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CODING NONMOTORIZED STATION LOCATION INFORMATION IN THE 2016 TRAFFIC MONITORING GUIDE FORMAT



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13. ABSTRACT (Maximum 200 words) The purpose of this guide is to make it easier for users to understand how the Traffic Monitoring Guide (TMG) format describes the information that should be collected when counting multimodal users, as well as how to format that information correctly. Successfully encoding count data in the TMG format is very important for obtaining the greatest value from collected counts. As with the motorized formats, the TMG nonmotorized format will be the required format for data submitted to the Traffic Monitoring Analysis System (TMAS), a national database maintained by the Federal Highway Administration that is currently being extended to receive nonmotorized count data. This guide walks through the TMG format and provides examples from a variety of counting scenarios.					
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CHAPTER 1

INTRODUCTION



INTRODUCTION

The Traffic Monitoring Guide (TMG) includes a section on traffic monitoring for nonmotorized traffic, along with a format for nonmotorized data collection. The format was introduced in the 2013 TMG and updated in the 2016 TMG with new fields to code helmet use, gender and age and refinements to existing fields to add more clarity and options for describing a wide range of counting scenarios. The data format is flexible and detailed, but also complex. This document offers detailed guidance and examples showing how to code counts and count locations in the TMG data format.

This document does not discuss how to conduct counts or to develop count programs. Rather, it focuses on how to record information about the counts, what was counted, and where the counts were collected. It also provides explanations and examples of how to record those counts in the TMG data format. The TMG Chapter 4 includes guidance on a variety of technologies for collecting nonmotorized counts and steps for developing a permanent data program or collecting short-duration counts. In addition, the TMG identifies other resources for guidance on nonmotorized counting, including *NCHRP Report 797: Guidebook on Pedestrian and Bicycle Volume Data Collection*. NCHRP Report 797 provides information on setting up a count program, selecting appropriate counting methods and technologies, adjusting counts, and using the multimodal data collected.

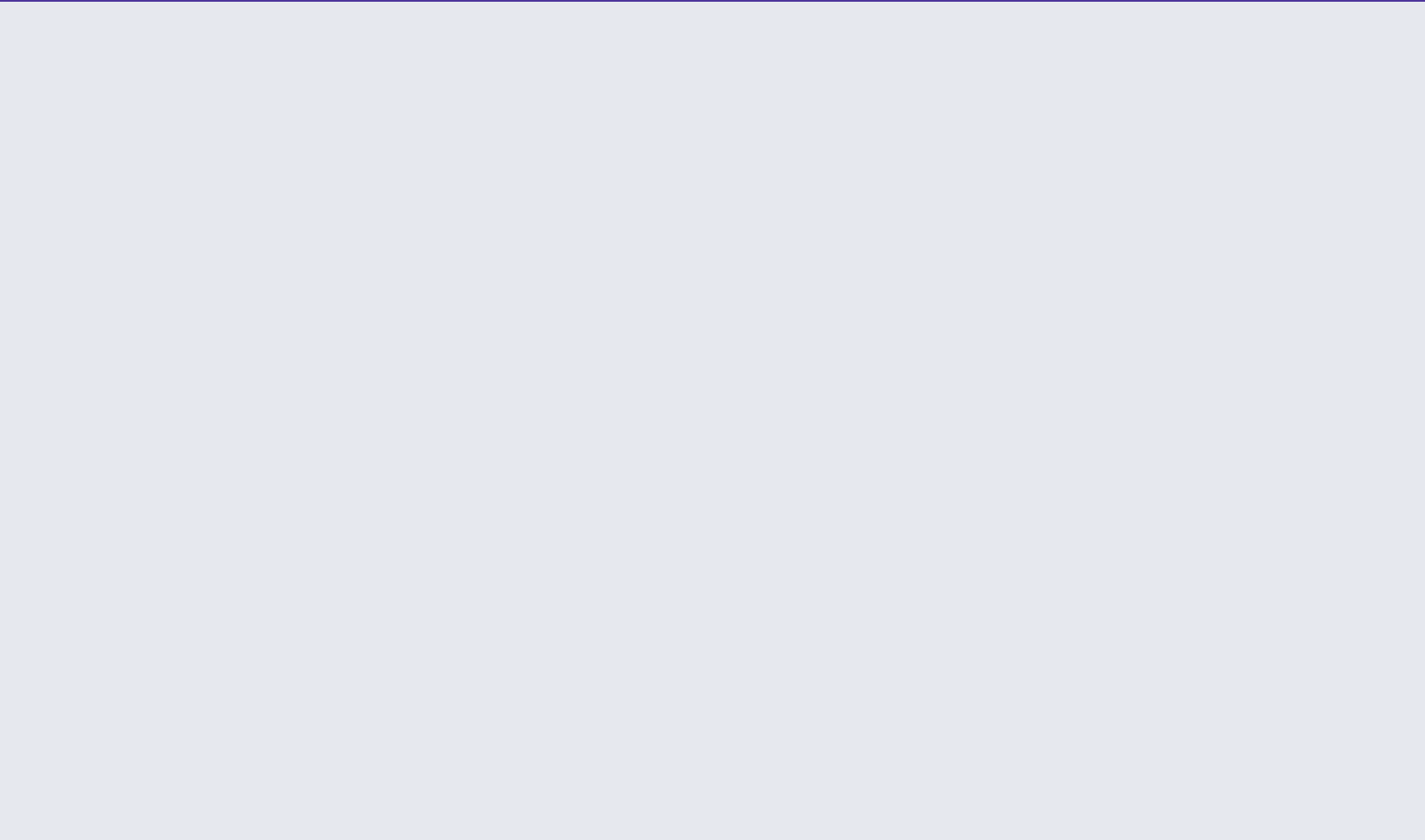
The TMG data format requires information to describe the count (where it was collected, what was counted, when it was taken) in addition to the count itself. The intent of the TMG format is to enable data to be collected and recorded consistently so that it can be compared from year to year and location to location. Systematically and consistently furnishing the information specified in the TMG format enables the count data to be used for a variety of purposes, such as establishing trends and supporting research on multimodal travel patterns and activities.

The purpose of this guide is to make it easier for users to understand how the TMG format describes the information that should be collected when counting multimodal users, as well as how to format that information correctly. Successfully encoding count data in the TMG format is very important for obtaining the greatest value from collected counts. As with the motorized formats, the TMG nonmotorized format will be the required format for data submitted to the Traffic Monitoring Analysis System (TMAS), a national database maintained by the Federal Highway Administration that is currently being extended to receive nonmotorized count data.

GUIDEBOOK ORGANIZATION

This guidebook is organized into the following chapters:

Introduction	Introduces the guidebook and purpose of the TMG format.
TMG Format	Provides a primer on the TMG format and how data is entered and organized in the format.
Count Station Description (Location)	Describes the fields that compose Count Station Description (Location) records and provides examples and exhibits to illustrate use of the format.
Count Data	Describes the fields that compose Count Data records with supporting exhibits and examples.
Collecting Multiple Counts at a Single Location	Explains how to collect multiple counts at a single location and when multiple count station description (location) records and count data records are needed.
Facility Types and Counting Examples	Provides example count station description (location) records for a variety of counting scenarios, ranging from simple to complex applications of the TMG format.
Glossary	Provides definitions for key terminology used in the document.



CHAPTER 2

TMG FORMAT



TMG FORMAT

The data format to record information about nonmotorized counts are specified in Sections 7.9 and 7.10 of the TMG. The format has specific requirements for the number and type of characters in each field in a data file. In order to facilitate the development of an online database and to address the need to have a flexible, comprehensive format that is adaptable to different situations, there are some idiosyncrasies in the format that may seem peculiar to first time users of the guide. For example, the TMG specifies two types of records that must be collected for each count:

Nonmotorized Count Station Description Data and Nonmotorized Count Data. There are some overlapping fields within each of these data formats that are intended to ensure data consistency between the count records and the associated station description metadata, and to allow the count records to be interpreted independently of the station description.

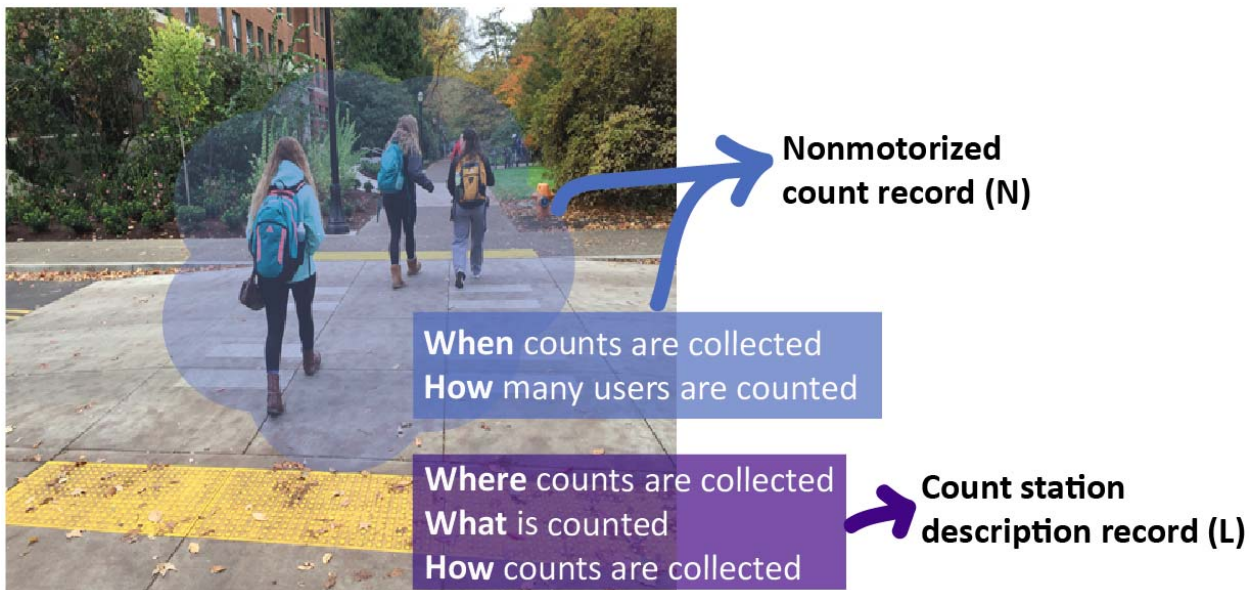
These two types of records are designated in the TMG format by their Record Identifier code and illustrated in Exhibit 1:

"L" for Count Station Description ("Location") records

"N" for Nonmotorized Count records

Within this document, the Count Station Description record is referred to as the "station location record" since a principal function of that record is to describe where the count was collected, and because the record is identified in its first data field by the letter "L" (for Location). However the reader should keep in mind that the "station location" also includes detailed information on what was counted (pedestrians, bicyclists, wheelchair users, etc.), and the method by which the counts were collected (for example, by manual counting, by reviewing videos, or by using portable or permanently installed count equipment).

Exhibit 1. **RECORD TYPES**




Within the station location record, certain fields refer to the “count subject” and describe in detail what is going to be counted at the station location. Other fields describe where the counts were collected and how the counts were collected. One station record is required per location, per mode counted, per direction, per year. For example, bicyclists traveling in different directions or positions on the roadway are considered different types of “subjects” and separate count sets should be reported for each, with each count set having its own station location record. Therefore, multiple station location records will be created if multiple types of subjects (e.g. bicyclists or pedestrians) are counted at a site. The actual counts reported in the count data record are the number of these subjects observed. Some examples showing how many station location records are needed for common counting scenarios are illustrated in Exhibit 2.

Exhibit 2. STATION LOCATION RECORD EXAMPLE

Location: shared use path with pedestrians and cyclists traveling in both directions

To count:

- Total number of multimodal users = 1 station location record
- Total number of cyclists and total number of pedestrians = 2 station location records
- Number of pedestrians in each direction = 2 station location records



The following chapters provide a comprehensive explanation of the information needed to describe both station location records and nonmotorized count records. For each piece of information or “field,” the TMG format specifies the field ID (a unique identifier for that field), number of columns (how many characters or digits are allowed in the field), and the field description. In addition, each piece of information is noted as “Critical” or “Optional.” **Critical means the field must be supplied with a non-blank value (spaces are considered blanks) in order to describe the count completely, while Optional means the field may be left blank.** The TMG includes descriptions of the fields, and allowable data ranges or values for fields. This document reviews the information in the TMG and provides specific additional examples and illustrations to clarify both the individual fields and how they work together to describe what is being counted and where.

Note: The TMG data format is new, and there may be some situations that cannot be fully accounted for using the directional elements described here. Such situations will be rare in practice. The examples developed here will aid users of the TMG format in interpreting how to code common and unusual station locations and count data. These examples will be available on a page created for this purpose on the FHWA traffic monitoring website at <http://www.fhwa.dot.gov/policyinformation/travelmonitoring.cfm>. The website is updated regularly and provides contact information for obtaining additional technical support for coding special cases.



CHAPTER 3
TMG FORMAT –
COUNT STATION
DESCRIPTION (LOCATION)



COUNT STATION DESCRIPTION (LOCATION)

The following descriptive data should be gathered for each count station (or in traffic monitoring terminology, for each “station location”). Some of these elements will be constant for the entire data collection effort and may not need to be collected on a location-by-location basis. Also, some of the fields may be the same for different count types (e.g. bicycles or pedestrians) conducted at the same location. This scenario is further described in the **Chapter 5: Collecting Multiple Counts at a Single Location**.

Highway Performance Monitoring System (HPMS):

The acronym “HPMS” in this discussion refers to the “FHWA Highway Performance Monitoring System,” which is a database of counts and other information for all federally classified roadways collected by each state and maintained by FHWA. HPMS includes a complete network of public roads indexed by a linear referencing system established in each state. HPMS is described online at: <http://www.fhwa.dot.gov/policyinformation/hpms.cfm>.

To illustrate how information is developed for the station description fields, an example count location from Portland, Oregon is used. The count site is shown in Exhibit 3. The value recorded in each field for this location is shown in the italicized “Example” bullet at the end of each field description.

Exhibit 3. **COUNT LOCATION, LOOKING NORTH**



1. NONMOTORIZED STATION/LOCATION RECORD INDICATOR (FIELD 1/COLUMN 1) – CRITICAL

- The letter “L” is always coded to indicate that this is a count station description/location record. This field is not case-sensitive.

2. STATE FIPS CODE (FIELD 2/COLUMNS 2-3) – CRITICAL

- Code the two-digit FIPS state or Canadian province code, per Table 1.
- *Example: 41 (Oregon)*

TABLE 1. STATE AND PROVINCE FIPS CODES

State	Code	State	Code	State	Code	Province	Code
Alabama	01	Maine	23	Pennsylvania	42	Alberta	81
Alaska	02	Maryland	24	Rhode Island	44	British Columbia	82
Arizona	04	Massachusetts	25	South Carolina	45	Manitoba	83
Arkansas	05	Michigan	26	South Dakota	46	New Brunswick	84
California	06	Minnesota	27	Tennessee	47	Newfoundland	85
Colorado	08	Mississippi	28	Texas	48	Nova Scotia	86
Connecticut	09	Missouri	29	Utah	49	Ontario	87
Delaware	10	Montana	30	Vermont	50	Prince Edward Island	88
D.C.	11	Nebraska	31	Virginia	51	Quebec	89
Florida	12	Nevada	32	Washington	53	Saskatchewan	90
Georgia	13	New Hampshire	33	West Virginia	54	Yukon	91
Hawaii	15	New Jersey	34	Wisconsin	55	NW Territory	92
Idaho	16	New Mexico	35	Wyoming	56	Labrador	93
Illinois	17	New York	36	Puerto Rico	72	Nunavut	94
Indiana	18	North Carolina	37	American Samoa	60		
Iowa	19	North Dakota	38	Guam	66		
Kansas	20	Oregon	41	Northern Marina Islands	69		
Kentucky	21	Ohio	39	Virgin Islands of the U.S.	78		
Louisiana	22	Oklahoma	40				

3. COUNTY (FIELD 3/COLUMNS 4-6) – CRITICAL

- Code the three-digit FIPS county code. These codes were originally assigned in the Federal Information Processing Standards Publication 6, which was published (but has subsequently been withdrawn) by the National Institute for Standards and Technology. Current codes for US counties based on the original FIPS 6 publication are maintained by the US Department of the Census, and may be found online at <http://www.census.gov/geo/reference/codes/cou.html>.
- If the location is outside the United States and its territories, agencies are free to use fields as they wish, but they should document the codes they are using in their own table and strive for consistency with other agencies with whom they expect to share data.
- *Example: 051 (Multnomah County)*

4. STATION ID (FIELD 4/COLUMNS 7-12) – CRITICAL

- A six-character identifier that indicates a location at which a set of counts is collected.
- This ID is arbitrary but should be unique within a given State and County.
- Cities, counties and metropolitan planning organizations (MPOs) may use the same station IDs to help identify common station locations, but the expectation is that the collecting agency will establish the ID.
- The identifier must be alphanumeric (containing only letters and numbers, and no symbols). The field should be right-justified and extra columns at the left should contain zeroes. The identifier may NOT contain blank characters.
- The Station ID is used to link counts of different uses that were collected at the same “place.” For example, if bicycle and pedestrian data are both collected separately at the same location, they should reference the same station ID. Likewise, if counts in different directions are collected at the same location, the station ID will identify the overall location.
- *Example: ESP456*

5. FUNCTIONAL CLASSIFICATION OF THE ROADWAY (FIELD 5/COLUMNS 13-14) – CRITICAL

- This field has two characters. The first is one of the digits from Table 2 indicating the type of facility as a roadway, off-road trail, or some other location. The second is either a ‘U’ or ‘R’ indicating an Urban or Rural location.
- The functional classification for roadways may be found by referring to the local agency or state website. If the local agency does not use the same classifications as shown in Table 2 (i.e. does not distinguish between major and minor collectors), select the classification you feel best fits the roadway.
- If you are counting a shared use path not adjacent to a roadway (type 0), enter the classification as a trail or shared use path. If you are counting a sidepath or trail associated with a roadway, enter the functional classification of the roadway.

- If you are counting an area (like an open plaza or sports field where direction is undifferentiated), enter the classification as a general activity count.
- *Example: 8U (Trail or Shared Use Path, Urban). Note that in this case the shared use path is coded as a “Trail or Shared Use Path” as it is not part of a roadway. Although there is an adjacent elevated highway shown in the photograph, the nonmotorized facility has no relationship to the highway.*

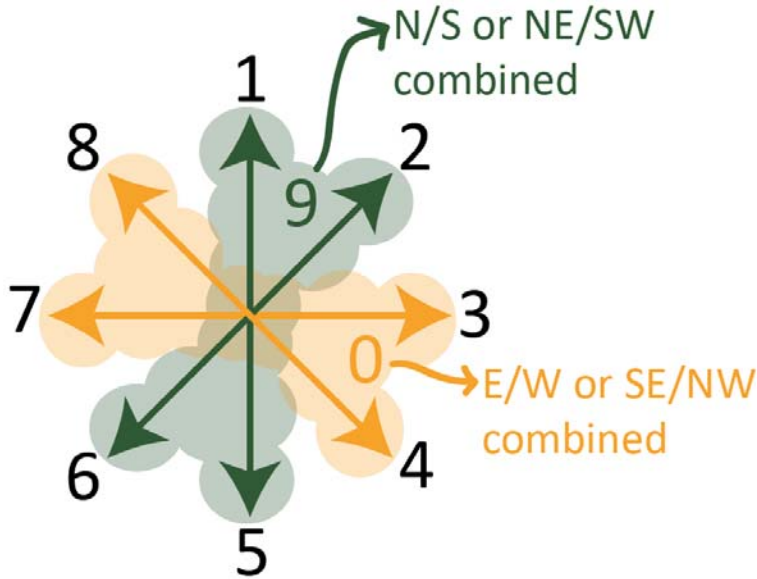
TABLE 2. FUNCTIONAL CLASSIFICATION CODES

Code	Classification
1	Interstate
2	Principle Arterial – Other Freeways and Expressways
3	Principal Arterial – Other
4	Minor Arterial
5	Major Collector
6	Minor Collector
7	Local
8	Trail or Shared Use Path
9	General Activity Count

6. DIRECTION OF ROUTE (FIELD 6/COLUMN 15) – CRITICAL

- The Direction of Route establishes a single direction that is used in combination with subsequent fields as the basis for describing which side of the road or trail the count was taken on (Field 7, Location of Count Relative to Roadway) and which direction the counted travelers were moving (Field 8, Direction of Movement). It amounts to the “prime meridian” relative to which the other fields describing the location and direction of the count are interpreted. The direction of route selected needs to be consistent with the following two fields. Exhibit 8 illustrates how fields 6, 7 and 8 are related.
- This is a number denoting a conventional compass direction (N, NE, E, SE, S, SW, W, NW) per the table in the TMG and illustrated in Exhibit 4.
- As indicated in Exhibit 4, the Direction of Route can be set as east-west, southwest-northwest, north-south, or northeast-southwest combined for locations where users in both directions are counted. This requires the Location of Count Relative to Roadway (Field 7) to be set to “Both sides of the road combined” **and** “Direction of Movement (Field 8) to travel in both (all) directions.” In general, it is recommended that a single explicit direction of route be chosen for clearer interpretation of the following fields.

