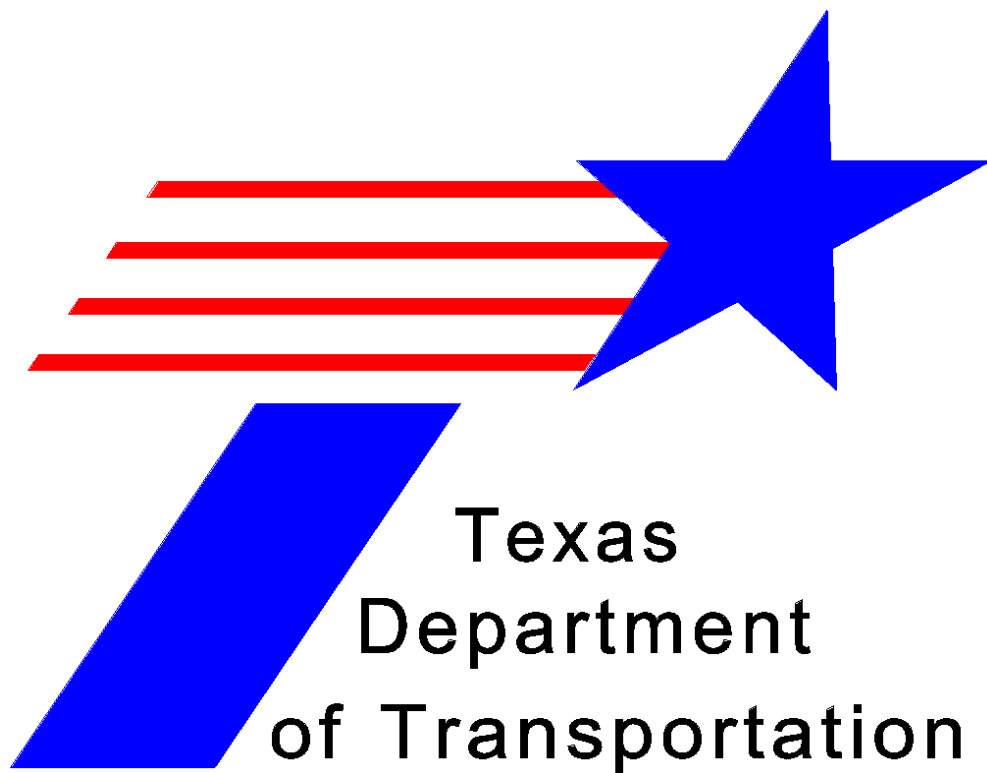


Traffic Recorder Instruction Manual



Released February 2012

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Manual Notice 2012-1

From: James L. Randall, P.E., Director, TPP Division

Manual: *Traffic Recorder Instruction Manual*

Effective Date: February 01, 2012

Purpose

This update improves criteria and visual representations which are used when traffic counters categorize vehicles into specific classifications. Additionally, this update documents recommendations of the Federal Highways Administration (FHWA) with hyperlinks to the FHWA Traffic Monitoring Guide and 13-Category Scheme of vehicle classifications.

Contents

Revisions to Chapter 4

- ◆ Section 1, FHWA 13-Category Scheme, 1st Paragraph
 - A new hyperlink documents that the FHWA recommends that highway agencies use the FHWA 13-Category Scheme when classifying vehicles.
- ◆ Section 1, FHWA 13-Category Scheme, 2nd Paragraph
 - A new hyperlink documents that the FHWA-13 Category Scheme separates vehicles into categories that carry passengers or commodities.
- ◆ Section 1, Figure 4-1, FHWA 13-Category Scheme (delete former graphic; replace with new graphic)
 - Classes 1-13. A new graphic developed by TxDOT provides a clear, visual representation of the appropriate vehicle in each class of the FHWA 13-Category Scheme.
- ◆ Section 1, Classification Table, FHWA 13-Category Scheme
 - Class 2, Passenger Cars, Additional Identifiers. Deleted the wording, **import pickup**;
 - Class 3, Pickups, Panels, Vans, Additional Identifiers. Added the wording, **and long-bed pickups**;
 - Class 5, Single-unit Trucks, Additional Identifiers. Deleted the wording, **long-bed pickup with extended cab**.
- ◆ Section 2, Vehicle Classification Descriptions
 - Class 2, Passenger Cars, bulleted items. Deleted the wording, **import pickups**;
 - Class 3, Pickups, Panels, Vans, bulleted items. Added the wording, **and long-bed**;

- Class 5, Single-Unit Trucks, bulleted items. Deleted the wording, **Chevy, Ford, and Dodge long-bed (eight-foot) pickups with extended cabs.**

Revision to Appendix A

- ◆ FHWA 13-Category Scheme (delete former graphic; replace with new graphic)
 - A new graphic developed by TxDOT provides a clear, visual representation of the appropriate vehicle in each class of the FHWA 13-Category Scheme.
 - This is the same new graphic developed for Chapter 4, Figure 4-1.

Contact

Readers may direct questions or suggestions for this manual to the Traffic Analysis Section of the Transportation Planning and Programming Division, (512) 486-5101.

Archives

Past manual notices are available in a [PDF archive](#).

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Chapter 1 — Introduction

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Section 1 — Overview of Manual

Manual's Focus

This manual provides instructions to traffic counters for:

- ◆ Visually categorizing vehicles into specific classifications,
- ◆ Manually recording counts of vehicle classifications into categories, and
- ◆ Compiling counts and transferring the traffic data into designated forms.

This manual has been written to provide instructions to TxDOT personnel to manually classify, count, and record traffic data using safe and accurate procedures.

Importance of Traffic Data

Traffic data is very important to many users. Transportation professionals use traffic data to plan, design, construct, operate, and maintain roadways. Decision makers use it to allocate funding for roadway projects, while other users decide where to build a hotel, estimate vehicle emissions, and more.

To collect traffic data, TxDOT uses short duration manual counts and automated permanent continuous counts. Some collection methods produce traffic volume, while others produce vehicle classifications. All methods are critical to developing traffic statistics, with one of the primaries being the Annual Average Daily Traffic (AADT).

Each data collection method has certain benefits and drawbacks. Automated counts can provide accuracy on high traffic, multilane roads that operate at a constant speed. Manual counts, the method taught in this instruction manual, use human observation to achieve accurate results in these situations:

- ◆ diverse geographic locations
- ◆ areas where vehicles follow closely
- ◆ stop and go traffic
- ◆ conditions requiring judgment (classifying a car pulling a light trailer versus a tractor pulling a semi-trailer).

General Description of Work

TxDOT uses several different methods to collect information on the characteristics of traffic. This instruction manual specifically addresses the manual collection of vehicle classification counts.

Technicians, referred to as traffic counters, must observe the classification of vehicles at specific roadway sites and manually record the traffic data for later use.

Traffic counters use a mechanical device to tally the number of vehicle classifications that travel past a designated site during a specific time period. In addition, the traffic counters report weather and road conditions for each hour of a scheduled count. TxDOT traffic analysts use the collected data to develop traffic statistics, which include the number of vehicles at given checkpoints, the percentages of vehicle classifications, and the directional flow of the traffic stream.

Traffic Counters' Requirement

Traffic counters must understand and follow the policies and procedures in this manual to safely and accurately conduct manual vehicle classification counts.

Section 2 — Collecting and Posting Reliable Traffic Data

Collecting Reliable Data

Traffic counters must accurately classify and count vehicles to yield reliable traffic data, vital to TxDOT's roadway programs. Departmental traffic analysts exercise great effort to verify the accuracy of collected and reported counts by comparing the counts to historic traffic data. Traffic counters must precisely conduct manual classification counts whether in areas of high, medium, or low traffic flow. Counting an extra 15 minutes or undercounting can distort the count and render the data useless.

The traffic counter must set up at the specifically prescribed location. The traffic counter crew must count for exactly 24 consecutive hours. Occasionally, however, a 48-hour count may be necessary. The same counting precision is required for an extended count as for a 24-hour count. Counts are conducted Monday through Thursday only.

Accurately Posting Data

Continued precision is extremely important as the traffic counter manually transfers hourly counts from the traffic recorder equipment to the required Form 1617A. Detailed instructions for completing Form 1617A are provided in Chapter 6 of this manual.

Section 3 — Definitions

| | |
|---|--|
| Manual Bank Board | The board holding the keys or buttons of a tally counter which is used to manually record vehicle classification counts. |
| Manual Counts | Measurement of traffic characteristics based on human observation in combination with a manual device. The terms manual counts and visual counts are used interchangeably. |
| Semi-trailer | A detachable trailer for hauling freight with wheels at the rear end, and the forward end being supported by the rear of a truck or tractor. |
| Tally Counter | The mechanical equipment that traffic counters use to manually record the number of vehicles – by classification – during a manual vehicle classification count. This equipment is also known as a traffic recorder. |
| Traffic Counter | Personnel who count vehicles in a stream of traffic. |
| Traffic Counter Crew | The number of traffic counters counting vehicles in a stream of traffic over the entire time period. |
| Traffic Data | Individual facts, statistics, or items of information on traffic. |
| Traffic Recorder | Portable traffic monitoring equipment that personnel use to manually tally classes of vehicles. This equipment is also known as a Tally Counter. |
| Traffic Volume | The most basic form of traffic data collection. The total number of all vehicles at a given checkpoint. Each vehicle, regardless of body style or number of axles, counts as one volume. |
| Truck, Tractor, Straight Truck Power Unit | These terms are used interchangeably to indicate a powerful motor-driven vehicle designed for hauling a trailer or semitrailer. |
| Vehicle Classification | The measurement, summarization and reporting of traffic volume by vehicle type and axle configuration. Traffic counters must use the 13-category classification scheme recommended by the Federal Highway Administration (FHWA). |

Chapter 2 — Safety

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Section 1 — Introduction

Traffic-counting work is dangerous! As a traffic counter, you are required to spend time on and near roadways, many of which are high-speed facilities with large volumes of traffic. Failure to follow safe practices could result in serious injury or death.

Safety is a primary consideration while counting traffic, for both the counter and the traveling public. Traffic counters must follow prescribed safety practices while counting traffic.

Section 2 — Proper Attire

Headgear

Traffic counters must wear a hard hat at all times while working outside the vehicle in the highway right of way. This includes time spent while setting up and removing the traffic survey sign.

NOTE: Headgear must meet standards of ANSI Z89.1-1986.

Safety Vest

Traffic counters must wear a reflective orange-colored safety vest at all times while outside the vehicle in the highway right of way. The vest will eventually lose reflectivity and should be replaced periodically.

NOTE: The safety vest must meet the standards of ANSI/ISEA 107 -2004, Class 2.

Footwear

Traffic counters must wear steel-toed footwear at all times while working outside the vehicle in the highway right of way. It is recommended that the footwear have a nonskid sole and be water resistant.

NOTE: Footwear that meets the standards of ANSI Z41-1991 is acceptable; however, any new purchases must meet ASTM F2413-05 standards.

Clothing

The following are prohibited:

- ◆ see-through shirts
- ◆ sleeveless or half-shirts
- ◆ camouflage clothing, such as hunting apparel
- ◆ unbuttoned shirts
- ◆ being shirtless

Section 3 — Traffic Counter Vehicle

Safety Standards

Employees shall follow policies and procedures in the [Equipment Manual](#) and the [Equipment Preventive Maintenance Manual](#) while using state vehicles. Willful violation is grounds for disciplinary action.

Collisions

If a traffic counter is involved in a collision while conducting a vehicle classification count:

- ◆ Call 911 if injuries need medical attention.
- ◆ Move vehicles out of traffic, if there are no visible signs of injury and vehicles are drivable.
- ◆ Use a first aid kit or fire extinguisher, if comfortable doing so. Follow universal precautions and treat all blood and bodily fluids as infected by using latex protection.
- ◆ Contact your supervisor.

Strandings

For vehicle, road hazard, or other stranding problems, the Texas Department of Public Safety has a toll-free number to help.

- ◆ 1-800-525-5555, DPS Stranded Motorist Hotline.

The number is printed on the back of all Texas driver licenses and ID cards, and used for non-emergency assistance. It is not a substitute for 911.

Depending on your location, the call is routed to the appropriate police agency that will provide help or send a unit to check on your welfare until other help arrives.

Where your call will be routed

| Your location | Call routed to |
|-----------------------------|---|
| Inside city limits | Police department with local jurisdiction |
| In a rural area | Sheriff's office with local jurisdiction |
| Areas with courtesy patrols | Courtesy Patrol (or you will be given the number) |

Section 4 — Traffic Counter Safety

Working at Night

A flashlight is required equipment for personnel on night shifts. This will be used to inspect the ground and find a suitable parking place. **Do not shine the flashlight** into oncoming traffic.

Expect local law enforcement to inspect your activity during night shifts; be courteous and respectful when answering all questions.

Working in Heat

Heat exhaustion and heatstroke are dangers during hot weather. Counting sites located in urban areas often do not provide protection from the sun. A vehicle in direct sunlight will become very hot. Open all windows to ensure a steady flow of fresh air. You should carry an adequate supply of drinking water during shift work, and wear cool loose-fitting clothing while working in the heat.

Working in Inclement Weather

Traffic counters should avoid working in severe conditions such as icy roads, blizzards, etc. Besides the personal safety threat, traffic conditions in such weather will not reflect accurate traffic flows. If you find weather conditions threatening your physical safety or influencing traffic flows, **check with your supervisor to determine whether to leave the counting site.**

Tornados While Working Outdoors If you are working outside when a tornado threatens, first seek shelter inside a sturdy building. Otherwise, lie flat and face down in the lowest depression available, protecting the back of the head with arms. Get as far away from trees and cars as possible; they may be blown onto you.

Tornados While Driving If you are driving when a tornado threatens, remember that vehicles are extremely dangerous in a tornado. Only if a tornado is somewhat far away and traffic is light, should you try to drive out of its path by moving at right angles to the tornado.

If a tornado is immediately nearby, park your vehicle as quickly and safely as possible – away from traffic lanes. Get out and seek shelter in a sturdy building. If in the open country, lie flat and face down in the lowest depression available, protecting the back of the head with arms. Get as far away from trees and cars as possible; they may be blown onto you.

NOTE: Avoid seeking shelter under bridges, which can create deadly traffic hazards while offering little protection against flying debris.

