Twp.	US 220	220	310	0.7 mi. S of Business US 220 (Bedford Springs)
326	Clarion	Paint Twp.	US 322	322	280	0.5 mi. E of PA 66 (Clarion)
328 *	Centre	Boggs Twp.	PA 150	150	194	1.2 mi. N of 1-80 (Milesburg)
330	Bucks	Northampton Twp.	PA 532	532	130	1.4 mi. SW of PA 413 (Newtown)
334	York	W. Manchester Twp.	US 30	30	170	0.6 mi. W of PA 116 (Thomasville)
349	Lehigh	Upper Saucon Twp.	PA 309	309	30	0.7 mi. S of PA 378 (Coopersburg)
360	Clearfield	Bloom Twp.	US 219	219	670	3.2 mi. S of US 322 (Luthersburg)

Permanent Site Locations (Continued)

** Indicates CAVC site*
*** Indicates road is not a PA, US, or Interstate Route*

SITE #	COUNTY	MUNICIPALITY	ROUTE	SR	SEGMENT	LOCATION
362	York	North Codorus Twp.	PA 616	616	240	1.6 mi. N of PA 214 (New Salem)
363	McKean	Lafayette Twp.	US 219	219	290	0.1 mi. N of PA 59 (Lewis Run)
364	Lackawanna	Newton Twp.	PA 307	307	360	50' W of SR 4017 (Clarks Summitt)
367	Union	West Buffalo Twp.	PA 45	45	250	0.6 mi. W of PA 104 (Mifflinburg)
370	Westmoreland	Rostraver Twp.	I-70	70	454	0.9 mi. W of PA 51 (Uniontown)
371	Fulton	Brush Creek Twp.	I-70	70	1522	1.1 mi. S of PA 915 (Crystal Spring)
372	Union	White Deer Twp.	I-80	80	2104	0.7 mi. W of US 15 (Milton)
374	Butler	Lancaster Twp.	I-79	79	904	3.5 mi. N of PA 68 (Zelienople)
375	Allegheny	N. Fayette Twp.	US 22/30	22	80	0.8 mi. E of PA 978 (Imperial)
376	Luzerne	Wilkes-Barre Twp.	I-81	81	1664	0.7 mi. N of PA 309-Exit 165A (Wilkes-Barre)
377	Bucks	Bristol Twp.	I-95	95	404	2.5 mi. S of US 1 (PennDel)
378	Fayette	Redstone Twp.	US 40	40	160	0.6 mi. W of SR 4020 (Briar Hill)
379	Blair	Logan Twp.	**	4013	80	0.4 mi. E of SR 4015 (Altoona)
380 *	Berks	Cumru Twp.	PA 562	562	40	0.2 mi. W of SR 2033 (St. Lawrence)
381	Mercer	Hermitage Twp.	**	3019	20	0.9 mi. N of PA 718 (Sharon)
382	Cambria	Lower Yoder Twp.	**	3005	40	0.7 mi. SW of PA 56 (Morrellville)
383 *	Clinton	Chatham Run	PA 150	150	360	0.5 mi. N of SR 1005 (Chatham Run)
384	Tioga	Lawrence Twp.	**	4022	50	1.9 mi. from PA 49 (Nelson)
385	Warren	Southwest Twp.	**	3002	30	0.7 mi. W of PA 27 (Enterprise)
386 *	Montour	Limestone Twp.	PA 254	254	10	2.0 mi. E of I-80 (Limestoneville)
387 *	Somerset	Brothers Valley	**	2031	110	2.0 mi. S of US 219 (Garrett)
388	Monroe	Ross Twp.	**	3004	170	0.4 mi. SW of SR 3015 (Saylorsburg)
389 *	Jefferson	Perry Twp.	PA 536	536	210	0.3 mi. W of SR 3011 (Frostburg)
390 *	Lancaster	West Donegal Twp.	PA 230	230	20	1.7 mi. W of PA 743/241 (Elizabethtown)
391	Chester	Warwick Twp.	PA 23	23	110	1.5 mi. E of PA 345 (Warwick Area)
392	Luzerne	Foster Twp.	I-80	80	2684	5.9 mi. E of PA 309 (White Haven)
393	Washington	Donegal Twp.	I-70	70	2	0.3 mi. E of W. Virginia/Pennsylvania Line (West Alexander)
394	Lehigh	Upper Saucon Twp.	I-78	78	614	1.1 mi. E of PA 309/PA 145/I-78 (Allentown)
395	Fayette	German Twp.	PA 21	21	230	0.1 mi. E of SR 3023 (Uniontown)
800 *	Centre	Spring Twp.	I-99	99	800	1.2 mi. N of PA 150 (Bellefonte)
801 *	Dauphin	Lower Paxton	I-81	81	714	0.7 mi. S of SR 3019 (Paxtonia)
802 *	Monroe	Coolbaugh Twp.	PA 423	423	140	0.2 mi. E of I-380 (Tobyhanna)
803 *	Adams	Freedom Twp.	US 15	15	20	0.5 mi. N of Maryland/Pennsylvania Line (Gettysburg)
804 *	Washington	Canton Twp.	I -70	70	160	1.3 mi. E of US 40 (Washington)
805 *	Crawford	N. Shenango Twp.	PA 285	285	20	0.1 mi. E of SR 3007 (Espyville)
985 *	Cambria	Richland	US 219	219	120	1.6 mi. N of PA 56 (St. Michael)

Strategic Highway Research Program (SHRP) and LTPP

The Strategic Highway Research Program (SHRP) was authorized by the U.S. Congress in 1987 as a five-year research initiative. The focus of this initiative was to develop and evaluate technologies and techniques to improve the performance, safety, durability, and efficiency of the nation's highways. SHRP was directed by a committee of managers from state highway agencies, industry, and academia, and operated as a unit of the National Research Council. Research was concentrated in asphalt, concrete and structures, highway operations, and pavement performance.

The Federal Highway Administration assumed coordination of a national program to move the products evaluated or developed under SHRP to the state and local agencies upon completion of the research phase.

The Long Term Pavement Performance (LTPP) program was established under SHRP and is currently managed by FHWA. LTPP, which is a 20-year study of in-service pavements, provides the basis for pavement design, maintenance, rehabilitation, and construction methodologies. The Bureau supports this program by collecting weight and vehicle classification data and reporting the data to LTPP.

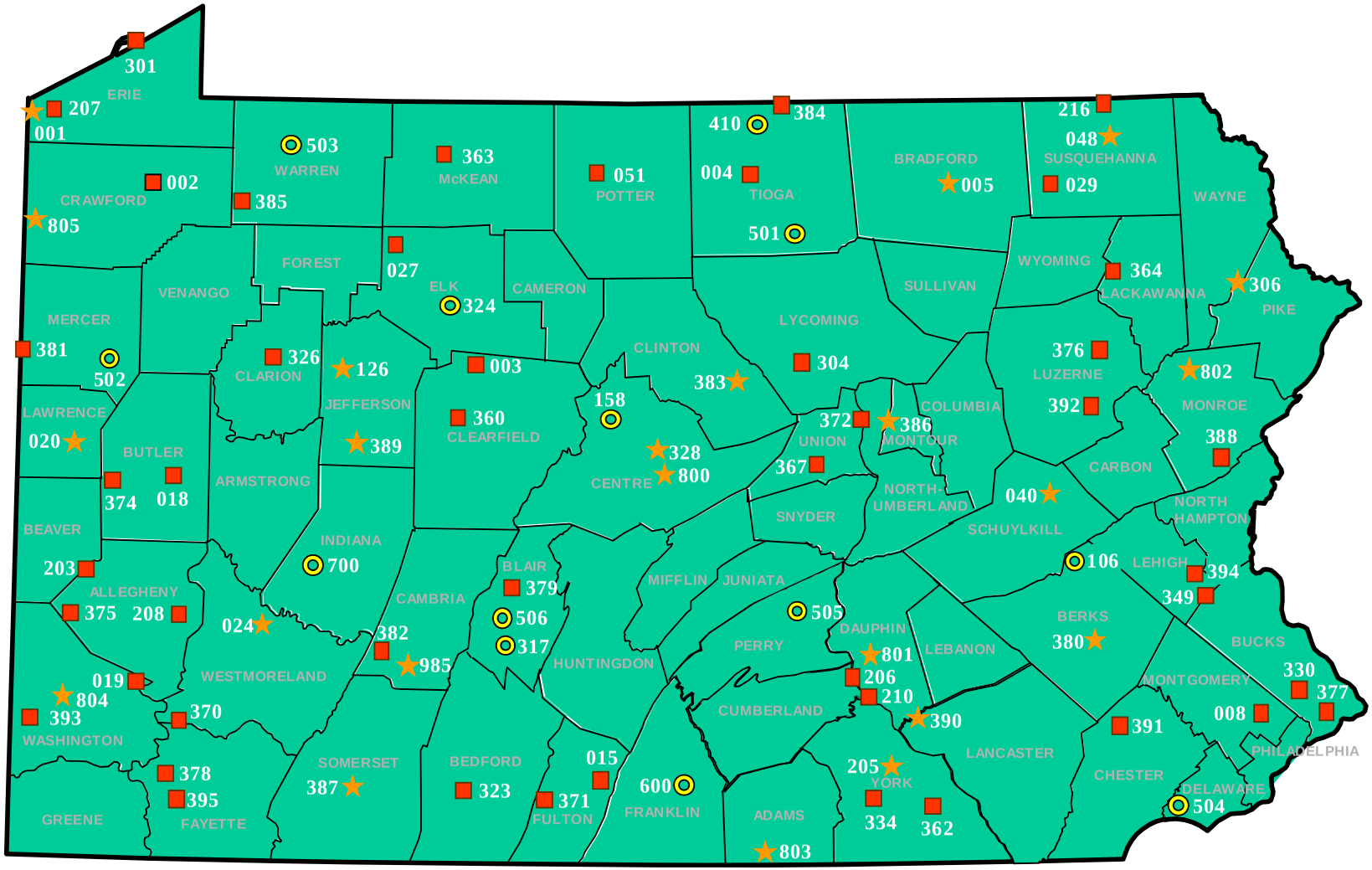
ATR, CAVC and Weigh-In-Motion (WIM) Locations Map (Opposite)

The ATR, CAVC, and WIM locations map of Pennsylvania, which is shown on the following page, gives an overview of where all of the ATR, CAVC and Weigh-In-Motion sites are located. Symbols are used in addition to the site number to identify the location of the site.

Newly constructed Lower Allen Drive Interchange – Camp Hill, PA

CONTINUOUS MONITORING SITES

■ *ATR* ◎ *WIM / CAVC* ★ *CAVC*



Permanent Site Locations by Traffic Pattern Group (TPG)

This chart groups the permanent site locations by Traffic Pattern Group. It gives the permanent site number, route, and the urban area or county depending on the TPG into which the permanent site falls. The Annual Average Daily Traffic (AADT) for each permanent site is also listed on this chart.

PERMANENT SITE LOCATIONS BY TPG

TPG 1: URBAN INTERSTATE

SITE #	ROUTE	URBAN AREA	AADT
205	I-83	YORK	52,221
210	I-83	HARRISBURG	113,384
376	I-81	WILKES-BARRE	60,457
377	I-95	PHILADELPHIA	54,557
394	I-78	ALLENTOWN	57,096
801	I-81	HARRISBURG	76,651

TPG 2: RURAL INTERSTATE

SITE #	ROUTE	COUNTY	AADT
207	I-90	ERIE	21,107
216	I-81	SUSQUEHANNA	27,376
370	I-70	WESTMORELAND	31,319
371	I-70	FULTON	18,249
372	I-80	UNION	26,692
392	I-80	LUZERNE	23,312
393	I-70	WASHINGTON	29,812

PERMANENT SITE LOCATIONS BY TPG

TPG 3: URBAN PRINCIPAL ARTERIAL

SITE #	ROUTE	URBAN AREA	AADT
8	PA 73	PHILADELPHIA	16,649
206	H. Taylor Br.	HARRISBURG	27,590
301	PA 5	ERIE	14,285
330	PA 532	PHILADELPHIA	11,166
375	US 22/30	PITTSBURGH	23,249

TPG 4: RURAL PRINCIPAL ARTERIAL

SITE #	ROUTE	COUNTY	AADT
4	US 6	TIOGA	2,868
19	PA 88	WASHINGTON	5,712
24	US 22	WEST MORELAND	17,992
323	US 220	BEDFORD	3,877
326	US 322	CLARION	9,475
334	US 30	YORK	16,951
360	US 219	CLEARFIELD	2,368
363	US 219	MCKEAN	4,733
378	US 40	FAYETTE	8,969
395	PA 21	FAYETTE	10,736
800	I-99	CENTRE	20,493

Permanent Site Locations by TPG (Continued)

PERMANENT SITE LOCATIONS BY TPG							
TPG 5: URBAN MINOR ARTERIAL/COLLECTOR					TPG 6: NORTH RURAL MINOR ARTERIAL			
SITE #	ROUTE	URBAN AREA	AADT		SITE #	ROUTE	COUNTY	AADT
18	PA 38	BUTLER	6,414		2	PA 77	CRAWFORD	1,935
20	PA 65	NEW CASTLE	7,401		3	PA 255	CLEARFIELD	5,402
379	SR 4013	ALTOONA	1,426		27	PA 66/948	ELK	2,742
380	PA 562	READING	9,121		48	US 11	SUSQUEHANNA	4,275
381	SR 3019	SHARON	520		51	PA 44	POTTER	3,160
382	SR 3005	JOHNSTOWN	1,778		328	PA 150	CENTRE	4,950

PERMANENT SITE LOCATIONS BY TPG							
TPG 7: CENTRAL RURAL MINOR ARTERIAL					TPG 8: NORTH RURAL COLLECTOR			
SITE #	ROUTE	COUNTY	AADT		SITE #	ROUTE	COUNTY	AADT
15	US 522	FULTON	5,199		5	SR 1043	BRADFORD	1,336
40	US 209	SCHUYLKILL	4,865		29	PA 267	SUSQUEHANNA	1,246
367	PA 45	UNION	6,023		383	PA 150	CLINTON	3,761
390	PA 230	LANCASTER	5,781		384	SR 4022	TIOGA	451
391	PA 23	CHESTER	7,769		385	SR 3002	WARREN	1,840

PERMANENT SITE LOCATIONS BY TPG							
TPG 9: CENTRAL RURAL COLLECTOR					TPG 10: SPECIAL RECREATIONAL			
SITE #	ROUTE	COUNTY	AADT		SITE #	ROUTE	COUNTY	AADT
362	PA 616	YORK	5,987		306	PA 507	PIKE	5,416
364	PA 307	LACKAWANNA	5,006					
386	PA 254	MONTOUR	2,097					
387	SR 2031	SOMERSET	3,219					
388	SR 3004	MONROE	3,220					
389	PA 536	JEFFFERSON	2,022					