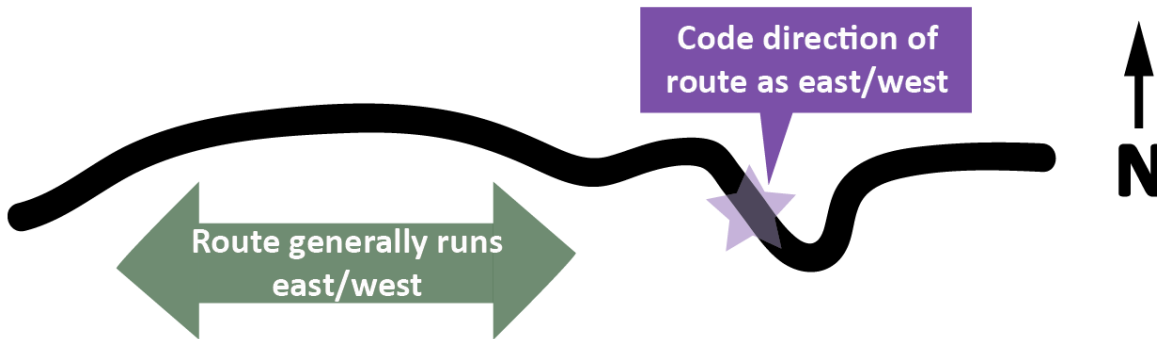
Exhibit 4. **DIRECTION OF ROUTE OPTIONS**



Note: a code of 0 refers to east-west or southeast-northwest combined (volume stations only) and a code of 9 refers to north-south or northeast-southwest combined (volume stations only)

- The direction, while technically arbitrary, should reflect the facility orientation most dominant along the whole route or path so the direction of movement can be reliably interpreted and reproduced when subsequent counts are collected at the same location, as shown in Exhibit 5.

Exhibit 5. **DIRECTION OF ROUTE EXAMPLE**



- For one-way facilities, the direction is typically the posted direction of travel. For two-way facilities, it may be the increasing “milepost” direction which can be obtained from the HPMS Linear Reference System (preferred if available), from physical mileposts on the roadside, or from the direction of increasing house or block numbers on the roadway. Alternatively, the overall cardinal compass direction of the route may be used. If the count is on a trail or road with no conventional direction, the direction is arbitrary but the same choice should be used for counts taken later at the same location. If necessary, use Field 32 to document how the direction was determined.
- *Example: 1 (North) – path generally runs north/south, north is selected to be consistent with advancing mileposts on nearby north/south highways*

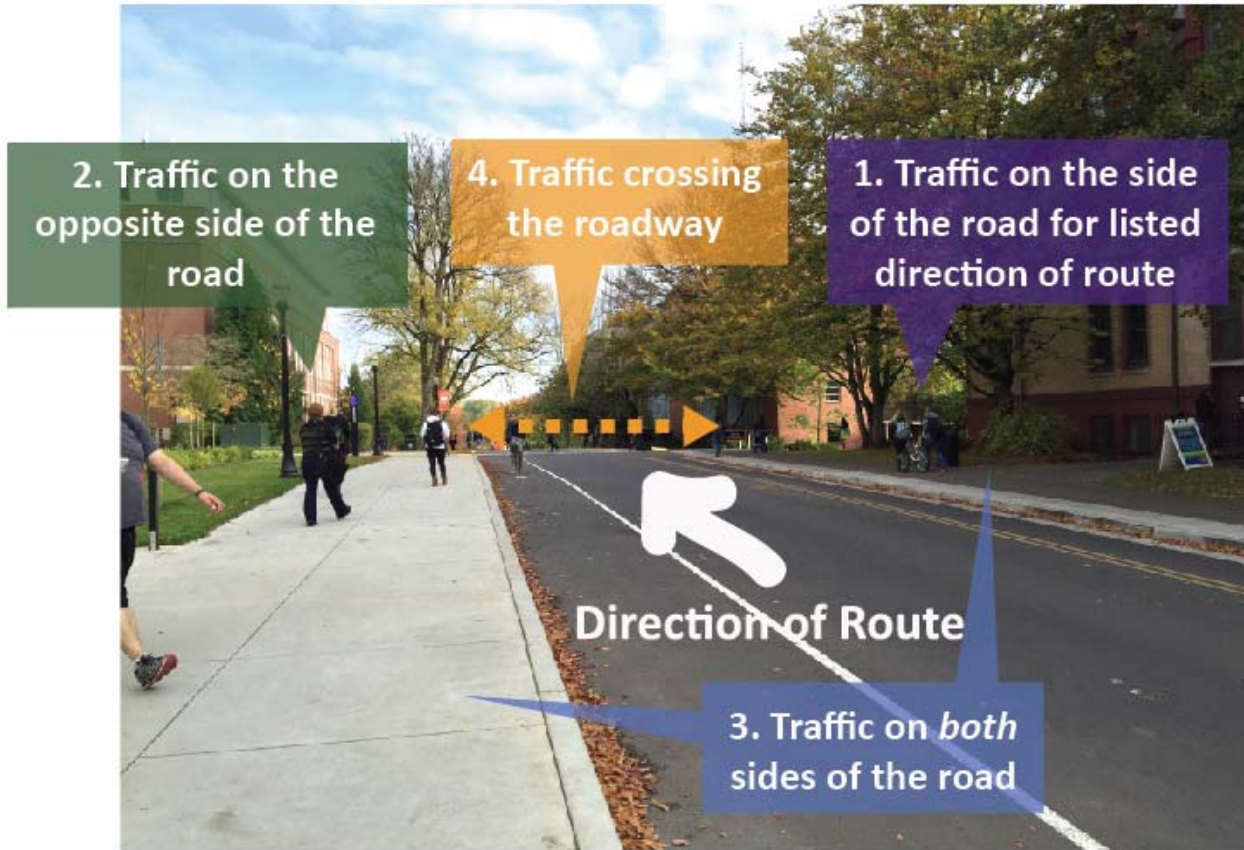
7. LOCATION OF COUNT RELATIVE TO ROADWAY (FIELD 7/COLUMN 16) – CRITICAL

- Indicates count location relative to the Direction of Route and records which “side” of the road the counted facility is on (same or opposite).
- Because the TMG format was developed to capture counts taken in North America, the “side of the road for the listed Direction of Route” will be the right side of the road for an observer facing in the Direction of Route, and “the opposite side from the listed Direction of Route” will be the left side for that same observer.
- The TMG format directly supports crossing counts, parallel counts, and counts of total movements through intersections.
- Movements approaching or departing intersections, or crossing in specific directions, may be reported, but these must be broken down into counts along or across the roadways entering and leaving the intersection and reported separately. A complete example of how to do that is presented in **Chapter 6: Facility Types and Counting Examples**.
- Explicit turning movement counts are not supported. A turning movement count in this sense would report, for example, the number of people who were traveling east along Main Street and then turned north onto Vine Street at the intersection.
- The TMG format also allows for a location with “both” directions, which would be appropriate for counting travelers on a facility that is designed for travel in both directions, such as a trail or a single lane roadway. This code may also be used, as suggested in Exhibit 6 for example, if the count station reports total counts on both sidewalks, but does not report counts on each sidewalk separately.
- *Example: 3 (both sides of the road combined)*

TABLE 3. LOCATION OF COUNT RELATIVE TO ROADWAY CODES

Code	Location of Count Relative to Roadway
1	Traffic on the side of the road for the listed direction of route
2	Traffic on the opposite side of the road from the listed direction (i.e., the side with on-coming traffic, given the listed direction of route)
3	Both sides of the road combined (appropriate for example, if counting a trail or other shared use path)
4	Traffic moving perpendicular to the roadway (that is, crossing the street)

Exhibit 6. LOCATION OF COUNT RELATIVE TO ROADWAY



8. DIRECTION OF MOVEMENT (FIELD 8/COLUMN 17) – CRITICAL

- Indicates the direction of movement of the users being counted, relative to the Direction of Route, as shown in Exhibit 7.
- To determine the direction of movement, first face in the direction that was used to establish the Direction of Route (Field 6). If the users you are counting in front of you are traveling in the direction of route (away from you), code the direction of movement as 1 (only occurring in the direction of the route). If the users are traveling in the opposite direction of the route (toward you), code the direction of movement as 2 (only occurring opposite the direction of route).
- TMG can accept counts of “both” travel directions, but directional counts (same/opposite) are more flexible because they provide additional detail to assess travel patterns, even on facilities such as trails that are intrinsically bi-directional. It is desirable to collect directional counts wherever possible. Remember that you will need two station location records in that case, one for each direction.
- As an example, if the direction of movement is opposite the direction of the route and bicyclists are being counted on the same side of the road for the direction of movement, then the bicyclist is traveling the “wrong way.”

- *Example: 1 (travel monitored only occurring in the Direction of Route) – at this location northbound and southbound bicyclists are counted separately. Separate station location records are needed for each direction.*

TABLE 4. DIRECTION OF MOVEMENT CODES

Code	Direction of Movement
1	Travel monitored only occurring in the Direction of Route
2	Travel monitored only occurring opposite to the Direction of Route
3	Travel in both (all) directions Note: used if collecting a “General Activity Count”
4	Travel at an intersection that includes all movements Note: if used, the “intersection” variable should then be coded as a 1 or 2
5	Travel monitored perpendicular to Direction of Route, crossing from Left to Right (facing Direction of Route)
6	Travel monitored perpendicular to Direction of Route, crossing from Right to Left (facing Direction of Route)

Exhibit 7. DIRECTION OF MOVEMENT

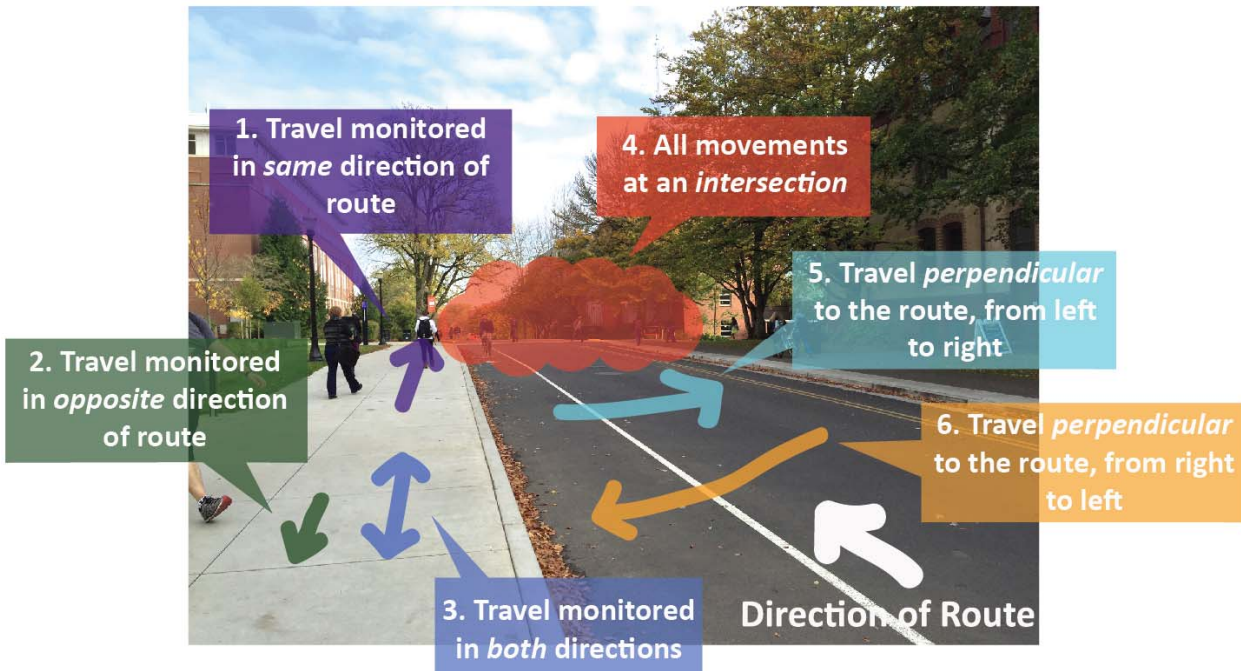
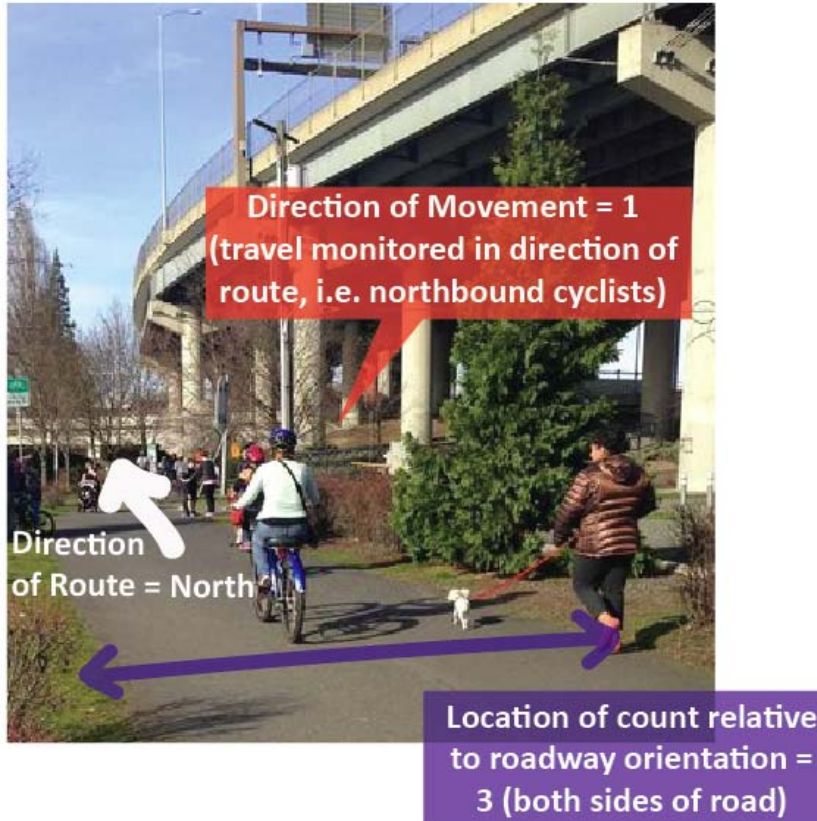


Exhibit 8 illustrates how the three fields above (direction of route, location of count relative to roadway, and direction of movement) relate to each other.

Exhibit 8. **DIRECTION OF ROUTE, LOCATION OF COUNT RELATIVE TO ROADWAY, AND DIRECTION OF MOVEMENT ILLUSTRATION**



9. FACILITY TYPE (FIELD 9/COLUMN 18) – CRITICAL

- Indicates the facility type on which the count was taken, using one of the codes in Table 5.
- Note that bike lanes, sidewalks and other facilities associated with a motorized roadway are coded as their own facility types. A facility type of “1” (in the roadway) would be the right choice for bicyclists riding in a shared lane, or pedestrians walking in the street rather than on the roadside (or either type of user on a forest road that is maintained, even if rarely used, for motor vehicles).
- Some facilities may be represented by different facility types depending on the purpose for which the count is being collected. For example, a shared use path may cross over a roadway and fit both code “0” (on a trail) and code “5” (on an overpass). If the reason for counting traffic on the overpass is to understand what is happening on the trail, code “0” should be used. If the reason for counting the overpass is to understand how travelers are crossing the road under the overpass (for example, to compare traffic on the overpass to the number of people crossing the roadway at ground level), then code “5” is appropriate.
- If code “5” (underpass) or code “6” (overpass) is used, then the Location of Count Relative to Roadway should always be “4” (Travel perpendicular to the roadway). Other characteristics of the station location such as Direction of Route and Functional Classification should describe the road that is being crossed, not the overpass.

- The values in other fields should be consistent with these choices: the Functional Classification should be “8” (trail) if code “0” is used here, and it should be the Functional Classification of the roadway the overpass crosses if code “5” is used here. Likewise, the Direction of Route should be selected based on the direction of the trail if “0” is used here, and selected based on the roadway which the overpass crosses if “5” is used here (the correct direction of the roadway under the overpass is especially important if you are tracking which direction the traffic on the overpass is moving: “left-to-right” or “right-to-left”).
- The crosswalk field is intended to apply to all legal crosswalks, including those that are not marked (as might be the case at a residential intersection, where crossing is permitted without special striping).
- If “perpendicular to traffic” is selected in “Location of Count Relative to Roadway” variable and the “Facility Type” variable is coded as “in roadway right of way,” then the count includes ALL people crossing a roadway. If “exclusively in a crosswalk” is indicated, then only those in the crosswalk (or directly next to the crosswalk) are being counted. This coding differentiation is designed to indicate if all pedestrians crossing a street within a given block (including those who crossed mid-block outside a crosswalk) are being counted, or whether only pedestrians actually using a marked crosswalk are being counted.
- Further guidance for selecting the appropriate facility type is provided in Table 5 and illustrated in the examples in Exhibit 9.
- *Example: 0*

TABLE 5. FACILITY TYPE COUNT CODES






Code	Facility Type
0	On a trail not intended for on-road motor vehicles (may accommodate snowmobiles or other off-road motorized vehicles) and not within the right of way of an adjacent road <i>Note: intended for trails that are not associated with a roadway and do not run adjacent to a roadway, with the exception of limited access roadways. Trails adjacent to limited access roadways (like urban highways) fit this category. If this field is used, the Functional Classification should be coded as an “8” (trail or shared use path)</i>
1	In roadway right of way (the roadway may designate a trail potentially open to motor vehicles such as a fire road in a national forest) <i>Note: refers to locations where users share the space with vehicles (like a festival street or neighborhood bikeway).</i>
2	Exclusively in a crosswalk <i>Note: refers to both mid-block crossings and crosswalks associated with an intersection. Includes all legal crosswalks, even those not striped (such as at a residential intersection). The Functional Classification refers to the road being crossed.</i>
3	On a sidewalk intended primarily or exclusively for pedestrians <i>Note: indicates facility is intended for pedestrians, even if cyclists or other users are present.</i>
4	In a striped (painted) bicycle lane (with no physical barrier separating adjacent motorized traffic) <i>Note: also includes shoulder facilities used by bicyclists and/or pedestrians and buffered bicycle lanes with no vertical separation or barrier between vehicles and cyclists.</i>








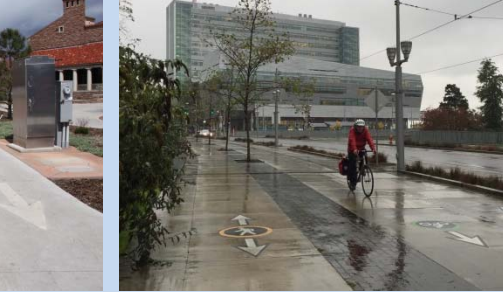


Chapter 3 | Count Station Description (Location)

Code	Facility Type
5	<p>On an overpass intended to allow nonmotorized traffic to pass over a roadway</p> <p><i>Note: intended to be used when an overpass is available as an option for multimodal users. The Functional Classification and Direction of Route refer to the roadway the overpass crosses.</i></p>
6	<p>In an underpass intended to allow nonmotorized traffic to pass under a roadway</p> <p><i>Note: intended to be used when an underpass is available as an option for multimodal users. The Functional Classification and Direction of Route refer to the roadway the underpass is under.</i></p>
7	<p>In a physically separated bicycle lane (separated by curb, bollards or other structure from an immediately adjacent motorized roadway lane)</p> <p><i>Note: includes cycle tracks and other facilities vertically separated from vehicular traffic.</i></p>
8	<p>On a sidepath intended for bicycles or bicycles and pedestrians, occurring in a roadway right of way or immediately adjacent to a roadway (distinguished from "3" by explicitly allowing bicycles; distinguished from "0" by being associated with a roadway; distinguished from "7" by being separated by landscaping or unpaved area from the adjacent roadway)</p> <p><i>Note: used for bicycle or shared use facilities adjacent to a roadway and typically considered an alternative to the roadway (where cyclists could realistically ride on the roadway). If the roadway is a limited access roadway (like an urban highway), this is likely not the best choice. The Functional Classification and other related fields refer to the roadway the facility runs adjacent to.</i></p>
9	<p>General area (for general area count, with no facility explicitly designated)</p> <p><i>Note: will typically be used for plazas or intersections.</i></p>

Exhibit 9. FACILITY TYPE EXAMPLES

Short

Code	Description	Examples
0	Trail not associated with a roadway	
1	In roadway right of way (shared space)	
2	Crosswalk (legal crossing)	
3	Sidewalk (for pedestrians)	
4	Striped bike lane	

Code	Short Description	Examples	
5	Overpass		
6	Underpass		
7	Separated bicycle lane		
8	Sidepath adjacent to roadway		
9	General area count		

10. INTERSECTION (FIELD 10/COLUMN 19) – OPTIONAL

- Indicates whether count is at an intersection and if so whether it is a roundabout or not.
- When deciding whether a location is located at an intersection or not, consider the context of the count. If the point is to count people using/negotiating an intersection (i.e. we're interested in the movements through/across the intersection), code the location as at an intersection. If the point is to count people using a through facility (and we just happened to set up near an intersection because that is where the best physical location was), code the location as not at an intersection. Exhibit 10 provides an example of each scenario.