Compromised Condition of Counter

Fatigue Traffic counters must not work on the roadway when mentally or physically fatigued. These conditions greatly increase the potential for errors that could result in hazardous situations.

Distractions

Earphones The following are prohibited while conducting vehicle classification counts:

- ◆ earphones
- ◆ headphones
- ◆ Bluetooth devices

Loud Music Listening to excessively loud music during traffic counts as to disturb nearby drivers, homeowners, or businesses is prohibited.

Visual Display Units The following or similar forms of distractions are prohibited while conducting vehicle classification counts:

- ◆ television
- ◆ DVD player
- ◆ personal computer (laptop, notebook, tablet, etc.)
- ◆ video game player

Dangerous People

If you witness a crime or strongly suspect one is about to occur, call for law enforcement. **Do not approach the crime suspect – call 911 instead.**

If you are working in a remote area where 911 services are unavailable, call the Department of Public Safety at (800) 525-5555. They can either connect you to a local sheriff's office or give you the phone number for calling them yourself.

Emergency Contacts

Traffic counters are encouraged to provide contact information of a family member or friend in the event of an emergency. The following are suggestions for posting this information:

- ◆ employee records
- ◆ supervisor
- ◆ ICE – entering ICE (in case of emergency) into your cell phone

Section 5 — Road Conditions

Available Reports

TxDOT maintains information on road conditions concerning flooding, construction, and etc. Road conditions can change quickly. TxDOT updates road conditions as soon as possible, although no warranty is offered that the reports are accurate or complete.

Current road conditions may be found by:

- ◆ searching online at http://www.txdot.gov/travel/road_conditions.htm
- ◆ calling (800) 452-9292 for a TxDOT travel counselor, 8:00 a.m. to 6:00 pm, Monday – Friday
- ◆ calling (800) 452-9292 for automated TxDOT reports, 24 hours a day by entering the desired highway number.

Upcoming road construction and closure announcements are available online at: http://www.txdot.gov/travel/upcoming_conditions.htm.

Wireless Internet Access

Free wireless Internet access is available at all TxDOT rest areas and travel information centers. To log on, look for the network name, “Texas Safety Rest Area Free Wifi” on your wireless login display. After connecting, the [TexTreks Web portal](#) will open and provide information on the following:

- ◆ maps
- ◆ weather
- ◆ road conditions
- ◆ accommodations
- ◆ travel safety tips

For technical assistance, call toll free, (866) 532-5235.

TxDOT Safety Rest Areas

| REST AREA NAME | LOCATION | MILE POST | LATITUDE | LONGITUDE |
|--|---|-----------|----------|-----------|
| Andrews County Northbound | US 385 - North Bound, North of Andrews | | 32.5191 | -102.6121 |
| Bell County Northbound | IH 35 - Northbound, approximately 2 miles south of Salado, midway between Austin and Waco | 281 | 30.9001 | -97.5623 |
| Bell County Southbound | IH 35 - Southbound, approximately 2 miles south of Salado, midway between Austin and Waco | 282 | 30.9137 | -97.5508 |
| Brooks County | US 281, approximately 9 miles south of Falfurrias, southwest of Corpus Christi. | | 27.0942 | -98.1464 |
| Callahan County Eastbound | IH 20 - East Bound, East of Abilene | 296 | 32.4285 | -99.5844 |
| Callahan County Westbound | IH 20 - West Bound, East of Abilene | 296 | 32.4262 | -99.5699 |
| Cass County Southbound | US 59 - South Bound, South of Atlanta - Facility serves traffic both directions | | 33.0616 | -94.2739 |
| Cherokee County Northbound | US 69 - North Bound, North of Jacksonville | | 32.0294 | -95.2797 |
| Coke County | US 87 - North of Water Valley, Serves traffic both directions | | 31.7017 | -100.78 |
| Collingsworth County Southbound | US 83 - South Bound, North of Wellington | | 34.9595 | -100.2215 |
| Colorado County Eastbound | IH 10, approximately 4.5 miles west of Columbus, between Houston and San Antonio | 692 | 29.6932 | -96.613 |
| Colorado County Westbound | IH 10, approximately 4.5 miles west of Columbus, between Houston and San Antonio | 692 | 29.6935 | -96.607 |
| Comal County Northbound | IH 35 - North Bound, South of New Braunfels | 180 | 29.6315 | -98.2278 |
| Comal County Southbound | IH 35 - South Bound, South of New Braunfels | 180 | 29.6348 | -98.2219 |
| Concho County | US 87 - West of Eden - Serves traffic both directions | | 31.2177 | -99.9622 |
| Crosby County Eastbound | US 82 - East Bound, East of Crosbyton | | 33.6661 | -101.1597 |
| Culberson County Westbound - IH 10 | IH 10 - West Bound, 4 miles east of Van Horn | 144 | 31.0429 | -104.7477 |

| REST AREA NAME | LOCATION | MILE POST | LATITUDE | LONGITUDE |
|--|--|-----------|----------|-----------|
| Culberson County (near Pine Springs) | US 62/180, about 7 miles from Texas/New Mexico state line | | 31.9604 | -104.6804 |
| Culberson County Eastbound - IH 10 | IH 10 - East Bound, 4 miles east of Van Horn | 144 | 31.0437 | -104.7594 |
| Donley County Eastbound | IH-40, 1 hour drive East of Amarillo | 129 | 35.1792 | -100.8353 |
| Donley County Northbound | US-287, 4 miles East of Hedley | | 34.8269 | -100.6101 |
| Donley County Southbound | US-287, 4 miles East of Hedley | | 34.8324 | -100.6197 |
| El Paso County Eastbound | IH-10 - East Bound, East of Fabens | 50 | 31.5089 | -106.1232 |
| El Paso County Westbound | IH-10 - West Bound, East of Fabens | 51 | 31.5021 | -106.1138 |
| Ellis County Northbound | IH 35E - North Bound, South of Waxahachie | 392 | 32.2788 | -96.8689 |
| Ellis County Southbound | IH 35E - South Bound, South of Waxahachie | 392 | 32.285 | -96.868 |
| Franklin County Eastbound | IH 30 - East Bound, 4 miles west of Mount Vernon | 143 | 33.165 | -95.289 |
| Franklin County Westbound | IH 30 - West Bound, 4 miles west of Mount Vernon | 143 | 33.1649 | -95.2832 |
| Galveston County North Landing (Bolivar) | SH-87, next to Port Bolivar Ferry Landing | | 29.3627 | -94.779 |
| Galveston County South Landing | SH-87, next to Port Galveston Ferry Landing | | 29.3276 | -94.7727 |
| Gillespie County Ranch Road 1 | Ranch Road 1 - West Bound, near Stonewall | | 30.2392 | -98.6527 |
| Gillespie County US 290 | US 290 - West Bound, between Johnson City and Fredericksburg | | 30.2359 | -98.6098 |
| Gray County Westbound | IH-40, just west of Alanreed | 131 | 35.1985 | -100.7982 |
| Guadalupe County Eastbound | IH 10 - East Bound, East of Seguin | 621 | 29.6148 | -97.8093 |
| Guadalupe County Westbound | IH 10 - West Bound, East of Seguin | 622 | 29.6158 | -97.803 |
| Hale County Northbound | IH 27 - North Bound, South of Hale Center | 29 | 33.9314 | -101.8537 |
| Hale County Southbound | IH 27 - South Bound, South of Hale Center | 29 | 33.9368 | -101.8542 |
| Hardeman County Northbound | US-287, East of Quanah | | 34.2685 | -99.6302 |
| Haskell County Southbound | US 277 - South Bound, South of Haskell | | 33.0262 | -99.7795 |
| Howard County Eastbound | IH 20 - East Bound, East of Big Spring | 191 | 32.3004 | -101.2633 |

| REST AREA NAME | LOCATION | MILE POST | LATITUDE | LONGITUDE |
|--|--|-----------|----------|-----------|
| Johnson County Northbound | IH 35W - North Bound, South of Burleson | 33 | 32.4733 | -97.2719 |
| Johnson County Southbound | IH 35W - South Bound, South of Burleson | 33 | 32.4991 | -97.2902 |
| Kenedy County | US-77, about 20 miles south of Kingsville, located in the median serving traffic both directions | | 27.1335 | -97.7928 |
| Kerr County Eastbound | IH 10 - East Bound, North of Comfort | 514 | 30.0534 | -99.0308 |
| Kerr County Westbound | IH 10 - West Bound, North of Comfort | 514 | 30.0533 | -99.0238 |
| Knox County Westbound | US 82 - West Bound, East of Benjamin | | 33.5898 | -99.717 |
| Live Oak County Northbound | IH 37 - North Bound, North of Three Rivers | 78 | 28.5995 | -98.217 |
| Live Oak County Southbound | IH 37 - South Bound, North of Three Rivers | 82 | 28.6541 | -98.2463 |
| Medina County | US-90, between D'Hanis and Sabinal, located in the median serving traffic both directions | | 29.314 | -99.3856 |
| Medina County Northbound - IH 35 | IH 35 - North Bound, North of Devine | 130 | 29.1954 | -98.8284 |
| Medina County Southbound - IH 35 | IH 35 - South Bound, North of Devine | 130 | 29.2007 | -98.8222 |
| Mitchell County Westbound | IH 20 - West Bound, West of Colorado City | 204 | 32.3433 | -101.06 |
| Navarro County Northbound | IH 45 - North Bound, South of Corsicana | 216 | 31.9047 | -96.3832 |
| Navarro County Southbound | IH 45 - South Bound, South of Corsicana | 216 | 31.913 | -96.3976 |
| Nolan County Eastbound | IH 20 - East Bound, East of Sweetwater | 256 | 32.4874 | -100.2116 |
| Nolan County Westbound | IH 20 - West Bound, East of Sweetwater | 256 | 32.4866 | -100.207 |
| Orange County Eastbound | IH 10 - East Bound, West of Orange | 868 | 30.1307 | -93.906 |
| Orange County Westbound | IH 10 - West Bound, West of Orange | 868 | 30.1309 | -93.9011 |
| Palo Pinto County Eastbound | IH 20 - East Bound, East of US 281 | 390 | 32.6311 | -98.0723 |
| Palo Pinto County Westbound | IH 20 - West Bound, East of US 281 | 390 | 32.6364 | -98.0671 |
| Pecos East County Eastbound | IH 10, 23 miles west of Sheffield in west Texas | 308 | 30.8639 | -102.0856 |
| Pecos East County Westbound | IH 10, 23 miles west of Sheffield in west Texas | 308 | 30.8536 | -102.0669 |

| REST AREA NAME | LOCATION | MILE POST | LATITUDE | LONGITUDE |
|---|---|-----------|----------|-----------|
| Pecos West County Eastbound | IH 10 - East Bound, 26 miles west of Ft. Stockton | 233 | 30.9388 | -103.3139 |
| Pecos West County Westbound | IH 10 - West Bound, 26 miles west of Ft. Stockton | 233 | 30.9378 | -103.3052 |
| Polk County Northbound | US 59 - North Bound, North of Leggett | | 30.8365 | -94.8619 |
| Polk County Southbound | US 59 - South Bound, North of Leggett | | 30.8401 | -94.8609 |
| Sutton County Eastbound | IH 10 - East Bound, West of Sonora | 394 | 30.6164 | -100.7489 |
| Sutton County Westbound | IH 10 - West Bound, West of Sonora | 394 | 30.6143 | -100.7411 |
| Van Zandt County Eastbound | IH 20 - East Bound, West of Van | 538 | 32.5155 | -95.6899 |
| Van Zandt County Westbound | IH 20 - West Bound, West of Van | 538 | 32.5133 | -95.6796 |
| Victoria County Northbound | US 59 - North Bound, North of Victoria | | 28.885 | -96.8285 |
| Victoria County Southbound | US 59 - South Bound, North of Victoria | | 28.8914 | -96.822 |
| Walker County Northbound | IH 45 - North Bound, North of Huntsville | 124 | 30.7828 | -95.6595 |
| Walker County Southbound | IH 45 - Southbound, North of Huntsville | 125 | 30.8007 | -95.6841 |
| Ward County Eastbound | IH 20 - East Bound, East of Pyote | 69 | 31.5381 | -103.0717 |
| Ward County Westbound | IH 20 - West Bound, East of Pyote | 69 | 31.5408 | -103.0639 |
| Wichita County Northbound | US 287 - North Bound, West of Iowa Park | | 33.9659 | -98.7084 |
| Wichita County Southbound | US 287 - South Bound, West of Iowa Park | | 33.9657 | -98.7201 |
| Wise County Northbound | US 287 - North Bound, 2 miles North of Decatur | | 33.284 | -97.6316 |

TxDOT Travel Information Centers

| LOCATION | ADDRESS | CONTACT |
|----------|---|--------------------------------------|
| Amarillo | 9700 E. I-40 Amarillo, TX 79118 | (806) 335-1441 (806) 335-2427 fax |
| Anthony | 8799 S. Desert Blvd. Anthony, TX 79821 | (915) 886-3468 (915) 886-4616 fax |
| Austin | 112 East 11th St. Austin, TX 78701 | (512) 463-8586 (512) 475-3046 |

| | | |
|-------------------|---|--------------------------------------|
| Denison | 6801 US 69/75 Denison, TX | (903) 463-2860 (903) 463-5783 fax |
| Gainesville | 4901 N. I-35 Gainesville, TX 76240 | (940) 665-2301 (940) 665-4695 fax |
| Langtry | U.S. 90 W. State Loop 25 at Torres Ave Langtry, TX | (432) 291-3340 (432) 291-3366 fax |
| Laredo | 15551 I-35 N. at US 83 Laredo, TX 78045 | (956) 417-4728 (956) 417-4731 fax |
| Orange | 1708 E. I-10 Orange, TX 77632 | (409) 883-9416 (409) 886-1915 fax |
| Texarkana | 1200 W. I-30 Texarkana, TX 75503 | (903) 794-2114 (903) 792-3392 fax |
| Rio Grande Valley | 2021 W. Harrison Harlingen, TX 78552 | (956) 428-4477 (956) 428-4475 fax |
| Waskom | 1255 N. I-20 E. Waskom, TX 75692 | (903) 687-2547 (903) 687-2046 fax |
| Wichita Falls | 900 Central Freeway Wichita Falls, TX 76306 | (940) 723-7931 (940) 761-1818 fax |

Chapter 3 — Preparing for Vehicle Classification Counts

Contents:

[Section 1 — Equipment and Supplies](#)

[Section 2 — Reviewing Assigned Schedule](#)

[Section 3 — Counting Station](#)

[Section 4 — Synchronizing Timepiece](#)

[Section 5 — Trip Checklist](#)

Section 1 — Equipment and Supplies

Required Equipment and Supplies

Tally Counter. Manual classification counting equipment used by traffic counters in the field.