2009 Peak Hour by Traffic Pattern Group (TPG)

2009 Peak Hour by Traffic Pattern Group (TPG)

TPG 1: Urban Interstate

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
205	9/4	4:00 PM	Fri	5,135	9.83%	52,221
210	2/27	3:00 PM	Fri	10,953	9.65%	113,384
376	7/31	4:00 PM	Fri	6,439	10.65%	60,457
377	3/27	5:00 PM	Fri	5,895	10.81%	54,557
394	12/26	3:00 PM	Sat	6,523	11.41%	57,096
801	7/6	4:00 PM	Mon	7,570	9.84%	76,651

TPG 2: Rural Interstate

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
207	7/5	3:00 PM	Sun	3,123	14.80%	21,107
216	11/22	1:00 PM	Sun	4,832	17.65%	27,376
370	7/31	4:00 PM	Fri	3,275	10.46%	31,319
371	11/26	10:00 AM	Thur	2,951	16.17%	18,249
372	11/29	3:00 PM	Sun	4,935	18.49%	26,692
392	11/29	2:00 PM	Sun	3,719	15.95%	23,312
393	11/29	2:00 PM	Sun	4,256	14.28%	29,812

2009 Peak Hour by Traffic Pattern Group (TPG)

TPG 3: Urban Principal Arterial

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
8	11/19	7:00 AM	Thur	2,034	12.20%	16,649
206	8/3	4:00 PM	Mon	4,038	14.60%	27,590
301	5/12	3:00 PM	Tues	1,635	11.45%	14,285
330	4/16	5:00 PM	Thur	1,200	10.56%	11,166
375	8/19	3:00 PM	Wed	2,766	11.90%	23,249

TPG 4: Rural Principal Arterial

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
4	8/27	12:00 PM	Thur	741	25.71%	2,868
19	10/22	5:00 PM	Thur	660	11.54%	5,712
24	11/29	3:00 PM	Sun	2,097	11.66%	17,992
323	8/19	4:00 PM	Wed	1,291	33.21%	3,877
326	9/10	3:00 PM	Thur	1,113	11.71%	9,475
334	2/12	4:00 PM	Thur	2,011	11.83%	16,951
360	9/4	4:00 PM	Fri	313	12.57%	2,368
363	8/7	3:00 PM	Fri	595	12.50%	4,733
378	8/19	3:00 PM	Wed	1,817	20.12%	8,969
395	8/19	3:00 PM	Wed	2,564	23.82%	10,736
800	11/20	4:00 PM	Fri	2,840	13.76%	20,493

2009 Peak Hour by TPG (Continued)

2009 Peak Hour by Traffic Pattern Group (TPG)

TPG 5: Urban Minor Arterial or Collector

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
18	9/4	4:00 PM	Fri	874	13.61%	6,414
20	4/17	5:00 PM	Fri	801	10.79%	7,401
379	4/17	4:00 PM	Fri	170	11.81%	1,426
380	4/17	5:00 PM	Fri	1,118	12.25%	9,121
381	8/19	2:00 PM	Wed	124	22.55%	520
382	4/2	3:00 PM	Thur	229	12.79%	1,778

TPG 6: North Rural Minor Arterial

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
2	3/28	8:00 AM	Sat	404	20.57%	1,935
3	8/19	4:00 PM	Wed	1,003	18.51%	5,402
27	11/29	2:00 PM	Sun	451	16.35%	2,742
48	7/3	2:00 PM	Fri	681	15.64%	4,275
51	6/25	7:00 AM	Thur	472	14.86%	3,160
328	2/2	3:00 PM	Mon	944	19.07%	4,950

2009 Peak Hour by Traffic Pattern Group (TPG)

TPG 7: Central Rural Minor Arterial

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
15	8/19	2:00 PM	Wed	901	17.28%	5,199
40	5/20	3:00 PM	Wed	556	11.32%	4,865
367	8/7	5:00 PM	Fri	776	12.85%	6,023
390	3/7	12:00 PM	Sat	755	12.87%	5,781
391	4/24	5:00 PM	Fri	905	11.60%	7,769

TPG 8: North Rural Collector

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
5	11/6	7:00 AM	Fri	184	13.42%	1,336
29	8/19	1:00 PM	Wed	314	24.49%	1,246
383	5/21	4:00 PM	Thur	516	13.36%	3,761
384	9/19	3:00 PM	Sat	88	17.67%	451
385	9/5	10:00 AM	Sat	292	15.75%	1,840

2009 Peak Hour by Traffic Pattern Group (TPG)

TPG 9: Central Rural Collector

Site #	Date	Hour	DOW	Volume	% AADT	AADT
362	8/19	11:00 AM	Wed	1,131	18.84%	5,987
364	6/19	5:00 PM	Fri	629	12.53%	5,006
386	4/16	10:00 AM	Thur	434	20.63%	2,097
387	8/26	5:00 PM	Wed	414	12.86%	3,219
388	8/12	5:00 PM	Wed	405	12.30%	3,220
389	4/2	4:00 PM	Thur	307	14.92%	2,022

TPG 10: Special Recreational

Site #	Date	Hour	DOW	Volume	% AADT	AADT
306	9/5	11:00 AM	Sat	865	15.28%	5,416

2009 30th Highest Hour by Traffic Pattern Group (TPG)

2009 30th Highest Hour by Traffic Pattern Group

TPG 1: Urban Interstate

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
205	8/7	4:00 PM	Fri	4,670	8.94%	52,221
210	6/30	4:00 PM	Tue	10,140	8.93%	113,384
376	10/9	4:00 PM	Fri	5,906	9.77%	60,457
377	3/23	5:00 PM	Mon	5,523	10.12%	54,557
394	4/28	7:00 AM	Tue	5,473	9.57%	57,096
801	10/1	4:00 PM	Thur	7,099	9.23%	76,651

TPG 2: Rural Interstate

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
207	8/9	11:00 AM	Sun	2,633	12.47%	21,107
216	8/9	4:00 PM	Sun	3,341	12.20%	27,376
370	7/24	4:00 PM	Fri	3,017	9.63%	31,319
371	4/3	3:00 PM	Fri	2,618	14.35%	18,249
372	11/13	3:00 PM	Fri	2,818	10.56%	26,692
392	9/7	2:00 PM	Mon	2,614	11.21%	23,312
393	5/22	4:00 PM	Fri	3,034	10.18%	29,812

2009 30th Highest Hour by Traffic Pattern Group

TPG 3: Urban Principal Arterial

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
8	11/9	7:00 AM	Mon	1,891	11.34%	16,649
206	4/28	4:00 PM	Tue	3,716	13.43%	27,590
301	7/31	4:00 PM	Fri	1,538	10.77%	14,285
330	4/24	5:00 PM	Fri	1,093	9.62%	11,166
375	12/22	4:00 PM	Tue	2,253	9.69%	23,249

TPG 4: Rural Principal Arterial

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
4	7/5	1:00 PM	Sun	414	14.37%	2,868
19	9/11	4:00 PM	Fri	606	10.59%	5,712
24	11/29	5:00 PM	Sun	1,802	10.02%	17,992
323	4/24	5:00 PM	Fri	425	10.93%	3,877
326	3/20	4:00 PM	Fri	1,027	10.81%	9,475
334	5/23	11:00 AM	Sat	1,581	9.30%	16,951
360	9/11	4:00 PM	Fri	270	10.84%	2,368
363	8/21	3:00 PM	Fri	511	10.74%	4,733
378	3/4	4:00 PM	Wed	1,001	11.08%	8,969
395	4/24	3:00 PM	Fri	1,080	10.03%	10,736
800	10/2	3:00 PM	Fri	2,326	11.27%	20,493

2009 30th Highest Hour by TPG (Continued)

2009 30th Highest Hour by Traffic Pattern Group													
TPG 5: Urban Minor Arterial or Collector							TPG 6: North Rural Minor Arterial						
Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT	Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
18	10/26	4:00 PM	Mon	708	11.02%	6,414	2	3/27	5:00 PM	Fri	244	12.42%	1,935
20	2/6	4:00 PM	Fri	739	9.96%	7,401	3	8/19	10:00 AM	Wed	601	11.09%	5,402
379	4/16	5:00 PM	Thur	149	10.35%	1,426	27	8/14	2:00 PM	Fri	360	13.05%	2,742
380	12/4	3:00 PM	Fri	1,020	11.17%	9,121	48	4/24	3:00 PM	Fri	522	11.99%	4,275
381	6/22	5:00 PM	Mon	60	10.91%	520	51	6/26	7:00 AM	Fri	395	12.43%	3,160
382	5/13	4:00 PM	Wed	200	11.17%	1,778	328	8/19	11:00 AM	Wed	520	10.50%	4,950

2009 30th Highest Hour by Traffic Pattern Group													
TPG 7: Central Rural Minor Arterial							TPG 8: North Rural Collector						
Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT	Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
15	10/6	3:00 PM	Tue	630	12.08%	5,199	5	4/29	4:00 PM	Wed	160	11.67%	1,336
40	4/10	1:00 PM	Fri	484	9.85%	4,865	29	9/18	3:00 PM	Fri	156	12.17%	1,246
367	8/15	10:00 AM	Sat	659	10.91%	6,023	383	4/2	3:00 PM	Thur	422	10.92%	3,761
390	4/4	10:00 AM	Sat	638	10.87%	5,781	384	9/25	6:00 PM	Fri	64	12.85%	451
391	6/12	3:00 PM	Fri	823	10.55%	7,769	385	9/7	11:00 AM	Mon	203	10.95%	1,840

2009 30th Highest Hour by Traffic Pattern Group													
TPG 9: Central Rural Collector							TPG 10: Special Recreational						
Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT	Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
362	6/10	5:00 PM	Wed	610	10.16%	5,987	306	7/11	12:00 PM	Sat	677	11.96%	5,416
364	6/9	3:00 PM	Tue	540	10.75%	5,006							
386	7/8	3:00 PM	Wed	238	11.31%	2,097							
387	4/23	4:00 PM	Thur	337	10.47%	3,219							
388	5/15	4:00 PM	Fri	354	10.75%	3,220							
389	10/14	3:00 PM	Wed	241	11.72%	2,022							

2009 50th Highest Hour by Traffic Pattern Group (TPG)

2009 50th Highest Hour by Traffic Pattern Group

TPG 1: Urban Interstate

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
205	7/31	4:00 PM	Fri	4,629	8.86%	52,221
210	7/14	4:00 PM	Tue	10,062	8.86%	113,384
376	7/17	4:00 PM	Fri	5,759	9.53%	60,457
377	2/26	5:00 PM	Thur	5,438	9.97%	54,557
394	10/30	5:00 PM	Fri	5,347	9.35%	57,096
801	7/10	3:00 PM	Fri	6,999	9.10%	76,651

TPG 2: Rural Interstate

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
207	7/3	2:00 PM	Fri	2,552	12.09%	21,107
216	11/21	12:00 PM	Sat	3,225	11.78%	27,376
370	10/9	3:00 PM	Fri	2,965	9.47%	31,319
371	5/25	2:00 PM	Mon	2,540	13.92%	18,249
372	8/21	5:00 PM	Fri	2,698	10.11%	26,692
392	8/2	12:00 PM	Sun	2,507	10.75%	23,312
393	7/3	3:00 PM	Fri	2,924	9.81%	29,812

2009 50th Highest Hour by Traffic Pattern Group

TPG 3: Urban Principal Arterial

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
8	10/19	5:00 PM	Mon	1,862	11.17%	16,649
206	11/2	8:00 AM	Mon	3,681	13.30%	27,590
301	10/14	3:00 PM	Wed	1,524	10.67%	14,285
330	3/12	5:00 PM	Thur	1,072	9.43%	11,166
375	5/13	4:00 PM	Wed	2,215	9.53%	23,249

TPG 4: Rural Principal Arterial

Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
4	7/9	11:00 AM	Thur	370	12.84%	2,868
19	4/7	5:00 PM	Tue	592	10.35%	5,712
24	9/18	4:00 PM	Fri	1,740	9.67%	17,992
323	8/7	3:00 PM	Fri	405	10.42%	3,877
326	4/30	3:00 PM	Thur	1,014	10.67%	9,475
334	6/19	4:00 PM	Fri	1,551	9.12%	16,951
360	4/24	4:00 PM	Fri	263	10.56%	2,368
363	9/11	4:00 PM	Fri	494	10.38%	4,733
378	2/9	4:00 PM	Mon	948	10.50%	8,969
395	10/16	3:00 PM	Fri	1,048	9.74%	10,736
800	11/3	7:00 AM	Tue	2,262	10.96%	20,493

2009 50th Highest Hour by TPG (Continued)

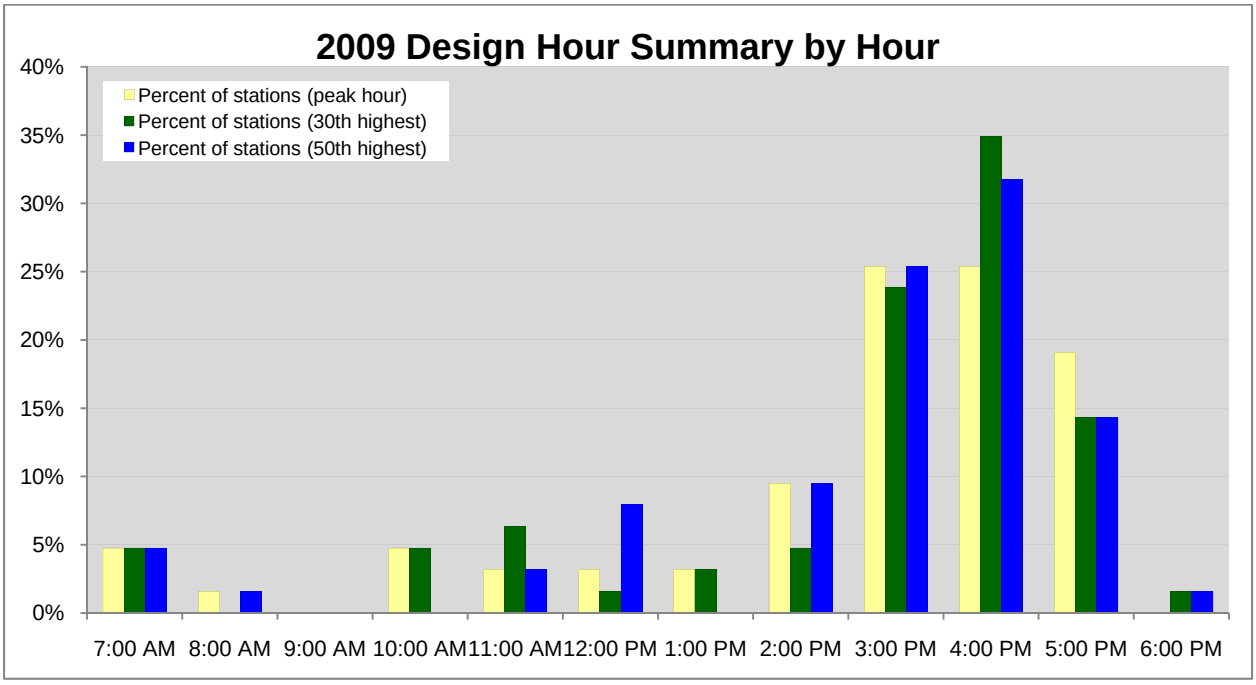
2009 50th Highest Hour by Traffic Pattern Group													
TPG 5: Urban Minor Arterial or Collector							TPG 6: North Rural Minor Arterial						
Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT	Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
18	4/1	4:00 PM	Wed	691	10.76%	6,414	2	8/27	3:00 PM	Thur	222	11.30%	1,935
20	3/31	3:00 PM	Tue	726	9.78%	7,401	3	9/11	4:00 PM	Fri	575	10.61%	5,402
379	3/6	4:00 PM	Fri	146	10.15%	1,426	27	11/28	2:00 PM	Sat	347	12.58%	2,742
380	4/28	4:00 PM	Tue	999	10.94%	9,121	48	5/29	3:00 PM	Fri	494	11.35%	4,275
381	9/17	4:00 PM	Thur	58	10.55%	520	51	6/25	12:00 PM	Thur	360	11.33%	3,160
382	11/3	3:00 PM	Tue	197	11.00%	1,778	328	10/19	5:00 PM	Mon	505	10.20%	4,950