Exhibit 10. INTERSECTION CODING OPTIONS

	
<p>Temporary inductive loops are used to count cyclists using NW Banks Road. The bicycle lane shown ends farther east, so the point of the count is to assess use of the roadway by cyclists.</p>	<p>Road tubes are temporarily set-up to capture cyclists on Dunsmuir Street just south of Howe. The purpose of the count is to assess bicyclist exposure through the intersection, utilizing vehicle counts at the intersection.</p>
<p>Intersection: 0 (not at an intersection)</p>	<p>Intersection: 1 (at an intersection)</p>

- *Example: 0 (not at an intersection)*

TABLE 6. INTERSECTION CODES










Code	Intersection
0	Count is NOT taken at an intersection
1	Count is taken at an intersection (but not an intersection with a roundabout)
2	Count is taken at an intersection with a roundabout

11. TYPE OF COUNT (FIELD 11/COLUMN 20) – CRITICAL

- Indicates what type of user is being counted. The list of available types appears in Table 7. It is important to describe as precisely as possible what is being counted in the count records associated with this location.

- Recording characteristics of the travelers such as helmet use or gender is done in the count records (not the count station description), and is explained in Fields 13, 14 and 15 of the Nonmotorized Count Record format.
- Example: 2 [bicycles (only) are being counted]*

TABLE 7. TYPE OF COUNT CODES

Code	Type of Count
0	Other animals specify in Field 32, Other Notes
1	Pedestrians (only) 
2	Bicycles (only) 
3	Equestrians (only) 
4	Person in Wheelchairs 
5	Persons using other pedestrian assistive devices i.e. skates, skateboards, Segway®, hoverboards, etc. 
6	Motorized vehicles on a trail e.g. snowmobiles, all-terrain vehicles, etc. 
7	All pedestrians and bicycles Sum code 1 and 2 
8	All nonmotorized traffic Sum codes 1-5 
9	All traffic on a trail Sum codes 1-6 

12. METHOD OF COUNTING (FIELD 12/COLUMNS 21) – CRITICAL

- Indicates the method used to conduct the count, whether by a human observation, portable traffic recording device, or permanent count station, as shown in Exhibit 11.
- “Human observation (manual)” counts are conducted by human beings who are using portable equipment in the field (clipboards, tablets, smartphones, etc.), or who are later reviewing video recordings taken at the location.
- Portable counters are installed just for the duration of the count study, which may range from a few hours to several weeks or a month.
- Permanent counters are built into or on the physical environment and intended to operate continuously over long periods.

- “Part-time permanent” installations are considered “portable” for the purposes of this field. Such installations might include a permanently installed loop (for example) to which a counter is only sometimes connected.
- Seasonal counts on roads or trails that are closed or snowed in for part of the year should be recorded as permanent counters if the counter remains in place while the trail is closed but is continuously operating whenever the facility is open. A notation regarding the seasonal closure may be placed in Field 32 (Other Notes).
- *Example: 2 (Portable traffic recording device) – pneumatic tubes were temporarily installed for a week of data collection*

TABLE 8. METHOD OF COUNTING CODES

Code	Method of Counting
1	Human observation (manual)
2	Portable traffic recording device
3	Permanent, continuous count station (CCS)

Exhibit 11. METHOD OF COUNTING EXAMPLES



13. TYPE OF SENSOR (FIELD 13/COLUMN 22) – OPTIONAL

- If a specific sensor technology is always used to conduct the count described in this station record, the type is indicated here. This field is optional in the station description, but must be provided explicitly in each count record. If this field is left blank in the station description, it will be interpreted as if code “9” had been supplied explicitly.
- Manual and automated counts may be collected at the same facility at the same location, but these counts should be reported as separate nonmotorized count records. It is critical to include the type of sensor used in each of those count records, and to use code “9” here.
- *Example: R (Air tube)*

TABLE 9. TYPE OF SENSOR CODES

Code	Type of Sensor	Code	Type of Sensor
9	Multiple	S	Sonic/acoustic
H	Human observation	T	Tape switch
I	Passive infrared	3	Pressure sensor/mat
2	Active infrared	U	Ultrasonic
K	Laser/lidar	V	Video image with automated or semi-automated reduction
L	Inductive loop	1	Video image with manual reduction at a later time
M	Magnetometer	W	Microwave (radar)
P	Piezoelectric	X	Radio wave (radar)
Q	Quartz piezoelectric	Z	Other
R	Air tube		

14. YEAR OF DATA (FIELD 14/COLUMNS 23-26) – CRITICAL

- The year of data collection is entered in four digits.
- As implied by this field, the station location record should be updated or renewed annually (for example, if the data is being submitted to the FHWA Traffic Monitoring Analysis System).
- *Example: 2015*

15. FACTOR GROUPS (FIELDS 15-19/COLUMNS 27-32) – OPTIONAL

- The TMG provides a total of five single digit fields to list the identifiers used to factor the count provided. The values in these records are not the factors themselves, but simply identifiers of the factor groups used. The factors are used by agencies collecting the counts to convert short duration counts to estimates of daily travel or annual travel.
- In the case of permanent continuous count locations, these identifiers describe which factor group that count location belongs to, so that the adjustment factors can be computed. Use the text field in the “Other Notes” variable at the end of this record to further describe the factor groups to which the site is assigned.
- At this time, the use of these factor groups is both optional and flexible. A submitting agency may assign each factor identifier to purposes as the agency sees fit. TMAS will record these fields but make no other use of them.
- As an example, the factor group fields could be used as follows:
 - Factor group 1: time-of-day pattern
 - Factor group 2: day-of-week pattern
 - Factor group 3: monthly or seasonal pattern
 - Factor group 4: equipment adjustment patterns

- Factor group 5: adjustments due to type of weather

20. PRIMARY COUNT PURPOSE (FIELD 20/COLUMN 32) – OPTIONAL

- Indicates the primary purpose the data collection. If the data serves multiple purposes, select which purpose is considered the most important or the greatest impetus for establishing the data collection location.
- This field is desirable to support research based on data submitted to TMAS. Different levels of detail will often be expected for different applications, and including this field will make it easier for researchers to locate sets of counts that are consistent with the type of research they hope to conduct.
- *Example: P (Planning or statistic reporting purposes)*

TABLE 10. METHOD OF COUNTING CODES

Code	Method of Counting
O	Operations and facility management purposes
P	Planning or statistic reporting purposes
R	Research purposes
S	Count taken as part of a Safe Routes to School data collection effort
L	Facility design purposes
E	Enforcement purposes

21. POSTED SPEED LIMIT (FIELD 21/COLUMNS 33-34) – OPTIONAL

- Speed posted in miles per hour (a whole number), if applicable.
- Speed limits below 5 miles per hour should be left blank, even if posted. Those are probably unreasonable for bicyclists and irrelevant for pedestrians.
- *Example: Blank*

22. YEAR STATION ESTABLISHED (FIELD 22/COLUMNS 35-38) – CRITICAL

- The 4-digit year in which data at this Station ID was first collected.
- This field is required, and should contain the year the counts were taken (same value as Field 14, Year of Data) if the year of establishment is not known.
- *Example: 2011*

23. YEAR STATION DISCONTINUED (FIELD 23/COLUMN 39-42) – OPTIONAL

- If applicable, this field is used to code the four-digit year the count station was discontinued.
- Data that is submitted to TMAS should include a station description record in which this field is filled in for situations when a Station ID is permanently retired (e.g. due to a facility being realigned, or a permanent counter being removed).
- *Example: Blank*

24. NATIONAL HIGHWAY SYSTEM (FIELD 24/COLUMN 43) – OPTIONAL

- Indicate with a Y (yes) or N (no) if the road is part of the National Highway System.
- This field is only relevant for facilities associated with motorized roadways, and can remain blank otherwise.
- *Example: N (No, not on National Highway System)*

25. LATITUDE (FIELD 25/COLUMNS 44-51) AND

26. LONGITUDE (FIELD 26/COLUMNS 52-60) – CRITICAL

- Enter GPS coordinates of the location where the data collection master device (or person) is placed (that is, the device that is logging or storing the data). These may be estimated from tools such as internet mapping services if precise local measurements are not available.
- If this is not available, enter the coordinates for the roadway center point at the sensor location.
- This is NOT the location of tubes or individual sensors. The individual collection locations are described structurally using Direction of Route, Location of Count Relative to Roadway, Facility Type and Direction of Movement. Longitude and Latitude for those individual collection locations may optionally be included in the corresponding count records.
- The latitude and longitude fields must not contain blanks; any leading zeros should be coded.
- The latitude field assumes the location is in the northern hemisphere and implies a decimal place, so the eight digit entry would be understood as XX.XXX XXX.
- The longitude field assumes the location is in the western hemisphere, so negative values are presumed and should not be coded explicitly. The field interpretation implies a minus sign (to indicate degrees west of the prime meridian) and a decimal point, so the nine digit entry would be understood as -XXX.XXX XXX.
- *Example: 45513672; 122668189*

27. POSTED ROUTE SIGNING (FIELD 27/COLUMNS 61-62) – OPTIONAL

- Code the highest classification route number appearing on signs posted along the facility.
- *Example: 1 (Not signed)*

TABLE 11. POSTED ROUTE SIGNING CODES

Code	Posted Route Signing
1	Not signed
2	Interstate
3	U.S.
4	State
5	Off-Interstate Business Marker
6	County
7	Township
8	Municipal
9	Parkway Marker or Forest Route Marker
10	US Bicycle Route
11	State or Local Bicycle Route
12	None of the above (signed differently)

28. POSTED SIGNED ROUTE NUMBER (FIELD 28/COLUMNS 63-70) – OPTIONAL

- Record the route number appearing in the corresponding posted sign (previous field), if applicable.
- The entry should be right-justified with leading zeroes.
- This field is required if Field 27 (Posted Route Signing) indicates a specific type of signage and can be entered as all zeroes if Field 27 is coded as “12” (signed differently).
- *Example: Blank*

29. LINEAR REFERENCING SYSTEM (LRS) IDENTIFICATION (FIELD 29/COLUMNS 71-130) – OPTIONAL

- The LRS identification, if reported, must be the same as the LRS identification reported in the HPMS for the section of roadway where the station is located.

- The LRS identification is a 60-character, right-justified value. The LRS ID can be alphanumeric, but must not contain blanks; any leading zeros should be coded. If the HPMS LRS identifier is more than 60 characters, then only the first 60 characters should be recorded.
- This field is useful if motorized counts on this roadway segment are also collected for HPMS.
- More information concerning the LRS may be found in Chapter III of the HPMS Field Manual (September 2010), Linear Referencing System Requirements.
- If consistent LRS data is available for a trail not associated with a motorized roadway (e.g. if the trail is mapped using LRS data by a natural resources agency), it may also be supplied in this field.
- *Example: Blank*

30. LINEAR REFERENCING SYSTEM (LRS) LOCATION POINT (FIELD 30/COLUMNS 131-138) – OPTIONAL

- The numeric LRS location point for the station, coded in miles to the nearest thousandth of a mile. There is an implied decimal place after the fourth character that should NOT be explicitly coded. A seven-digit LRS location Point is interpreted as XXXX.XXX, and should be zero-filled on the left if the entire field is not blank.
- *Example: Blank*

31. STATION LOCATION (FIELD 31/COLUMNS 139-188) – OPTIONAL

- Short (50 character) English text description of the location, indicating the nearest major intersecting route, state border, or landmark and direction from that landmark. If on a city street, enter the city and street name. Abbreviate if necessary and left justify text. The field may contain any printable character.
- This field (or Field 32 Other Notes if there is insufficient space) may also be used to provide additional information about how the Direction of Route was determined.
- Additional examples are provided in Exhibit 12.
- *Example: Eastbank Esplanade 0.17mi south of Burnside Bridge*

Exhibit 12. STATION LOCATION EXAMPLES

5.6 miles east of the PA state line

Under the Wilson Bridge at exit 45

Dunsmuir St protected bicycle lane S of Howe

32. OTHER NOTES (FIELD 32/COLUMNS 189-239) – OPTIONAL

- Any special circumstances can be documented, such as the specific use of factor groups 1 through 5.
- This field may contain any printable character and is limited to 51 characters.
- If Field #11 (Type of Count) is coded as 8 (other animals), indicate the type(s) of animals here.
- This field should be used if it is desired to indicate whether the trail or facility being counted is open only to nonmotorized traffic for part of the year (e.g. for mountain trails that are closed when covered with snow).
- This field (or Field 31 Station Location) may also be used to provide additional information about how the Direction of Route was determined.
- *Example: Dir. of Route from physical compass*

COUNT STATION DESCRIPTION DATA FIELDS AND EXAMPLE

Table 12 summarizes the count station description fields with the example from Portland, Oregon shown in the rightmost column.

TABLE 12. COUNT STATION DESCRIPTION DATA FIELDS

Field	Columns	Width	Description	Type ¹	Example
1	1	1	Nonmotorized station/location record identifier (L)	C	L
2	2-3	2	State FIPS Code	C	41
3	4-6	3	County FIPS Code	C	051
4	7-12	6	Station ID	C	EEPORT
5	13-14	2	Functional classification of the roadway	C	8U
6	15	1	Direction of route	C	1
7	16	1	Location of count relative to roadway	C	3
8	17	1	Direction of movement	C	1
9	18	1	Facility type	C	0
10	19	1	Intersection	O	0
11	20	1	Type of count	C	2
12	21	1	Method of counting	C	2
13	22	1	Type of Sensor	O	R
14	23-26	4	Year of Data	C	2015
15	27	1	Factor Group 1	O	
16	28	1	Factor Group 2	O	
17	29	1	Factor Group 3	O	

Chapter 3 | Count Station Description (Location)

Field	Columns	Width	Description	Type ¹	Example
18	30	1	Factor Group 4	O	
19	31	1	Factor Group 5	O	
20	32	1	Primary count purpose	O	P
21	32-34	2	Posted speed limit	O	
22	35-38	4	Year station established	C	2011
23	39-42	4	Year station discontinued	O	
24	43	1	National highway system	O	N
25	44-51	8	Latitude	C	45513672
26	52-60	9	Longitude	C	122668189
27	61-62	2	Posted route signing	O	_1
28	63-70	8	Posted signed route number	O	
29	71-130	60	LRS identification	O	
30	131-138	8	LRS location point	O	
31	139-188	50	Station location	O	Eastbank Esplanade apx 0.17 mi S of Burnside Brg
32	189-239	51	Other notes	O	Dir. of Route from physical compass

¹C = Critical, O = Optional

The TMG includes an example from a bicycle lane in Colorado’s Garfield County. This example is further illustrated in the examples presented in **Chapter 6: Facility Types and Counting Examples**.

CHAPTER 4

TMG FORMAT – COUNT DATA



COUNT DATA

The following data items should be reported to describe and report the count data that was collected. Each count record should be accompanied by a corresponding station location record describing the subject and location of the count as described in the previous section. One record will be provided for each calendar day for which data is submitted. The format is intended to be flexible and allow for counts gathered at a variety of time intervals (5, 10, 15, 20, 30, or 60 minutes).

1. NONMOTORIZED COUNT RECORD INDICATOR (FIELD 1/COLUMN 1) – CRITICAL

- The letter “N” is always coded to indicate nonmotorized count data. This field is not case sensitive.

2. – 12. STATION LOCATION (DESCRIBED IN FIELDS 2-12/ COLUMNS 2-35)

- These fields describe the count location and are identical to the data entered for the station location. They include:
 - State FIPS Code (Field 2) – Critical
 - County FIPS Code (Field 3) – Critical
 - Station ID (Field 4) – Critical
 - Latitude (Field 5) – Critical
 - Longitude (Field 6) – Critical
 - Direction of Route (Field 7) – Critical
 - Location of count relative to roadway (Field 8) – Critical
 - Direction of movement (Field 9) – Critical
 - Facility type (Field 10) – Critical
 - Intersection (Field 11) – Optional
 - Type of count (Field 12) – Critical
- The intent of replicating these fields in the count record and station location is to uniquely associate multiple sets of counts from different days with the same location. In addition, it makes it feasible to quickly interpret where a count record was taken without looking up the full station location record.
- *Example: State FIPS Code - 41 (Oregon), County FIPS Code - 051 (Multnomah County), Station ID – EEPOR, Latitude – 45513672, Longitude – 122668189, Direction of Route – 1 (North), Location - 3 [both sides of the road combined (appropriate for example, if counting a trail or other shared use path)], Direction – 1 (travel monitored only occurring in the Direction of*

Route), Facility Type – 0 (on a trail), Intersection – 0 (not at an intersection), Type of count – 2 (portable traffic recording device),

13. – 15. SUBJECT OF COUNT (INFORMATION SPECIFIC TO THE COUNT SUBJECT IS DESCRIBED IN FIELDS 13-15/COLUMNS 36-38) – OPTIONAL

- These fields describe the subject of the count and are unique to the nonmotorized count record. They are optional fields and can be used if data is available. If any field is not used, it should remain blank. The subject fields include:

Helmet Use (Field 13/Column 36)

Blank = all subjects (helmet or not)

N = No helmet

H = Helmet observed

I = Indeterminate (observer could not identify)

Gender (Field 14/Column 37)

Blank = all genders

M = perceived male

F = perceived female

I = Indeterminate (observer could not identify)

Age (Field 15/Column 28)

Blank = all ages

C = Child (pre-teen)










A = Adult (teen or older)

I = Indeterminate (observer could not identify)

- If any of these fields are used, then additional count records must be provided (so that each count record describes a unique subset of the data). For example, if helmet use is counted, then at least two (and potentially three) records are needed to capture separate counts of users with no helmets, users with helmets, and users where helmet use could not be determined. If two of these fields (e.g. Helmet and Age) are used, then up to nine count records are needed, as illustrated in Exhibit 13. If all three fields (Helmet, Gender, and Age) are used, then up to twenty-seven count records are needed.
- If data on these fields is not collected, they should be left blank.
- Example: Helmet Use – blank, Gender – blank, Age – blank*

Exhibit 13. SUBJECT OF COUNT

Age

		Child	Adult	Indeterminate
Helmet Use	No Helmet			
	Helmet			
	Indeterminate			

16. TYPE OF SENSOR (FIELD 16/COLUMN 39) – CRITICAL

- This field is used to indicate the type of sensor used for detection and it is required.
- If the station location record codes the type of sensor as anything other than “9” or “blank,” then the value stored here should be the same as the value in the Type of Sensor field in the station location record.
- *Example: Type of Sensor – F (Air tube)*

17. PRECIPITATION (FIELD 17/COLUMN 40) – OPTIONAL

- Indicate whether measurable precipitation fell during any count interval in this record with Y (yes) or N (No).
- *Example: N (No, it was not raining or snowing)*

18. HIGH TEMPERATURE (FIELD 18/COLUMNS 41-43) – OPTIONAL

- The highest temperature recorded at the station location during any count interval, expressed in Fahrenheit (rounded to the nearest whole degree).
- If the “highest temperature” is not known, the temperature recorded at the time the temporary counter was placed will suffice.
- *Example: 78*

19. LOW TEMPERATURE (FIELD 19/COLUMN 44-46) – OPTIONAL

- The lowest temperature recorded at the station location during any count interval, expressed in Fahrenheit (rounded to the nearest whole degree).
- If the “lowest temperature” is not known, the temperature recorded at the time the counter was picked up will suffice.
- *Example: 52*

20. YEAR OF COUNT (FIELD 20/COLUMNS 47-50) – CRITICAL

- Code the four digits of the year in which the data was collected.
- This field should have the same value as the Year of Data field (Field 14) in the corresponding station location record.
- *Example: 2015*

21. MONTH OF COUNT (FIELD 21/COLUMNS 51-52) – CRITICAL

- Code the two digits for the month in which the data was collected.
- *Example: 05*

22. DAY OF COUNT (FIELD 22/COLUMNS 53-54) – CRITICAL

- Code the two digits for the day in which the data was collected.
- *Example: 18*

23. COUNT START TIME FOR THIS RECORD (FIELD 23/COLUMNS 55-58) – CRITICAL

- Record the local time in effect on the date of the count using military format (always four digits, e.g. 0800, 2355)

- The count start time must be on a five minute interval. Hourly records are expected to start on the hour and 15-minute records are expected to start at 0, 15, 30, or 45 minutes past the hour. For a 5-minute interval, the count must start at a time ending in either 0 or 5.
- Due to daylight savings time, it has been typical practice with motorized counts to “overwrite an hour of data” in the fall and have a “missing hour” in the spring. This practice is continued for the TMG nonmotorized format.
- If a count session continues past midnight, a new record with a new date should commence with the first interval that starts after midnight.
- *Example: 0000 (counts collected from midnight onwards)*

24. COUNT INTERVAL BEING REPORTED (FIELD 24/COLUMNS 59-60) – CRITICAL

- The TMG allows for 05, 10, 15, 20, 30, or 60 minute intervals.
- Counts should be collected and reported for the shortest feasible intervals (shorter if automated equipment is used, longer if manual counts are conducted).
- *Example: 15*

25. COUNTS FOR EACH INTERVAL (FIELDS 25 THROUGH 312 AS APPROPRIATE/COLUMN 61 ONWARD)

- These fields are used to record the actual count data observed during each interval.
- Right justify the integer being reported and blank fill leading columns as needed.
- An all-blank field is considered "missing" data. If a counter was present and operating but no subjects were observed, a single zero, right-justified, should be entered. A blank field means the counter was not operating during that interval (for example, if manual counts were taken on the same day only in morning and evening rush hours – the periods in the middle of the day when no one was counting would be recorded as blanks, but the first period (say) after the counter returned to the station location should be recorded as zero if no subjects were observed).
- *Example:*

2	(12:00-12:15 AM)	0	(1:00-1:15 AM)	1	(2:00-2:15 AM)
0	(12:15-12:30 AM)	1	(1:15-1:30 AM)	...	
0	(12:30-12:45 AM)	0	(1:30-1:45 AM)		
0	(12:45-1:00 AM)	0	(1:45-2:00 AM)		

COUNT DATA FIELDS AND EXAMPLE

Table 13 summarizes the count information fields as they appear in the TMG, with the example for Portland, Oregon added in the final column.