Figure 3-1. Manual Vehicle Classification Counting Equipment (Tally Counter, The Denominator Company).

Other Required Supplies

- ◆ Timepiece. A watch, clock, or other timepiece is required to ensure accuracy for:
 - start of hourly counts
 - end of hourly counts
 - end of shift
- ◆ Global Positioning System (GPS) receiver
 - decimal format is required for latitude and longitude readings
 - minutes and seconds format is not used
- ◆ Texas highway map (showing Texas counties)
- ◆ State Traffic Survey sign
- ◆ clipboard, extra long
- ◆ bulldog paper clips
- ◆ calendar

- ◆ number two pencils
- ◆ flashlight and batteries
- ◆ calculator

NOTE: **Only number two pencils may be used for reporting traffic counts.** No ink pens, ball point pens, erasable ink pens, felt tip markers, or other writing instruments may be used for writing on Form 1617A.

Recommended Supplies

- ◆ heavy anchor for traffic survey sign
- ◆ drinking water
- ◆ medical first aid kit
- ◆ fire extinguisher
- ◆ emergency weather radio with specific message area encoding (SAME)

Section 2 — Reviewing Assigned Schedule

Schedule Information

Each member of the traffic counter crew should review the assigned schedule and identify the following information:

- ◆ date of the counting assignment
- ◆ hours for the counting shift
- ◆ map location of the counting site, including
 - county
 - TxDOT District
- ◆ counting station's identification number
- ◆ GPS decimal coordinates for latitude and longitude
- ◆ type of count
 - directional (two directions of traffic flow)
 - three-way (three directions of traffic flow)
 - four-way (four directions of traffic flow)
- ◆ highway number (the leg of traffic to be counted)
 - a single lane or multilane road flowing in one direction indicates one leg.
- ◆ direction (direction of traffic flow from the station location)
 - north
 - south, etc.
- ◆ Nearest town in direction of traffic flow
 - nearest town northward
 - nearest town southward, etc.
- ◆ destination route to counting site
 - check the planned route for road conditions (see Chapter 2, Section 5.)
 - estimate drive time to arrive safely and ensure proper setup
- ◆ any special instructions on the assigned schedule

Section 3 — Counting Station

Locating Station

Using information from the schedule, note the following information for the counting station:

- ◆ county
- ◆ assigned highway legs
- ◆ GPS latitude and longitude decimal readings

Find the general location using a map. Find the exact location using a GPS receiver with decimal readout. The schedule will provide the decimal latitude and longitude for each station location.

Parking

Review any special parking instructions on the schedule. Select a parking place that provides a clear view of the traffic flow for the particular type of assigned count: two-, three-, or four-way count.

Keep these points in mind while selecting a parking place:

- ◆ **You must** park at least 15' from the travel lane, or behind a barrier
- ◆ **You must** park behind a barrier when counting between a highway and access road
- ◆ **Do not** park any part of your vehicle on the roadway or shoulder
- ◆ **Do not** park within the median of a divided highway
- ◆ **Do not** block private driveways or access to mailboxes
- ◆ **Do not** trespass onto private property
- ◆ **Do not** restrict visibility of other drivers
- ◆ **Do not** obstruct highway signs and markers
- ◆ **Do not** shine headlights into traffic
- ◆ **Do not** allow an open door to protrude into a lane of traffic
- ◆ **Do not** cause unsafe conditions for other drivers or pedestrians; be alert for pedestrians around you
- ◆ **Do not** impede passing traffic

Posting State Traffic Survey Sign

Remember that while outside the vehicle and in the highway right of way, you must wear the proper headgear, safety vest, and steel-toed shoes.

Using a sandbag or other heavy anchor, place the Traffic Survey sign near the road within 10' of the shoulder so it is visible by passing traffic. Do not place the sign in a lane of traffic.

Leaving Site

While wearing the required headgear, safety vests, and steel-toed shoes, remove the State Traffic Survey sign. Check around your vehicle and ensure that you did not leave any litter at the counting location.

Very cautiously, proceed back onto the roadway, yielding the right of way to traffic.

Section 4 — Synchronizing Timepiece

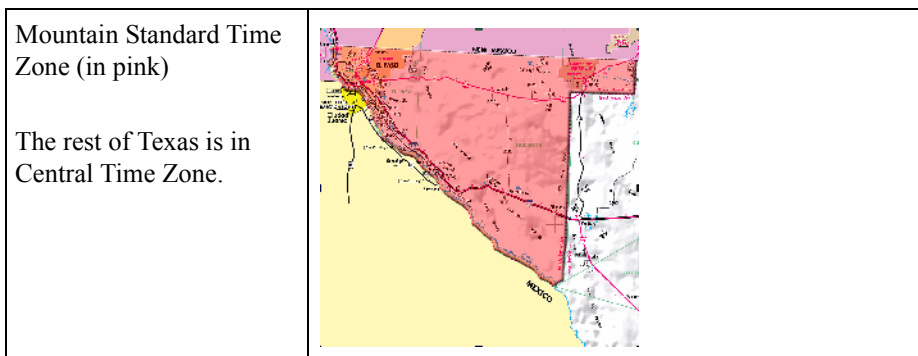
The required time format for traffic counting is the 24-hour clock notation with 00:00 being midnight. Before each shift, traffic counters must set the minute hand of their timepieces to ensure they are synchronized with the official time. Official time is attained using either the Internet or the telephone.

Using the Internet for Official Time

Traffic counters can obtain the official time by clicking on the desired time zone from this Web site:

<http://nist.time.gov/>

NOTE: While most of Texas lies in the Central Time Zone, traffic counts in the following Texas counties are in the Mountain Time Zone: El Paso County, Hudspeth County, and the north-west corner of Culberson County.



Using the Telephone for UTC Time

Traffic counters who obtain Coordinated Universal Time (also referred to as UTC Time) by telephone must call the following (toll) number:

303-499-7111

Ignoring the hour (which designates a universal time), counters must set the minute hands on their timepieces to match the telephoned recording.

Section 5 — Trip Checklist

This list may not have everything you can think of to make your trip successful, but it should be helpful.

- ◆ safety headgear, vest, and shoes
- ◆ vehicle maintenance
- ◆ road conditions
- ◆ synchronize timepiece
- ◆ assigned count schedule sheet
- ◆ tally counter
- ◆ State Traffic Survey sign and anchor
- ◆ Form 1617A (with completed headers)
- ◆ pencils (graphite lead only)
- ◆ clipboard (extra long)
- ◆ calculator
- ◆ flashlight
- ◆ drinking water
- ◆ first aid kit
- ◆ fire extinguisher
- ◆ Traffic Recorder Instruction Manual
- ◆ GPS receiver
- ◆ Texas highway map
- ◆ Supervisor's phone number
- ◆ emergency weather radio

Chapter 4 — Classifying Vehicles

Contents:

[Section 1 — Classification Categories](#)

[Section 2 — Vehicle Classification Descriptions](#)

Section 1 — Classification Categories

FHWA 13-Category Scheme

The Federal Highway Administration (FHWA) recommends that highway agencies use the 13-Category Scheme to classify vehicles. TxDOT uses the FHWA scheme for its manual vehicle classification program, and it is essential that traffic counters classify vehicles accurately in accordance with this scheme.

The FHWA 13-Category Scheme is separated into categories depending on whether the vehicle carries passengers or commodities. Non-passenger vehicles are further subdivided by the number of axles and number of units, including both power and trailer units. Note that the addition of a trailer to vehicle classes 1 to 5 does not change the classification of the vehicle.

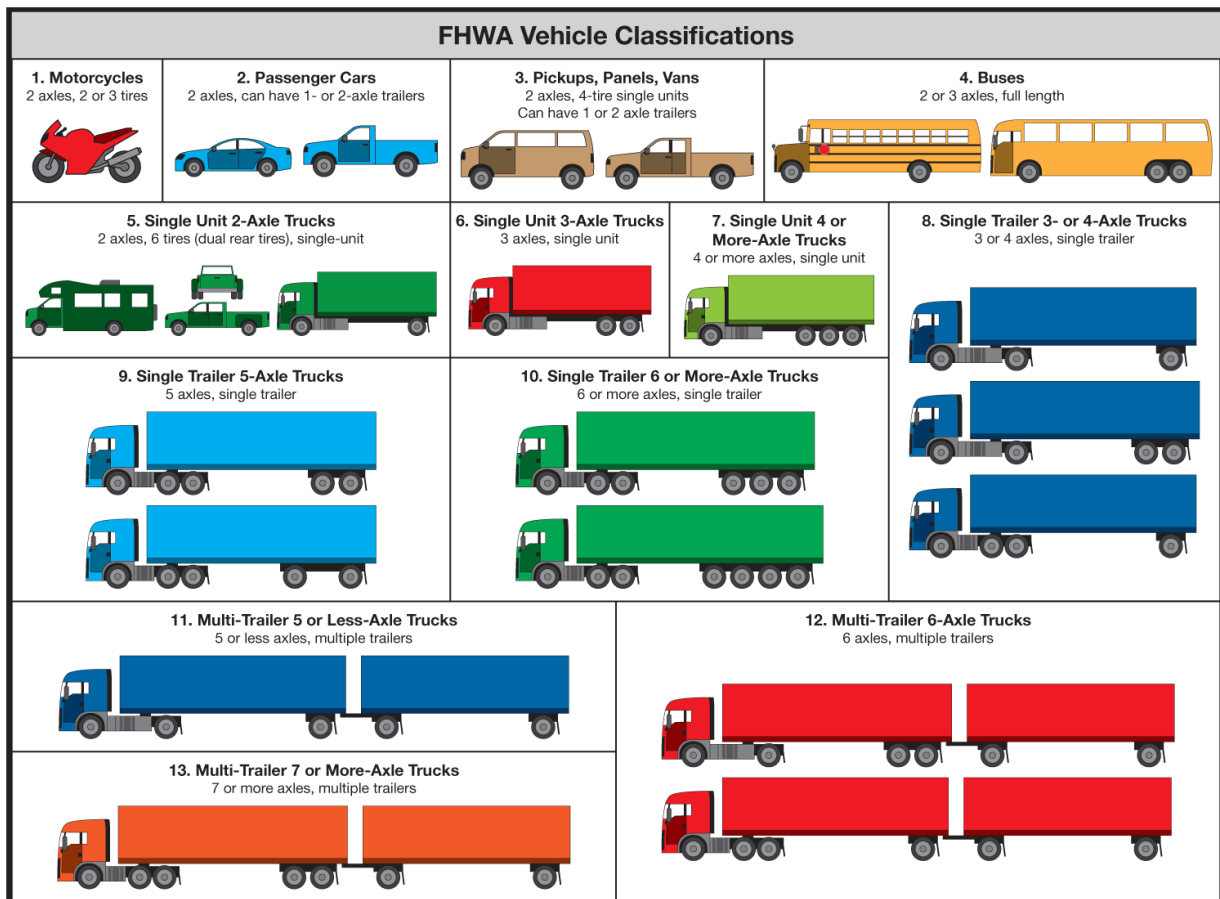


Figure 4-1. FHWA 13-Category Scheme for Vehicle Classifications.

Classification Table

FHWA 13-Category Scheme -- Classification Table

| Broad Categories | Classification Number | General Description | Definition | Additional Identifiers | Sub-class |
|-------------------------|------------------------------|----------------------------|---|--|------------------|
| Passenger carriers | 1 | Motorcycles | 2 axles, 2 or 3 wheels. | Also motor scooters, mopeds, and 3-wheel motorcycles. | |
| | 2 | Passenger cars | 2 axles. Can have 1- or 2-axle trailers. | Short-bed pickup (5-6'), no extended cab; SUVs; minivan; sedan. | |
| | 3 | Pickups, panels, vans | 2-axle, 4-tire single units. Can have 1- or 2-axle trailers. | Long-bed pickup (8'), no extended cab; short-bed and long-bed pickups with extended cab or 4 doors; conversion van; full-size work van; limousine - regular; short-bed dually. | |
| | 4 | Buses | 2- or 3-axle, full length. | School; transit; private; commercial. Does not include compact school buses. | |

FHWA 13-Category Scheme -- Classification Table

| Broad Categories | Classification Number | General Description | Definition | Additional Identifiers | Sub-class |
|----------------------|-----------------------|-----------------------|--|--|-------------------|
| Commodities Carriers | 5 | Single-unit trucks | 2-axle, 6-tire, (dual rear tires), single-unit trucks. | Approx. 21' steering to rear axles; 8' bed dually with 4 full doors; dump or sewage truck (with or without 2-axle trailer); compact school bus or 4 full doors; extended limousines. | |
| | 6 | Single-unit trucks | 3-axle, single-unit trucks. | Dump truck; single tractor with 3 axles and no trailer; oil field equipment. | |
| | 7 | Single-unit trucks | 4 or more axle, single-unit trucks. | 4 or more axle trucks on a single frame. | |
| | 8 | Single-trailer trucks | 3- or 4-axle, single-trailer trucks. | 2-axle truck/tractor pulling single 1-axle trailer; 2-axle pulling single 2-axle trailer; 3-axle pulling single 1-axle trailer. | 2S1 2S2 3S1 |
| | 9 | Single-trailer trucks | 5-axle, single-trailer trucks. | 3-axle truck/tractor pulling single 2-axle trailer (18-wheeler); 2-axle pulling single 3-axle trailer; dump truck pulling 2-axle trailer. | 3S2 3S2-Split |
| | 10 | Single-trailer trucks | 6 or more axle, single-trailer trucks. | 3-axle truck/tractor with single 3 or more axle trailer. | 3S3 3S4 |
| | 11 | Multi-trailer trucks | 5 or less axle, multi-trailer trucks. | 2-axle truck/tractor with 2 trailers, the first trailer with 1 axle, the second trailer with 2 axles. | 2S1-2 |
| | 12 | Multi-trailer trucks | 6-axle, multi-trailer trucks. | 2-3 axle truck/tractor with 2 trailers, the first trailer with 1-2 axles, the second trailer with 2 axles. | 2S2-2 3S1-2 |
| | 13 | Multi-trailer trucks | 7 or more axle, multi-trailer trucks. | 3-axle truck/tractor with 2 or more trailers. | 3S2-2 |

Section 2 — Vehicle Classification Descriptions

Motorcycles

Class 1. Motorcycles include all two or three-wheeled motorized vehicles. Typical vehicles in this class have saddle type seats and are steered by handlebars rather than steering wheels. This class includes motorcycles, motor scooters, mopeds, motor-powered bicycles, and three-wheel motorcycles. These motor vehicles have two axles, three when pulling a trailer.