2009 50th Highest Hour by Traffic Pattern Group													
TPG 7: Central Rural Minor Arterial							TPG 8: North Rural Collector						
Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT	Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
15	9/23	3:00 PM	Wed	608	11.66%	5,199	5	7/17	2:00 PM	Fri	155	11.31%	1,336
40	9/2	3:00 PM	Wed	474	9.65%	4,865	29	10/2	4:00 PM	Fri	143	11.15%	1,246
367	8/7	3:00 PM	Fri	615	10.18%	6,023	383	3/6	4:00 PM	Fri	411	10.64%	3,761
390	1/31	11:00 AM	Sat	615	10.48%	5,781	384	7/2	6:00 PM	Thur	60	12.05%	451
391	3/26	7:00 AM	Thur	803	10.29%	7,769	385	6/6	2:00 PM	Sat	199	10.73%	1,840

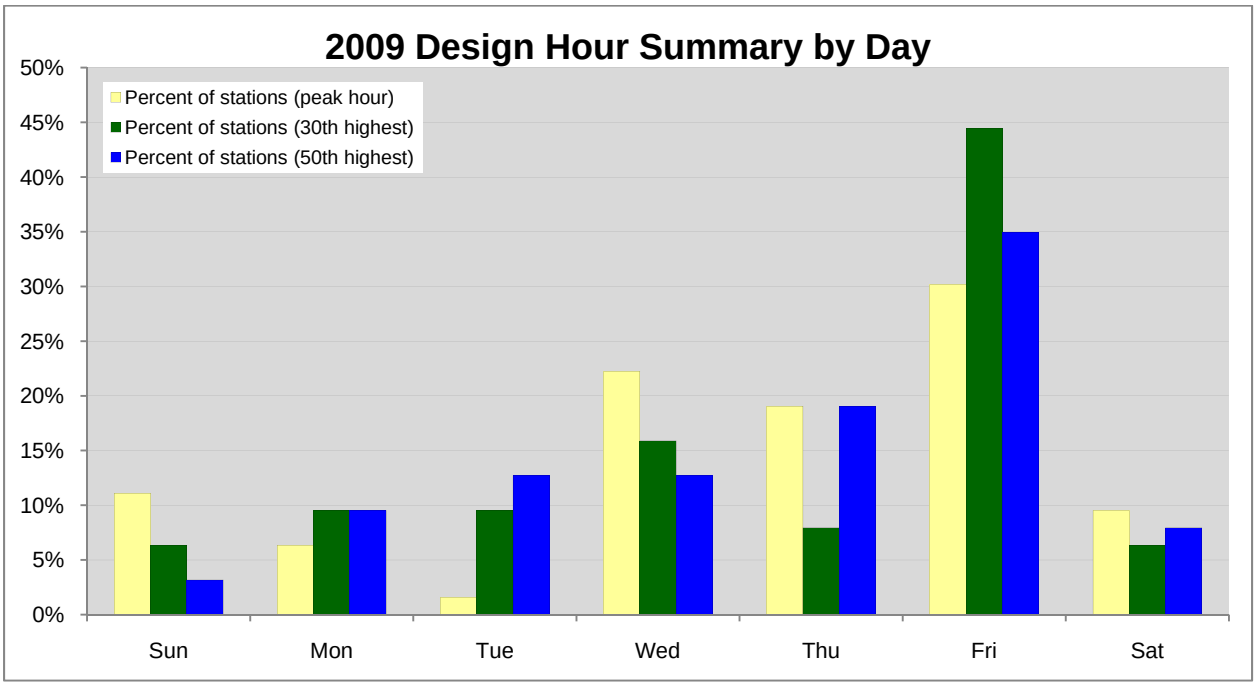
2009 50th Highest Hour by Traffic Pattern Group													
TPG 9: Central Rural Collector							TPG 10: Special Recreational						
Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT	Site #	Date	Hour (start)	DOW	Volume	% AADT	AADT
362	10/6	5:00 PM	Tue	594	9.90%	5,987	306	6/13	12:00 PM	Sat	650	11.48%	5,416
364	4/13	7:00 AM	Mon	525	10.46%	5,006							
386	3/12	3:00 PM	Thur	229	10.88%	2,097							
387	10/2	4:00 PM	Fri	325	10.09%	3,219							
388	2/18	4:00 PM	Wed	348	10.57%	3,220							
389	12/23	12:00 PM	Wed	235	11.42%	2,022							

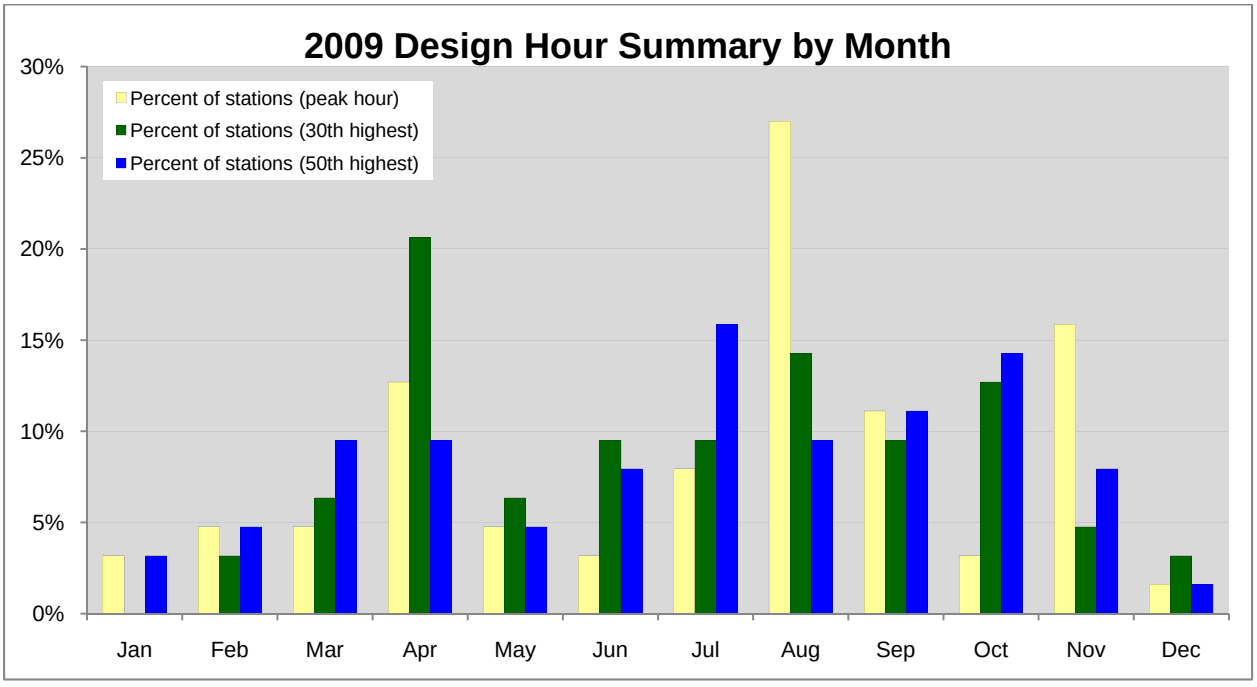
2009 Design Hour Summaries: Peak, 30th and 50th Highest Hour

Design Hour Volume (DHV) is the hourly traffic volume used in the design of highways. The DHV is usually represented by the 30th highest hourly volume of the future year chosen for design. The following three graphs show the peak, 30th and 50th highest hour summary by hour, day, and month.



2009 Design Hour Summaries: Peak, 30th and 50th Highest Hour





Five Year Summary of Annual Average Daily Traffic (AADT) from Permanent Sites

This chart shows the permanent site station numbers and their Annual Average Daily Traffic (AADT) for the past five years, 2005 through 2009. The percent change is also given for 2008 to 2009 and 2005 to 2009, showing where traffic has increased or decreased.

**Indicates there is no data available.*

	Annual Average Daily Traffic (AADT)					Percent Change	
Site #	2005	2006	2007	2008	2009	2008-2009	2005-2009
2	2,120	2,058	2,098	2,016	1,935	-4.2%	-9.6%
3	5,709	5,738	5,728	5,448	5,402	-0.9%	-5.7%
4	2,889	2,834	2,855	2,741	2,868	4.4%	-0.7%
5	1,433	1,441	1,400	1,327	1,336	0.7%	-7.3%
8	15,733	15,912	16,282	16,270	16,649	2.3%	5.5%
15	5,990	5,982	5,832	5,564	5,199	-7.0%	-15.2%
18	6,598	7,015	6,644	6,545	6,414	-2.0%	-2.9%
19	6,321	5,982	5,821	5,587	5,712	2.2%	-10.7%
20	7,769	7,801	7,552	7,381	7,401	0.3%	-5.0%
24	17,443	17,350	17,705	*	17,992	0.0%	3.1%
27	2,737	2,773	2,799	2,688	2,742	2.0%	0.2%
29	1,111	1,173	1,156	1,163	1,246	6.7%	10.8%
40	4,935	4,943	5,019	*	4,865	0.0%	-1.4%
48	4,411	4,547	4,547	4,610	4,275	-7.8%	-3.2%
51	3,882	3,650	3,388	3,195	3,160	-1.1%	-22.8%
205	*	*	*	*	52,221	0.0%	0.0%
206	27,393	27,977	29,004	28,350	27,590	-2.8%	0.7%
207	20,905	20,577	21,038	21,402	21,107	-1.4%	1.0%
210	115,600	116,841	117,292	115,527	113,384	-1.9%	-2.0%
216	28,006	28,187	27,395	26,915	27,376	1.7%	-2.3%
301	15,857	15,439	15,045	14,757	14,285	-3.3%	-11.0%
304	*	*	*	*	26,626	0.0%	0.0%
306	6,134	6,155	5,991	5,784	5,416	-6.8%	-13.3%
323	3,572	3,651	3,788	3,757	3,877	3.1%	7.9%
326	10,201	10,114	10,027	9,594	9,475	-1.3%	-7.7%
328	5,784	5,070	5,138	4,944	4,950	0.1%	-16.8%
330	11,392	11,471	11,487	11,371	11,166	-1.8%	-2.0%
334	19,764	18,933	18,125	17,379	16,951	-2.5%	-16.6%

Five Year Summary of AADT from Permanent Sites (Continued)

*Indicates there is no data available.

	Annual Average Daily Traffic (AADT)					Percent Change	
Site #	2005	2006	2007	2008	2009	2008-2009	2005-2009
360	2,698	2,658	2,580	2,500	2,368	-5.6%	-13.9%
362	5,699	5,932	6,019	5,927	5,987	1.0%	4.8%
363	5,102	5,058	5,037	4,817	4,733	-1.8%	-7.8%
364	5,310	5,352	5,327	5,192	5,006	-3.7%	-6.1%
367	6,473	6,241	6,087	5,894	6,023	2.1%	-7.5%
370	31,111	31,099	31,865	32,519	31,319	-3.8%	0.7%
371	19,299	19,401	19,092	18,680	18,249	-2.4%	-5.8%
372	26,111	26,696	27,031	26,543	26,692	0.6%	2.2%
375	25,013	25,170	24,070	23,479	23,249	-1.0%	-7.6%
376	59,882	61,170	61,431	61,733	60,457	-2.1%	1.0%
377	54,307	53,219	54,592	54,531	54,557	0.0%	0.5%
378	10,989	10,922	10,660	10,446	8,969	-16.5%	-22.5%
379	1,474	1,493	1,515	1,439	1,426	-0.9%	-3.4%
380	9,563	9,451	9,171	9,399	9,121	-3.0%	-4.8%
381	701	671	612	537	520	-3.3%	-34.8%
382	1,963	1,927	1,870	1,782	1,778	-0.2%	-10.4%
383	4,209	4,181	3,926	4,223	3,761	-12.3%	-11.9%
384	622	630	606	584	451	-29.5%	-37.9%
385	2,159	2,081	1,929	1,844	1,840	-0.2%	-17.3%
386	2,056	2,122	2,235	2,271	2,097	-8.3%	2.0%
387	3,379	3,384	3,301	3,164	3,219	1.7%	-5.0%
388	3,862	3,961	3,822	3,358	3,220	-4.3%	-19.9%
389	2,160	2,239	2,182	2,158	2,022	-6.7%	-6.8%
390	6,673	6,608	6,307	6,267	5,781	-8.4%	-15.4%
391	8,607	8,733	8,549	8,170	7,769	-5.2%	-10.8%
392	23,522	23,746	23,867	23,035	23,312	1.2%	-0.9%
393	30,354	30,910	30,875	30,513	29,812	-2.4%	-1.8%
394	50,879	52,363	52,003	55,137	57,096	3.4%	10.9%
395	*	*	11,550	10,971	10,736	-2.2%	0.0%
800	*	*	*	*	20,493	0.0%	0.0%
801	*	*	*	*	76,651	0.0%	0.0%

* 395 Percent change is taken from 2007, 2008 & 2009 data only, 2007 was first full year of data.