TABLE 13. COUNT INFORMATION DATA FIELDS

Field	Columns	Width	Description	Type	Example
1	1	1	Nonmotorized count record identifier (N)	C	N
2	2-3	2	State FIPS Code	C	41
3	4-6	3	County FIPS Code	C	051
4	7-12	6	Station ID	C	EEPORT
5	13-20	8	Latitude	C	45513672
6	21-29	9	Longitude	C	122668189
7	30	1	Direction of Route	C	1
8	31	1	Location of count relative to roadway	C	3
9	32	1	Direction of movement	C	1
10	33	1	Facility type	C	0
11	34	1	Intersection	O	0
12	35	1	Type of count (bike/pedestrian/both)	C	2
13	36	1	Helmet use	O	_
14	37	1	Gender	O	_
15	38	1	Age	O	_
16	39	1	Type of Sensor	O	R
17	40	1	Precipitation (yes/no)	O	N
18	41-43	3	High temperature	O	_78
19	44-46	3	Low temperature	O	_52
20	47-50	4	Year of count	C	2015
21	51-52	2	Month of count	C	05
22	53-54	2	Day of count	C	18
23	55-58	4	Count start time for this record (military time, HHMM)	C	0000
24	59-60	2	Count interval being reported (in minutes)	C	15
25	61-65	5	Count for interval 1	C	____2 (12:00-12:15 AM)
26	66-70	5	Count for interval 2	C/O	____0 (12:15-12:30 AM)
27	71-75	5	Count for interval 3	C/O	____0 (12:30-12:45 AM)
28	76-80	5	Count for interval 4	C/O	____0 (12:45-1:00 AM)
29	81-85	5	Count for interval 5	C/O	____0 (1:00-1:15 AM)

Chapter 4 | Count Data

Field	Columns	Width	Description	Type	Example
30	86-90	5	Count for interval 6	C/O	_____1 (1:15-1:30 AM)
31	91-95	5	Count for interval 7	C/O	_____0 (1:30-1:45 AM)
32	96-100	5	Count for interval 8	C/O	_____0 (1:45-2:00 AM)
33	101-105	5	Count for interval 9	C/O	_____1 (2:00-2:15 AM)
34-312	106-1500		Count intervals 25 – 288 are used only if the reported day contains this many reporting time periods. Only report those periods for which data were collected. Up to 288 reporting periods are needed if 5-minute intervals are used. Up to 144 periods are needed for 10-minute intervals. Up to 96 periods are needed for 15-minute intervals Up to 72 periods are needed for 20-minute intervals Up to 48 periods are needed for 30-minute intervals Up to 24 periods are needed for 60-minute intervals	C/O	Etc. (96 periods used total)

CHAPTER 5
**COLLECTING MULTIPLE
COUNTS AT A SINGLE
LOCATION**



COLLECTING MULTIPLE COUNTS AT A SINGLE LOCATION

This chapter provides further guidance on how to collect multiple counts at a single location and when multiple count station description (location) records and count data records are needed.

COUNT STATION DESCRIPTION (LOCATION)

A separate count station description (location) record is needed for each direction, side of the roadway, and mode for which counts are collected. Table 14 indicates which station location fields may change when multiple counts are collected at a single location on a facility (such as northbound *and* southbound bicyclists in a bike lane, or total pedestrians *and* total bicyclists). The “Notes” column indicates when and why these fields may change.

TABLE 14. STATION LOCATION DATA FIELDS THAT MAY CHANGE WITH DIFFERENT COUNTS

Field	Description	Type	Notes
7	Location of count relative to roadway	C	May change if counts taken on a different side of the roadway
8	Direction of movement	C	Change if counts taken in a different direction
11	Type of count	C	Change if different type of traveler counted
12	Method of counting	C	May change if different method used to count user

The number of station location records needed in general can be determined by the equation in Exhibit 14.

Exhibit 14. NUMBER OF STATION LOCATION RECORDS REQUIRED PER YEAR

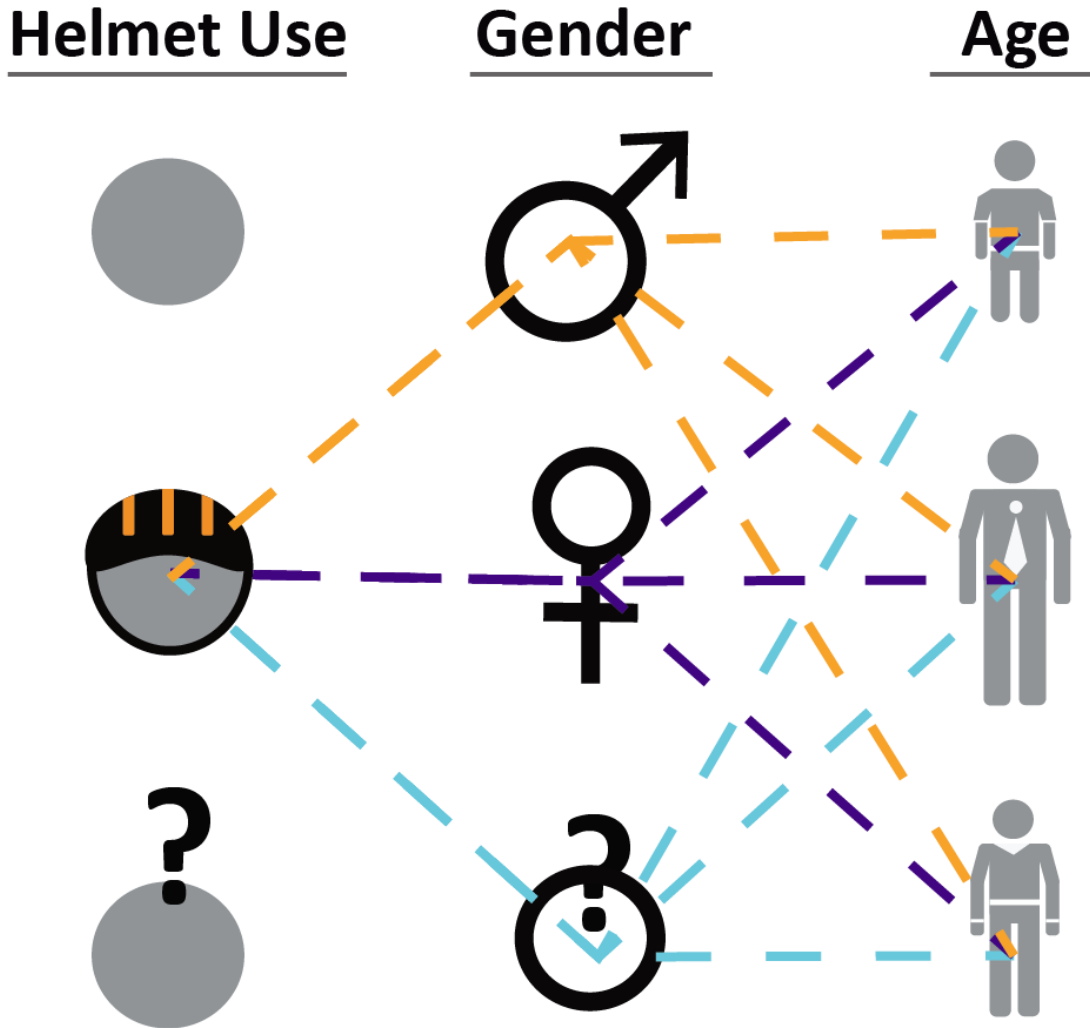


COUNT DATA

Multiple count records may also be required for each station location record depending on the data being collected and duration of the count. For example, if fields 13, 14 and/or 15 are used to provide additional information about the count subject, additional count records must be provided so that each count record describes a unique subset of the data. For example, if helmet use is counted, then at least two (and potentially three) records are needed to capture separate counts of users without helmets, users with helmets, and users where helmet use could not be determined. If two of these fields (e.g. Helmet Use and Age) are used, then up to nine count records are needed.

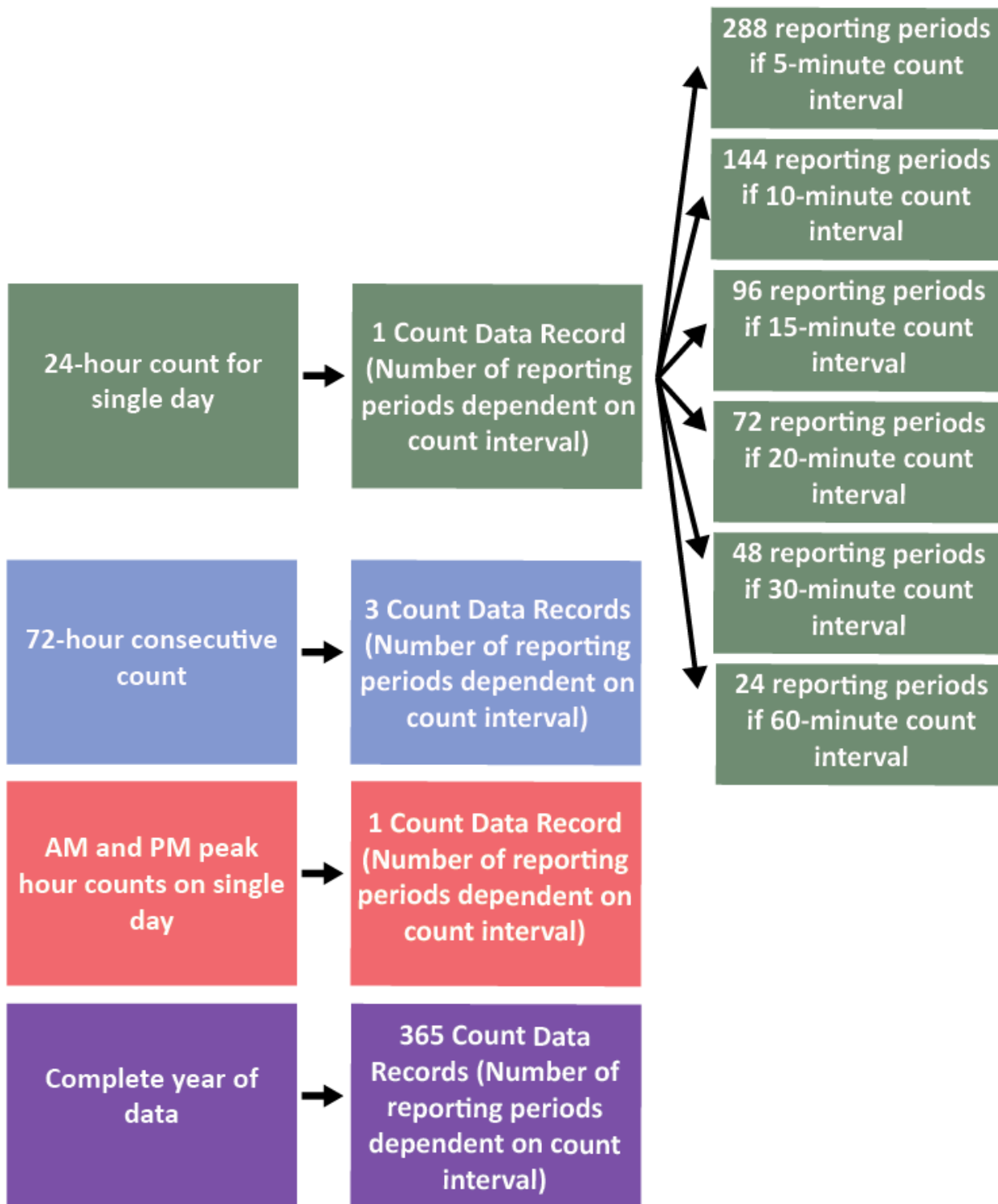
If all three fields (Helmet Use, Gender, and Age) are used, then up to twenty-seven count records are needed. Exhibit 15 illustrates the unique subsets of data collected when helmet use, gender, and age are recorded. Up to twenty-seven count records are needed if all three options are utilized within each category (i.e. no helmet, helmet, indeterminate helmet use; perceived male, perceived female, indeterminate gender; child, adult, indeterminate age). Exhibit 15 illustrates the nine unique count records associated with users wearing a helmet. Nine additional count records are associated with users not wearing a helmet and users where helmet use is indeterminate.

Exhibit 15. **ADDITIONAL COUNT SUBJECT DATA**



In addition, a separate count record is required for each day of data collection. The number of fields in the count record is dependent on the interval and span of data collection. A few scenarios are described in Exhibit 16.

Exhibit 16. COUNT DATA RECORDS BASED ON COUNT DURATION



Note that one count data record is recommended for counting an AM and PM peak hour on a single day. The periods in the middle of the day when no counts were collected would be recorded as blanks, but the first period after the counter returned to the station location should be recorded as zero if no subjects were observed.

CHAPTER 6

FACILITY TYPES AND COUNTING EXAMPLES




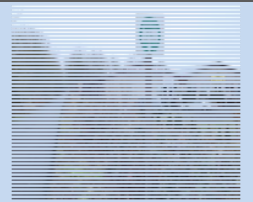














FACILITY TYPES AND COUNTING EXAMPLES

The following examples show how to code a sample of the facility types and counting scenarios that agencies may encounter when collecting nonmotorized data. An introduction for each facility type is provided that calls out key considerations when coding data on these types of facilities, followed by a variety of examples for each facility type. For each example, the critical fields required to code the station location are provided. In some cases, the optional fields are also provided to illustrate how those fields are used, although these are not a focus of the examples. The intent of these examples is to explore both simple applications of the station location format, as well as more challenging examples. Exhibit 17 outlines the example categories covered in this section.

Additional examples will be added in the future to TMG website, and contact information to request help with any tricky situation you may encounter in your own practice is also available there:

<http://www.fhwa.dot.gov/policyinformation/travelmonitoring.cfm>

Exhibit 17. **EXAMPLE CATEGORIES**

	Typical Users	Facility Type	Direction of Movement	Example
Shared Use Paths		0 - trail 5 - overpass 6 - underpass 8 - sidepath	1 - travel in same direction of route 2 - travel in opposite direction of route	
Shared Vehicle Lanes		1 - roadway right of way	1 - travel in same direction of route 2 - travel in opposite direction of route	
Bicycle Lanes		4 - striped bicycle lane 7 - separated bicycle lane	1 - travel in same direction of route 2 - travel in opposite direction of route	
Contraflow Bicycle Lanes		4 - striped bicycle lane 7 - separated bicycle lane	1 - travel in same direction of route 2 - travel in opposite direction of route	
Sidewalks		3 - sidewalk	1 - travel in same direction of route 2 - travel in opposite direction of route	
Roadway Shoulders		1 - roadway right of way	1 - travel in same direction of route 2 - travel in opposite direction of route	
Roadway Crossings		1 - roadway right of way 2 - crosswalk 5 - overpass 6 - underpass	3 - travel in both directions 5 - travel left to right 6 - travel right to left	
Intersections		2 - crosswalk 9 - general area	4 - travel at an intersection 5 - travel left to right 6 - travel right to left	

SHARED USE PATHS

The following examples illustrate a range of shared use paths and are intended to provide both simple examples where the use of the TMG format is straightforward and more challenging examples where the user may have questions about how to implement the format. Some of the *station location* fields that the user should pay special attention to when coding share use paths include:




- **Functional Classification of the Roadway, Field 5:** if the facility is adjacent to a roadway, enter the functional classification of the roadway. If the facility is not associated with a roadway, enter the classification as a trail or shared use path.
- **Direction of Route, Field 6:** the direction should reflect the facility orientation that is most dominant along the whole route or path. This direction may not correspond to the direction at the count location if the route curves or temporarily departs from its typical alignment. Use the Other Notes field to provide more information if the direction would not be immediately obvious to someone visiting the site later.
- **Location of Count Relative to Roadway, Field 7:** this field indicates the count location relative to the roadway and records which “side” of the road the counted facility is on. For shared use paths and trails, the location of the count relative to the roadway is almost always both sides of the road combined, as users are counted on the entire width of the path. Note that even if one counts at a location including “both sides of the road,” it is still possible to count each direction of travel separately (see Field 8, Direction of Movement). Trails that have a center stripe and direction indications may support different locations, though it is still uncommon in practice to count those separately. For shared use facilities associated with a roadway, this field indicates which side of the roadway the facility that is being counted is on.
- **Direction of Movement, Field 8:** this field is dictated by the direction of users being counted.
- **Facility Type, Field 9:** it may be challenging to categorize the facility type and require some judgement may be needed to decide which type *best* fits the location being counted. Some guidance on the options relevant to shared use facilities is provided in Exhibit 18.

Exhibit 18. FACILITY TYPES FOR SHARED USE PATHS

0 - Trail not associated with a roadway

This code is intended for trails that are not associated with a roadway and do not consistently run adjacent to a roadway, with the exception of limited access roadways. Trails adjacent to limited access roadways (like urban highways) fit this category. If this code is used, the functional classification should be coded as an “8” (trail or shared use path).



<p style="text-align: center;">5 - Overpass</p> <p>Use when an overpass is available as an option for multimodal users crossing a roadway. The functional classification and direction of route refer to the roadway the overpass crosses.</p>	
<p style="text-align: center;">6 - Underpass</p> <p>Use when an underpass is available as an option for multimodal users crossing a roadway. The functional classification and direction of route refer to the roadway the underpass goes under.</p>	
<p style="text-align: center;">8 - Sidepath adjacent to roadway</p> <p>This code is intended to be used for bicycle or multi-use facilities adjacent to a roadway and that would typically be considered an alternative to the roadway. The functional classification and direction of route refer to the roadway the facility runs adjacent to.</p>	

- **Type of Count, Field 11:** this field is used to indicate what type of user is being counted. Multiple station location records are needed if multiple users are being counted and reported separately. A variety of potential counting scenarios are detailed in Table 15.

TABLE 15. POTENTIAL COUNTING SCENARIOS

Counting Scenario	Number of Station Location Records Needed	Direction of Movement	Type of Count
Total traffic in both directions	1	3 (both)	4 (peds and bikes)
Total traffic in each direction separately	2	1 (direction of route)	4 (peds and bikes)
		2 (opposite of route)	4 (peds and bikes)
Bicycle and pedestrian data separately, and in each direction separately	4	1 (direction of route)	1 (peds)
		2 (opposite of route)	1 (peds)
		1 (direction of route)	2 (bikes)
		2 (opposite of route)	2 (bikes)

EXAMPLE 1: BANKS-VERNONIA STATE TRAIL

The example below walks through setting up the station location record for a count collected at a shared use path in Banks, Oregon. The path is called the Banks-Vernonia State Trail and serves pedestrian, bicyclists, and equestrians. The trail generally runs north/south between Banks, Oregon and Vernonia, Oregon. Even though small portions of the route turn and run east/west, the direction of the route will be considered north since the trail mile markers count up from Banks to Vernonia (overall traveling north). Passive infrared is used to conduct counts on the trail, with user type and direction not differentiated. Therefore, one count station description is used to report all counts.