Passenger Cars

Class 2. All sedans, coupes, and station wagons manufactured primarily for the purpose of carrying passengers and including those passenger cars pulling recreational or other light trailers. These motor vehicles have two axles, three to four when pulling a trailer and include the following:

- ◆ short-bed pickups (five- or six-foot beds), no extended cab
- ◆ sport utility vehicles
- ◆ mini vans
- ◆ sedans (limousines are entered into Class 3, pickups, panels, and vans)

Pickups, Panels, Vans

Class 3. All two-axle, four-tire, vehicles other than passenger cars. Included in this classification are pickups, panels, vans, and other vehicles such as campers, motor homes, ambulances, hearses, carryalls, and minibuses. Other two-axle, four-tire single-unit vehicles pulling recreational or other light trailers are included in this classification.

Panels and pickups have two axles (three to four axles when pulling a trailer) and four tires, but can also include six-tire (dually) pickups if they do not meet the conditions in Class 5. Vehicles with a single cab and a long bed (eight-foot length) are counted as panels and pickup trucks. Examples of panel and pickup classifications are:

- ◆ Chevy, Ford, Dodge long-bed (eight-foot bed), no extended cab
- ◆ short-bed and long-bed pickups with extended cabs
- ◆ conversion vans
- ◆ full-size work vans
- ◆ limousines – regular
- ◆ short-bed pickups with four doors (five- or six-foot beds)

Buses

Class 4. All vehicles manufactured as traditional passenger-carrying buses with two axles and six tires, or three or more axles. This class includes only traditional buses (including school buses) functioning as passenger-carrying vehicles. Modified buses should be considered to be a truck.

Buses may be commercial or private, have two and three axles, and are 25 feet or more. Examples of bus classifications are:

- ◆ school buses
- ◆ Greyhound buses
- ◆ musician tour buses

NOTE: ADA/disability-equipped buses and compact school buses are classified as two-axle, six-tire, single-unit trucks, or Class 5.

Single Unit Trucks

Class 5. Two-axle, six-tire, single-unit trucks. All vehicles on a single frame including trucks, camping and recreational vehicles, motor homes, etc., with two axles and dual rear wheels. This class includes vehicles with two axles, three to four when pulling a trailer, although pulling a trailer does not change the classification of the vehicle.

This class includes vehicles with two axles (three to four when pulling a trailer) and six tires, usually dual rear tires. Examples of six-tire single-unit trucks include:

- ◆ dump and sewage trucks with two axles
- ◆ four-door, long-bed pickups (eight-foot)
- ◆ airport buses
- ◆ limousines – extended

Class 6. Three-axle, single-unit trucks. All vehicles on a single frame with three axles, including trucks, camping and recreational vehicles, motor homes, etc. Examples of three-axle single-unit trucks include:

- ◆ dump trucks with three axles (dummy axle must be off the ground)
- ◆ single tractors with three axles – NO TRAILERS
- ◆ oil field equipment with three axles

NOTE: Dump trucks pulling two-axle trailers are classed under 5-axle, single-trailer trucks.

Class 7. All trucks on a single frame with four or more axles, not pulling trailers. Examples include:

- ◆ dump trucks with four axles (dummy axle must be on the ground)
- ◆ oil field equipment with four axles

Combination Trucks (Pulling Trailers)

Combination trucks are tractor trucks pulling trailers. Of importance is the number of axles on the truck and trailer(s), rather than the body style.

Class 8. Three- to four-axle, single-trailer trucks. All vehicles with four or fewer axles consisting of two units, one of which is a tractor or straight truck power unit. This class includes:

- ◆ trucks with two axles pulling a single one-axle trailer
- ◆ trucks with two axles pulling a single two-axle trailer or trucks with three axles pulling a single one-axle trailer; total axle count is four, for truck and trailer

Class 9. Five-axle, single-trailer trucks. All five-axle vehicles consisting of two units, one of which is a tractor or straight truck power unit. This class includes:

- ◆ trucks with three axles pulling a single trailer with two axles (eighteen wheelers)
- ◆ tractors with two axles pulling a single, three-axle trailer, or a dump truck pulling a two-axle trailer

Class 10. Six or more axle, single-trailer trucks. All vehicles with six or more axles consisting of two units, one of which is a tractor or straight truck power unit. This class includes trucks with three axles pulling a single-trailer with three or more axles.

Class 11. Five or less axle, multi-trailer trucks. All vehicles with five or fewer axles consisting of three or more units, one of which is a tractor or straight truck power unit. This class includes trucks with two axles pulling two trailers, the first trailer with one axle, the second trailer with two axles.

Class 12. Six-axle multi-trailer trucks. All six-axle vehicles consisting of three or more units, one of which is a tractor or straight truck power unit. This class includes trucks with two and three axles, pulling two trailers. The first trailer has one or two axles; the second trailer has two axles. The total axles are six for the truck and both trailers.

Class 13. Seven or more axle, multi-trailer trucks. All vehicles with seven or more axles consisting of three or more units, one of which is a tractor or straight truck power unit. This class includes trucks with two trailers or more, having at least seven axles total.

Chapter 5 — Counting Vehicles

Contents:

[Section 1 — Counting Instructions](#)

Section 1 — Counting Instructions

Introduction

The tally counter equipment is used to record the number of vehicles each hour that travel past a counting station. The vehicles are first classified by a traffic counter's visual observation, using the FHWA 13-Category Scheme. (See Chapter 4 or Appendix A.) Each classified vehicle is counted by recording it into the tally counter per the direction or leg of the vehicle's travel.

Vehicle classification counts are conducted for each hour of a counting shift and must accurately follow timing schedules. Counting past an hour or short of one can cause a large error in the counting data. Most classification counts last for 24 consecutive hours per station; however, some special counts may require a different duration. These exceptions will always be clearly explained in the schedule of an assigned count. Each schedule will show the station location, date, shift hours, and the assigned direction of the count.

There are three scenarios for the visual classification counting process. The procedures for each counting scenario are provided in the following sections.

Directional (Two-Way) Counts

A directional (two-way) count measures the number of vehicles traveling in two directions at a given checkpoint – the counting station. The tally counter equipment is used to record each vehicle by classification and its direction of travel. Traffic counter personnel must classify and record all vehicles for each hour of their shift.

In Figure 5-1, the tally counter is set up for a directional count. The top two rows of keys are used for the first or north direction of travel; the bottom two rows, for the second or south direction of travel. This arrangement may also be used for frontage road counts that do not include main lanes.

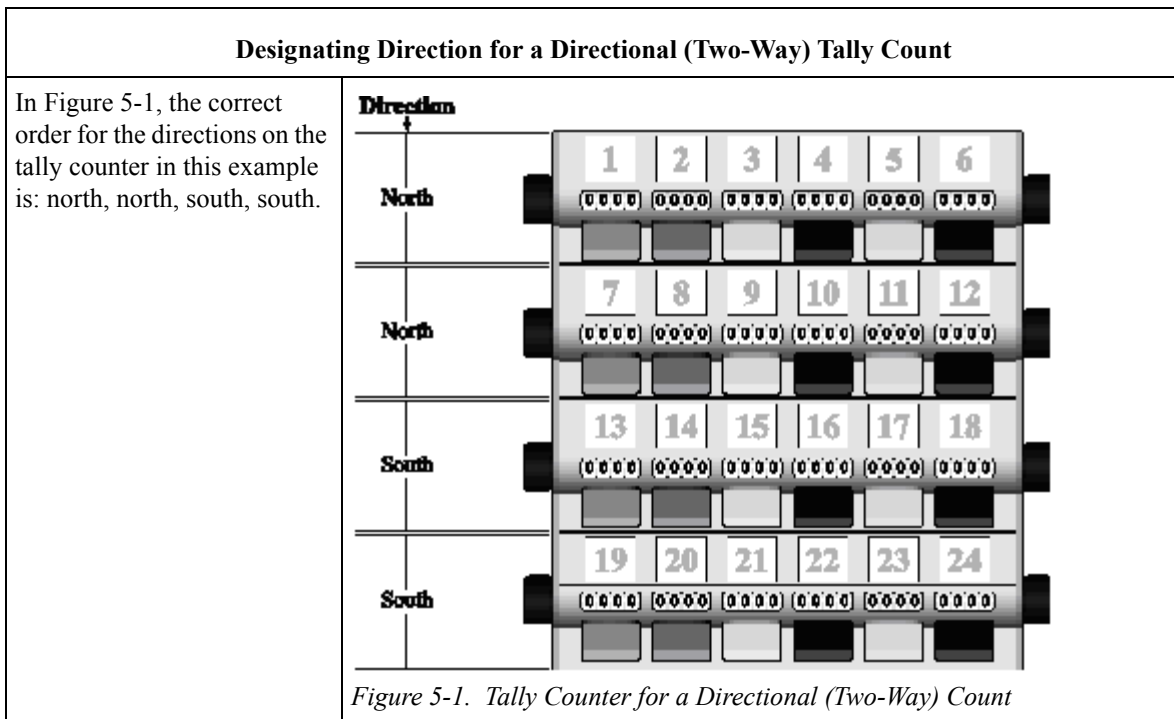
Designating Direction for Directional Counts. It is very important to assign the directions on the tally counter rows in the proper order. **To determine the correct order**, first look at the assigned counting schedule. The schedule will identify each assigned direction of travel and the corresponding direction code. Arrange the directions on the tally counter rows by considering the ascending numeric order of the direction codes:

Direction Codes

| Direction | Code # | Direction | Code # | Direction | Code # | Direction | Code # |
|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
| North | 1 | East | 3 | South | 5 | West | 7 |

| Direction | Code # | Direction | Code # | Direction | Code # | Direction | Code # |
|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
| Northeast | 2 | Southeast | 4 | Southwest | 6 | Northwest | 8 |

Because north is coded as 1 and south is coded as 5, the directions on the tally counter in this example occur in the numerical order of north and then south. North is then dedicated to the top two rows of keys on the tally counter and south, to the bottom two rows.



Labeling Tally Counter Keys for Directional Counts. For a two-way count you need to label twelve of the thirteen vehicle classification categories in the spacing above the tally counter keys. Looking at the keys in Figure 5-1 (and the illustrative numbers above them), place temporary labels on your tally counter for vehicle classifications 2-13 above keys 1-12 for the north direction of travel. Likewise, place labels for classes 2-13 above keys 13-24 for the south leg of travel. Refer to the table, Labeling Tally Counter Keys for Directional Counts, for specific labeling in this example.

Labeling Tally Counter Keys for Directional Counts

| Label Name | Class # | Key # | Direction |
|-----------------------|---------|-------|-----------|
| Passenger Cars | 2 | 1 | North |
| | | 13 | South |
| Pickups, Panels, Vans | 3 | 2 | North |
| | | 14 | South |

Labeling Tally Counter Keys for Directional Counts

| Label Name | Class # | Key # | Direction |
|--------------------------------------|---------|-------|-----------|
| Buses | 4 | 3 | North |
| | | 15 | South |
| 2-Axle Single-unit | 5 | 4 | North |
| | | 16 | South |
| 3-Axle Single-unit | 6 | 5 | North |
| | | 17 | South |
| 4 or More Axle Single-unit | 7 | 6 | North |
| | | 18 | South |
| 3 or 4-Axle Single-trailer Trucks | 8 | 7 | North |
| | | 19 | South |
| 5-Axle Single-trailer Trucks | 9 | 8 | North |
| | | 20 | South |
| 6 or More Axle Single-trailer Trucks | 10 | 9 | North |
| | | 21 | South |
| 5 or Less Axle Multi-trailer Trucks | 11 | 10 | North |
| | | 22 | South |
| 6-Axle Multi-trailer Trucks | 12 | 11 | North |
| | | 23 | South |
| 7 or More Axle Multi-trailer Trucks | 13 | 12 | North |
| | | 24 | South |

Vehicles Not Classifiable by Tally Counter. In a two-way count scenario, the tally counter has twelve keys per direction of travel. Because there are thirteen classifications in the FHWA 13-Category Scheme, you must use a separate method to keep track of the one category not classifiable by the tally counter. In our example of a two-way count, you would separately keep track of the Class 1 vehicles that travel in the north direction and those that travel in the south direction for each hour of your shift.

NOTE: Depending on your preferences, you can select which one of the FHWA thirteen categories will not be classifiable on the tally counter and tracked by a separate method.

Recording the Counts. After you have assigned the direction of travel to the tally counter rows and also labeled the keys for a two-way count, you are ready to begin recording the number of vehi-

cles by classification for each hour of your shift. When you observe a vehicle, classify it visually; identify the direction of travel; and manually click the corresponding key on the tally counter as shown in the table, Recording Vehicle Classifications on Tally Counter for Directional Counts.

Recording Vehicle Classifications on Tally Counter for Directional Counts

| For each vehicle classified as: | Direction or Leg | Click Key # | Direction or Leg | Click Key # |
|---|------------------|-------------|------------------|-------------|
| Passenger Cars (Class 2) | North | 1 | South | 13 |
| Pickups, Panels, Vans (Class 3) | North | 2 | South | 14 |
| Buses (Class 4) | North | 3 | South | 15 |
| 2-Axle Single-unit (Class 5) | North | 4 | South | 16 |
| 3-Axle Single-unit (Class 6) | North | 5 | South | 17 |
| 4 or More Axle Single-unit (Class 7) | North | 6 | South | 18 |
| 3 or 4-Axle Single-trailer Trucks (Class 8) | North | 7 | South | 19 |
| 5-Axle Single-trailer Trucks (Class 9) | North | 8 | South | 20 |
| 6 or More Axle Single-trailer Trucks (Class 10) | North | 9 | South | 21 |
| 5 or Less Axle Multi-trailer Trucks (Class 11) | North | 10 | South | 22 |
| 6-Axle Multi-trailer Trucks (Class 12) | North | 11 | South | 23 |
| 7 or More Axle Multi-trailer Trucks (Class 13) | North | 12 | South | 24 |

Recording Vehicle Classifications on Tally Counter for Directional Counts

Recording Counts Procedure

1. Observe vehicle.
2. Classify it visually.
3. Identify its direction of travel.
4. Click appropriate class/direction key.