* 205, 304, 800 & 801 2009 was first full year of data.

* 24, & 40 2008 data not available due to site being inactive.

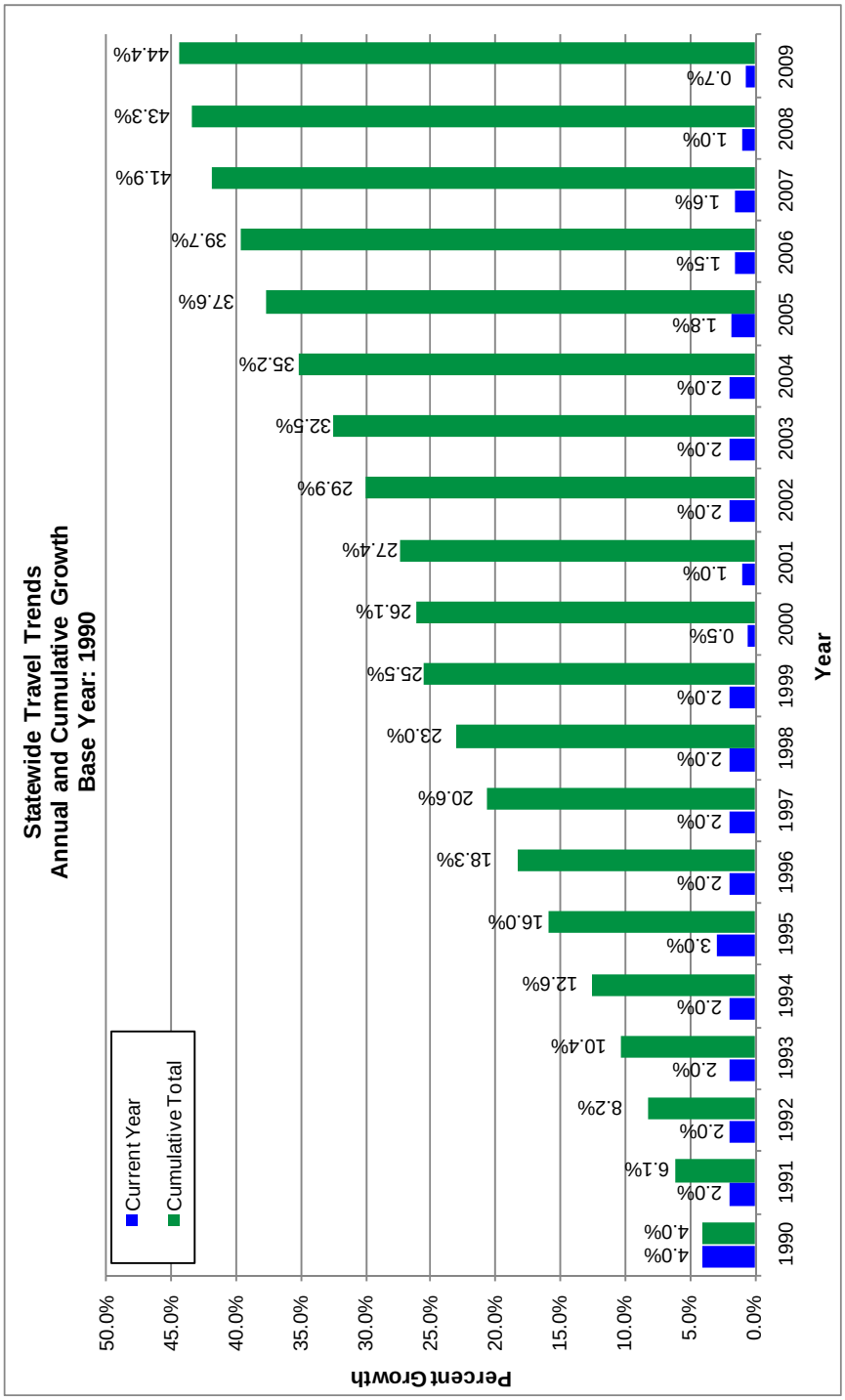
Statewide Traffic Trends: Annual and Multi-Year Change By Traffic Pattern Group

This table shows percent change for the traffic pattern groups at one-year intervals starting with 2004/2005 up to 2008/2009. An overall percent change for the traffic pattern groups is also shown on this table.

Percent Change Per Year, 2004 - 2009						
TRAFFIC PATTERN GROUPS	**2004-05**	**2005-06**	**2006-07**	**2007-08**	**2008-09**	**2004-09**
TPG 1 Urban Interstate	3.2%	2.9%	3.0%	2.4%	1.0%	12.5%
TPG 2 Rural Interstate	3.2%	3.0%	3.0%	2.4%	2.2%	13.8%
TPG 3 Urban Principal Arterial	1.1%	0.7%	1.1%	0.2%	0.3%	3.4%
TPG 4 Rural Principal Arterial	1.6%	1.2%	1.3%	0.8%	0.5%	5.4%
TPG 5 Urban Minor Arterials or Collectors	1.1%	0.7%	1.1%	0.2%	0.3%	3.4%
TPG 6 North Rural Minor Arterials	1.6%	1.2%	1.3%	0.8%	0.5%	5.4%
TPG 7 Central Rural Minor Arterials	1.6%	1.2%	1.3%	0.8%	0.5%	5.4%
TPG 8 North Rural Collectors	1.6%	1.2%	1.3%	0.8%	0.5%	5.4%
TPG 9 Central Rural Collectors	1.6%	1.2%	1.3%	0.8%	0.5%	5.4%
TPG 10 Special Recreational	1.6%	1.2%	1.3%	0.8%	0.5%	5.4%
Statewide	1.8%	1.5%	1.6%	1.0%	0.7%	6.6%

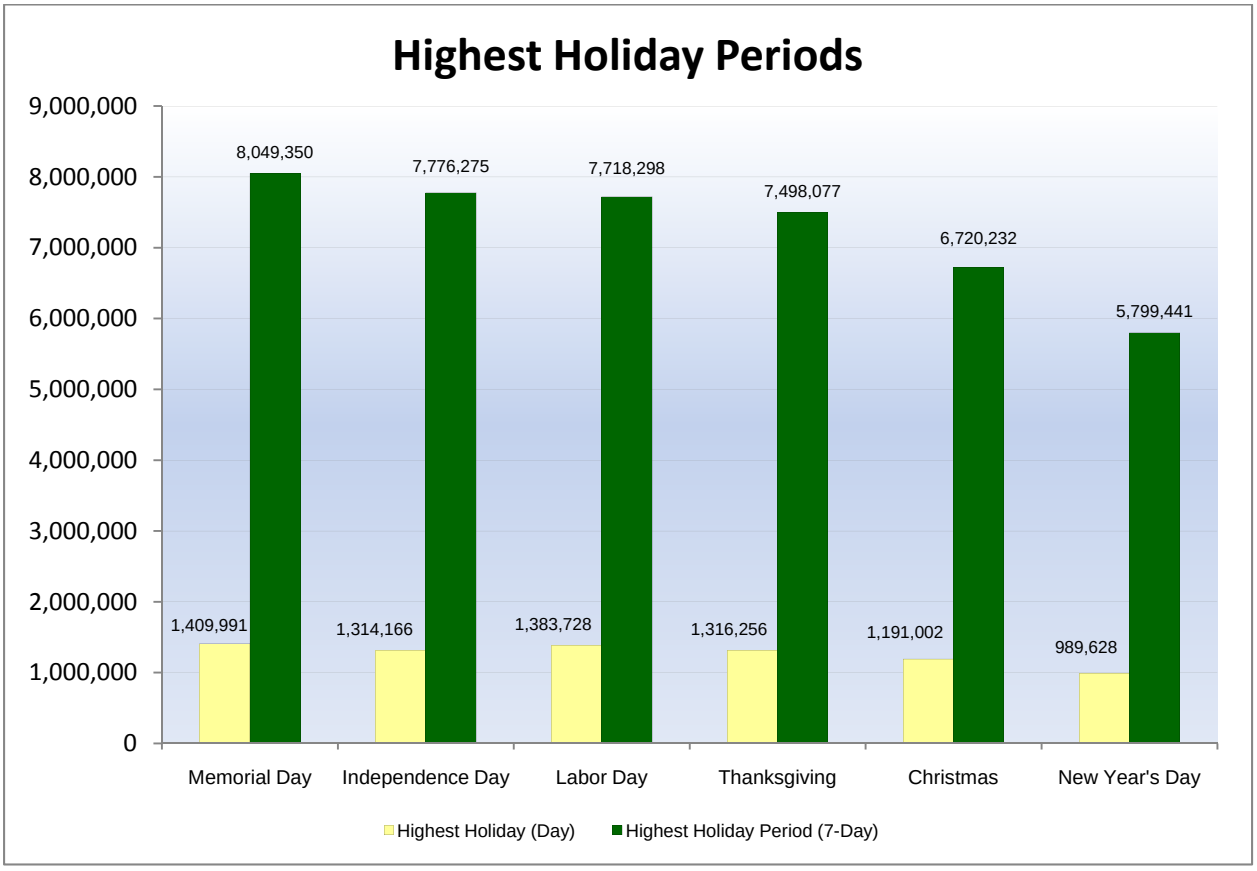
Statewide Traffic Trends

This chart shows yearly changes from 1990 to 2009 and a 20-year cumulative trend for the same period.



Heaviest Holiday Travel Periods: 2009

The 59 permanent sites were used to calculate the holidays having the highest seven-day periods of traffic. The highest seven-day holiday periods and the highest day within the seven-day holiday period (total traffic at all permanent site stations) are shown on the chart below:



The chart indicates that Memorial Day had the highest seven-day holiday period in 2009 with a total volume of 8,049,350. Independence Day ranked second (7,776,275) followed by Labor Day (7,718,298) and Thanksgiving (7,498,077). Christmas and New Year's Day ranked fifth (6,720,232) and sixth (5,799,441) respectively.

The highest day during a seven-day holiday period in 2009 was the Friday before Memorial Day (May 22, 2009), which had a volume of 1,409,991. The second highest day was the Friday before Labor Day (September 4, 2009), which had a volume of 1,383,728. The Wednesday before Thanksgiving Day (November 25, 2009), ranked third with 1,316,256, while the Friday after Independence Day (July 10, 2009), ranked fourth with 1,314,166. The Wednesday before Christmas (December 23, 2009) ranked fifth with 1,191,002, while the Wednesday before New Year's Day (December 30, 2009) ranked sixth with 989,628.

Heaviest Holiday Travel Period Comparisons: 2008-2009

Highest Holiday (Day)					
2008			2009		
	Holiday	Total Volume		Holiday	Total Volume
1.	Labor Day	1,184,822	1.	Memorial Day	1,409,991
2.	Independence Day	1,150,876	2.	Labor Day	1,383,728
3.	Memorial Day	1,141,003	3.	Thanksgiving	1,316,256
4.	Thanksgiving	1,109,928	4.	Independence Day	1,314,166
5.	Christmas	1,053,177	5.	Christmas	1,191,002
6.	New Year's Day	1,032,955	6.	New Year's Day	989,628

Highest Holiday Period (7-Day)					
2008			2009		
	Holiday	Total Volume		Holiday	Total Volume
1.	Labor Day	6,829,075	1.	Memorial Day	8,049,350
2.	Independence Day	6,681,918	2.	Independence Day	7,776,275
3.	Memorial Day	6,633,712	3.	Labor Day	7,718,298
4.	Thanksgiving	6,479,912	4.	Thanksgiving	7,498,077
5.	Christmas	5,870,567	5.	Christmas	6,720,232
6.	New Year's Day	5,788,849	6.	New Year's Day	5,799,441

Factoring Process: Traffic Adjustment Factors

Traffic Adjustment Factors
Traffic Adjustment Factors are numbers that are used to create traffic statistics representing an average day. Factors are generated by applying statistical methods and programs to raw traffic counts. The different procedures used to factor counts depend on the following outcomes.

24-Hour Total Traffic and Truck Traffic Estimation
Count data less than 24-hours (short term counts) must first be expanded to a 24-hour total, which is accomplished through the use of hourly percentage tables. Separate tables are utilized for total vehicles and truck data application.

AADT and ADTT Estimation
A 24-hour count is processed to an Annual Average Daily Traffic (AADT) and Average Daily Truck Traffic (ADTT) through the application of a "day of week by month" factor. Separate tables are utilized for total vehicle and truck data application.

Axle Correction
Axle volume count data is collected by counting the number of axles striking a single pneumatic tube stretched across a section of highway and dividing by two. This type of data must be corrected to compensate for vehicles containing more than two axles (specifically truck data) to obtain a representative number of vehicles actually traveling that road section. This representation is obtained through the application of an axle correction factor.

Equivalent Single Axle Load Adjustment (ESAL)
ESAL adjustment factors are applied to the ADTT for each type of truck classification, to determine the loading effect these truck classes have on the pavement. Two separate calculations are performed: one for rigid type pavement (concrete) and one for flexible type pavement (bituminous). The AASHTO Mechanistic Empirical Pavement Design Guide has incorporated improved methods of determining loading effects of traffic. In the future, these new methods may supersede the use of ESAL factors.

Growth Factor
If the count to be analyzed was taken earlier than the current year, a regional growth trend is applied to project the older count data to a representative current year estimate. Regional growth trends are established based on Functional Class Group (FCG).

Design Hour Volume Factor, DHV (K)
The K-factor represents the percentage of AADT during the design hour. It is calculated by dividing the peak hour volume by the AADT. A 24-hour count is required to calculate the K-factor. If this condition is not met (in the case of manual counts), a default value is applied. The default value is calculated from the 59 permanent site stations using the 30th highest hour and is established based on Traffic Pattern Group (TPG).

Table 350
Hourly Percentages Compiled for Total Vehicles

The following table shows hourly percentages of total vehicles sorted by Traffic Pattern Group (TPG) for the year 2009. Factors from this table are applied to raw traffic counts of less than 24 hours, which may include volume counts (axle and loop), automatic vehicle classification (AVC), or manual classification counts. Hourly percentages from this table are applied to the known hour periods of the raw count, converting it to a 24-hour total.

The factors were developed using the Department's Traffic Information System (TIS), a PC-based computer application. Raw count data from 2,000 AVC counts, collected statewide and averaged over the last five years, was assigned to the respective TPG and a summary was produced showing the hourly percentage tables by direction (applied to divided roadways).