Exhibit 19. **BANKS-VERNONIA TRAIL LOOKING NORTH (LEFT), AERIAL VIEW (RIGHT)**



TABLE 16. STATION LOCATION DATA FIELDS – BANKS-VERNONIA STATE TRAIL

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	067	Washington County's code is 067
4	Station ID	C	BANKTH	Indicates Banks trailhead
5	Functional classification of the roadway	C	8R	A rural trail or shared use path (not adjacent to any roadway)
6	Direction of route	C	1	North, per overall route direction
7	Location of count relative to roadway	C	3	Traffic on the entire trail is counted
8	Direction of movement	C	3	Travel in both directions is counted
9	Facility type	C	0	Located on trail
10	Intersection	O	0	Not at an intersection
11	Type of count	C	5	All nonmotorized users are counted
12	Method of counting	C	3	A permanent count station is set-up at this location
13	Type of Sensor	O	I	Passive infrared is used for the data collection
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken as part of regular reporting
21	Posted speed limit	O		No posted speed limit
22	Year station established	C	2012	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	45622669	Indicates location of master device for data collection
26	Longitude	C	123114714	
27	Posted route signing	O	1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	Banks-Vernonia trailhead in Banks	
32	Other notes	O	Dir. of route from trail mile markers	

EXAMPLE 2: TILIKUM CROSSING SHARED USE PATH

The example below walks through setting up the station location record for a count collected on a bridge in Portland, Oregon. The bridge, called the Tilikum Crossing, provides transit lanes on the inside of the bridge and a one-way bicycle facility and two-way pedestrian facility on each side of the bridge. The bicycle and pedestrian facility are considered a shared use path since they are not associated with vehicle travel lanes. The bridge runs east/west over the Willamette River. The direction of the bridge will be considered east to match the increasing mile points on nearby highway facilities also crossing the river. Inductive loops are used to count users by direction. In this example, westbound (wrong-way) riders on the south side of the bridge are counted. A second count station description would be needed to report eastbound riders, with the same station ID used to link the counts to the same place.

Exhibit 20. **SOUTH SIDE OF TILIKUM CROSSING LOOKING EAST**

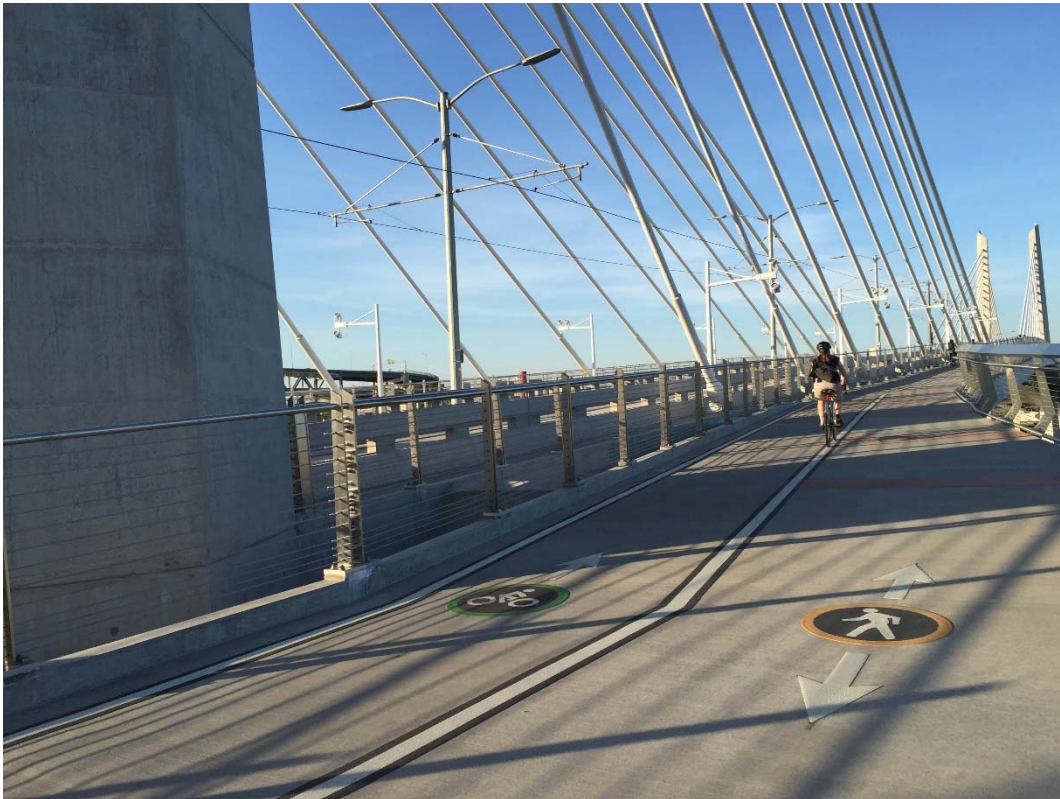


TABLE 17. STATION LOCATION DATA FIELDS – TILIKUM CROSSING

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	051	Multnomah County's code is 051
4	Station ID	C	TILCRS	Indicates Tilikum Crossing (this ID is used to correlate other counts taken at the same "place," like eastbound bicyclists)
5	Functional classification of the roadway	C	8U	An urban trail or shared use path
6	Direction of route	C	3	East, for consistency with increasing mileposts on nearby highways
7	Location of count relative to roadway	C	1	There are bicycle/pedestrian facilities on both sides of the bridge. A 1 is used to indicate that only users on the south side are being counted
8	Direction of movement	C	2	Travel opposite the direction of route is counted (i.e. wrong-way riders, traveling westbound)
9	Facility type	C	0	Although this count is on a bridge over the river, 5 is not selected because we are counting the trail itself, not the facility over which the trail passes
10	Intersection	O	0	Not at an intersection
11	Type of count	C	2	Bicycles only are counted
12	Method of counting	C	3	A permanent count station is set-up at this location
13	Type of Sensor	O	L	Inductive loops are used to count bicycles by direction at this location.
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken as part of regular reporting
21	Posted speed limit	O		No posted speed limit
22	Year station established	C	2015	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	45503197	Indicates location of master device for data collection
26	Longitude	C	122669525	
27	Posted route signing	O	_1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	South side Tilikum Crossing	
32	Other notes	O	Dir of route from hwy mile pts, wrong-way riders	

EXAMPLE 3: BROADWAY SIDEPATH

The station location shown below is located in Boulder, Colorado adjacent to Broadway in the vicinity of College Avenue. The facility is considered a sidepath (facility type 8) because it is located adjacent to a roadway and typically follows the alignment of the roadway (although at some points the path drops down in elevation to meet connections that the roadway passes over). While the path bends and changes direction in some locations, it generally runs north/south. Though the facility at this location is northwest/southeast, the direction of the path will be considered north to match the direction of advancing addresses on Broadway and general direction of the facility.

Exhibit 21. **BROADWAY SIDEPATH LOOKING EAST**



In this example, a video camera is used to collect data which is then manually reduced. Pedestrians and bicyclists are counted separately and direction is recorded. As shown in Exhibit 22, four count station descriptions are needed to record the count data collected. This example illustrates the count station description for southbound pedestrians.

Exhibit 22. BROADWAY COUNT STATION DESCRIPTION

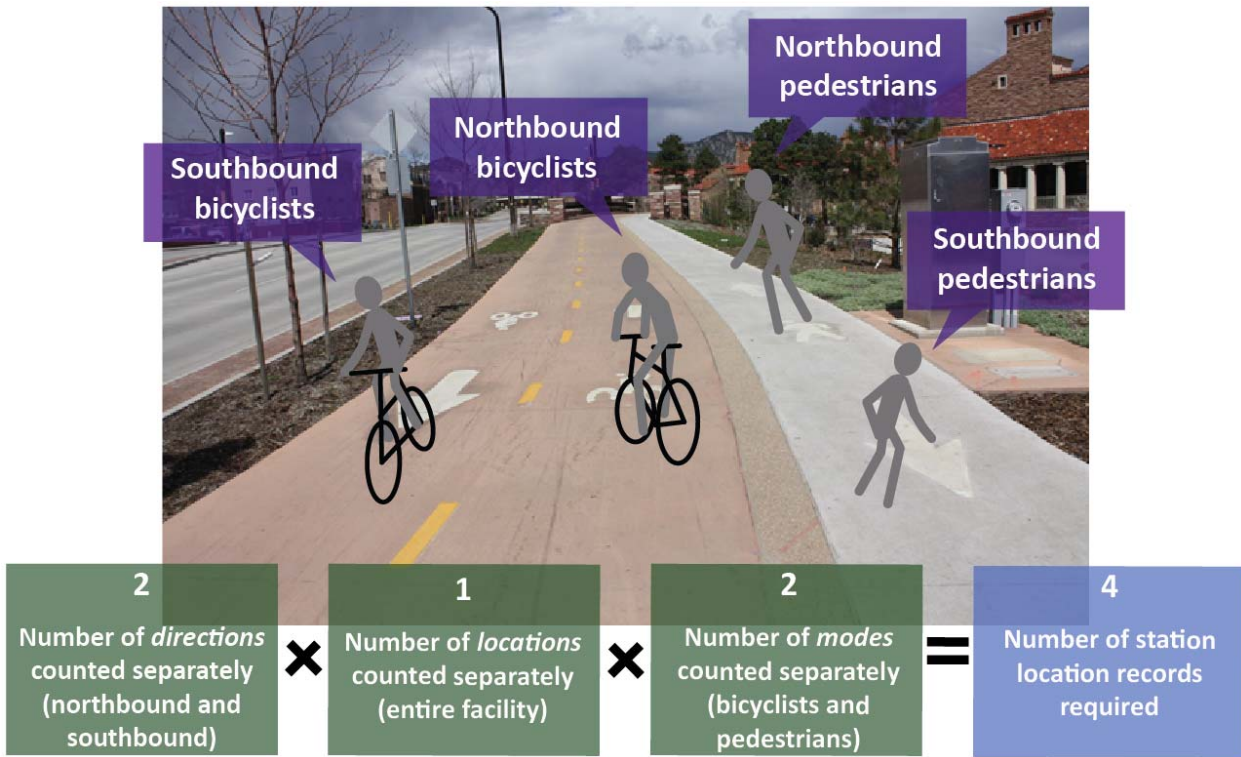


TABLE 18. STATION LOCATION DATA FIELDS –BROADWAY SIDEPATH

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	08	Colorado's code is 08
3	County FIPS Code	C	013	Boulder County's code is 013
4	Station ID	C	93PATH	Indicates path adjacent to Broadway (this ID is used to link other counts taken at the same "place," like southbound pedestrians, northbound bicyclists, and southbound bicyclists)
5	Functional classification of the roadway	C	3U	An urban principal arterial – other (note that this refers to Broadway, not the sidepath)
6	Direction of route	C	1	North, for consistency with advancing addresses on Broadway
7	Location of count relative to roadway	C	3	Users on the entire path are counted
8	Direction of movement	C	2	Travel opposite the direction of route is counted (i.e. users walking southbound)
9	Facility type	C	8	On a sidepath immediately adjacent to a roadway
10	Intersection	O	0	Not at an intersection
11	Type of count	C	1	Pedestrians only are counted
12	Method of counting	C	1	A video camera is set-up to collect video footage of the site and later reduced
13	Type of Sensor	O	1	Video data is captured and manually reduced
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	O	Count taken for facility management purposes
21	Posted speed limit	O	30	Refers to posted speed limit on Broadway
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	40004725	Indicates location of video camera for data collection
26	Longitude	C	105269769	
27	Posted route signing	O	_4	Broadway is signed as State Highway 93
28	Posted signed route number	O	00000093	
29	LRS identification	O		Jurisdiction is unaware of LRS for this location
30	LRS location point	O		
31	Station location	O	SB Peds on Broadway Path north of 18 th St	
32	Other notes	O	Dir. of route from advancing building numbers	

EXAMPLE 4: MIDTOWN GREENWAY SHARED USE PATH

The station location shown below is located in Minneapolis, Minnesota at the undercrossing of 10th Avenue via the Midtown Greenway. The Midtown Greenway is not associated with a specific roadway but located in a former railroad corridor in South Minneapolis. At the location shown below, the path runs east/west, which is consistent with the majority of the path. The direction of the path will be considered east to match the advancing Avenue numbers in this area of the path. Users are counted by human observation just east of the 10th Avenue undercrossing. Volunteers are counting bicyclists and pedestrians separately by direction, but for this example we'll be coding the record for westbound cyclists. The eastbound cyclists and eastbound and westbound pedestrians would each be a separate record (for a total of four count station description records). This site poses a coding challenge when it comes to the facility type. While the site is an undercrossing, the majority of the Midtown Greenway is set below the roadway level and thus there are frequent undercrossings. The intent of the count is to measure use on the Midtown Greenway, as opposed to assess users using the Midtown Greenway to cross 10th Avenue. Therefore, the facility type is coded as a trail not intended for on-road motor vehicles and not within the right of way of an adjacent road (as opposed to an undercrossing).

Exhibit 23. MIDTOWN GREENWAY LOOKING WEST (LEFT), AERIAL VIEW (RIGHT)



TABLE 19. STATION LOCATION DATA FIELDS – MIDTOWN GREENWAY

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	27	Minnesota's code is 27
3	County FIPS Code	C	053	Hennepin County's code is 053
4	Station ID	C	GRN10A	Indicates Midtown Greenway near 10 th Avenue (this ID is used to link other counts taken at the same "place," like eastbound bicyclists)
5	Functional classification of the roadway	C	8U	An urban trail or shared use path
6	Direction of route	C	3	East, for consistency with advancing Avenue numbers
7	Location of count relative to roadway	C	3	Users on the entire path are counted
8	Direction of movement	C	2	Travel opposite the direction of route is counted (i.e. users cycling westbound)
9	Facility type	C	0	Located on trail
10	Intersection	O	0	Not at an intersection
11	Type of count	C	2	Bicyclists only are counted
12	Method of counting	C	1	Manual counts are conducted via human observation
13	Type of Sensor	O	H	Human observation
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	O	Count taken for facility management purposes
21	Posted speed limit	O		No posted speed limit
22	Year station established	C	2015	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	449504412	Indicates location of volunteer observing cyclists
26	Longitude	C	093259889	
27	Posted route signing	O	1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	Midtown Greenway between 10 th and 11 th	
32	Other notes	O	Dir of route from advancing avenue numbers	

SHARED VEHICLE LANES

The following examples illustrate a variety of facilities with shared vehicle lanes (where bicyclists and possibly pedestrians share a road with motorized vehicles). This category includes roads with no nonmotorized facilities, lanes with shared lane markings, and “wide outside lanes.” The examples here include both one-way and two-way facilities. Some of the *station location* fields that the user should pay special attention to when coding shared vehicle facilities include:

- **Direction of Route, Field 6:** the direction of route should reflect the facility orientation most dominant along the whole route and ideally correspond to the motorized roadway direction. It should be selected to be consistently interpreted and reproduced when subsequent counts are collected at the same location. If necessary, use Field 31 or 32 to document how the direction was determined.
- **Location of Count Relative to Roadway, Field 7:** this field may be confusing to interpret, particularly on a one-way facility with multiple lanes where cyclists are primarily expected to ride in one lane. The TMG only distinguishes “in the road” versus “not in the road” and does not distinguish specific lanes within the roadway. Always code one-way facilities with a “1” to indicate traffic on the side of the road for the listed direction of route, regardless of which travel lane is used. For two way facilities, use this field to code the side of the roadway users are on. For example, if the direction of route is listed as east, traffic on the eastbound side of the roadway is considered the “same” as the direction of route while traffic on the westbound side of the roadway is considered “opposite” to the direction of route (regardless of which way users are actually moving – the direction of movement that was counted is recorded separately in Field 8, Direction of Movement).
- **Direction of Movement, Field 8:** dictated by the direction that the users being counted are actually moving (with respect to the direction of route). This field can be used to count wrong-way riders distinct from those traveling in the correct direction.
- **Type of Count, Field 11:** this field is used to indicate what type of users are being counted.

EXAMPLE 1: LINCOLN STREET NEIGHBORHOOD BIKEWAY

The example below walks through setting up the station location record for a count collected on a two-way roadway with shared lanes. The roadway generally runs east/west and the direction will be considered east since the house numbers increase heading east. For this example, cyclists traveling in the eastbound direction are being counted. A second count station description would be needed to report westbound riders, with the same station ID used to link the counts to the same place. As shown in Exhibit 24, roadway tubes are temporarily set-up for the data collection.

Exhibit 24. LINCOLN STREET LOOKING EAST



TABLE 20. STATION LOCATION DATA FIELDS – LINCOLN STREET NEIGHBORHOOD BIKEWAY

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	051	Multnomah County's code is 051
4	Station ID	C	LINCLN	Indicates Lincoln Street count (this ID is used to link other counts taken at the same "place," like eastbound bicyclists)
5	Functional classification of the roadway	C	7U	An urban, local roadway
6	Direction of route	C	3	East, to correspond with increasing house numbers
7	Location of count relative to roadway	C	1	Traffic on the same side of the road for the listed direction of route is counted (on the right side of the road when facing in the direction of route)
8	Direction of movement	C	1	Travel eastbound (occurring in the same direction of route) is being counted
9	Facility type	C	1	Count is collected in roadway right of way
10	Intersection	O	0	Not at an intersection
11	Type of count	C	2	Only bicycles are counted
12	Method of counting	C	2	A portable traffic recording device is used
13	Type of Sensor	O	R	Air tubes are used for the counts
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken as part of regular reporting
21	Posted speed limit	O	25	25 miles per hour posted speed limit
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	45508011	Indicates location of device for data collection
26	Longitude	C	122627847	
27	Posted route signing	O	_1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	Lincoln Street W of SE35 th PI, EB bikes	
32	Other notes	O	Dir of route from house numbers	

EXAMPLE 2: SW ALDER STREET BICYCLE COUNT

The example below walks through setting up the station location record for a count collected on SW Alder Street in Portland, Oregon. SW Alder Street is one-way, with traffic moving in the southeast direction towards the river, so this is considered the direction of route. Bicyclists share the road with vehicles and may ride in either lane. Volunteers record the number of cyclists during the morning and evening peak hours.

Exhibit 25. SW ALDER STREET LOOKING SOUTHEAST



TABLE 21. STATION LOCATION DATA FIELDS – LINCOLN STREET SHARED ROADWAY

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	051	Multnomah County's code is 051
4	Station ID	C	ALDER6	Indicates SW Alder Street count near SW 6 th Avenue (this ID is used to correlate other counts taken at the same "place," like pedestrians)
5	Functional classification of the roadway	C	4U	An urban, minor arterial roadway
6	Direction of route	C	4	Southeast, to correspond with vehicle traffic
7	Location of count relative to roadway	C	1	Traffic on the side of the road for the listed direction of route is being counted (although cyclists in both lanes are being counted, since this is a one-way facility the code is entered as a 1)
8	Direction of movement	C	1	Travel occurring in the direction of route is being counted
9	Facility type	C	1	Count is collected in roadway right of way
10	Intersection	O	0	Not at an intersection
11	Type of count	C	2	Only bicycles are counted
12	Method of counting	C	1	Human observation is used for the counts
13	Type of Sensor	O	H	Human observation is used for the counts
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	O	Count taken to assess bicycle operations
21	Posted speed limit	O		
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	45519978	Indicates location of master device for data collection
26	Longitude	C	122678939	
27	Posted route signing	O	_1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	SW Alder Street west of SW 6 th Ave	
32	Other notes	O	Dir of route based on direction of vehicle traffic	

EXAMPLE 3: PINE STREET SHARED ROADWAY

The example below walks through setting up the station location record for a count collected on Pine Street in Glenwood Springs, Colorado. Pine Street runs north south and bicyclists share the roadway with vehicles. The road is considered to have a northern direction and the count is taken on the east side of the road with only northbound movements counted. This example is featured in the TMG in Table 7-36.