Figure 5-2. Tally Counter for a Directional Count

NOTE: Be certain you record each vehicle classification on the correct direction of travel with the tally counter equipment and the separate tracking method as well.

Resetting Tally Counter. Remember to closely watch the clock or use a timer when you are recording vehicle counts. Each hour of counting must begin at the top of the hour. At the end of each hour's counting, you must quickly and accurately transfer the total counts per classification onto Form 1617A. (See Chapter 6 for directions.) Immediately afterward, you must reset each key on the tally counter back to 0000 for the next hour's counting.

Three-Way Counts

A three-way count measures the number of vehicles traveling on three directions or legs of travel at a given checkpoint – the counting station. The tally counter equipment is used to record each vehicle by classification and its direction of travel. Traffic counter personnel must classify and record all vehicles for each hour of their shift.

In Figure 5-3, the tally counter is set up for a three-way count. The top row of keys is used for the first direction, or north leg of travel; the second row is for the east leg; and the third row is for the south leg.

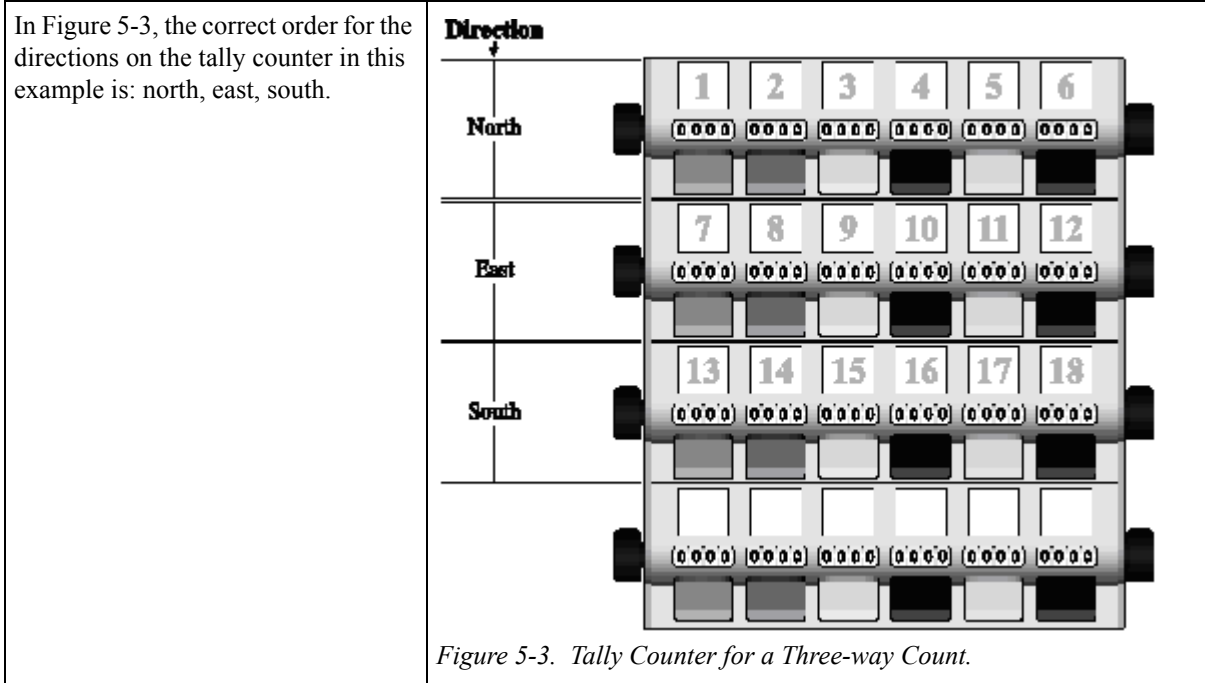
Designating Direction for Three-Way Counts. It is very important to assign the directions on the tally counter rows in the proper order. **To determine the correct order**, first look at the assigned counting schedule. The schedule will identify each assigned direction or leg of travel and the corresponding direction code. Arrange the directions on the tally counter rows by considering the ascending numeric order of the direction codes:

Direction Codes

| Direction | Code # | Direction | Code # | Direction | Code # | Direction | Code # |
|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
| North | 1 | East | 3 | South | 5 | West | 7 |
| Northeast | 2 | Southeast | 4 | Southwest | 6 | Northwest | 8 |

Because north is coded as 1, east as 3, and south as 5, the directions occur in the numerical order of north, east, and south. North is then dedicated to the first row of keys on the counter, east to the second row, and south to the third row.

Designating Direction for a Three-Way Tally Count



Labeling Tally Counter Keys for Three-Way Counts. For a three-way count you need to label six of the thirteen vehicle classification categories in the spacing above the tally counter keys. Looking at the keys in Figure 5-3 (and the illustrative numbers above them), place temporary labels on your tally counter for vehicle Classes 2, 3, 4, 5, 6, and 9 above keys 1-6 for the north leg of travel. Likewise, place the same class labels above keys 7-12 for the east leg, and above keys 13-18 for the south leg of travel. Refer to the table, Labeling Tally Counter Keys for Three-Way Counts, for specific labeling in this example.

Labeling Tally Counter Keys for Three-way Counts

| Label Name | Class # | Key # | Direction or Leg |
|-----------------------|---------|-------|------------------|
| Passenger Cars | 2 | 1 | North |
| | | 7 | East |
| | | 13 | South |
| Pickups, Panels, Vans | 3 | 2 | North |
| | | 8 | East |
| | | 14 | South |

Labeling Tally Counter Keys for Three-way Counts

| Label Name | Class # | Key # | Direction or Leg |
|------------------------------|---------|-------|------------------|
| Buses | 4 | 3 | North |
| | | 9 | East |
| | | 15 | South |
| 2-Axle Single-unit | 5 | 4 | North |
| | | 10 | East |
| | | 16 | South |
| 3-Axle Single-unit | 6 | 5 | North |
| | | 11 | East |
| | | 17 | South |
| 5-Axle Single-trailer Trucks | 9 | 6 | North |
| | | 12 | East |
| | | 18 | South |

Vehicles Not Classifiable by Tally Counter. In a three-way count scenario, the tally counter has six keys per leg of travel. Because there are thirteen classifications in the FHWA 13-Category Scheme, you must use a separate method to keep track of the other seven categories not classifiable by the tally counter. In our example of a three-way count, you would separately track vehicle Classes 1, 7, 8, 10, 11, 12, and 13 per leg of travel for each hour of your shift.

NOTE: Depending on your preferences, you can select which of the FHWA thirteen categories will not be classifiable on the tally counter and tracked by a separate method.

Recording the Counts. After you have assigned the leg of travel to the tally counter rows and also labeled the keys for a three-way count, you are ready to begin recording the number of vehicles by classification for each hour of your shift. When you observe a vehicle, classify it visually; identify the leg of travel; and manually click the corresponding key on the tally counter as shown in the table, Recording Vehicle Classifications on Tally Counter for Three-Way Counts.

Recording Vehicle Classifications on Tally Counter for Three-way Counts

| For each vehicle classified as: | Direction or Leg | Click Key # | Direction or Leg | Click Key # | Direction or Leg | Click Key # |
|---------------------------------|------------------|-------------|------------------|-------------|------------------|-------------|
| Passenger Cars (Class 2) | North | 1 | South | 7 | East | 13 |
| Pickups, Panels, Vans (Class 3) | North | 2 | South | 8 | East | 14 |
| Buses (Class 4) | North | 3 | South | 9 | East | 15 |
| 2-Axle Single-unit (Class 5) | North | 4 | South | 10 | East | 16 |

Recording Vehicle Classifications on Tally Counter for Three-way Counts

| For each vehicle classified as: | Direction or Leg | Click Key # | Direction or Leg | Click Key # | Direction or Leg | Click Key # |
|--|------------------|-------------|------------------|-------------|------------------|-------------|
| 3-Axle Single-unit (Class 6) | North | 5 | South | 11 | East | 17 |
| 5-Axle Single-trailer Trucks (Class 9) | North | 6 | South | 12 | East | 18 |

Recording Vehicle Classifications on Tally Counter for Three-Way Counts

Recording Counts Procedure

1. Observe vehicle.
2. Classify it visually.
3. Identify its direction of travel.
4. Click appropriate class/direction key.

Figure 5-4. Tally Counter for a Three-Way Count.

NOTE: Be certain you record each vehicle classification on the correct leg of travel with the tally counter and the separate tracking method as well.

Resetting Tally Counter. Remember to closely watch the clock or use a timer when you are recording vehicle counts. Each hour of counting must begin at the top of the hour. At the end of each hour’s counting, you must quickly and accurately transfer the total counts per classification onto Form 1617A. (See Chapter 6 for directions.) Immediately afterward, you must reset each key on the tally counter back to 0000 for the next hour’s counting.

Four-Way Counts

A four-way count measures the number of vehicles traveling on four legs of travel at a given check-point – the counting station. The tally counter equipment is used to record each vehicle by classification and its direction of travel. Traffic counter personnel must classify and record all vehicles for each hour of their shift.

In Figure 5-5, the tally counter is set up for a four-way count. The top row of keys is used for the first leg, or north leg of travel; the second row is for the east leg; the third row, south leg; and the fourth row, west leg.

Designating Direction for Four-Way Counts. It is very important to assign the directions on the tally counter rows in the proper order. **To determine the correct order**, first look at the assigned counting schedule. The schedule will identify each leg of travel and the corresponding direction code. Arrange the directions on the tally counter rows by considering the ascending numeric order of the direction codes:

Direction Codes

| Direction | Code # | Direction | Code # | Direction | Code # | Direction | Code # |
|-----------|--------|-----------|--------|-----------|--------|-----------|--------|
| North | 1 | East | 3 | South | 5 | West | 7 |
| Northeast | 2 | Southeast | 4 | Southwest | 6 | Northwest | 8 |

Because north is coded as 1, east as 3, south as 5, and west as 7, the directions occur in the numerical order of north, east, south and west. North is then dedicated to the first row of keys on the counter, east to the second row, south to the third, and west to the fourth.

Designating Direction for a Four-Way Tally Count

In Figure 5-5, the correct order for the directions on the tally counter in this example is: north, east, south, west.

| | | | | | | | | | | | | | | |
|------------------|--------|---|--------|--------|--------|----|----|----|--------|--------|--------|--------|--------|--------|
| Direction | ↑ | | | | | | | | | | | | | |
| North | | <table border="1" style="border-collapse: collapse; text-align: center; width: 100%;"> <tr> <td style="width: 16.6%;">1</td> <td style="width: 16.6%;">2</td> <td style="width: 16.6%;">3</td> <td style="width: 16.6%;">4</td> <td style="width: 16.6%;">5</td> <td style="width: 16.6%;">6</td> </tr> <tr> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> </tr> </table> | 1 | 2 | 3 | 4 | 5 | 6 | (0000) | (0000) | (0000) | (0000) | (0000) | (0000) |
| 1 | 2 | 3 | 4 | 5 | 6 | | | | | | | | | |
| (0000) | (0000) | (0000) | (0000) | (0000) | (0000) | | | | | | | | | |
| East | | <table border="1" style="border-collapse: collapse; text-align: center; width: 100%;"> <tr> <td style="width: 16.6%;">7</td> <td style="width: 16.6%;">8</td> <td style="width: 16.6%;">9</td> <td style="width: 16.6%;">10</td> <td style="width: 16.6%;">11</td> <td style="width: 16.6%;">12</td> </tr> <tr> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> </tr> </table> | 7 | 8 | 9 | 10 | 11 | 12 | (0000) | (0000) | (0000) | (0000) | (0000) | (0000) |
| 7 | 8 | 9 | 10 | 11 | 12 | | | | | | | | | |
| (0000) | (0000) | (0000) | (0000) | (0000) | (0000) | | | | | | | | | |
| South | | <table border="1" style="border-collapse: collapse; text-align: center; width: 100%;"> <tr> <td style="width: 16.6%;">13</td> <td style="width: 16.6%;">14</td> <td style="width: 16.6%;">15</td> <td style="width: 16.6%;">16</td> <td style="width: 16.6%;">17</td> <td style="width: 16.6%;">18</td> </tr> <tr> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> </tr> </table> | 13 | 14 | 15 | 16 | 17 | 18 | (0000) | (0000) | (0000) | (0000) | (0000) | (0000) |
| 13 | 14 | 15 | 16 | 17 | 18 | | | | | | | | | |
| (0000) | (0000) | (0000) | (0000) | (0000) | (0000) | | | | | | | | | |
| West | | <table border="1" style="border-collapse: collapse; text-align: center; width: 100%;"> <tr> <td style="width: 16.6%;">19</td> <td style="width: 16.6%;">20</td> <td style="width: 16.6%;">21</td> <td style="width: 16.6%;">22</td> <td style="width: 16.6%;">23</td> <td style="width: 16.6%;">24</td> </tr> <tr> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> <td>(0000)</td> </tr> </table> | 19 | 20 | 21 | 22 | 23 | 24 | (0000) | (0000) | (0000) | (0000) | (0000) | (0000) |
| 19 | 20 | 21 | 22 | 23 | 24 | | | | | | | | | |
| (0000) | (0000) | (0000) | (0000) | (0000) | (0000) | | | | | | | | | |

Figure 5-5. Tally Counter for a Four-Way Count.

Labeling Tally Counter Keys for Four-Way Counts. For a four-way count you need to label six of the thirteen vehicle classification categories in the spacing above the tally counter keys. Looking at the keys in Figure 5-5 (and the illustrative numbers above them), place temporary labels on your tally counter for vehicle Classes 2, 3, 4, 5, 6, and 9 above keys 1-6 for the north leg of travel. Likewise, place the same class labels above keys 7-12 for the east leg of travel, above keys 13-18 for the

south leg, and above keys 19-24 for the west leg. Refer to the table, *Labeling Tally Counter Keys for Four-Way Counts*, for specific labeling in this example.