Hourly Percentages: Total Vehicles							
TPG 1				TPG 2			
HOUR	DIR 1	DIR 2	TOTAL	HOUR	DIR 1	DIR 2	TOTAL
1	1.11%	1.26%	1.19%	1	1.50%	1.78%	1.77%
2	0.85%	0.90%	0.86%	2	1.23%	1.50%	1.46%
3	0.78%	0.80%	0.78%	3	1.17%	1.41%	1.35%
4	0.86%	0.85%	0.82%	4	1.19%	1.42%	1.36%
5	1.24%	1.10%	1.11%	5	1.43%	1.64%	1.56%
6	2.61%	2.06%	2.26%	6	2.39%	2.29%	2.27%
7	5.93%	4.06%	4.87%	7	4.28%	3.69%	3.65%
8	8.17%	5.38%	6.65%	8	5.86%	4.63%	4.77%
9	6.83%	5.09%	5.91%	9	5.45%	4.75%	4.87%
10	5.45%	4.77%	5.13%	10	5.40%	4.87%	5.12%
11	5.23%	4.84%	5.06%	11	5.69%	5.12%	5.44%
12	5.29%	5.09%	5.25%	12	5.90%	5.27%	5.65%
13	5.35%	5.32%	5.42%	13	5.87%	5.40%	5.71%
14	5.40%	5.48%	5.50%	14	5.92%	5.71%	5.88%
15	5.88%	6.21%	6.04%	15	6.18%	6.24%	6.27%
16	6.51%	7.63%	7.00%	16	6.57%	7.11%	6.81%
17	6.64%	8.69%	7.54%	17	6.77%	7.84%	7.10%
18	6.42%	8.34%	7.33%	18	6.22%	7.20%	6.56%
19	5.22%	5.78%	5.59%	19	5.05%	5.35%	5.31%
20	3.99%	4.42%	4.34%	20	4.16%	4.28%	4.39%
21	3.32%	3.84%	3.68%	21	3.65%	3.80%	3.90%
22	2.88%	3.41%	3.24%	22	3.22%	3.42%	3.47%
23	2.32%	2.63%	2.54%	23	2.73%	2.88%	2.92%
24	1.71%	2.03%	1.90%	24	2.18%	2.39%	2.38%
TOTAL	**100.00%**	**100.00%**	**100.00%**	**TOTAL**	**100.00%**	**100.00%**	**100.00%**

Table 350
Hourly Percentages Compiled for Total Vehicles (Continued)

Hourly Percentages: Total Vehicles							
TPG 3				TPG 4			
HOUR	DIR 1	DIR 2	TOTAL	HOUR	DIR 1	DIR 2	TOTAL
1	0.73%	1.00%	0.82%	1	0.92%	1.04%	0.80%
2	0.47%	0.60%	0.50%	2	0.64%	0.73%	0.54%
3	0.42%	0.48%	0.42%	3	0.58%	0.64%	0.48%
4	0.49%	0.47%	0.44%	4	0.70%	0.69%	0.57%
5	0.92%	0.68%	0.76%	5	1.22%	0.96%	1.02%
6	2.59%	1.60%	2.03%	6	3.12%	2.10%	2.50%
7	6.11%	3.62%	4.70%	7	5.90%	3.89%	4.79%
8	8.51%	5.38%	6.69%	8	7.23%	5.13%	6.15%
9	7.13%	5.06%	6.02%	9	6.17%	5.02%	5.65%
10	5.49%	4.65%	5.16%	10	5.40%	4.85%	5.30%
11	5.18%	4.69%	5.11%	11	5.32%	4.88%	5.40%
12	5.31%	5.09%	5.43%	12	5.44%	5.20%	5.60%
13	5.55%	5.42%	5.74%	13	5.61%	5.39%	5.82%
14	5.56%	5.59%	5.76%	14	5.81%	5.75%	6.00%
15	6.05%	6.42%	6.33%	15	6.31%	6.51%	6.59%
16	6.72%	8.17%	7.33%	16	6.90%	8.06%	7.55%
17	6.93%	9.27%	7.82%	17	7.16%	8.89%	7.92%
18	6.76%	9.09%	7.68%	18	6.74%	8.54%	7.43%
19	5.40%	6.37%	5.97%	19	5.21%	5.96%	5.58%
20	4.09%	4.79%	4.60%	20	3.91%	4.50%	4.29%
21	3.28%	3.99%	3.80%	21	3.22%	3.89%	3.60%
22	2.75%	3.42%	3.13%	22	2.82%	3.28%	2.94%
23	2.13%	2.38%	2.24%	23	2.20%	2.39%	2.09%
24	1.42%	1.78%	1.54%	24	1.46%	1.72%	1.43%
TOTAL	**100.00%**	**100.00%**	**100.00%**	**TOTAL**	**100.00%**	**100.00%**	**100.00%**

Table 350
Hourly Percentages Compiled for Total Vehicles (Continued)

Hourly Percentages: Total Vehicles							
TPG 5				TPG 6			
HOUR	DIR 1	DIR 2	TOTAL	HOUR	DIR 1	DIR 2	TOTAL
1	0.74%	0.94%	0.70%	1	0.91%	0.87%	0.82%
2	0.45%	0.56%	0.40%	2	0.56%	0.56%	0.54%
3	0.39%	0.45%	0.33%	3	0.45%	0.45%	0.48%
4	0.46%	0.45%	0.34%	4	0.53%	0.60%	0.53%
5	0.88%	0.66%	0.64%	5	0.85%	0.83%	0.94%
6	2.43%	1.60%	1.84%	6	2.01%	1.73%	2.21%
7	5.48%	3.77%	4.41%	7	4.30%	3.51%	4.25%
8	7.84%	5.45%	6.49%	8	6.33%	5.43%	5.76%
9	6.82%	5.15%	5.89%	9	6.29%	5.04%	5.55%
10	5.35%	4.64%	5.03%	10	5.73%	4.69%	5.37%
11	5.06%	4.69%	5.01%	11	5.32%	4.93%	5.54%
12	5.37%	5.13%	5.46%	12	5.70%	5.29%	5.84%
13	5.72%	5.57%	5.87%	13	5.93%	5.97%	6.08%
14	5.71%	5.58%	5.77%	14	6.08%	6.22%	6.19%
15	6.08%	6.33%	6.36%	15	6.45%	7.06%	6.82%
16	6.93%	8.12%	7.55%	16	7.15%	8.64%	7.80%
17	7.23%	9.25%	8.16%	17	7.35%	8.88%	7.99%
18	6.99%	9.18%	8.01%	18	7.11%	8.66%	7.29%
19	5.53%	6.48%	6.20%	19	6.00%	6.03%	5.61%
20	4.41%	4.78%	4.87%	20	4.52%	4.55%	4.41%
21	3.64%	3.95%	4.03%	21	3.65%	3.73%	3.64%
22	2.96%	3.25%	3.12%	22	2.84%	2.86%	2.87%
23	2.13%	2.33%	2.13%	23	2.36%	2.07%	2.07%
24	1.39%	1.68%	1.39%	24	1.59%	1.42%	1.40%
TOTAL	**100.00%**	**100.00%**	**100.00%**	**TOTAL**	**100.00%**	**100.00%**	**100.00%**

Table 350
Hourly Percentages Compiled for Total Vehicles (Continued)

Hourly Percentages: Total Vehicles							
TPG 7				TPG 8			
HOUR	DIR 1	DIR 2	TOTAL	HOUR	DIR 1	DIR 2	TOTAL
1	0.85%	0.95%	0.74%	1	0.77%	1.41%	0.74%
2	0.55%	0.66%	0.45%	2	0.51%	0.84%	0.45%
3	0.50%	0.55%	0.39%	3	0.41%	0.57%	0.36%
4	0.55%	0.61%	0.45%	4	0.48%	0.46%	0.39%
5	0.99%	0.94%	0.90%	5	0.86%	0.63%	0.71%
6	2.60%	1.93%	2.51%	6	2.62%	1.27%	1.97%
7	5.65%	3.78%	5.06%	7	6.06%	3.37%	4.35%
8	7.20%	5.01%	6.36%	8	7.16%	5.16%	6.16%
9	6.18%	4.68%	5.51%	9	6.73%	5.12%	5.71%
10	5.42%	4.56%	5.08%	10	5.63%	4.83%	5.19%
11	5.35%	4.75%	5.15%	11	5.55%	4.95%	5.28%
12	5.55%	5.09%	5.39%	12	5.55%	5.26%	5.57%
13	5.87%	5.60%	5.76%	13	5.90%	5.74%	5.92%
14	5.82%	5.68%	5.74%	14	5.79%	5.74%	5.97%
15	6.43%	6.65%	6.47%	15	5.92%	6.45%	6.53%
16	7.15%	8.62%	7.70%	16	6.23%	7.33%	7.67%
17	7.38%	9.60%	8.16%	17	6.54%	7.25%	8.07%
18	6.77%	8.91%	7.70%	18	6.32%	7.00%	7.62%
19	5.29%	5.97%	5.77%	19	5.53%	6.49%	6.02%
20	4.12%	4.55%	4.46%	20	4.45%	5.27%	4.77%
21	3.52%	3.84%	3.76%	21	3.74%	4.46%	3.92%
22	2.78%	3.06%	3.00%	22	3.17%	4.20%	3.07%
23	2.05%	2.29%	2.10%	23	2.39%	3.82%	2.15%
24	1.42%	1.71%	1.41%	24	1.67%	2.38%	1.42%
TOTAL	**100.00%**	**100.00%**	**100.00%**	**TOTAL**	**100.00%**	**100.00%**	**100.00%**

Table 350
Hourly Percentages Compiled for Total Vehicles (Continued)

Hourly Percentages: Total Vehicles							
TPG 9				TPG 10			
HOUR	DIR 1	DIR 2	TOTAL	HOUR	DIR 1	DIR 2	TOTAL
1	0.84%	1.27%	0.78%	1	0.48%	0.37%	0.62%
2	0.53%	0.75%	0.46%	2	0.40%	0.22%	0.38%
3	0.48%	0.63%	0.39%	3	0.43%	0.33%	0.31%
4	0.58%	0.64%	0.43%	4	0.32%	0.23%	0.32%
5	1.14%	0.95%	0.80%	5	0.56%	0.47%	0.62%
6	2.96%	2.00%	2.18%	6	1.38%	1.06%	1.44%
7	6.35%	4.00%	4.72%	7	3.55%	1.76%	3.06%
8	7.93%	5.24%	6.42%	8	6.21%	2.48%	5.01%
9	6.92%	5.06%	5.65%	9	5.76%	3.02%	5.22%
10	5.63%	4.56%	4.96%	10	4.53%	3.61%	5.19%
11	4.98%	4.44%	4.94%	11	4.88%	4.10%	5.48%
12	5.14%	4.66%	5.25%	12	6.04%	4.27%	5.99%
13	5.27%	5.40%	5.59%	13	6.83%	5.40%	6.39%
14	5.47%	5.53%	5.64%	14	6.86%	5.71%	6.65%
15	5.71%	6.47%	6.32%	15	6.24%	5.71%	6.79%
16	6.31%	7.80%	7.63%	16	6.37%	7.41%	7.60%
17	6.65%	8.64%	8.15%	17	6.63%	9.96%	8.15%
18	6.60%	8.19%	7.87%	18	6.85%	12.49%	7.92%
19	5.64%	6.36%	6.14%	19	7.16%	7.81%	6.22%
20	4.50%	4.66%	4.80%	20	6.86%	7.53%	5.51%
21	3.48%	3.91%	3.99%	21	5.06%	7.57%	4.49%
22	3.02%	3.46%	3.15%	22	3.38%	4.52%	3.21%
23	2.40%	3.03%	2.23%	23	1.99%	2.41%	2.09%
24	1.49%	2.36%	1.48%	24	1.22%	1.55%	1.33%
TOTAL	**100.00%**	**100.00%**	**100.00%**	**TOTAL**	**100.00%**	**100.00%**	**100.00%**

Table 360
Hourly Percentages Compiled for Truck Traffic

The following four tables and chart show hourly percentages of truck traffic sorted by Maintenance Functional Class (MFC). These tables are applied separately to raw truck data of less than 24-hours, including both Automatic Vehicle Classification (AVC) and manual counts. Manual classification counts are the primary source of data using these tables. The hourly percentages are calculated from these tables and applied to the sum of the known hour periods and in turn converted to a 24-hour truck total.

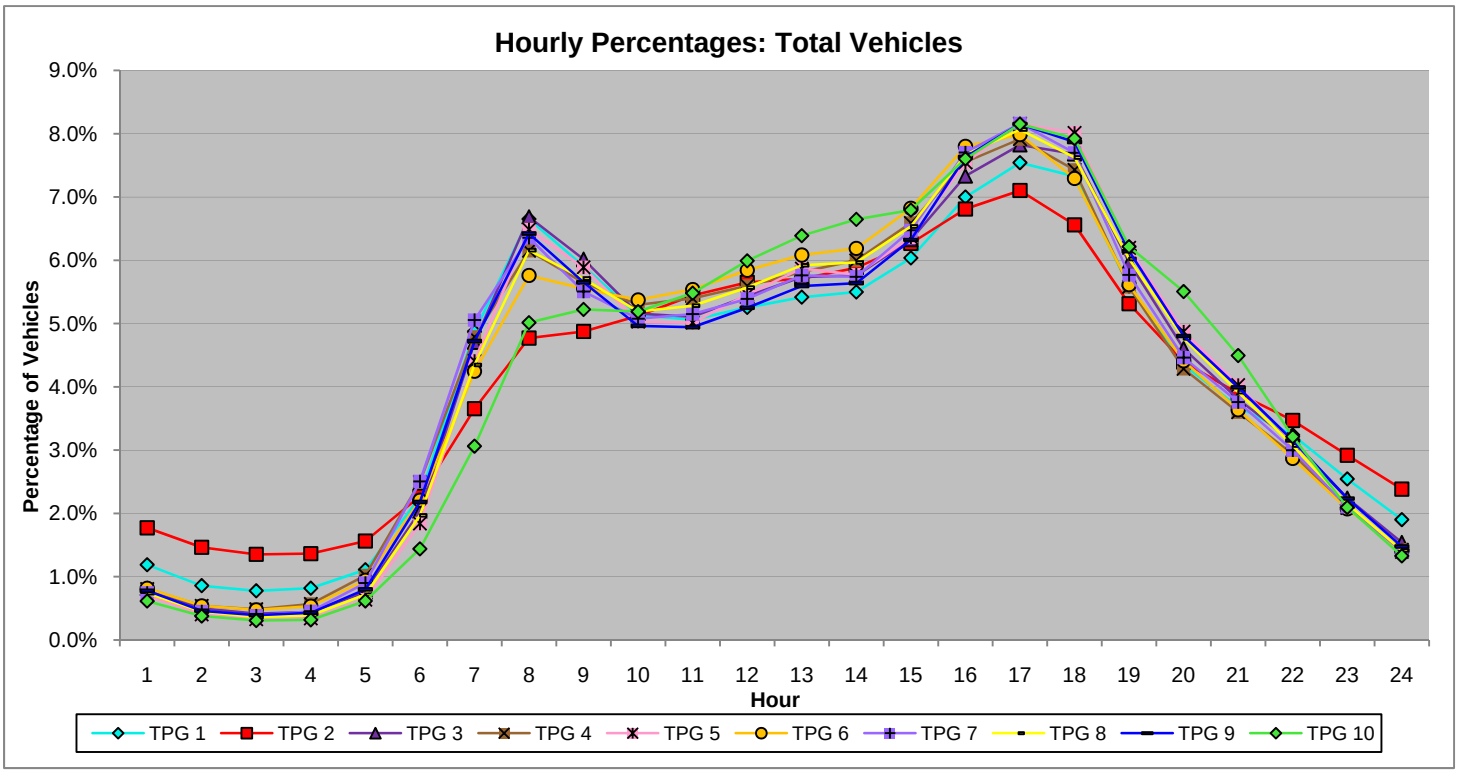
The factors were developed using 2,000 AVC counts, collected and verified over the last five years. The raw count data was assigned to the respective Traffic Pattern Group (TPG), the truck data was extracted by vehicle type, and the Traffic Information System (TIS) generated a summary showing the hourly percentage table by direction (applied to divided roadways). Truck data is tabulated according to MFC. Hourly weekday truck distribution provides evidence that the hourly percentage changes by MFC provide a valid breakdown of groups. Therefore, a summary was produced converting the TPGs to comparable MFC groups to be consistent with the characteristics of the 2009 Hourly Percentages (Truck Traffic) tables.