Exhibit 26. PINE STREET GRAPHIC SHOWING AERIAL VIEW

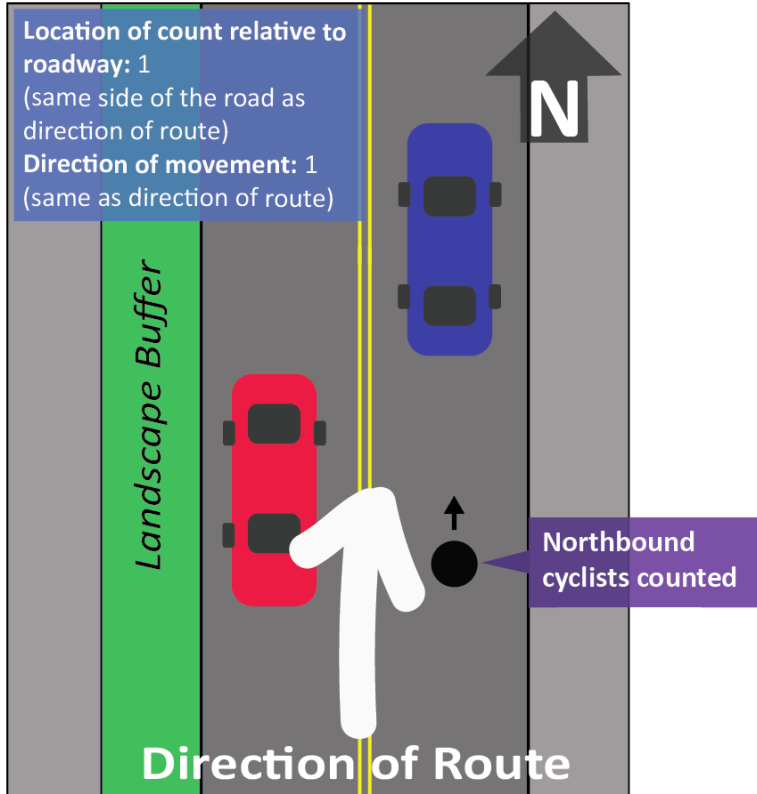


TABLE 22. STATION LOCATION DATA FIELDS – PINE STREET SHARED ROADWAY

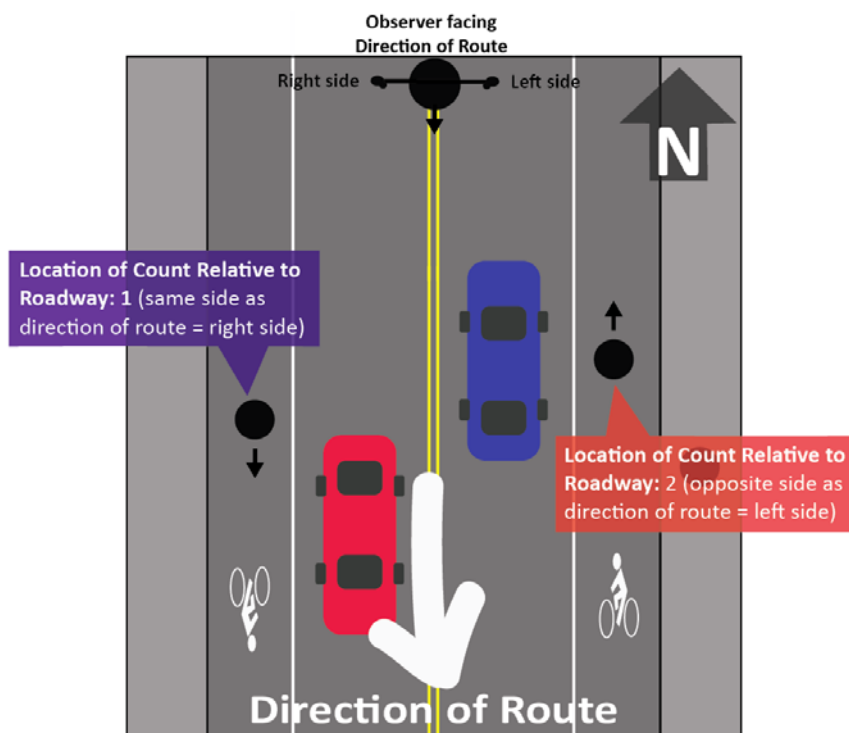
Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	08	Colorado's code is 08
3	County FIPS Code	C	045	Garfield County's code is 045
4	Station ID	C	GLWLDC	Station ID developed by Colorado
5	Functional classification of the roadway	C	7U	The count is collected on an urban, local road
6	Direction of route	C	1	North
7	Location of count relative to roadway	C	1	Traffic on the side of the road for the listed direction of route is counted
8	Direction of movement	C	1	Travel in the northbound direction (occurring in the direction of route) is being counted
9	Facility type	C	1	Count is collected in roadway right of way
10	Intersection	O	0	Not at an intersection
11	Type of count	C	2	Only bicycles are counted
12	Method of counting	C	1	Counts are collected manually by volunteers
13	Type of Sensor	O	H	Counts are collected manually by volunteers
14	Year of Data	C	2015	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	R	Count taken for research purposes
21	Posted speed limit	O	25	The speed limit on Pine Street is 25 mph
22	Year station established	C	2010	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	39550600	Indicates location of master device for data collection
26	Longitude	C	107324851	
27	Posted route signing	O	_1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O	0000...00LR SID123456	Colorado DOT LRS for the location
30	LRS location point	O		
31	Station location	O	Pine Street northbound	
32	Other notes	O	Volunteer count on W side of Hotel Colorado	

BICYCLE LANES

The following examples focus on bicycle lanes, including buffered bicycle lanes. Contraflow bicycle lanes (including two-way bicycle lanes) are presented in the next section. Some of the *station location* fields that the user should pay special attention to when coding bicycle lanes include:



- **Functional Classification of the Roadway, Field 5:** enter the functional classification of the roadway the bicycle lanes are on.
- **Direction of Route, Field 6:** the direction should reflect the facility orientation that is most dominant along the roadway, preferably the same direction that would apply to the motorized roadway designation (e.g. Northbound Main Street). For two-way facilities, it may be the increasing “milepost” direction which can be obtained from the HPMS Linear Reference System (preferred if available), from physical mileposts on the roadside, or from the direction of increasing house or block numbers on the roadway. This direction may not correspond to the direction at the count location if the route curves or temporarily departs from its typical alignment. Use Field 31 or 32 to provide more information if the direction would not be obvious to someone visiting the site later.
- **Location of Count Relative to Roadway, Field 7:** this field records which “side” of the road the counted facility is on. If bicyclists on both sides of the road are not distinguished, this field would be entered as a “3.” If bicyclists on one side are being counted, stand facing the direction of route to determine how to code this field. The “side of the road for the listed Direction of Route” (Code 1) will be the right side of the road for an observer facing in the Direction of Route, and “the opposite side from the listed Direction of Route” (Code 2) will be the left side for that same observer, as shown in Exhibit 27.

Exhibit 27. LOCATION OF COUNT RELATIVE TO ROADWAY FOR BICYCLE LANES



- **Direction of Movement, Field 8:** this field is determined by the direction users being counted are moving relative to the direction of route.
- **Facility Type, Field 9:** bicycle lanes will fit into one of the two categories described in Exhibit 28.

Exhibit 28. **BICYCLE LANE FACILITY TYPES**

<p style="text-align: center;">4 - Striped bicycle lane</p> <p>Includes buffered bicycle lanes with no vertical separation between vehicles and cyclists (i.e. where the buffer is paint). Also includes shoulder facilities used by bicyclists and/or pedestrians.</p>	
<p style="text-align: center;">7 - Physically separated bicycle lane</p> <p>“A separated bike lane is an exclusive facility for bicyclists that is located within or directly adjacent to the roadway and that is physically separated from motor vehicle traffic with a vertical element.”</p> <p>-Separated Bike Lane Planning and Design Guide (FHWA)</p>	

EXAMPLE 1: NE MULTNOMAH STREET BUFFERED BIKE LANE

The example below walks through setting up the station location record for a count collected on NE Multnomah Street, a roadway with buffered bicycle lanes. The roadway generally runs east/west and the direction will be considered east since the building numbers increase heading east. For this example, cyclists traveling in the westbound direction are being counted. A second count station description would be needed to report eastbound riders, with the same station ID used to link the counts to the same place. Exhibit 29 illustrates the location of count relative to the roadway and direction of movement.

Exhibit 29. **NE MULTNOMAH STREET LOOKING WEST (TOP), GRAPHIC SHOWING AERIAL VIEW (BOTTOM)**

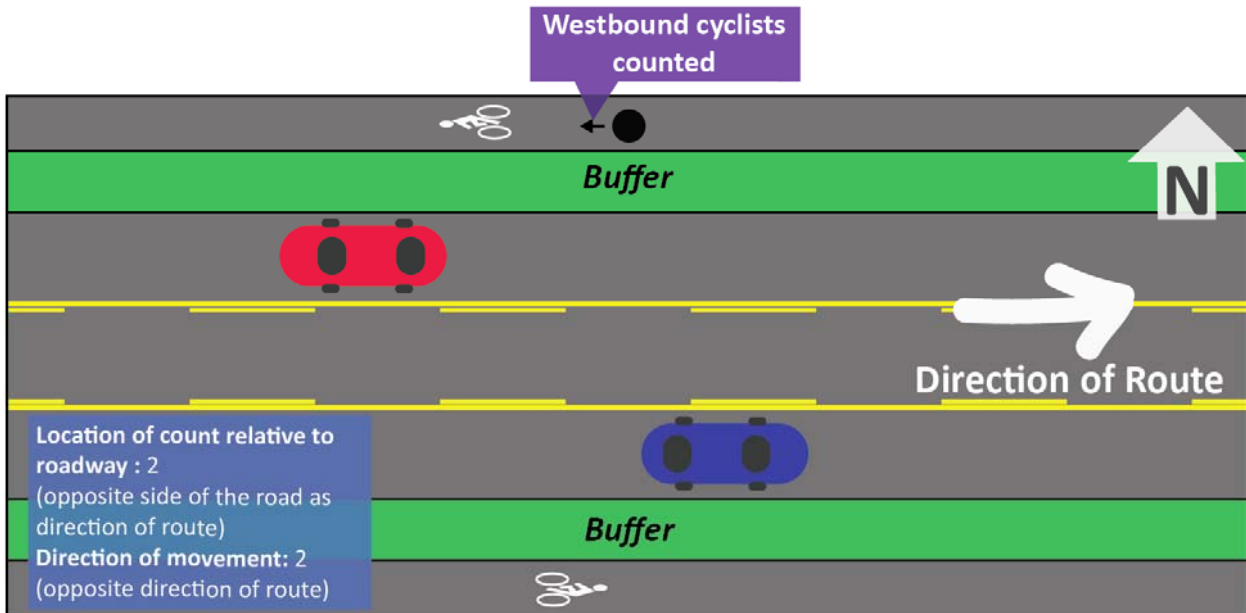


TABLE 23. STATION LOCATION DATA FIELDS – NE MULTNOMAH STREET BUFFERED BIKE LANE

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	051	Multnomah County's code is 051
4	Station ID	C	MULTBB	Indicates count on NE Multnomah Street buffered bike lanes (this ID is used to link other counts taken at the same "place," like eastbound bicyclists)
5	Functional classification of the roadway	C	7U	An urban, local roadway
6	Direction of route	C	3	East, to correspond with increasing building numbers
7	Location of count relative to roadway	C	2	Count is taken on the opposite side of the road from the listed direction of route (left side of the road when facing east)
8	Direction of movement	C	2	Travel westbound (occurring opposite the direction of route) is being counted
9	Facility type	C	7	Count is collected in a physically separated bicycle lane
10	Intersection	O	0	Not at an intersection
11	Type of count	C	2	Only bicycles are counted
12	Method of counting	C	2	Portable traffic recording device used for the counts
13	Type of Sensor	O	R	Air tube is used for the counts
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken to report use of corridor by bicyclists
21	Posted speed limit	O	25	25 miles per hour posted speed limit
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	45531594	Indicates location of device for data collection
26	Longitude	C	122659219	
27	Posted route signing	O	„1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	Multnomah St E. of NE 6 th Ave, buffered bike lane	
32	Other notes	O	Dir of route based on ascending building numbers	

EXAMPLE 2: NW BANKS ROAD BIKE LANE

The example below walks through setting up the station location record for a count collected on NW Banks Road, a roadway with bicycle lanes. The roadway generally runs east/west and the direction will be considered west since the building numbers increase heading west. For this example, cyclists traveling in the eastbound direction are being counted. A second count station description would be needed to report westbound riders, with the same station ID used to link the counts to the same place. A temporary inductive loop (installed on the surface of the pavement) is used to record the number of cyclists using NW Banks Road. Although the count location is near an intersection, the count is considered not at an intersection since the purpose of the count is to assess use of the roadway by cyclists (the count location is coincidentally at an intersection). Exhibit 30 illustrates the location of count relative to the roadway and direction of movement.

Exhibit 30. **NW BANKS ROAD LOOKING EAST (TOP), GRAPHIC SHOWING AERIAL VIEW (BOTTOM)**

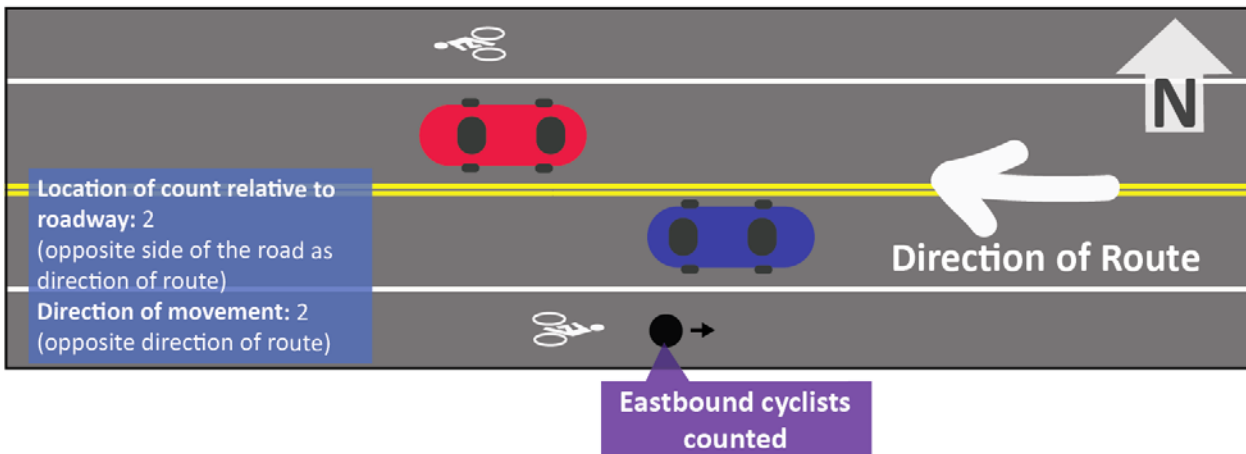


TABLE 24. STATION LOCATION DATA FIELDS – NW BANKS ROAD BIKE LANE

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	067	Washington County's code is 067
4	Station ID	C	BANKRD	Indicates count on NW Banks Road (this ID is used to link other counts taken at the same "place," like westbound bicyclists)
5	Functional classification of the roadway	C	5U	An urban collector (Banks does not distinguish between major and minor collectors, so major collector is used)
6	Direction of route	C	7	West, to correspond with increasing building numbers
7	Location of count relative to roadway	C	2	Count is taken on the opposite side of the road from the listed direction of route (left side of the road when facing west)
8	Direction of movement	C	2	Travel eastbound (occurring opposite the direction of route) is being counted
9	Facility type	C	4	Count is collected in a striped bicycle lane with no physical barrier separating adjacent motorized traffic
10	Intersection	O	0	Not at an intersection
11	Type of count	C	2	Only bicycles are counted
12	Method of counting	C	2	Portable traffic recording device used for the counts
13	Type of Sensor	O	L	A temporary inductive loop (on top of the pavement) is used for the counts
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken to report use of corridor by bicyclists
21	Posted speed limit	O	25	25 miles per hour posted speed limit
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	45621733	Indicates location of master device for data collection
26	Longitude	C	123114003	
27	Posted route signing	O	_1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	Banks Rd east of Main St, EB bikes	
32	Other notes	O	Dir of route based on ascending building numbers	

EXAMPLE 3: N WILLIAMS AVENUE LEFT-SIDE BICYCLE LANE

The example below walks through setting up the station location record for a count collected on N Williams Avenue, a one-way roadway with a bicycle lane on the left-side of the road. The roadway runs north/south with travel northbound, so the direction of route is considered north. The location of the count relative to the roadway is coded on the opposite side of the road to indicate the bicycle lane is on the left-side of the roadway relative to the direction of route, while the direction of movement is coded as the same as the direction of route. The bicycle lane is separated from vehicles with a painted buffer, but this is still considered facility type 4 “in a striped (painted) bicycle lane” (instead of 7, “in a physically separated bicycle lane”) because there is no physical separation other than paint (no vertical separation) between cyclists and motor vehicles.

Exhibit 31. **N WILLIAMS AVENUE LOOKING NORTH (TOP), GRAPHIC SHOWING AERIAL VIEW (BOTTOM)**

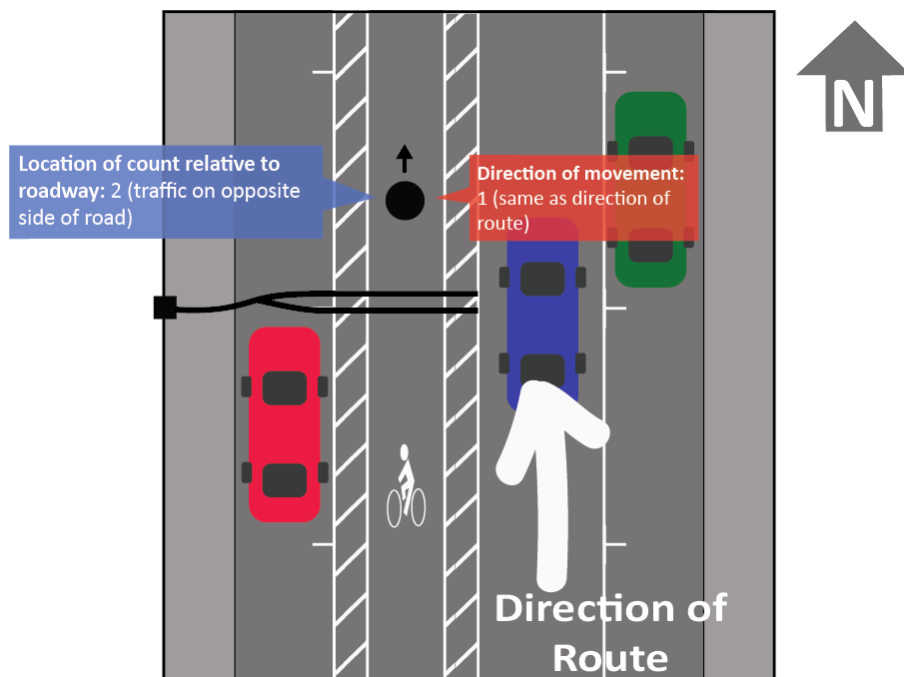


TABLE 25. STATION LOCATION DATA FIELDS – N WILLIAMS AVENUE LEFT-SIDE BICYCLE LANE

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	051	Multnomah County's code is 051
4	Station ID	C	WIL005	Indicates count on N Williams Avenue (this ID is used to link other counts taken at the same "place," like northbound vehicles)
5	Functional classification of the roadway	C	5U	An urban, major collector roadway
6	Direction of route	C	1	North, to correspond with direction of traffic
7	Location of count relative to roadway	C	2	Traffic on the opposite side of the road as the direction of route is being counted (left side when facing north)
8	Direction of movement	C	1	Travel northbound (occurring in the direction of route) is being counted
9	Facility type	C	4	Count is collected in a striped bicycle lane
10	Intersection	O	0	Not at an intersection
11	Type of count	C	2	Only bicycles are counted
12	Method of counting	C	2	Portable traffic recording device used for the counts
13	Type of Sensor	O	R	Air tube is used for the counts
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken to report use of corridor by bicyclists
21	Posted speed limit	O	25	25 miles per hour posted speed limit
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	45561186	Indicates location of master device for data collection
26	Longitude	C	122667033	
27	Posted route signing	O	_1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	N William Ave N of Roselawn, NB bikes left side	
32	Other notes	O	Dir of route based on bicycle and vehicle traffic	

EXAMPLE 4: OAK STREET ADVISORY BICYCLE LANES

The example below walks through setting up the station location record for a count collected on Oak Street in Sandpoint, Idaho. There are advisory bicycle lanes on the roadway, meaning the roadway is striped with bicycle lanes on either side and a center bi-directional vehicle lane. Vehicles are allowed to encroach into the bicycle lanes when oncoming vehicles meet. A video camera is set-up to record cyclists due to the potential influence of vehicles entering the bicycle lane on inductive loops or tubes. The roadway runs east/west with increasing building numbers westbound, so the direction of route is considered west. The count is specifically for the bicycle lanes on the south side of the roadway, which serves eastbound cyclists. A second count station description would be needed to report westbound riders, with the same station ID used to link the counts to the same place.