Labeling Tally Counter Keys for Four-Way Counts

| Label Name | Class # | Key # | Direction or Leg |
|------------------------------|---------|-------|------------------|
| Passenger Cars | 2 | 1 | North |
| | | 7 | East |
| | | 13 | South |
| | | 19 | West |
| Pickups, Panels, Vans | 3 | 2 | North |
| | | 8 | East |
| | | 14 | South |
| | | 20 | West |
| Buses | 4 | 3 | North |
| | | 9 | East |
| | | 15 | South |
| | | 21 | West |
| 2-Axle Single-unit | 5 | 4 | North |
| | | 10 | East |
| | | 16 | South |
| | | 22 | West |
| 3-Axle Single-unit | 6 | 5 | North |
| | | 11 | East |
| | | 17 | South |
| | | 23 | West |
| 5-Axle Single-trailer Trucks | 9 | 6 | North |
| | | 12 | East |
| | | 18 | South |
| | | 24 | West |

Vehicles Not Classifiable by Tally Counter. In a four-way count scenario, the tally counter has six keys per leg of travel. Because there are thirteen classifications in the FHWA 13-Category Scheme, you must use a separate method to keep track of the other seven categories not classifiable by the

tally counter. In our example of a four-way count, you would separately track of Classes 1, 7, 8, 10, 11, 12, and 13 per leg of travel for each hour of your shift.

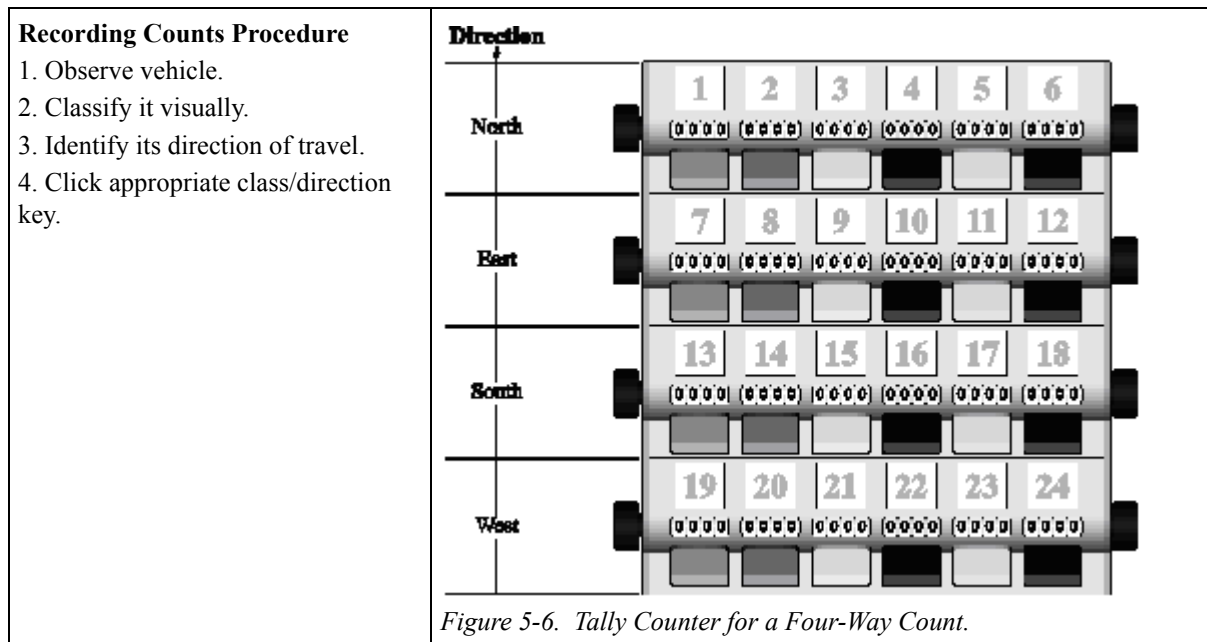
NOTE: Depending on your preferences, you can select which of the FHWA thirteen categories will not be classifiable on the tally counter and tracked by a separate method.

Recording the Counts. After you have assigned the direction or leg of travel to the tally counter rows and also labeled the keys for a four-way count, you are ready to begin recording the number of vehicles by classification for each hour of your shift. When you observe a vehicle, classify it visually; identify the direction or leg of travel; and manually click the corresponding key on the tally counter as shown in the table, Recording Vehicle Classifications on Tally Counter for Four-Way Counts.

Recording Vehicle Classifications on Tally Counter for Four-way Counts

| For each vehicle classified as: | Direction or Leg | Click Key # | Direction or Leg | Click Key # | Direction or Leg | Click Key # | Direction or Leg | Click Key # |
|--|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|
| Passenger Cars (Class 2) | North | 1 | East | 7 | South | 13 | West | 19 |
| Pickups, Panels, Vans (Class 3) | North | 2 | East | 8 | South | 14 | West | 20 |
| Buses (Class 4) | North | 3 | East | 9 | South | 15 | West | 21 |
| 2-Axle Single-unit (Class 5) | North | 4 | East | 10 | South | 16 | West | 22 |
| 3-Axle Single-unit (Class 6) | North | 5 | East | 11 | South | 17 | West | 23 |
| 5-Axle Single-trailer Trucks (Class 9) | North | 6 | East | 12 | South | 18 | West | 24 |

Recording Vehicle Classifications on Tally Counter for Four-Way Counts



NOTE: Be certain you record each vehicle classification on the correct direction of travel with the tally counter equipment and the separate tracking method as well.

Resetting Tally Counter. Remember to closely watch the clock or use a timer when you are recording vehicle counts. Each hour of counting must begin at the top of the hour. At the end of each hour's counting, you must quickly and accurately transfer the total counts per classification onto Form 1617A. (See Chapter 6 for directions.) Immediately afterward, you must reset each key on the tally counter back to 0000 for the next hour's counting.

Chapter 6 — Using Form 1617A

Contents:

[Section 1 — Setting Up Form 1617A](#)

[Section 2 — Form 1617A Blocks](#)

[Section 3 — Entering Numerical Data](#)

[Section 4 — Calculating Totals](#)

Section 1 — Setting Up Form 1617A

Required Format

Traffic counts are reported using Form 1617A. An example of the form is in Appendix B, but the official form is 11" x 17". Form 1617A is also referred to at times as the manual count classification sheet.

It is critical that Form 1617A be completed accurately and legibly. Block style printing is required; cursive is prohibited. Data from the completed Form 1617A will later be entered into a computer database; therefore, any forms with illegible data are considered useless.

NOTE: Only number two pencils may be used for reporting traffic counts. No ink pens, ball point pens, erasable ink pens, felt tip markers, or other writing instruments may be used for writing on Form 1617A.

Header Information

Before driving to a counting station, traffic counters should review their assigned schedule and prepare the header information on Form 1617A.

First Lines. For the first row of blank lines on Form 1617A, enter the following:

- ◆ Station number
 - identification of the counting location
 - example: HP-870
- ◆ Date of the count
 - for your shift
- ◆ TxDOT district name and code number
 - district of the count's location
 - districts are listed on Form 1617A
 - district map is in Appendix C
- ◆ County name and code number
 - county of the counting location
 - counties are listed in Appendix G
- ◆ Traffic counter's name

Block Lines. Form 1617A has four blocks for entering data on two-to-four directions or legs of traffic flow. Use details from the assigned schedule to enter information on the blank lines above each block as needed for two, three, or four directions of traffic flow:

- ◆ Direction (enter for each leg of traffic)
 - Two-way counts will use the top two blocks only
 - Frontage road counts (no main lanes) also use top two blocks only
 - Three-way counts will use the top three blocks only
 - Four-way counts will use all four blocks
 - Enter the direction and the corresponding code
 - Enter the corresponding direction code as shown here:

| DIRECTION | CODE # |
|-----------|--------|
| North | 1 |
| Northeast | 2 |
| East | 3 |
| Southeast | 4 |
| South | 5 |
| Southwest | 6 |
| West | 7 |
| Northwest | 8 |

- ◆ Highway number
 - enter for each leg of traffic
- ◆ To
 - enter a town name
 - the nearest town for each leg of traffic
- ◆ Hour
 - enter each hour of a counting shift
 - 00 is the midnight hour
 - 00 is the first hour of a 24-hour count
 - 23 is the last hour of a 24-hour count

NOTE: If a traffic counter's shift lasts more than eight hours, the counter must use two 1617A sheets for the shift. For example, eight hours on one sheet and two hours on the second.

Section 2 — Form 1617A Blocks

General Information

Form 1617A has four blocks for entering data on two-to-four directions of traffic. A block, which contains cells, rows, and columns, is enclosed within a heavy, black line.

For each hour, a traffic counter must enter the following types of data into a block:

- ◆ Vehicle counts (classified as cars, trucks, buses, motorcycles, etc.)
- ◆ Weather conditions
- ◆ Traffic conditions
- ◆ Totals of vehicles by classifications

NOTE: If some of the cells within each block are not needed, leave them blank.

Counting Scenarios

There are three different counting scenarios that may be assigned for a traffic count, based on the number of legs or directions of traffic flow (north, east, etc.) You will use one of the four blocks on Form 1617A for each assigned traffic direction. If there are less than four directions of traffic for an assigned count, leave unused blocks blank.

Stations for Directional (Two-way) Counts. Stations located at a checkpoint (counting station) with no intersecting road will require two blocks on Form 1617A: one block for the traffic flowing toward the station and one for traffic flowing in the opposite direction. You must count each vehicle only once for the direction that it travels past the station.

Example. Assume a highway with four undivided lanes runs north and south from the counting station. A bus approaching the station from the south is counted once. A dump truck approaching from the north is counted once. There are no intersecting roads for the vehicles to turn onto and generate another count.

Stations for Three-way and Four-way Counts. Stations at intersections will use three or four blocks on Form 1617A. You must count each vehicle for each direction that it travels: one for the direction from which the vehicle approaches, and again for the direction to which it exits.

Example. Assume that there are three roads at the counting site: one to the north, one to the east, and one to the west. Figure 6-1 shows a vehicle approaching the station from the west and leaving the station to the north. The vehicle is counted twice: once in the block labeled west, and once in the block labeled north.

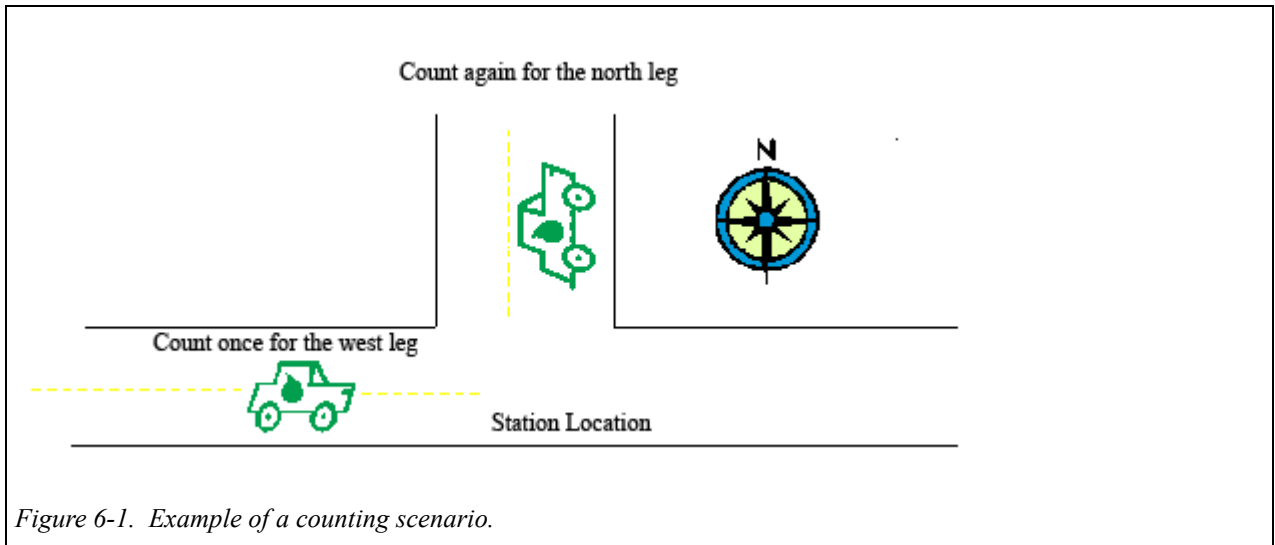


Figure 6-1. Example of a counting scenario.

NOTE: Be sure you assign the correct direction and code number in the correct block order on Form 1617A. See Chapter 5.

Section 3 — Entering Numerical Data

To accurately calculate and report traffic counts, you must manually transfer counts from the tally counter equipment by handwriting the data onto Form 1617A. In addition, it is mandatory that you accurately sum rows and columns on the form without errors.

At the end of each counting-hour, carefully transfer the vehicle classification counts from the tally counter to the correct:

- ◆ block for the direction of traffic flow
- ◆ row for the hour that was just counted
- ◆ column that reflects vehicle classification

For vehicles not classifiable using the tally counter, carefully transfer the hourly counts from any notes you have taken during the hour to the Notes box on Form 1617A. Remember to indicate each direction of traffic for those counts as well.

Hours

Looking at [Form 1617A](#) in the hour columns use the first and second cells to indicate the hours of your counts. Using the 24-hour military time format, enter two digits for each hour of your shift (minutes are not indicated).

Example.

| Hour | |
|--------|--------|
| Cell 1 | Cell 2 |
| 0 | 1 |
| 0 | 2 |

The first row of blocks designates hour 01, or 1:00 a.m.

The second row designates hour 02, or 2:00 a.m., etc.

Motorcycles

Under the motorcycle column, the third, fourth, and fifth cells indicate hundreds, tens, and ones, respectively. Form 1617A provides three cells for entering counts up to 999 per hour.

Example.

| Motorcycles | | |
|-------------|--------|--------|
| Cell 3 | Cell 4 | Cell 5 |
| | | 8 |
| | 3 | 5 |
| 2 | 5 | 6 |

The first row shows 8 motorcycles for the hour.