TPG 1 & 2				TPG 3 & 4			
MAINTENANCE FUNCTIONAL CLASS A (INTERSTATES)				MAINTENANCE FUNCTIONAL CLASS B (PRINCIPAL ARTERIALS)			
HOUR	DIR 1	DIR 2	TOTAL	HOUR	DIR 1	DIR 2	TOTAL
0	2.69%	3.18%	2.86%	0	1.24%	1.43%	1.19%
1	2.42%	3.06%	2.63%	1	1.12%	1.35%	1.12%
2	2.35%	2.90%	2.55%	2	1.19%	1.44%	1.20%
3	2.39%	3.07%	2.64%	3	1.45%	1.68%	1.48%
4	2.65%	3.22%	2.87%	4	2.00%	2.22%	2.03%
5	2.98%	3.57%	3.28%	5	3.20%	3.23%	3.17%
6	3.68%	4.08%	3.94%	6	4.96%	4.76%	4.93%
7	4.15%	4.47%	4.37%	7	6.32%	5.63%	6.24%
8	4.50%	4.67%	4.65%	8	6.86%	6.16%	6.74%
9	5.00%	4.84%	4.93%	9	6.54%	6.20%	6.66%
10	5.30%	4.84%	5.15%	10	6.64%	6.30%	6.75%
11	5.56%	4.80%	5.23%	11	6.66%	6.39%	6.78%
12	5.43%	4.79%	5.20%	12	6.69%	6.49%	6.71%
13	5.49%	4.92%	5.26%	13	6.65%	6.54%	6.75%
14	5.61%	4.97%	5.33%	14	6.70%	6.77%	6.87%
15	5.67%	5.02%	5.31%	15	6.54%	6.60%	6.67%
16	5.57%	4.81%	5.16%	16	5.79%	6.10%	5.81%
17	5.11%	4.58%	4.88%	17	4.88%	5.11%	4.80%
18	4.74%	4.42%	4.58%	18	3.77%	3.94%	3.67%
19	4.44%	4.29%	4.32%	19	2.93%	3.10%	2.84%
20	4.05%	4.04%	4.07%	20	2.42%	2.63%	2.39%
21	3.73%	4.08%	3.89%	21	2.14%	2.29%	2.04%
22	3.44%	3.84%	3.63%	22	1.80%	1.95%	1.71%
23	3.06%	3.54%	3.26%	23	1.50%	1.69%	1.45%
TOTAL	**100.00%**	**100.00%**	**100.00%**	**TOTAL**	**100.00%**	**100.00%**	**100.00%**

Table 360
Hourly Percentages Compiled for Truck Traffic (Continued)

TPG 5, 6 & 7				TPG 8 & 9			
MAINTENANCE FUNCTIONAL CLASS C (MINOR ARTERIALS)				MAINTENANCE FUNCTIONAL CLASS D, E & F (RURAL COLLECTORS)			
HOUR	DIR 1	DIR 2	TOTAL	HOUR	DIR 1	DIR 2	TOTAL
0	1.03%	1.41%	0.82%	0	1.21%	1.86%	0.96%
1	0.92%	1.28%	0.74%	1	1.01%	1.58%	0.84%
2	0.98%	1.34%	0.80%	2	1.07%	1.79%	0.89%
3	1.16%	1.60%	0.99%	3	1.28%	2.07%	1.10%
4	1.59%	1.94%	1.47%	4	1.86%	2.37%	1.59%
5	2.63%	2.79%	2.68%	5	2.83%	3.55%	2.78%
6	4.61%	4.47%	4.97%	6	5.15%	5.07%	4.91%
7	6.47%	5.87%	6.82%	7	6.12%	5.91%	6.66%
8	6.93%	6.20%	7.15%	8	6.40%	5.92%	6.81%
9	6.78%	6.12%	6.78%	9	6.61%	6.37%	6.55%
10	6.83%	6.22%	6.78%	10	6.52%	6.12%	6.62%
11	6.88%	6.27%	6.90%	11	6.56%	5.91%	6.67%
12	6.77%	6.40%	6.83%	12	6.88%	5.89%	6.65%
13	6.71%	6.51%	6.90%	13	6.67%	6.10%	6.74%
14	6.90%	6.83%	7.27%	14	6.74%	6.10%	7.13%
15	7.09%	6.80%	7.39%	15	6.31%	6.11%	7.39%
16	6.37%	6.16%	6.39%	16	5.92%	5.64%	6.37%
17	5.01%	5.53%	5.14%	17	5.16%	4.85%	5.12%
18	3.77%	4.11%	3.73%	18	4.16%	4.07%	3.88%
19	2.95%	3.37%	2.84%	19	3.27%	3.29%	3.03%
20	2.51%	2.72%	2.29%	20	2.68%	2.79%	2.50%
21	2.13%	2.35%	1.82%	21	2.22%	2.62%	1.99%
22	1.62%	2.02%	1.41%	22	1.85%	2.20%	1.56%
23	1.34%	1.69%	1.11%	23	1.52%	1.83%	1.25%
TOTAL	**100.00%**	**100.00%**	**100.00%**	**TOTAL**	**100.00%**	**100.00%**	**100.00%**

Hourly Percentages Charts



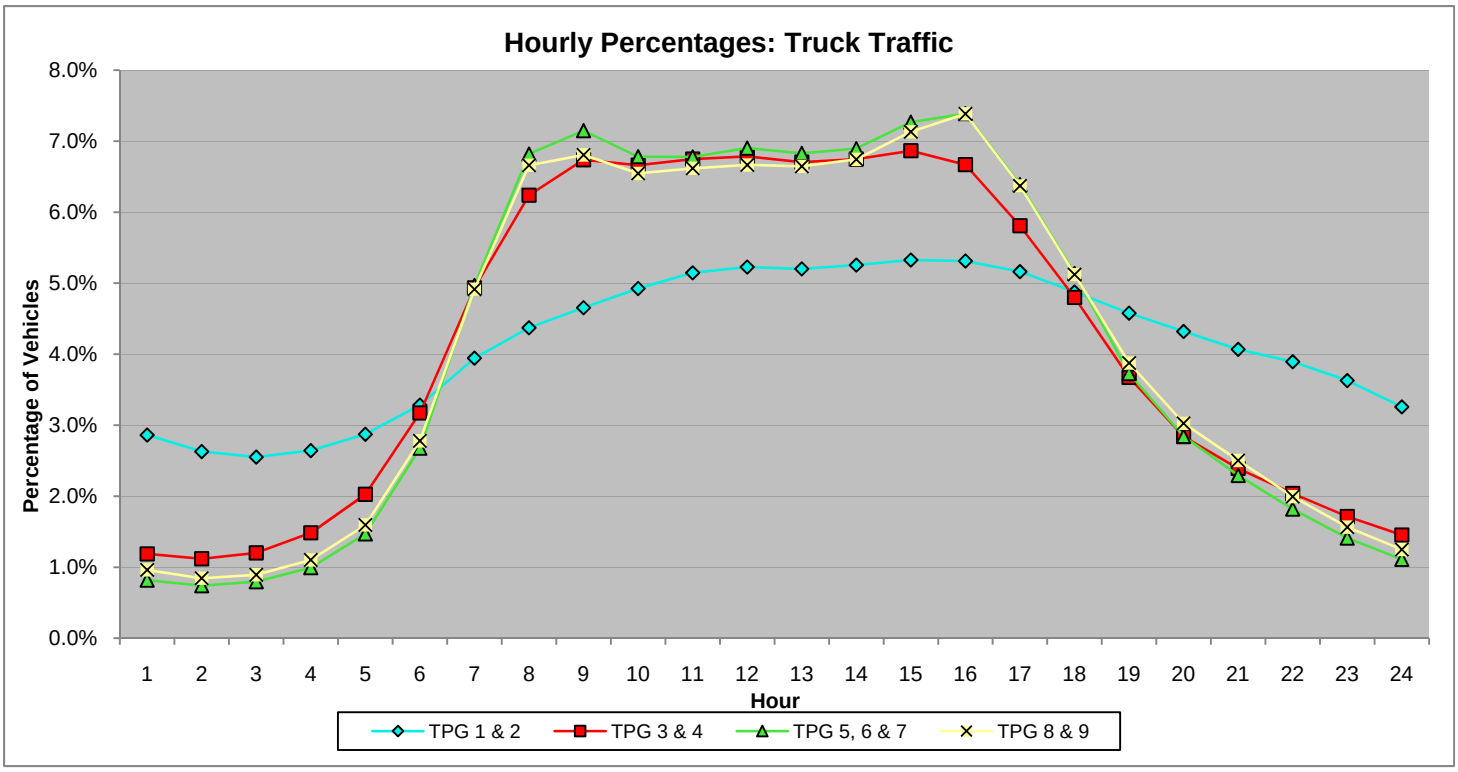


Table 355
Average Day of Week by Month Factors Compiled for Total Vehicles

The following 12 tables show average day of week factors by month compiled for total vehicles for the year 2009. Current year permanent site traffic data is assembled and the data is placed in the respective TPG. Annual Average Daily Traffic (AADT) is tabulated individually for each of the 59 permanent site stations. A factor is calculated for each day from each station and a list is tabulated by month and day of the week. This data is assembled by day and TPG for each station. The result is a group factor, which can be applied to a 24-hour raw traffic count taken during any day of the year to develop an AADT volume.

January 2009										
DAY	TPG 1	TPG 2	TPG 3	TPG 4	TPG 5	TPG 6	TPG 7	TPG 8	TPG 9	TPG 10
Monday	1.113	1.298	1.031	1.107	1.080	1.113	1.115	1.171	1.031	1.131
Tuesday	1.124	1.395	0.979	1.151	1.076	1.127	1.136	1.159	1.051	1.121
Wednesday	1.105	1.342	1.003	1.251	1.131	1.313	1.297	1.314	1.164	1.120
Thursday	1.052	1.301	1.288	1.260	1.033	1.309	1.196	1.289	1.178	1.272
Friday	0.979	1.130	0.952	0.998	1.010	1.018	1.000	1.062	1.002	0.949
Saturday	1.337	1.372	1.374	1.329	1.242	1.461	1.231	1.435	1.247	1.151
Sunday	1.459	1.312	1.831	1.633	1.437	1.842	1.703	1.684	1.558	1.651
DAY OF MONTH	1.167	1.307	1.208	1.247	1.144	1.312	1.240	1.302	1.176	1.199

February 2009										
DAY	TPG 1	TPG 2	TPG 3	TPG 4	TPG 5	TPG 6	TPG 7	TPG 8	TPG 9	TPG 10
Monday	1.091	1.256	0.994	1.070	1.058	1.103	1.093	1.178	1.042	1.126
Tuesday	1.111	1.337	0.943	1.062	1.025	1.084	1.094	1.114	1.054	1.151
Wednesday	1.077	1.306	0.935	1.055	1.018	1.112	1.068	1.125	1.020	1.141
Thursday	1.011	1.220	0.911	1.058	1.017	1.060	1.062	1.108	0.990	1.105
Friday	0.929	1.012	0.889	0.924	0.961	0.965	0.936	0.987	0.944	0.923
Saturday	1.231	1.348	1.229	1.205	1.097	1.233	1.141	1.241	1.172	1.011
Sunday	1.456	1.321	1.685	1.480	1.317	1.528	1.453	1.502	1.449	1.367
DAY OF MONTH	1.129	1.257	1.084	1.122	1.070	1.155	1.121	1.179	1.096	1.118

Table 355
Average Day of Week by Month Factors Compiled for Total Vehicles (Continued)

March 2009										
DAY	TPG 1	TPG 2	TPG 3	TPG 4	TPG 5	TPG 6	TPG 7	TPG 8	TPG 9	TPG 10
Monday	1.026	1.211	0.952	1.028	1.000	1.059	1.028	1.112	0.963	1.086
Tuesday	1.036	1.193	0.912	0.994	0.963	1.019	1.007	1.052	0.932	1.030
Wednesday	1.022	1.198	0.903	1.004	0.939	1.015	0.966	1.064	0.917	1.085
Thursday	0.979	1.089	0.915	0.989	0.951	0.990	0.963	1.015	0.913	1.056
Friday	0.920	0.912	0.871	0.885	0.883	0.890	0.868	0.919	0.867	0.911
Saturday	1.178	1.196	1.180	1.146	1.034	1.161	1.035	1.118	1.076	1.004
Sunday	1.223	1.042	1.612	1.407	1.208	1.357	1.338	1.358	1.316	1.401
DAY OF MONTH	1.055	1.120	1.049	1.065	0.997	1.070	1.029	1.091	0.998	1.082

April 2009										
DAY	TPG 1	TPG 2	TPG 3	TPG 4	TPG 5	TPG 6	TPG 7	TPG 8	TPG 9	TPG 10
Monday	0.965	1.017	0.946	0.982	0.938	0.959	0.990	1.005	0.919	1.036
Tuesday	0.986	1.106	0.888	0.975	0.917	0.948	0.981	0.967	0.874	0.919
Wednesday	0.979	1.034	0.889	0.955	0.921	0.955	0.939	0.985	0.885	0.956
Thursday	0.889	0.928	0.855	0.908	0.874	0.891	0.930	0.905	0.854	0.892
Friday	0.874	0.798	0.883	0.866	0.860	0.824	0.839	0.832	0.818	0.919
Saturday	1.107	1.070	1.217	1.057	0.927	1.015	0.977	1.007	0.990	0.921
Sunday	1.144	0.961	1.480	1.185	1.042	1.110	1.118	1.091	1.215	1.145
DAY OF MONTH	0.992	0.988	1.023	0.990	0.926	0.957	0.968	0.970	0.936	0.970