Exhibit 32. **OAK STREET LOOKING WEST (TOP), GRAPHIC SHOWING AERIAL VIEW (BOTTOM)**

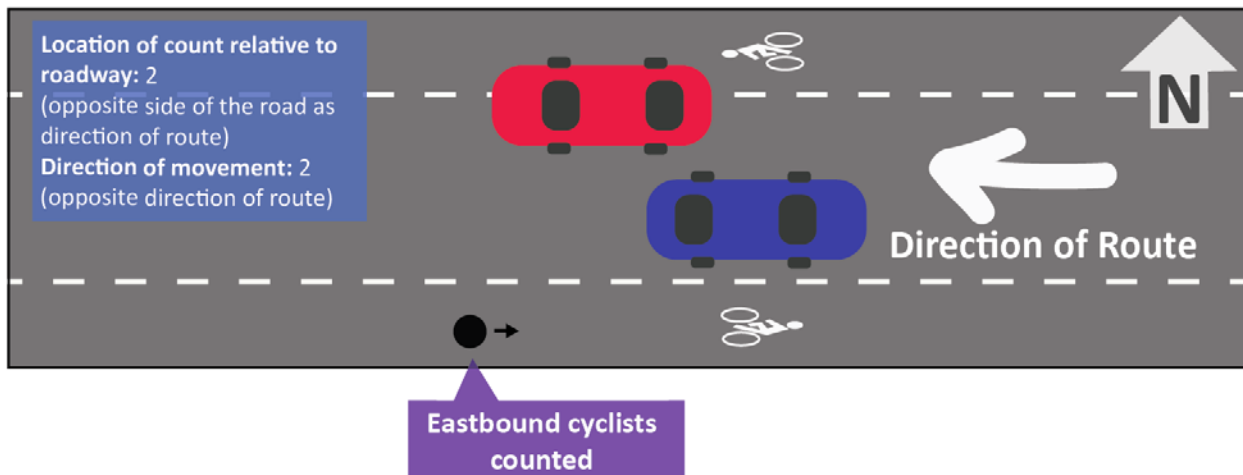


TABLE 26. STATION LOCATION DATA FIELDS – OAK STREET ADVISORY BICYCLE LANES

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	16	Idaho's code is 16
3	County FIPS Code	C	017	Bonner County's code is 017
4	Station ID	C	OAKBL0	Indicates count on Oak Street advisory bicycle lane (this ID is used to link other counts taken at the same "place," like westbound bicyclists)
5	Functional classification of the roadway	C	7U	An urban, local roadway
6	Direction of route	C	7	West, to correspond with increasing building numbers
7	Location of count relative to roadway	C	2	Traffic on the opposite side of the road as the direction of route is being counted
8	Direction of movement	C	2	Travel eastbound (occurring in the opposite direction of route) is being counted
9	Facility type	C	4	Count is collected in a striped bicycle lane
10	Intersection	O	0	Not at an intersection
11	Type of count	C	2	Only bicycles are counted
12	Method of counting	C	1	A video camera is temporarily set-up to collect video footage of the site and later reduced
13	Type of Sensor	O	1	Video data is captured and manually reduced
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken to report use of corridor by bicyclists
21	Posted speed limit	O		Speed limit not posted in vicinity of site
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	48275000	Indicates location of master device for data collection
26	Longitude	C	116552172	
27	Posted route signing	O	_1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	Oak Street advisory bicycle lane W of 4 th St	
32	Other notes	O	Dir of route based on increasing building numbers	

EXAMPLE 5: SW REED MARKET ROAD SEPARATED BICYCLE LANES

The example below walks through setting up the station location record for a count collected on SW Reed Market Road in Bend, Oregon. SW Reed Market Road is a two-way roadway with a center median and separated bicycle lanes (the bicycle lanes are elevated above the roadway and separated by a slight curb). There are several roundabouts on the corridor. At the roundabouts, bicyclists have the option to take a ramp down to the roadway and proceed through the roundabout or take a ramp up to the sidewalk and use the sidewalk and crossing around the roundabout. SW Reed Market Road generally runs east/west, although the count is collected on a section that runs more northerly. However, the direction of route is considered east (based on ascending building numbers) to be consistent with the overall direction of the route. Inductive loops are permanently installed in the pavement of the bicycle lanes. In this example, bicyclists on the south side of the roadway are counted. A separate count station description would be required for bicyclists on the north side of the roadway.

Exhibit 33. SW REED MARKET ROAD LOOKING NORTHEAST



TABLE 27. STATION LOCATION DATA FIELDS – SW REED MARKET ROAD SEPARATED BICYCLE LANES

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	017	Deschutes County's code is 017
4	Station ID	C	REEDWE	Indicates count on SW Reed Market Road on the west side of the Deschutes River (this ID is used to link other counts taken at the same "place," like eastbound bicyclists)
5	Functional classification of the roadway	C	4U	An urban, minor arterial roadway
6	Direction of route	C	3	East, to correspond with increasing building numbers
7	Location of count relative to roadway	C	1	Traffic on the same side of the road the direction of route is being counted
8	Direction of movement	C	1	Traffic eastbound (in the same direction as the direction of route) is being counted
9	Facility type	C	7	Count is collected in a physically separated bicycle lane (although not clear in Exhibit 33, the bicycle lane is raised several inches from the vehicle travel lane and separated by a slight curb)
10	Intersection	O	0	Not at an intersection
11	Type of count	C	2	Only bicycles are counted
12	Method of counting	C	3	The inductive loops are permanently installed
13	Type of Sensor	O	L	Inductive loops are used for the counts
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken to report use of corridor by bicyclists
21	Posted speed limit	O	25	
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	44038550	Indicates location of master device for data collection
26	Longitude	C	121332753	
27	Posted route signing	O	_1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O		Reed Market east of Mt Bachelor Dr

Field	Description	Type	Entry	Notes
32	Other notes	O		Dir of route based on ascending building numbers

EXAMPLE 6: NE CULLY BOULEVARD CYCLE TRACK

The example below walks through setting up the station location record for a count collected on NE Cully Boulevard in Portland, Oregon. NE Cully Boulevard has cycle tracks in both directions, separated from the vehicle travel lanes by parking and a slight curb. It runs on the diagonal, with ascending building numbers in the northeast direction, so this is considered the direction of route. Cyclists on the southeast side of the roadway traveling in the northeast direction are being counted.

Exhibit 34. NE CULLY BOULEVARD LOOKING SOUTHWEST



TABLE 28. STATION LOCATION DATA FIELDS – NE CULLY BOULEVARD CYCLE TRACK

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	051	Multnomah County's code is 051
4	Station ID	C	CULLYB	Indicates count on NE Cully Boulevard (station ID used to link other counts taken at the same "place," such as bicyclists traveling on the opposite side of the road)
5	Functional classification of the roadway	C	7U	An urban, collector roadway (Portland does not distinguish between major and minor collectors, so major collector is used)
6	Direction of route	C	3	Northeast, to correspond with increasing building numbers and vehicle traffic
7	Location of count relative to roadway	C	1	Traffic on the same side of the road as the direction of route is being counted (right side when facing northeast)
8	Direction of movement	C	1	Traffic in the northeast direction (same direction of route) is being counted
9	Facility type	C	7	Count is collected in a physically separated bike lane
10	Intersection	O	0	Not at an intersection
11	Type of count	C	2	Only bicycles are counted
12	Method of counting	C	1	Permanent inductive loops are installed
13	Type of Sensor	O	L	Inductive loops installed in the pavement
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken to report use of corridor by bicyclists
21	Posted speed limit	O	30	
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	45558522	Indicates location of master device for data collection
26	Longitude	C	122598247	
27	Posted route signing	O	_1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O		Cully Blvd north of Wygant, raised cycle track
32	Other notes	O		Dir of route based on ascending building numbers

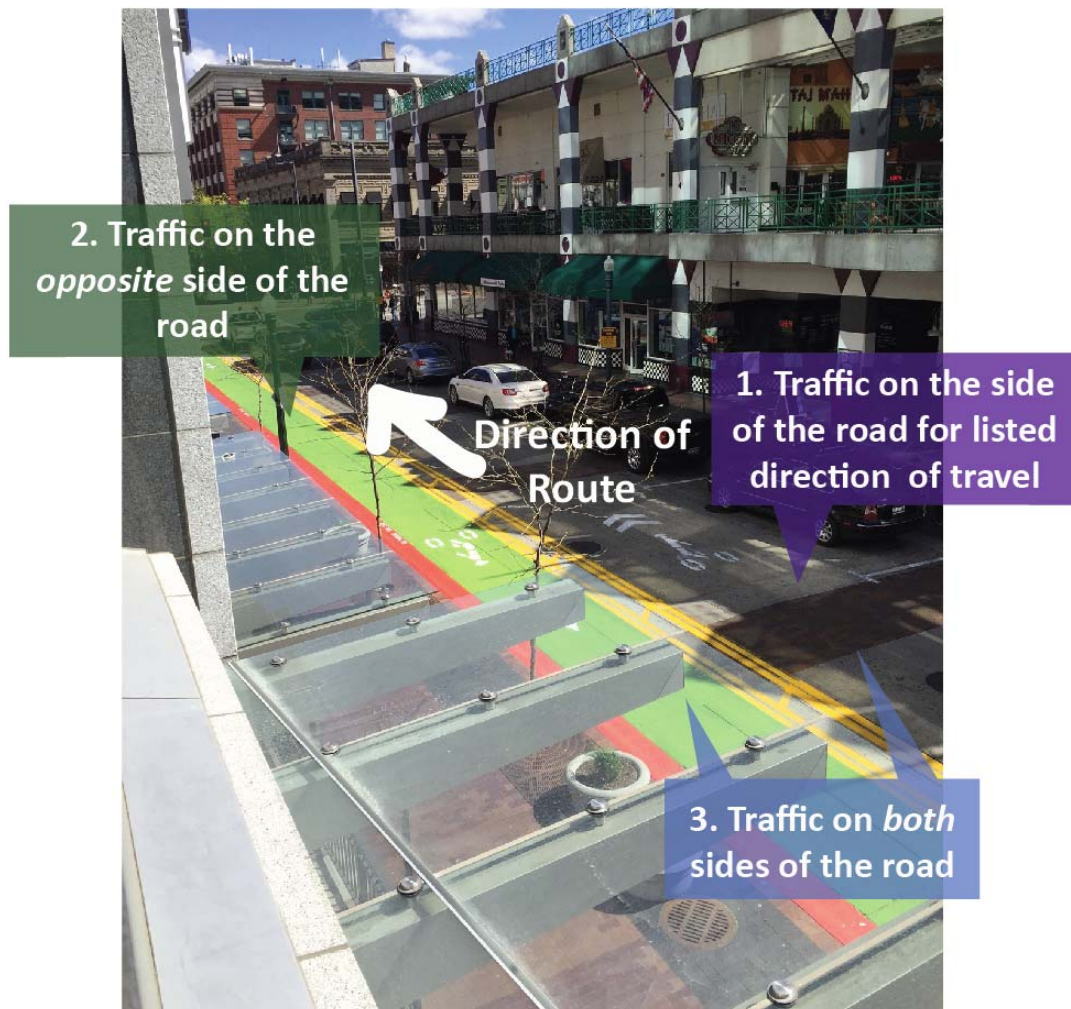
CONTRAFLOW BICYCLE LANES

The following examples cover contraflow bicycle lanes, including one-way and two-way bicycle lanes. Some of the *station location* fields that the user should pay special attention to when coding contraflow bicycle lanes are provided below, discussed by one-way and two-way lanes.

ONE-WAY CONTRAFLOW BICYCLE LANES:

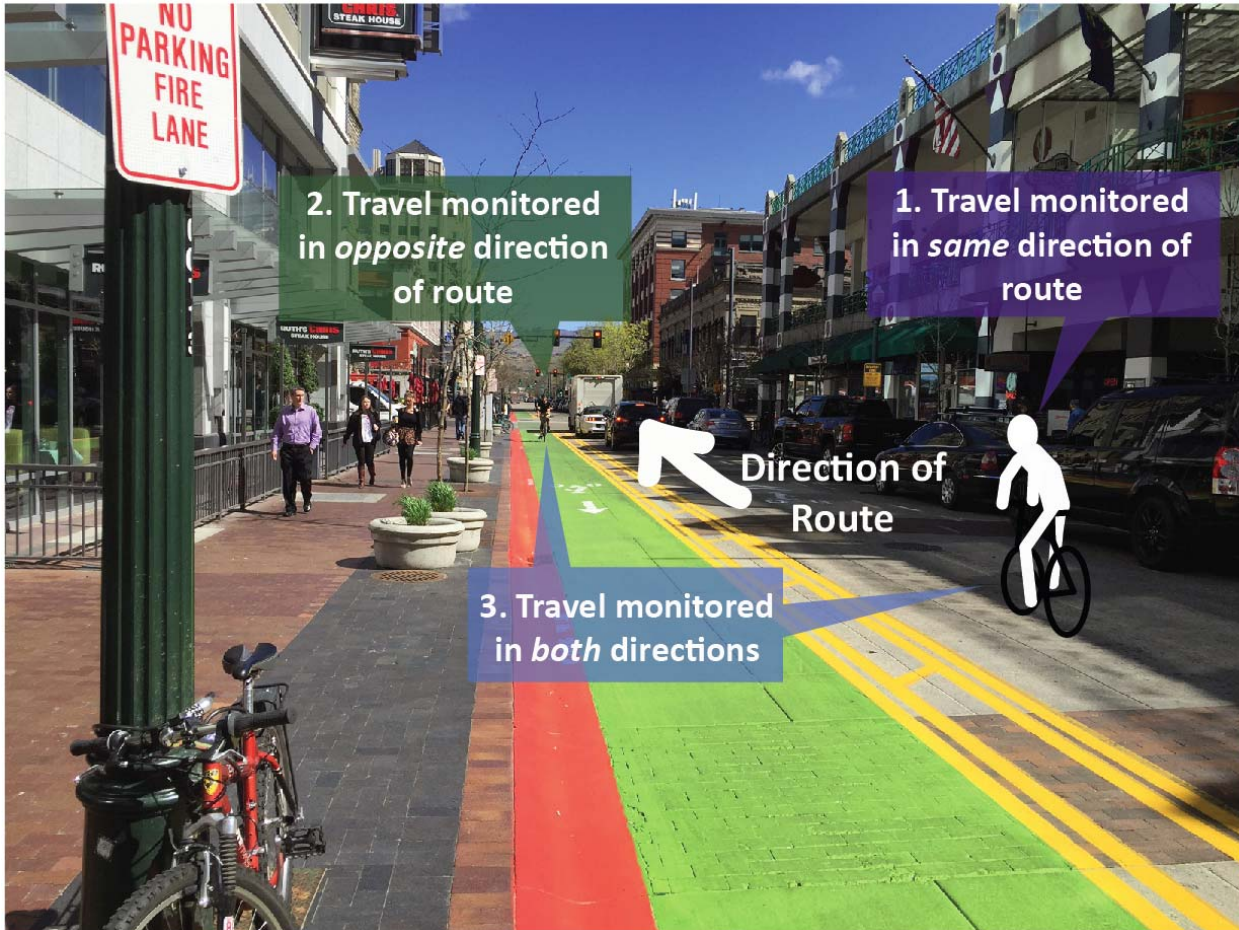
- **Direction of Route, Field 6:** if the count is on a one-way roadway with a contraflow bicycle lane, the direction of route is typically listed as the direction of the vehicle travel lane, regardless of whether users in the contraflow bicycle lane or roadway are being counted.
- **Location of Count Relative to Roadway, Field 7:** the location of the count relative to the roadway is dependent on the direction of route entered. If the vehicle travel lane is used to define the direction of route, users in the contraflow bicycle lane are considered to be traffic on the opposite side of the road (enter a value of “2”).

Exhibit 35. LOCATION OF COUNT RELATIVE TO ROADWAY FOR CONTRAFLOW BICYCLE LANES



- **Direction of Movement, Field 8:** dictated by direction of users in the area being counted. For example, if the vehicle travel lane is used to define the direction of route, users in the contraflow bicycle lane are considered to be traveling in the opposite direction of route (enter a value of “2”). Exhibit 36 shows the options for direction of movement considering this location.

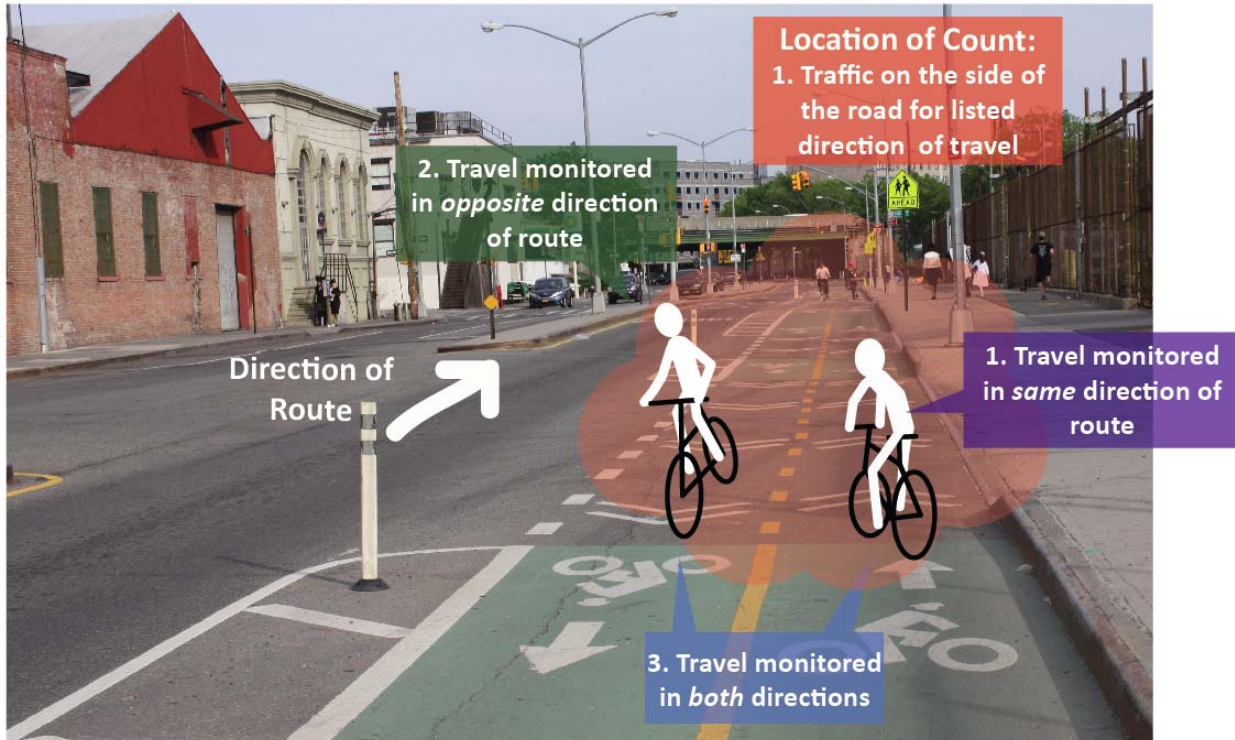
Exhibit 36. **DIRECTION OF MOVEMENT RELATIVE TO DIRECTION OF ROUTE FOR CONTRAFLOW BICYCLE LANES**



TWO-WAY BICYCLE LANES

- **Direction of Route, Field 6:** if known, use the direction of the increasing milepost (which can be obtained from the HPMS Linear Reference System) as the direction of route. Otherwise, the direction of route can be determined from the physical mileposts on the roadside or the direction of increasing house or block numbers on the roadway. The direction of route should be consistent with other counts in the area.
- **Location of Count Relative to Roadway, Field 7:** use the location field to indicate the location of the bicycle lanes relative to the roadway, as shown in Exhibit 37.

Exhibit 37. LOCATION OF COUNT RELATIVE TO ROADWAY FOR TWO-WAY CONTRAFLOW BICYCLE LANES



- **Direction of Movement, Field 8:** dictated by direction of users being counted, as shown in Exhibit 37. As seen in the exhibit, there is no way to distinguish wrong-way riders (as the location refers to the location of both lanes relative to the roadway, as opposed to each lane). If wrong-way riders are being counted, use Field 32 (other notes) to indicate this.

EXAMPLE 1: N 8TH STREET CONTRAFLOW BICYCLE LANE

The example below walks through setting up the station location record for a count collected on N 8th Street in Boise, Idaho. N 8th Street is one-way for vehicles with a contraflow bicycle lane. Vehicle traffic and ascending building numbers are in the northeast direction, so this is considered the direction of route. Cyclists are traveling in the opposite direction of vehicles and the opposite direction of the route. A video camera is temporarily set-up to capture cyclists and then reduced.

Exhibit 38. N 8TH STREET LOOKING NORTHEAST



TABLE 29. STATION LOCATION DATA FIELDS – N 8TH STREET CONTRAFLOW BICYCLE LANE

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	16	Idaho's code is 16
3	County FIPS Code	C	001	Ada County's code is 001
4	Station ID	C	N8STRE	Indicates N 8 th Street count
5	Functional classification of the roadway	C	7U	An urban, collector roadway (Boise does not distinguish between major and minor collectors, so major collector is used)
6	Direction of route	C	2	Northeast, to correspond with increasing building numbers and vehicle traffic
7	Location of count relative to roadway	C	2	Travel on the opposite side of the road from the listed direction of route (left side when facing northeast)
8	Direction of movement	C	2	Travel in the southwest direction (occurring opposite the direction of route) is being counted
9	Facility type	C	4	Count is collected in a striped bicycle lane
10	Intersection	O	0	Not at an intersection
11	Type of count	C	2	Only bicycles are counted
12	Method of counting	C	1	A video camera is temporarily set-up to collect video footage of the site
13	Type of Sensor	O	1	Video data is captured and manually reduced
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken to report use of corridor by bicyclists
21	Posted speed limit	O		Speed limit not signed for area count conducted
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	43615911	Indicates location of master device for data collection
26	Longitude	C	116203256	
27	Posted route signing	O	1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	8 th N of Main St, Dir of route based on vehicles	
32	Other notes	O	Contraflow bicycle lane	

Exhibit 39 shows how the station location fields would change if cyclists in the shared lane heading northeast were being counted.