The second row shows 35 motorcycles for the hour.

The third row shows 256 motorcycles for the hour.

Cars and Pickups

Form 1617A provides additional cells to allow entering counts up to 99,999 per hour for the following two classifications of vehicles:

- ◆ cars
- ◆ pickups, panels, and vans

Under the car columns or the pickup-panel-van columns, enter counts as needed in the required format shown below. Remember to use the correct row for the hour counted and correct block for the direction counted. If cells are not needed for a number, leave them blank.

Example.

| Hour | | Indication | Cars (Class 2) | | | | |
|--------|--------|-----------------------------------|----------------|--------|--------|--------|---------|
| Cell 1 | Cell 2 | | Cell 6 | Cell 7 | Cell 8 | Cell 9 | Cell 10 |
| 0 | 8 | Indicates 10,235 cars in hour 08. | 1 | 0 | 2 | 3 | 5 |

| Hour | | Indication | Pickups, Panels, Vans (Class 3) | | | | |
|--------|--------|------------------------------------|---------------------------------|---------|---------|---------|---------|
| Cell 1 | Cell 2 | | Cell 11 | Cell 12 | Cell 13 | Cell 14 | Cell 15 |
| 0 | 9 | Indicates 53 Class 3's in hour 09. | | | | 5 | 3 |

Other Vehicles

Under the other vehicle columns on Form 1617A, there are cells available to enter up to 9,999 vehicles for each class. Remember to enter hourly counts on the correct row for the hour counted and the correct block for the direction counted. If cells are not needed for a number, leave them blank.

Weather and Traffic

Indicate the weather and traffic conditions for each hour using numeric codes found in the box on the far right side of Form 1617A. Enter the one-digit codes in the weather and traffic columns for each block that is used for the assigned count. The codes should reflect the most adverse conditions during the hour.

| Weather Codes | | | Traffic Codes | |
|---------------|------------|--|---------------|--|
| 0 | Clear | | 0 | Normal |
| 1 | Cloudy | | 1 | High |
| 2 | Dust Storm | | 2 | Low |
| 3 | Fog | | 3 | High, cattle auction ball game, fair, etc. |
| 4 | Mist | | 4 | High, gravel haul |
| 5 | Rain | | 5 | High, funeral |
| 6 | Showers | | 6 | Low, road construction |
| 7 | Sleet | | 7 | Low, flooding |
| 8 | Snow | | 8 | Low, icy roads |

Clarification of Codes. Clarification is provided below for some of the condition codes:

- ◆ Mist (4) – drizzle during the counting hour.
- ◆ Rain (5) – raining continuously for the counting hour.
- ◆ Showers (6) – raining intermittently during the counting hour.
- ◆ Normal traffic (0) – traffic is moving unimpeded during the hour.
- ◆ High traffic (1) – a higher number of vehicles is moving during the hour due to a cause other than auctions, games, fairs; gravel-haul; or funeral procession. A wreck or other obstacle may have cleared and traffic is higher than normally expected that hour.
- ◆ Low traffic (2) – a lower number of vehicles is moving during the hour due to a cause other than road construction, floods, or ice. A wreck or other obstacle may have just occurred.

Reset Counter

After you have manually transferred all the numeric data from the tally counter into Form 1617A for an hour's counting, you must reset all of the tally counter keys to zero. Also, prepare to keep track of the vehicles not classifiable on the tally counter for the next hour. Remember to record the direction of traffic flow for those counts as well.

Section 4 — Calculating Totals

This is the final step in completing your work on Form 1617A, and it is a very important one. After you have finished your shift of recording classified vehicles and transferring the hourly data to the blocks for each direction of traffic flow, you must now sum the counts within each block following these directions **in the order as written**:

First. Add the counts from left to right across each row and enter the sum of that row into the far-right Total column of each block. You must do this for each row (each counting hour) of your shift and for each block that you used for the assigned count.

Second. Add the counts in each vehicle classification column from top to bottom and enter the total on the bottom Total row of each block under the appropriate classification column. Do this for each block that you used for the assigned count.

Third. Add the totals across the bottom row of each block from left to right, and enter the sum into the bottom-right corner of each block. On a separate notepad or with a calculator, add all the numbers in the far-right Total column from top to bottom for each block. The Total column sum that you just calculated must match the sum that you wrote in the bottom-right corner — if it does not, a mistake has been made that requires action. You must find all calculation errors within the block and make corrections until the two sums match.

Chapter 7 — Communications

Contents:

[Section 1 — Internal Communication](#)

[Section 2 — Dealing with the Public](#)

[Section 3 — Law Enforcement Inquiries](#)

Section 1 — Internal Communication

Good communication is critical to the success of the traffic counting program. Successful traffic counts require adherence to specific schedules and procedures, otherwise the collected data will be invalid.

If you experience problems with your vehicle, an illness, or other situations that could affect an assigned traffic count, you must report your situation immediately to your supervisor.

Reporting Problems

Schedule Problems.

NOTE: You must notify your supervisor immediately if you have a problem that will affect your ability to perform your scheduled count.

Other Problems.

If you have some other problem related to your work, contact your supervisor for instructions.

Section 2 — Dealing with the Public

When interacting with the public you must be courteous, considerate, and respectful of them and their property. When speaking with the public speak respectfully and use appropriate language.

Harassment by the Public

Maintain a calm, professional attitude when confronted by the public. If you are harassed or verbally abused, avoid the individual(s) and check with your supervisor to determine whether to leave the counting site. If you believe conditions threaten your physical safety, contact the local authorities immediately by calling 911. If you are in a remote area where the 911 service is not operating properly, call the Texas Department of Public Safety at (800) 525-5555 to obtain the local authority's telephone number.

Requests for Traffic Counts

Do not perform special traffic counts for the public or reveal traffic data to the public. Instead, politely refer the person requesting the count to the contact information below.

Traffic data is analyzed using various statistical techniques before it is published. Raw counts have little meaning and are misleading.

TxDOT publishes urban, highway, and county traffic counts on maps which are available to the private sector. Printed maps do have a fee, but emailed maps in pdf format are free.

Sources for TxDOT Traffic Count Maps















| | |
|---------------------|--|
| Web site requests | http://www.dot.state.tx.us/travel/traffic_map.htm |
| Telephoned requests | (512) 486-5012 |
| Written requests | Texas Department of Transportation Transportation Planning and Programming Division P.O. Box 5020 Austin, Texas 78763 |

Section 3 — Law Enforcement Inquiries

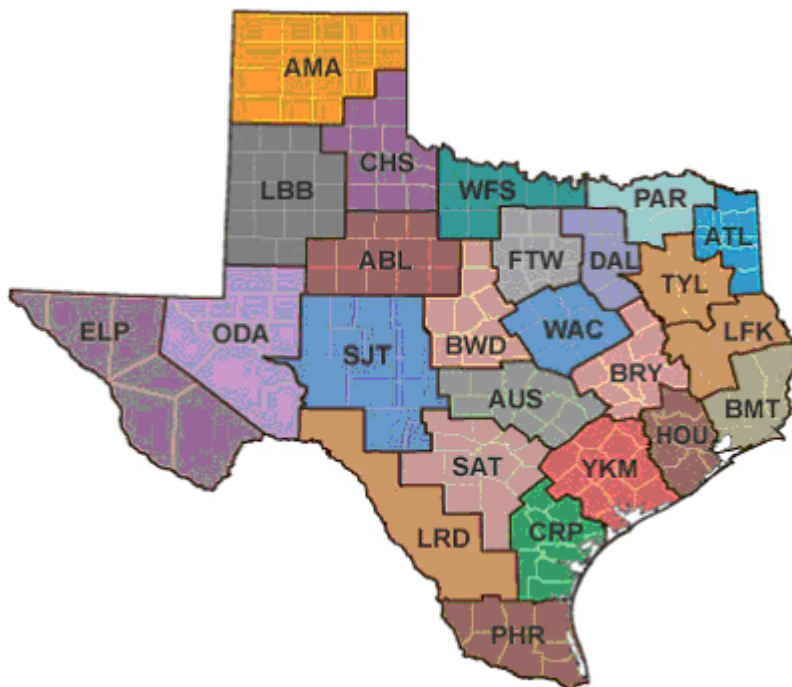
Identification Documents

While you are conducting traffic counts, it is possible that law enforcement or other authorities may stop to inquire about your activities. Be courteous and respectful, responding to their requests for your identification documents, such as your driver's license and employment identification.

Appendix A — Vehicle Classification Using FHWA 13-Category Scheme

| FHWA Vehicle Classifications | | | |
|--|---|---|--|
| <p>1. Motorcycles 2 axles, 2 or 3 tires</p>  | <p>2. Passenger Cars 2 axles, can have 1- or 2-axle trailers</p>  | <p>3. Pickups, Panels, Vans 2 axles, 4-tire single units Can have 1 or 2 axle trailers</p>  | <p>4. Buses 2 or 3 axles, full length</p>  |
| <p>5. Single Unit 2-Axle Trucks 2 axles, 6 tires (dual rear tires), single-unit</p>  | <p>6. Single Unit 3-Axle Trucks 3 axles, single unit</p>  | <p>7. Single Unit 4 or More-Axle Trucks 4 or more axles, single unit</p>  | <p>8. Single Trailer 3- or 4-Axle Trucks 3 or 4 axles, single trailer</p>  |
| <p>9. Single Trailer 5-Axle Trucks 5 axles, single trailer</p>  | <p>10. Single Trailer 6 or More-Axle Trucks 6 or more axles, single trailer</p>  | <p>8. Single Trailer 3- or 4-Axle Trucks 3 or 4 axles, single trailer</p>  | |
| <p>11. Multi-Trailer 5 or Less-Axle Trucks 5 or less axles, multiple trailers</p>  | <p>12. Multi-Trailer 6-Axle Trucks 6 axles, multiple trailers</p>  | | |
| <p>13. Multi-Trailer 7 or More-Axle Trucks 7 or more axles, multiple trailers</p>  | | | |

Appendix C — TxDOT District Map and Code Numbers



| DISTRICT | | # | | DISTRICT | | # |
|----------|----------------|----|--|----------|---------------|----|
| ABL | Abilene | 8 | | LRD | Laredo | 22 |
| AMA | Amarillo | 4 | | LBB | Lubbock | 5 |
| ATL | Atlanta | 19 | | LFK | Lufkin | 11 |
| AUS | Austin | 14 | | ODA | Odessa | 6 |
| BMT | Beaumont | 20 | | PAR | Paris | 1 |
| BWD | Brownwood | 23 | | PHR | Pharr | 21 |
| BRY | Bryan | 17 | | SJT | San Angelo | 7 |
| CHS | Childress | 25 | | SAT | San Antonio | 15 |
| CRP | Corpus Christi | 16 | | TYL | Tyler | 10 |
| DAL | Dallas | 18 | | WAC | Waco | 9 |
| ELP | El Paso | 24 | | WFS | Wichita Falls | 3 |
| FTW | Fort Worth | 2 | | YKM | Yoakum | 13 |
| HOU | Houston | 12 | | | | |

Appendix D — Schedule Example

SCHEDULE

Assigned to: _____ Schedule No.: 5/18/2009 3

| MONDAY | Date | Site # | Hwy | District | County | GPS | Counting Directions | | |
|---|--------|-----------|----------|--------------|--------------|-------------------------|-----------------------------|----------------------------|--|
| | Dir# | Direction | Location | | | | | | |
| | 18-May | MS-191 | IH 20 | Dallas 18 | Dallas 57 | 32.67560N 097.03159W | 7 | West traffic to Fort Worth | |
| Location and Driving Directions: | | | | | | | Special Instructions | | |
| 0.4 Mile East of Tarrant County Line, 0.9 Mile East of Great Southwest Parkway and 0.8 Mile West of Belt Line Rd. | | | | | | | | | |

| TUESDAY | Date | Site # | Hwy | District | County | GPS | Counting Directions | | |
|---|--------|-----------|-----------------------|-----------------|----------------|-------------------------|--|-------------------------|--|
| | Dir# | Direction | Location | | | | | | |
| | 19-May | TR-129T | International Parkway | Fort Worth 2 | Tarrant 220 | 32.86420N 097.04039W | 5 | South traffic to SH 183 | |
| Location and Driving Directions: | | | | | | | Special Instructions | | |
| DFW Airport 1.7 Miles North of SH 183 in Irving | | | | | | | Set up South of toll plaza in grassy area (south entry to Airport) | | |

| WEDNESDAY | Date | Site # | Hwy | District | County | GPS | Counting Directions | | |
|---|--------|-----------|--|-----------------|----------------|-------------------------|--|------------------------------|--|
| | Dir# | Direction | Location | | | | | | |
| | 20-May | TR-1000T | International Parkway (North Entry to Airport) | Fort Worth 2 | Tarrant 220 | 32.92390N 097.04041W | 5 | South traffic to DFW Airport | |
| Location and Driving Directions: | | | | | | | Special Instructions | | |
| DFW airport South of IH 635 | | | | | | | Set up North of toll plaza in the grassy area, separating lanes North of airport | | |

| THURSDAY | Date | Site # | Hwy | District | County | GPS | Counting Directions | | |
|--|--------|-----------|--------------------------|-----------------|----------------|-------------------------|-----------------------------|------------------------|--|
| | Dir# | Direction | Location | | | | | | |
| | 21-May | HP-814 | SH 180(West Division St) | Fort Worth 2 | Tarrant 220 | 32.73824N 097.12530W | 3 | East traffic to SH 360 | |
| | | | | | | | 7 | West traffic to IH 35W | |
| Location and Driving Directions: | | | | | | | Special Instructions | | |
| 1.5 Mile West of FM 157, Just West of Davis Street | | | | | | | | | |

Click [here](#) to view a .pdf of this schedule.