May 2009										
DAY	TPG 1	TPG 2	TPG 3	TPG 4	TPG 5	TPG 6	TPG 7	TPG 8	TPG 9	TPG 10
Monday	0.920	0.983	1.093	0.978	0.945	0.936	1.002	0.990	1.093	0.894
Tuesday	0.862	1.017	0.886	0.937	0.904	0.901	0.923	0.974	0.974	0.865
Wednesday	0.845	1.003	0.861	0.924	0.876	0.888	0.904	0.942	0.897	0.851
Thursday	0.803	0.901	0.856	0.898	0.871	0.859	0.897	0.889	0.869	0.820
Friday	0.779	0.763	0.838	0.810	0.819	0.783	0.800	0.811	0.837	0.803
Saturday	1.010	1.019	1.148	1.024	0.937	0.966	0.967	0.926	1.005	0.837
Sunday	1.048	0.963	1.394	1.183	1.061	1.053	1.143	1.004	1.190	1.011
DAY OF MONTH	0.895	0.950	1.011	0.965	0.916	0.912	0.948	0.934	0.981	0.869

Table 355
Average Day of Week by Month Factors Compiled for Total Vehicles (Continued)

June 2009										
DAY	TPG 1	TPG 2	TPG 3	TPG 4	TPG 5	TPG 6	TPG 7	TPG 8	TPG 9	TPG 10
Monday	0.897	0.919	0.919	0.948	0.925	0.938	0.954	0.940	0.875	0.861
Tuesday	0.903	0.976	0.889	0.937	0.917	0.948	0.951	0.921	0.866	0.856
Wednesday	0.892	0.950	0.873	0.934	0.926	0.937	0.931	0.931	0.865	0.814
Thursday	0.855	0.859	0.863	0.902	0.900	0.896	0.932	0.911	0.850	0.856
Friday	0.787	0.718	0.871	0.838	0.871	0.821	0.852	0.798	0.812	0.785
Saturday	1.011	0.935	1.174	1.035	0.965	0.972	0.942	0.896	0.996	0.962
Sunday	1.035	0.857	1.421	1.145	1.119	0.993	1.084	1.008	1.123	0.946
DAY OF MONTH	0.911	0.888	1.001	0.963	0.946	0.929	0.949	0.915	0.912	0.869

July 2009										
DAY	TPG 1	TPG 2	TPG 3	TPG 4	TPG 5	TPG 6	TPG 7	TPG 8	TPG 9	TPG 10
Monday	0.897	0.841	0.934	0.926	0.981	0.863	0.950	0.986	0.913	0.929
Tuesday	0.899	0.917	0.898	0.930	0.950	0.868	0.934	0.959	0.883	0.870
Wednesday	0.828	0.863	0.887	0.899	0.975	0.857	0.918	0.926	0.872	0.881
Thursday	0.844	0.761	0.873	0.874	0.945	0.828	0.895	0.864	0.859	1.052
Friday	0.848	0.688	0.927	0.842	0.958	0.794	0.856	0.836	0.862	1.021
Saturday	0.906	0.894	1.298	1.092	1.092	0.956	0.996	0.978	1.037	1.100
Sunday	0.951	0.754	1.458	1.149	1.141	0.951	1.131	1.028	1.160	1.010
DAY OF MONTH	0.882	0.817	1.039	0.959	1.006	0.874	0.954	0.940	0.941	0.980

August 2009										
DAY	TPG 1	TPG 2	TPG 3	TPG 4	TPG 5	TPG 6	TPG 7	TPG 8	TPG 9	TPG 10
Monday	0.858	0.849	0.947	0.914	0.934	0.915	0.958	0.877	0.903	1.449
Tuesday	0.855	0.883	0.916	0.923	0.927	0.924	0.940	0.864	0.917	1.415
Wednesday	0.832	0.876	0.889	0.889	0.909	0.882	0.896	0.857	0.903	1.451
Thursday	0.796	0.800	0.890	0.873	0.913	0.880	0.906	0.815	0.897	1.203
Friday	0.744	0.709	0.883	0.808	0.894	0.816	0.839	0.766	0.882	1.249
Saturday	0.915	0.819	1.232	0.971	1.009	0.936	0.948	0.886	0.996	1.166
Sunday	0.962	0.769	1.475	1.111	1.119	1.020	1.134	0.963	1.172	1.068
DAY OF MONTH	0.852	0.815	1.033	0.927	0.958	0.910	0.946	0.861	0.953	1.286

Table 355
Average Day of Week by Month Factors Compiled for Total Vehicles (Continued)

September 2009										
DAY	TPG 1	TPG 2	TPG 3	TPG 4	TPG 5	TPG 6	TPG 7	TPG 8	TPG 9	TPG 10
Monday	0.915	0.968	1.185	0.940	1.038	0.977	1.025	0.941	1.056	0.894
Tuesday	0.876	1.032	0.929	0.913	0.928	0.939	0.974	0.909	0.913	0.885
Wednesday	0.850	1.015	0.889	0.899	0.917	0.920	0.941	0.878	0.891	0.893
Thursday	0.817	0.918	0.880	0.878	0.900	0.893	0.932	0.832	0.890	0.835
Friday	0.759	0.773	0.864	0.800	0.872	0.805	0.838	0.769	0.832	0.782
Saturday	0.992	0.905	1.201	1.045	1.035	1.026	0.979	0.914	1.044	0.815
Sunday	1.051	0.891	1.460	1.169	1.102	1.093	1.194	1.010	1.225	1.008
DAY OF MONTH	0.894	0.929	1.058	0.949	0.970	0.950	0.983	0.893	0.979	0.873

October 2009										
DAY	TPG 1	TPG 2	TPG 3	TPG 4	TPG 5	TPG 6	TPG 7	TPG 8	TPG 9	TPG 10
Monday	0.858	0.972	0.944	0.923	0.982	0.942	0.987	0.967	0.948	0.928
Tuesday	0.874	1.061	0.903	0.923	0.940	0.947	0.974	0.950	0.926	0.942
Wednesday	0.860	1.049	0.889	0.920	0.942	0.946	0.946	0.940	0.906	0.963
Thursday	0.821	0.940	0.881	0.885	0.925	0.906	0.932	0.911	0.905	0.930
Friday	0.761	0.797	0.866	0.847	0.910	0.851	0.864	0.851	0.867	0.834
Saturday	1.033	1.083	1.239	1.080	1.062	1.057	1.040	1.014	1.105	0.974
Sunday	1.016	0.871	1.482	1.193	1.215	1.071	1.213	1.101	1.260	0.995
DAY OF MONTH	0.889	0.968	1.029	0.967	0.997	0.960	0.994	0.962	0.988	0.938

Table 355
Average Day of Week by Month Factors Compiled for Total Vehicles (Continued)

November 2009										
DAY	TPG 1	TPG 2	TPG 3	TPG 4	TPG 5	TPG 6	TPG 7	TPG 8	TPG 9	TPG 10
Monday	0.955	1.087	0.954	1.001	1.004	1.005	1.020	0.994	1.000	1.071
Tuesday	0.906	1.072	0.903	0.951	0.948	0.959	0.968	0.982	0.948	0.985
Wednesday	0.891	1.042	0.909	0.944	0.952	0.958	0.946	0.943	0.924	1.013
Thursday	0.924	1.054	1.113	0.926	1.024	1.040	1.030	0.986	1.063	0.980
Friday	0.902	0.917	0.904	0.899	0.948	0.908	0.885	0.908	0.905	0.914
Saturday	1.023	1.070	1.206	1.113	1.071	1.086	1.006	1.014	1.091	0.980
Sunday	1.078	1.039	1.526	1.265	1.200	1.159	1.204	1.188	1.275	1.254
DAY OF MONTH	0.954	1.040	1.074	1.014	1.021	1.016	1.008	1.002	1.029	1.028

December 2009										
DAY	TPG 1	TPG 2	TPG 3	TPG 4	TPG 5	TPG 6	TPG 7	TPG 8	TPG 9	TPG 10
Monday	0.998	1.068	0.982	1.031	1.056	1.192	1.033	1.082	1.005	1.064
Tuesday	0.969	1.084	0.927	1.002	1.013	1.095	1.016	1.042	0.993	1.050
Wednesday	0.942	1.120	0.928	0.976	1.012	1.097	1.015	1.041	0.975	1.016
Thursday	1.031	1.124	0.999	1.049	1.036	1.114	1.038	1.032	1.030	1.087
Friday	1.019	1.097	1.243	1.053	1.048	1.495	1.076	1.068	1.088	0.997
Saturday	1.156	1.191	1.333	1.296	1.219	1.299	1.192	1.181	1.284	1.358
Sunday	1.356	1.159	1.672	1.519	1.366	1.925	1.484	1.434	1.467	1.673
DAY OF MONTH	1.067	1.120	1.155	1.132	1.107	1.317	1.122	1.126	1.120	1.178

Monthly Variation Charts by Traffic Pattern Group (TPG)

The chart below shows the different variations between months and traffic pattern groups (TPG). The seasonal factors, which are the data this chart is derived from, show the percentage difference between the raw data count and the annual average daily traffic (AADT). The seasonal factors data can be found in Table 355.

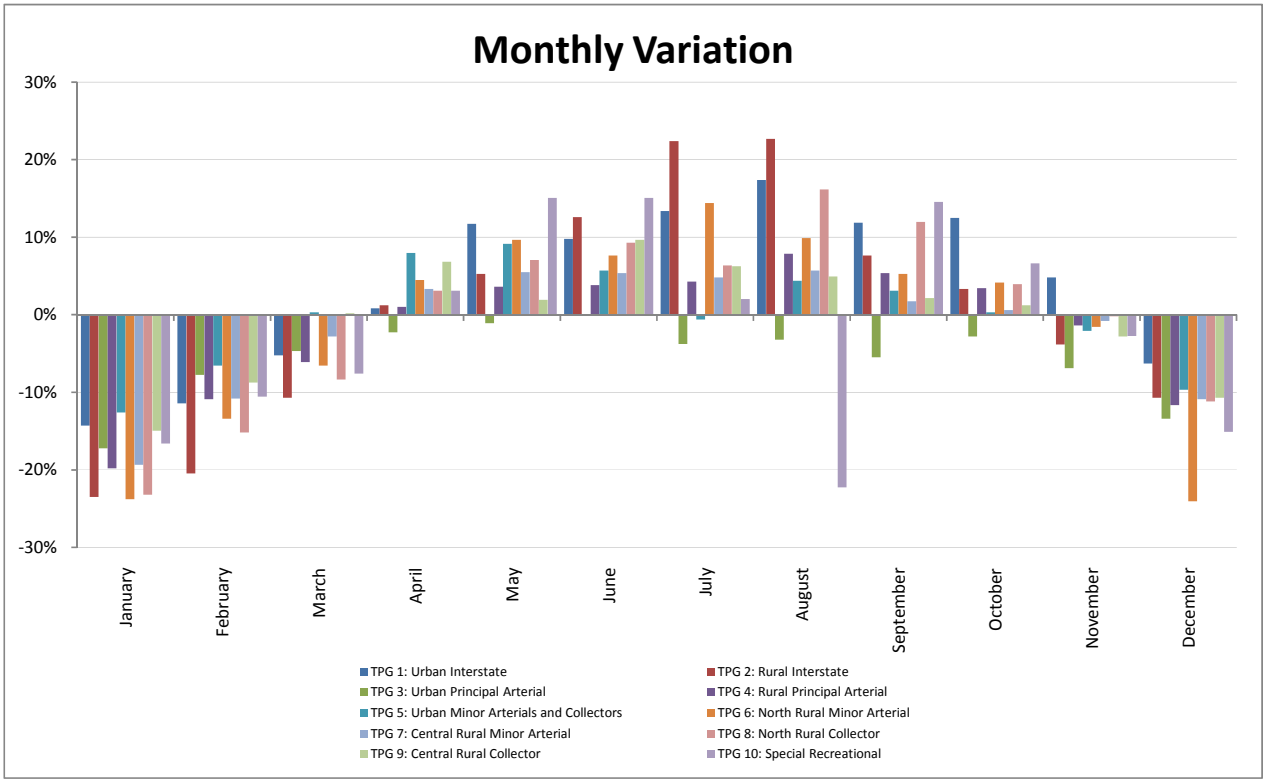


Table 365
Average Day of Week by Month Factors Compiled for Truck Traffic

The following table shows average day of week factors by month compiled for truck traffic. This data is used to convert 24-hour truck data to Average Daily Truck Traffic (ADTT). The ADTT is determined by applying the appropriate factor for the day of week and month to the truck traffic. Truck seasonal variation charts, which are based on truck traffic studies, indicate that truck traffic varies little for both the Interstate and Non-Interstate systems. On the other hand, day of week distribution does indicate a large variation between weekdays (Monday through Friday) versus weekend (Saturday through Sunday) truck flow. Continuous truck data obtained from the Pennsylvania Turnpike Commission toll collection facilities was evaluated and used to formulate the required truck factors.

Delaware River toll bridges and SHRP locations that also collect continuous vehicle classification data are being evaluated and may be used in calculation of future truck factors.

Average Day of Week by Month for Truck Traffic							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
January	0.94	0.87	0.85	0.84	0.88	2.34	3.70
February	0.92	0.85	0.85	0.84	0.87	2.38	3.57
March	0.88	0.82	0.81	0.80	0.84	2.15	3.30
April	0.87	0.79	0.77	0.76	0.77	1.86	2.91
May	0.82	0.78	0.75	0.75	0.76	1.82	2.66
June	0.83	0.76	0.75	0.72	0.74	1.74	2.40
July	0.84	0.77	0.76	0.75	0.76	1.63	2.28
August	0.81	0.76	0.76	0.74	0.75	1.65	2.27
September	0.82	0.75	0.73	0.72	0.73	1.72	2.41
October	0.80	0.75	0.74	0.73	0.74	1.85	2.46
November	0.85	0.77	0.77	0.75	0.77	1.86	2.85
December	0.85	0.85	0.83	0.78	0.81	2.13	3.10

Table 370
Yearly Growth Factors

The yearly growth factors (shown in the following table) are used to compute the current estimated average daily traffic for count data that is older than the current year. The factor application is applied by Traffic Pattern Group (TPG) and is used to calculate total vehicles and truck estimates. A limited amount of count data is processed through the Yearly Growth Factor table, since most traffic counts are for the current year.