Appendix E — Station Examples (with GPS Locations)

| EXAMPLES OF STATION DESCRIPTIONS (COUNTING SITES) | | | | | |
|--|---------------------|--------------|--|-------------------|--------------------|
| STATION | HIGHWAY | COUNTY | LOCATION | LEGS | CREWS |
| MAIN ROADWAYS LIST | | | | | |
| HP-819 | Mid-Western | Wichita | Mid-Western between Hampstead St and Irving Blvd 0.2 Mi. West of Hampstead Ln. or 0.5 mi. East of Taft Park at North Weeks Park 33.87539N / 098.51077W | 1 | 1 |
| M-278 | US 82 & 183 | Baylor | At junction of US 82, 183 and FM 1790 33.66972N / 099.13957W | 4 | 1 |
| M-945 | US 183 & 283 | Throckmorton | At junction of US 183 and 283 33.08522N / 099.17948W | 4 | 1 |
| M-1072 | IH 35 | Cooke | At Rest Area about 2.0 Miles North of FM 1202 33.69289N / 097.16280W | 1 | 1 |
| M-1075 | IH 44 US 277/281 | Wichita | at Oklahoma State Line – 34.10304N / 098.51249W | 1 | 1 |
| M-1076 | US 283 | Wilbarger | At junction with FM 924 34.20129N / 099.29453W | 4 | 1 |
| MA-328 | US 70 | Wilbarger | 0.9 Mile Southwest of FM 433 at permanent traffic recorder 34.08146N / 099.37729W | 1 | 1 |
| FRONTAGE ROAD LIST (Count FR & ML Separately) | | | | | |
| M-1800 | FR & ML | Wichita | IH 44 1.6 Miles South of FM 3429 Park at Rest Area 34.03212N / 098.55773W | 1 | 2 |
| M-1801 | FR | Wichita | IH 44 at Plum Creek just North of LP 370 and Business 287 33.93211N / 098.51709W | 1 | 2 |
| Total Sites | | | | Total Legs | Total Crews |
| 11 | | | | 18 | 11 |

Click [here](#) to view a .pdf of Station Examples.

Appendix F — Form 1617A Header Information

| STATION | COUNTY | HIGHWAY | LEG OR TRAVEL TOWARD | DIRECTION |
|---------------------------|--------------|---|---|---|
| MAIN ROADWAYS LIST | | | | |
| HP-819 | Wichita | Midwestern Pkwy | Hampstead Ln. | Northeast |
| M-278 | Baylor | US 183, 283 US 82, 277 FM 1790 US 82, 183, 277, 283 | Vernon Wichita Falls Farms Seymour | North East South Southwest |
| M-945 | Throckmorton | US 183, 283 US 183 US 283 Co. Rd. | Throckmorton Breckenridge Albany Farms | North Southeast Southwest West |
| M-1072 | Cooke | IH 35 | Marietta, Oklahoma Gainesville | North South |
| M-1075 | Wichita | IH 44 & US 277, 281 | Randlett, Oklahoma Wichita Falls | North South |
| M-1076 | Wilbarger | US 283 FM 924 US 283 FM 924 | Altus, Oklahoma Fargo Vernon FM 432 | North East South West |
| MA-328 | Wilbarger | US 70 | Vernon Crowell | Northeast Southwest |
| FRONTAGE ROAD LIST | | | | |
| M-1800 | Wichita | IH 44 | Burkburnett Wichita Falls | North South |
| M-1801 | Wichita | IH 44 | Burkburnett Wichita Falls | North South |

Click [here](#) to view a .pdf of this form.

Appendix G — Texas Counties and Code Numbers

Click [here](#) for a .pdf of Texas counties and code numbers.

| County | Code | County | Code | County | Code | County | Code | County | Code | County | Code |
|-----------|------|---------------|------|-----------|------|-----------|------|-------------|------|--------------|------|
| Anderson | 1 | Collingsworth | 44 | Gillespie | 87 | Kaufman | 130 | Motley | 173 | Sterling | 216 |
| Andrews | 2 | Colorado | 45 | Glasscock | 88 | Kendall | 131 | Nacogdoches | 174 | Stonewall | 217 |
| Angelina | 3 | Comal | 46 | Goliad | 89 | Kent | 132 | Navarro | 175 | Sutton | 218 |
| Aransas | 4 | Comanche | 47 | Gonzales | 90 | Kerr | 133 | Newton | 176 | Swisher | 219 |
| Archer | 5 | Concho | 48 | Gray | 91 | Kimble | 134 | Nolan | 177 | Tarrant | 220 |
| Armstrong | 6 | Cooke | 49 | Grayson | 92 | King | 135 | Nueces | 178 | Taylor | 221 |
| Atascosa | 7 | Coryell | 50 | Gregg | 93 | Kinney | 136 | Ochiltree | 179 | Terrell | 222 |
| Austin | 8 | Cottle | 51 | Grimes | 94 | Kleberg | 137 | Oldham | 180 | Terry | 223 |
| Bailey | 9 | Crane | 52 | Guadalupe | 95 | Knox | 138 | Orange | 181 | Throckmorton | 224 |
| Bandera | 10 | Crockett | 53 | Hale | 96 | Lamar | 139 | Palo Pinto | 182 | Titus | 225 |
| Bastrop | 11 | Crosby | 54 | Hall | 97 | Lamb | 140 | Panola | 183 | Tom Green | 226 |
| Baylor | 12 | Culberson | 55 | Hamilton | 98 | Lampasas | 141 | Parker | 184 | Travis | 227 |
| Bee | 13 | Dallam | 56 | Hansford | 99 | La Salle | 142 | Parmer | 185 | Trinity | 228 |
| Bell | 14 | Dallas | 57 | Hardeman | 100 | Lavaca | 143 | Pecos | 186 | Tyler | 229 |
| Bexar | 15 | Dawson | 58 | Hardin | 101 | Lee | 144 | Polk | 187 | Upshur | 230 |
| Blanco | 16 | Deaf Smith | 59 | Harris | 102 | Leon | 145 | Potter | 188 | Upton | 231 |
| Borden | 17 | Delta | 60 | Harrison | 103 | Liberty | 146 | Presidio | 189 | Uvalde | 232 |
| Bosque | 18 | Denton | 61 | Hartley | 104 | Limestone | 147 | Rains | 190 | Val Verde | 233 |
| Bowie | 19 | DeWitt | 62 | Haskell | 105 | Lipscomb | 148 | Randall | 191 | Van Zandt | 234 |
| Brazoria | 20 | Dickens | 63 | Hays | 106 | Live Oak | 149 | Reagan | 192 | Victoria | 235 |
| Brazos | 21 | Dimmitt | 64 | Hemphill | 107 | Llano | 150 | Real | 193 | Walker | 236 |
| Brewster | 22 | Donley | 65 | Henderson | 108 | Loving | 151 | Red River | 194 | Waller | 237 |
| Briscoe | 23 | Kenedy | 66 | Hidalgo | 109 | Lubbock | 152 | Reeves | 195 | Ward | 238 |

| County | Code | County | Code | County | Code | County | Code | County | Code | County | Code |
|-----------|------|-----------|------|------------|------|------------|------|---------------|------|------------|------|
| Brooks | 24 | Duval | 67 | Hill | 110 | Lynn | 153 | Refugio | 196 | Washington | 239 |
| Brown | 25 | Eastland | 68 | Hockley | 111 | Madison | 154 | Roberts | 197 | Webb | 240 |
| Burleson | 26 | Ector | 69 | Hood | 112 | Marion | 155 | Robertson | 198 | Wharton | 241 |
| Burnet | 27 | Edwards | 70 | Hopkins | 113 | Martin | 156 | Rockwall | 199 | Wheeler | 242 |
| Caldwell | 28 | Ellis | 71 | Houston | 114 | Mason | 157 | Runnels | 200 | Wichita | 243 |
| Calhoun | 29 | El Paso | 72 | Howard | 115 | Matagorda | 158 | Rusk | 201 | Wilbarger | 244 |
| Callahan | 30 | Erath | 73 | Hudspeth | 116 | Maverick | 159 | Sabine | 202 | Willacy | 245 |
| Cameron | 31 | Falls | 74 | Hunt | 117 | McCulloch | 160 | San Augustine | 203 | Williamson | 246 |
| Camp | 32 | Fannin | 75 | Hutchinson | 118 | McLennan | 161 | San Jacinto | 204 | Wilson | 247 |
| Carson | 33 | Fayette | 76 | Irion | 119 | McMullen | 162 | San Patricio | 205 | Winkler | 248 |
| Cass | 34 | Fisher | 77 | Jack | 120 | Medina | 163 | San Saba | 206 | Wise | 249 |
| Castro | 35 | Floyd | 78 | Jackson | 121 | Menard | 164 | Schleicher | 207 | Wood | 250 |
| Chambers | 36 | Foard | 79 | Jasper | 122 | Midland | 165 | Scurry | 208 | Yoakum | 251 |
| Cherokee | 37 | Fort Bend | 80 | Jeff Davis | 123 | Milam | 166 | Shackelford | 209 | Young | 252 |
| Childress | 38 | Franklin | 81 | Jefferson | 124 | Mills | 167 | Shelby | 210 | Zapata | 253 |
| Clay | 39 | Freestone | 82 | Jim Hogg | 125 | Mitchell | 168 | Sherman | 211 | Zavala | 254 |
| Cochran | 40 | Frio | 83 | Jim Wells | 126 | Montague | 169 | Smith | 212 | | |
| Coke | 41 | Gaines | 84 | Johnson | 127 | Montgomery | 170 | Somervell | 213 | | |
| Coleman | 42 | Galveston | 85 | Jones | 128 | Moore | 171 | Starr | 214 | | |
| Collin | 43 | Garza | 86 | Karnes | 129 | Morris | 172 | Stephens | 215 | | |

Appendix H — Submitting Data to TPP

Contents:

[Section 1 — Traffic Counter Duties](#)

[Section 2 — Excel Data Entry Instructions](#)

[Section 3 — Converting Excel Files to Text Files](#)

Section 1 — Traffic Counter Duties

Providing Field Data

TxDOT personnel must provide collected traffic data from each vehicle classification count on the original Form 1617A field copies. No other format is acceptable unless previously approved.

Software Requirements

The collected traffic data is submitted to TPP in digital and original handwritten formats to the supervisor or lead worker. To convert the traffic data into the required digital formats, the following software must be used:

- ◆ Microsoft® Windows (2000 or later)
- ◆ Microsoft® Windows Office Excel (2004 or later)

The two required electronic formats for the traffic data are:

- ◆ TPP-created Excel® spreadsheet form
- ◆ TPP-created text file form

Section 2 — Excel Data Entry Instructions

About the Excel Spreadsheets

There are three forms for the data entry. Their names and uses are as follows:

Spreadsheet Forms and Uses

| Spreadsheet Form Name | Form Use |
|--|--|
| MC Data Entry Two Direction | Use for a directional (two-way) count or for a frontage road count only (without main lanes) |
| MC Data Entry Three Leg | Use for a three-way intersection count |
| MC Data Entry Four Leg or Direction with FR | Use for a four-way intersection count or a directional count with frontage roads |

NOTE: Use the Excel spreadsheets to transfer the hand-written traffic data from the Form 1617A field copies into electronic format. Here is an overview of the general process:

1. Create a data directory for storing the three Excel spreadsheets as blank files
2. Copy the blank spreadsheets into the directory you created
3. Create subsequent directories as needed, perhaps by TxDOT districts, and store the spreadsheet files with completed data entry for each traffic count
4. Open the spreadsheet file name for the type traffic count needed
5. Name the file and store it in one of the subsequent directories
6. Proceed with data entry
7. Save the file often while you are working

The Data Entry Process

Figure H-1 is an example of a blank data entry spreadsheet for a twenty-four hour, two-way count. Refer to the table, Data Entry Process, for completing the spreadsheet.

Data Entry Process

| Excel Spreadsheet Column or Cell | For each hour of the count and each direction or leg... |
|----------------------------------|--|
| C3 | Enter the suffix of the station/site if one is given; leave blank if none noted. (C3 populates other cells.) |
| D3 | Enter the direction of leg code; leave blank if using direction code. (D3 populates other cells.) |
| E3 | Enter the direction code; leave blank if using direction of leg code. (E3 populates other cells.) |
| F3 | Enter FR if this is a frontage road count; leave blank otherwise. (F3 populates other cells.) |
| G3 | Enter the last two numbers of the year. (G3 populates other cells.) |
| H3 | Enter the month of the count in a two-digit format. (H3 populates other cells.) |
| I3 | Enter the date of the traffic counter's shift in two-digit format. (I3 populates other cells.) |
| J through Y | Enter the vehicle counts from Form 1617A under the correct class column and in the correct direction of travel block(s). |

Validating Data Entry

When you have finished entering all data into the Excel spreadsheet, compare the totals on the spreadsheet to the totals to the Form 1617A field copies. If all data has been correctly entered, the totals will match. You must correct all discrepancies in the Excel spreadsheet before submission.

NOTE: Be sure you have correctly entered either a direction of leg code or direction code.

Section 3 — Converting Excel Files to Text Files

After you have finished transferring the collected field data into an Excel spreadsheet, you are ready to convert the spreadsheet into a text file. You must send both an Excel file and a text file for every traffic count.

Procedures for converting to text file

| Find this on the spreadsheet file | Do this action |
|--|--|
| At the bottom of each of the three spreadsheet forms is a tab named, TXT File | Click on the tab, TXT File |
| On the spreadsheet's main tool bar, find the command, File | Click on File Click Save As |
| In the window that opens, look at the bottom for: Save as type: and look for the small black arrow to the right | Click on small black arrow |
| Look to the right in the next window that opens and find the next small black arrow | Click and hold down on the next small black arrow below |
| Watch the various file types as they scroll downward. Over half-way down, find the type that reads: Formatted Text (Space delimited) (*.prn) | Click on: Formatted Text (Space delimited) (*.prn) |
| In the window that remains open, look near the bottom for File name: and observe whether the file extension, i.e. the last three letters of the file name, has changed from xls to prn | If the file extension did not change to the site prn extension, you must change it now to the name of the site you are entering |
| When the file name and extension are correct | Click Save |
| A message will pop up – The selected file type does not support workbooks that contain multiple sheets To save only the active sheet, click OK | Click OK |
| Another message will pop up – MC Data entryprn may contain features that are not compatible with Formatted Text (Space delimited). Do you want to keep the work book in this format? | Click NO |
| A new window will open. Look for Save as type: | Click on the black arrow and change the file type back to Microsoft Excel Workbook (*.xls) , Then click Save |
| Look at the bottom of the spreadsheet form for the tab named, MC Data entry (for Two, Three, or Four) depending on the file type you are working with for this count | Click on the tab to bring you back to the worksheet where you entered the data. Click Save . The files should now be ready |