To use this table, select the base year of the count from the "YEAR" column and multiply it by the percentage under the corresponding "TPG" row.

For example, to determine the current year estimate (2009) of a 2000 base year count having a TPG 5, multiply 1.106 (10.6%) by the AADT of the 2000 count.

Yearly Growth Factors: 1999-2009										
TPG	**99-00**	**00-01**	**01-02**	**02-03**	**03-04**	**04-05**	**05-06**	**06-07**	**07-08**	**08-09**
TPG 1	0.5%	2.0%	3.0%	3.0%	3.2%	3.2%	2.9%	3.0%	2.4%	1.0%
TPG 2	0.5%	2.0%	3.0%	3.0%	3.3%	3.2%	3.0%	3.0%	2.4%	2.2%
TPG 3	0.5%	2.0%	1.8%	1.0%	1.4%	1.1%	0.7%	1.1%	0.2%	0.3%
TPG 4	0.3%	1.0%	1.8%	1.3%	1.7%	1.6%	1.2%	1.3%	0.8%	0.5%
TPG 5	0.5%	2.0%	1.8%	1.0%	1.4%	1.1%	0.7%	1.1%	0.2%	0.3%
TPG 6	0.3%	1.0%	1.9%	1.3%	1.7%	1.6%	1.2%	1.3%	0.8%	0.5%
TPG 7	0.3%	1.0%	1.9%	1.3%	1.7%	1.6%	1.2%	1.3%	0.8%	0.5%
TPG 8	0.3%	1.0%	1.9%	1.3%	1.7%	1.6%	1.2%	1.3%	0.8%	0.5%
TPG 9	0.3%	1.0%	1.9%	1.3%	1.7%	1.6%	1.2%	1.3%	0.8%	0.5%
TPG 10	1.0%	1.0%	1.0%	1.0%	1.7%	1.6%	1.2%	1.3%	0.8%	0.5%

The table below shows yearly growth percentages by TPG for 1999 through 2009.

Yearly Growth Factors: 1999-2009										
TPG	**99-00**	**00-01**	**01-02**	**02-03**	**03-04**	**04-05**	**05-06**	**06-07**	**07-08**	**08-09**
TPG 1	27.0%	26.3%	23.9%	20.2%	16.7%	13.1%	9.6%	6.5%	3.4%	1.0%
TPG 2	28.7%	28.1%	25.6%	21.9%	18.4%	14.6%	11.0%	7.8%	4.7%	2.2%
TPG 3	10.6%	10.0%	7.8%	5.9%	4.9%	3.4%	2.3%	1.6%	0.5%	0.3%
TPG 4	12.1%	11.8%	10.7%	8.7%	7.3%	5.5%	3.9%	2.6%	1.3%	0.5%
TPG 5	10.6%	10.0%	7.8%	5.9%	4.9%	3.4%	2.3%	1.6%	0.5%	0.3%
TPG 6	12.2%	11.9%	10.8%	8.7%	7.3%	5.5%	3.9%	2.6%	1.3%	0.5%
TPG 7	12.2%	11.9%	10.8%	8.7%	7.3%	5.5%	3.9%	2.6%	1.3%	0.5%
TPG 8	12.2%	11.9%	10.8%	8.7%	7.3%	5.5%	3.9%	2.6%	1.3%	0.5%
TPG 9	12.2%	11.9%	10.8%	8.7%	7.3%	5.5%	3.9%	2.6%	1.3%	0.5%
TPG 10	11.7%	10.6%	9.5%	8.4%	7.3%	5.5%	3.9%	2.6%	1.3%	0.5%

Functional Class Groups

Traffic volume data displayed in PennDOT's Roadway Management System (RMS) is projected to a current estimate year (2009) based on County/Functional Class Group (FCG). This provides the user with trends relative to a specific county. The factors are applied annually to the Department's Roadway Management System (RMS) to produce the current year traffic volume estimate values.

This table shows the FCGs with a description and corresponding Functional Class Codes (FCCs).

FCG	DESCRIPTIVE NAME	FCC
FCG 1	URBAN INTERSTATE	FCC 11
FCG 2	RURAL INTERSTATE	FCC 01
FCG 3	URBAN - OTHER FREEWAYS/EXPRESSWAYS	FCC 12
	URBAN - OTHER PRINCIPAL ARTERIALS	FCC 14
	URBAN - MINOR ARTERIALS	FCC 16
	RAMPS	**
FCG 4	RURAL - OTHER PRINCIPAL ARTERIALS	FCC 02
	RURAL - MINOR ARTERIAL	FCC 06
FCG 5	URBAN COLLECTORS	FCC 17
	URBAN - LOCAL	FCC 19
FCG 6	RURAL - MAJOR COLLECTOR	FCC 07
	RURAL - MINOR COLLECTOR	FCC 08
	RURAL - LOCAL	FCC 09

** The Federal Functional Classification of a ramp reflects the highest order of Federal Functional Classification of the roadways to which the ramp connects. As an example, Adams County, SR 8001 is the interchange at US 15, a rural principal arterial, and SR 3001, a rural minor arterial; therefore, the segments associated with SR 8001 are assigned a Federal Functional Classification of rural principal arterial.

Table 380
Axle Correction Factors

Axle volume count data is collected by counting vehicle axles (two axle strikes equals one vehicle).
Since these counts may include a number of trucks with more than two axles, they must be corrected to represent the actual volume of total vehicles. The axle correction factors are applied to raw axle volume count data, adjusting it to a correct representative volume.

2009 Axle Correction Factors are shown in the table below.

TPG	Axle Correction Factor
1	83.76%
2	69.36%
3	93.84%
4	89.42%
5	97.07%
6	92.55%
7	94.80%
8	95.33%
9	96.24%
10	95.67%

Table 385
Design Hour Factor Default Values

The design hour factor (K-factor) represents the percent of Annual Average Daily Traffic (AADT) occurring in the peak hour. This value is important in the design of roadways and capacity analysis studies.

Count data less than 24-hours and/or data not having directional volumes will not have the necessary raw data required to compute actual K-factor values. The K-factor default values were produced to complete unknown values not generated through the raw count factoring process, and to satisfy Highway Performance Monitoring System (HPMS) reporting requirements. They were developed by processing the actual hourly data from the 59 permanent site stations to identify the 30th highest hour; this hourly volume was divided by the AADT for each station, producing a K-factor. The factors were then averaged by Traffic Pattern Group (TPG).

During the raw count factoring process, the K-factor value is programmatically inserted into the Roadway Management System (RMS) database if the raw count data is insufficient to calculate an actual K-factor.

2009 K-Factors and corresponding TPGs are shown in the table below.

TPG	K factor default value
1	9%
2	11%
3	11%
4	10%
5	11%
6	12%
7	11%
8	11%
9	11%
10	12%

Tables 390 and 395
Equivalent Single Axle Load Factors

Equivalent Single Axle Load (ESAL) tables are used to calculate pavement loadings (rigid and flexible types) to produce a common parameter for design and planning purposes.

ESAL factors used in RMS were derived through a composite of data obtained from AASHTO guidelines and test data collected from historical Loadometer Surveys. Data obtained through WIM equipment is under review at this time and will be considered in development of future ESAL factors. The AASHTO Mechanistic Empirical Design Guide (MEPDG) has incorporated improved methods of determining loading effects of traffic. In the future, these new methods may supersede the use of ESAL factors.

2009 ESAL factors for rigid pavements are shown by Traffic Pattern Group (TPG) and vehicle classification in **Table 390**, below.

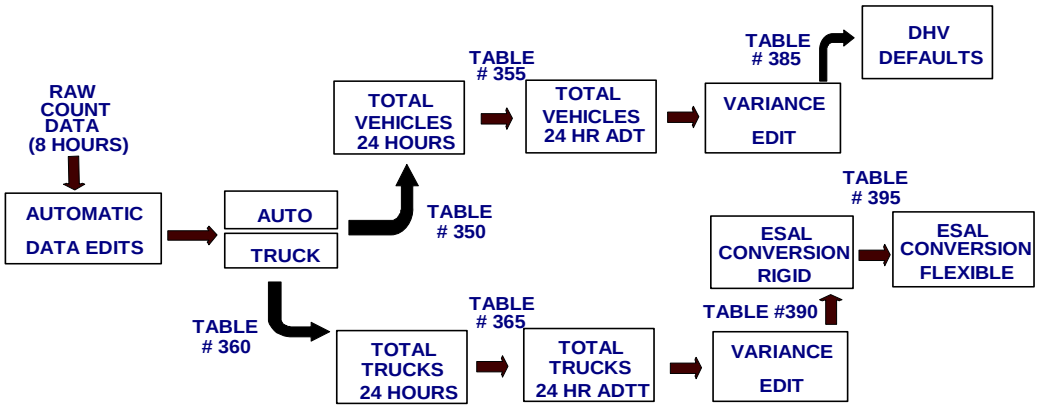
RIGID ESAL FACTORS										
CLASS	TPG 1	TPG 2	TPG 3	TPG 4	TPG 5	TPG 6	TPG 7	TPG 8	TPG 9	TPG 10
BUS	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240
2 AXLE SIX TIRE	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240
3 AXLE SINGLE UNIT	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150	1.150
4 AXLE SINGLE UNIT	7.000	7.000	7.000	7.000	7.000	7.000	7.000	7.000	7.000	7.000
3 AXLE WITH TRAILER	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600	0.600
3 AXLE MULTI-AXLE TRAILER	1.590	1.590	1.590	1.590	1.590	1.590	1.590	1.590	1.590	1.590
6 AXLE SINGLE TRAILER	1.421	1.421	1.421	1.421	1.421	1.421	1.421	1.421	1.421	1.421
5 AXLE MULTI TRAILER	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400	2.400
6 AXLE MULTI TRAILER	1.421	1.421	1.421	1.421	1.421	1.421	1.421	1.421	1.421	1.421
7 AXLE MULTI TRAILER	1.421	1.421	1.421	1.421	1.421	1.421	1.421	1.421	1.421	1.421

2009 ESAL factors for flexible pavements are shown by Traffic Pattern Group (TPG) and vehicle classification in **Table 395**, below.

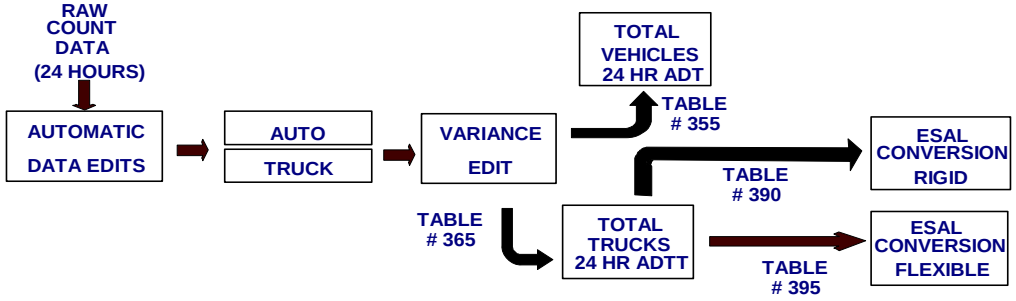
FLEXIBLE ESAL FACTORS										
CLASS	TPG 1	TPG 2	TPG 3	TPG 4	TPG 5	TPG 6	TPG 7	TPG 8	TPG 9	TPG 10
BUS	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240
2 AXLE SIX TIRE	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240	0.240
3 AXLE SINGLE UNIT	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820	0.820
4 AXLE SINGLE UNIT	4.500	4.500	4.500	4.500	4.500	4.500	4.500	4.500	4.500	4.500
3 AXLE WITH TRAILER	0.440	0.440	0.440	0.440	0.440	0.440	0.440	0.440	0.440	0.440
3 AXLE MULTI-AXLE TRAILER	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6 AXLE SINGLE TRAILER	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750	0.750
5 AXLE MULTI TRAILER	2.330	2.330	2.330	2.330	2.330	2.330	2.330	2.330	2.330	2.330
6 AXLE MULTI TRAILER	1.276	1.276	1.276	1.276	1.276	1.276	1.276	1.276	1.276	1.276
7 AXLE MULTI TRAILER	1.276	1.276	1.276	1.276	1.276	1.276	1.276	1.276	1.276	1.276

Roadway Management System
Factor Table Application Flow Chart

I. MANUAL COUNT (LESS THAN 24 HOURS)

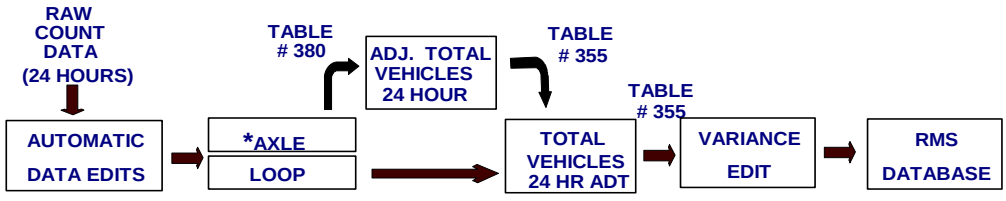


II. AUTOMATIC VEHICLE CLASSIFICATION COUNT



Note: DHV is computed from the raw count data.

III. AXLE AND LOOP VOLUME COUNTS



* Total Vehicles are computed by counting axles (2 axles equals 1 Vehicle)

Acronyms

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway & Transportation Officials
ACF	Axle Correction Factor
ADL	Average Daily Load
ADT	Average Daily Traffic
ADTT	Average Daily Truck Traffic
AGF	Annual Growth Factor
ATR	Automatic Traffic Recorder
AVC	Automatic Vehicle Classification
CAVC	Continuous Automatic Vehicle Classification
DHV	Design Hour Volume
DOW	Day of Week
DRJTBC	Delaware River Joint Toll Bridge Commission
DVMT	Daily Vehicle Miles of Travel
ESAL	Equivalent Single Axle Load
FCC	Functional Classification Code
FCG	Functional Classification Group
FHWA	Federal Highway Administration
GIS	Geographic Information System
HMPS	Highway Performance Monitoring System
HVTIS	Heavy Vehicle Travel Information System
ITDUS	Internet Traffic Data Upload System
ITS	Intelligent Transportation Systems
LTPP	Long Term Pavement Performance
MEPDG	Mechanistic Empirical Design Guide
MFC	Maintenance Functional Classification
MPO	Metropolitan Planning Organization
RPO	Rural Planning Organization
RMS	Roadway Management System
SHRP	Strategic Highway Research Program
SR	State Route
STIP	Short-Term In-Pavement
TIS	Traffic Information System
TMG	Traffic Monitoring Guide
TMS/H	Traffic Monitoring System for Highways
TPG	Traffic Pattern Group
TR	Traffic Route
WIM	Weigh-in-Motion

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