Exhibit 39. LOCATION OF COUNT RELATIVE TO ROADWAY



EXAMPLE 2: KENT AVENUE TWO-WAY PROTECTED BICYCLE LANES

The example below walks through setting up the station location record for a count collected on Kent Avenue in Brooklyn, New York. Kent Avenue has two-way vehicular traffic with a two-way protected bike lane on the west side of the roadway. Kent Avenue generally runs north/south, with ascending addresses in the southbound direction. Therefore, the direction of route is considered south. The location of the count relative to the roadway direction is based on the location of the protected bicycle lanes relative to the roadway, as shown in Exhibit 41. There is no way to code wrong-way riders since the location of the count refers to the protected bicycle lanes overall, as opposed to each lane. If wrong-way riders are counted, the “Other Notes” field can be used to indicate this. The example described in Table 30 is for counting cyclists in both lanes and directions.

Exhibit 40. **KENT AVENUE LOOKING SOUTH**



Exhibit 41. CODES BASED ON COUNT SUBJECTS

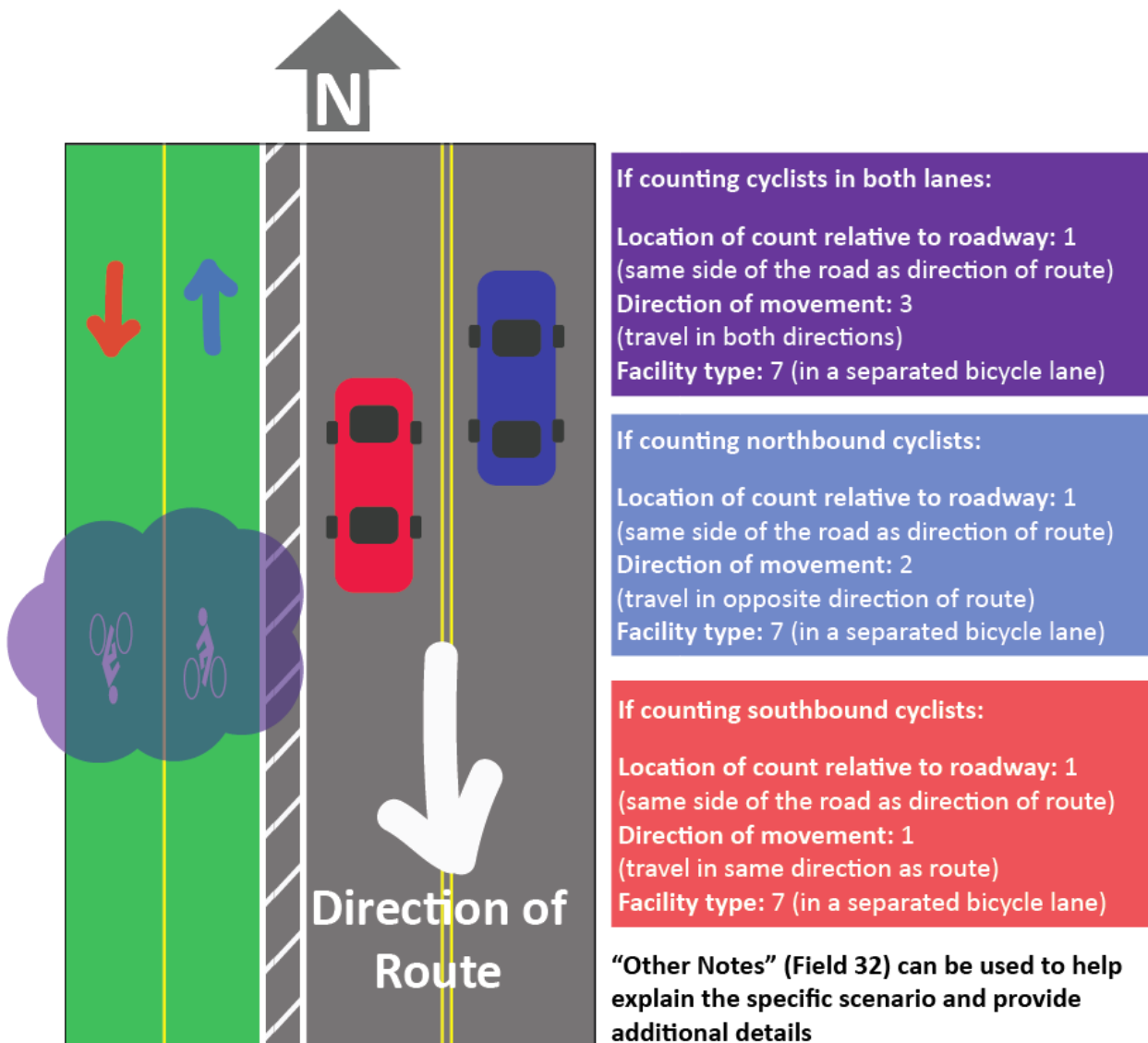


TABLE 30. STATION LOCATION DATA FIELDS – KENT AVENUE TWO-WAY PROTECTED BICYCLE LANES

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	36	New York's code is 36
3	County FIPS Code	C	047	Kings County's code is 047
4	Station ID	C	KENT11	Indicates Kent Avenue count (this ID is used to correlate other counts taken at the same "place")
5	Functional classification of the roadway	C	4U	An urban, minor arterial roadway
6	Direction of route	C	5	South, to correspond with increasing building numbers
7	Location of count relative to roadway	C	1	Traffic on the same side of the road as the direction of route is being counted (right side when facing south)
8	Direction of movement	C	3	Travel in both directions is being counted
9	Facility type	C	7	Count is collected in a physically separated bicycle lane (separated by vertical flex posts)
10	Intersection	O	0	Not at an intersection
11	Type of count	C	2	Only bicycles are counted
12	Method of counting	C	2	Road tubes are temporarily set-up to capture bicyclists
13	Type of Sensor	O	R	Road tubes
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken to report use of corridor by bicyclists
21	Posted speed limit	O	30	
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	40701561	Indicates location of master device for data collection
26	Longitude	C	073963939	
27	Posted route signing	O	1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	Kent Ave at Keap St, NB and SB bikes	
32	Other notes	O	Dir of route based on ascending building numbers	

EXAMPLE 3: DUNSMUIR STREET TWO-WAY PROTECTED BICYCLE LANE

The example below walks through setting up the station location record for a count collected on Dunsmuir Street in Vancouver, BC. Dunsmuir Street has one-way vehicular traffic and runs diagonally so traffic heads in the northwest direction. There is a two-way protected bike lane on the southeast side of the roadway. The count is taken at an intersection and the purpose of the count is to assess bicyclist exposure through the intersection. Roadway tubes are set-up to count cyclists in both directions but the count data is entered separately for each direction. Road tubes in close proximity to intersections can have problems with accuracy due to slowing or queuing cyclists. It is recommended that whenever possible tubes are placed midblock with no driveways. The example described in Table 31 is for counting cyclists moving in the northwest direction, like cyclist shown in Exhibit 42. A second count station description would be needed to report riders in the southeast direction, with the same station ID used to link the counts to the same place.

Exhibit 42. **DUNSMUIR STREET LOOKING NORTHWEST**



TABLE 31. STATION LOCATION DATA FIELDS – DUNSMUIR STREET TWO-WAY PROTECTED BICYCLE LANE

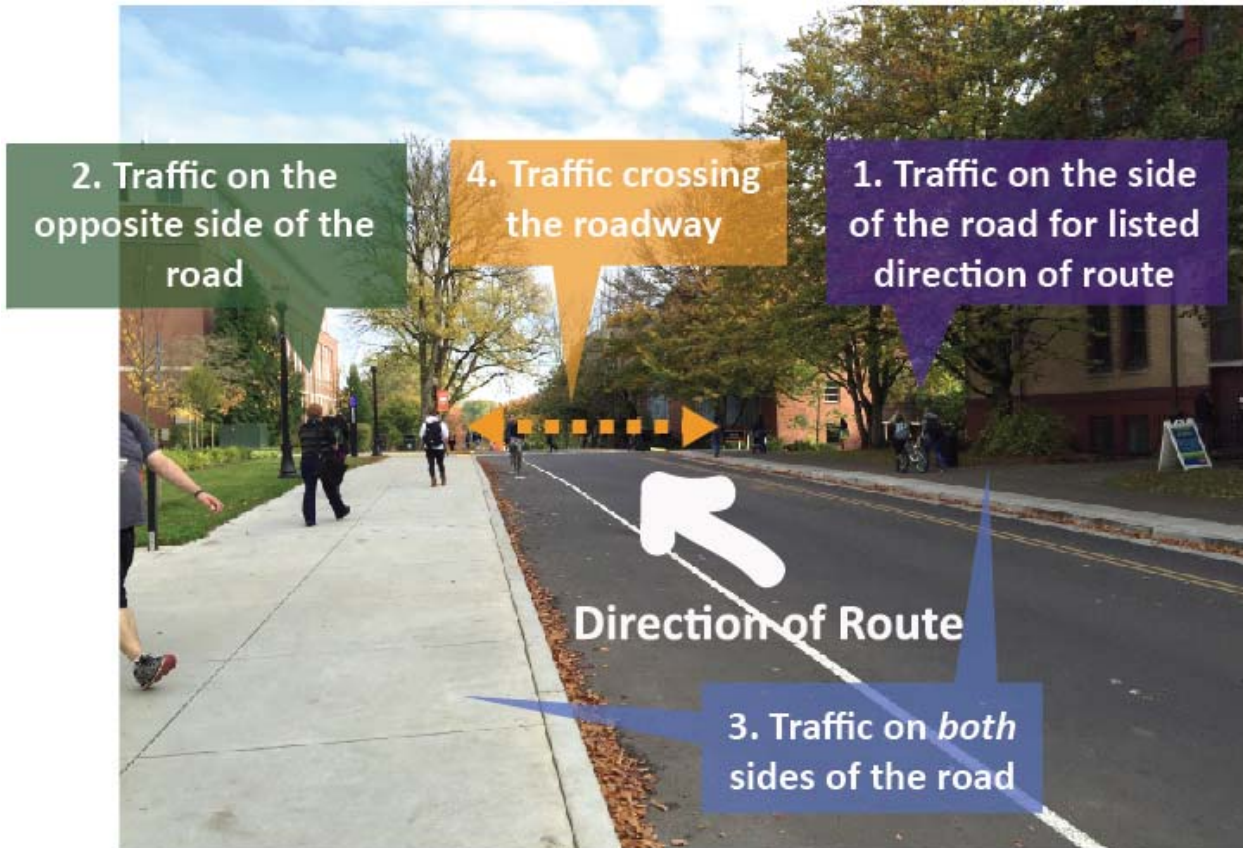
Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	82	British Columbia's code is 82
3	County FIPS Code	C	000	For locations outside the US, agencies should develop their own codes
4	Station ID	C	DUNS12	Corresponds to Dunsmuir Street count location (this ID is used to correlate other counts taken at the same "place," like bicyclists traveling southeast)
5	Functional classification of the roadway	C	5U	The formal classification of Dunsmuir Street is not available, but it functions similar to a major collector
6	Direction of route	C	8	Northwest, to correspond with direction of vehicular traffic
7	Location of count relative to roadway	C	1	Traffic on the same side of the road as the direction of route is being counted
8	Direction of movement	C	1	Travel in same direction as direction of route
9	Facility type	C	7	Count is collected in a physically separated bicycle lane
10	Intersection	O	1	Count is collected at approach to intersection
11	Type of count	C	2	Only bicycles are counted
12	Method of counting	C	2	Road tubes are temporarily set-up to capture bicyclists
13	Type of Sensor	O	R	Road tubes
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken to report use of corridor by bicyclists
21	Posted speed limit	O	30	
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	49284244	Indicates location of master device for data collection
26	Longitude	C	123117228	
27	Posted route signing	O	1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	Dunsmuir St protected bicycle lane S of Howe	
32	Other notes	O	Dir of route based on vehicle traffic	

SIDEWALKS, WALKWAYS, AND ROADWAY SHOULDERS

The following examples include counts collected on sidewalks or shoulders of roadways with motorized traffic. Some of the *station location* fields that the user should pay special attention to when coding count locations on sidewalks or roadway shoulders include:

- **Functional Classification of the Roadway, Field 5:** the functional classification refers to the roadway the sidewalk or shoulder is adjacent to.
- **Direction of Route, Field 6:** the direction should reflect the facility orientation of the roadway the sidewalk or shoulder is adjacent to, regardless of the direction of users being counted.
- **Location of Count Relative to Roadway, Field 7:** this field indicates the count location relative to the roadway and records which “side” of the road the counted facility is on, as shown in Exhibit 43.

Exhibit 43. LOCATION OF COUNT RELATIVE TO ROADWAY



- **Direction of Movement, Field 8:** this field is dictated by the direction of users being counted, related to the direction of route.
- **Facility Type, Field 9:** there is a specific field for sidewalk facilities (code 3). For roadway shoulders, field 4 should be used.

EXAMPLE 1: SW ALDER STREET SIDEWALK

The example below walks through setting up the station location record for a count collected on a sidewalk on SW Alder Street in Portland, Oregon. SW Alder Street is one-way, with traffic moving in the southeast direction towards the river, so this is considered the direction of route. The sidewalk counted is on the southern side of the roadway. Exhibit 44 illustrates the location of count relative to the roadway and direction of movement.

Exhibit 44. **ALDER STREET LOOKING NORTHEAST (TOP), GRAPHIC SHOWING AERIAL VIEW (BOTTOM)**

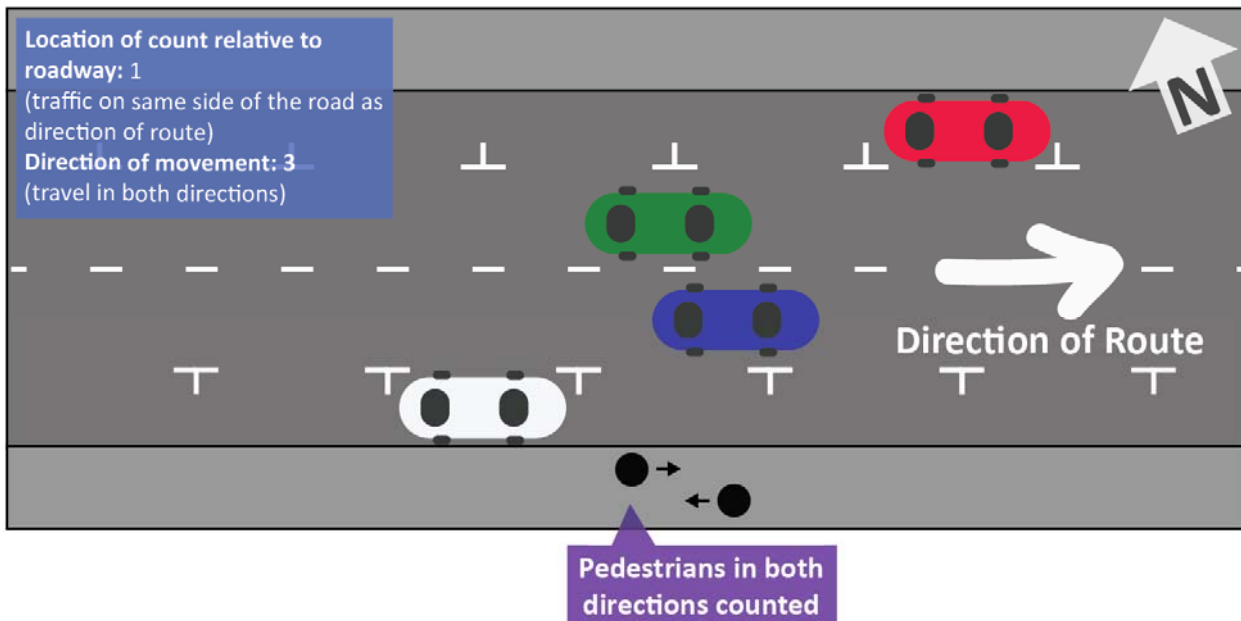


TABLE 32. STATION LOCATION DATA FIELDS – SW ALDER STREET SIDEWALK

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	051	Multnomah County's code is 051
4	Station ID	C	ALDER6	Indicates SW Alder Street count near SW 6 th Avenue (this ID is used to correlate other counts taken at the same "place," like bicyclists)
5	Functional classification of the roadway	C	4U	An urban, minor arterial roadway
6	Direction of route	C	4	Southeast, to correspond with vehicle traffic
7	Location of count relative to roadway	C	1	Traffic on the side of the road for the listed direction of route is being counted (right side when facing southeast)
8	Direction of movement	C	3	Travel in both directions is being counted
9	Facility type	C	3	Count is collected in a sidewalk
10	Intersection	O	0	Not at an intersection
11	Type of count	C	1	Only pedestrians are counted
12	Method of counting	C	1	A video camera is temporarily set-up to collect video footage of the site and later reduced
13	Type of Sensor	O	1	Video data is captured and manually reduced
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	O	Count taken to assess adequacy of sidewalk facility
21	Posted speed limit	O		
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	45519839	Indicates location of master device for data collection
26	Longitude	C	122678983	
27	Posted route signing	O	1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	Alder St west of Broadway, south sidewalk	
32	Other notes	O	Dir of route based on vehicle traffic	

EXAMPLE 2: OREGON STATE UNIVERSITY WALKWAY

The example below walks through setting up the station location record for a count collected on a walkway on Oregon State University's campus that does not run adjacent to a roadway. The walkway does not allow bicyclists and is exclusively for use by pedestrians. The facility is coded as a trail (Facility Type = 0) as it does not run adjacent to a roadway. The sidewalk facility type (Facility Type = 3) is intended for sidewalks adjacent to roadways. The "Other Notes" field should be used to indicate the facility is pedestrian-only.

Exhibit 45. **OREGON STATE UNIVERSITY WALKWAY LOOKING EAST**



TABLE 33. STATION LOCATION DATA FIELDS – OREGON STATE UNIVERSITY WALKWAY

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	003	Benton County's code is 003
4	Station ID	C	SQUADQ	Indicates count on South Quad Walkway
5	Functional classification of the roadway	C	8U	An urban trail or shared use path (this is the most appropriate functional classification since the walkway is not adjacent to a roadway, although it is not shared use)
6	Direction of route	C	7	West, based on increasing street numbers
7	Location of count relative to roadway	C	3	Traffic on both sides of the walkway is being counted
8	Direction of movement	C	3	Travel in both directions is being counted
9	Facility type	C	0	On a trail not intended for motor vehicles and not adjacent to a roadway (specified in Filed 32 that the facility is for pedestrians only)
10	Intersection	O	0	Not at an intersection
11	Type of count	C	1	Only pedestrians are counted
12	Method of counting	C	1	A video camera is temporarily set-up to collect video footage of the site and later reduced
13	Type of Sensor	O	1	Video data is captured and manually reduced
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	O	Count taken to assess adequacy of walkway width based on demand
21	Posted speed limit	O		
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	44565258	Indicates location of master device for data collection
26	Longitude	C	123279608	
27	Posted route signing	O	1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	South Quad Walkway north of Mem Union	
32	Other notes	O	Dir of route on increasing st numbers, ped only	

EXAMPLE 3: SW OAK STREET PEDESTRIANS

The example below walks through setting up the station location record for a pedestrian count collected on SW Oak Street in Tigard, Oregon. SW Oak Street is an east/west collector roadway with primarily residential uses to the north and south. While the roadway is planned to have sidewalks and bicycle lanes on both sides in the future, currently pedestrians walk on the shoulder/gravel walkways on either side of the street. The direction of route is considered west, consistent with the direction of increasing building numbers. In this example, pedestrians on the north side of the roadway are counted. The facility type may be challenging to identify as the pedestrian space is not clearly defined or demarcated. Exhibit 46 illustrates the potential facility types for counts taken on either side of the road. The north side is considered a facility type 4 (striped bicycle lane), as this is also relevant for shoulder facilities that pedestrians may use. The south side facility is considered 3 (sidewalk) to indicate that it is a space only pedestrians are expected to use. The “Other Notes” field should be used to specify the facility type further.

Exhibit 46. SW OAK STREET LOOKING WEST



TABLE 34. STATION LOCATION DATA FIELDS – SW OAK STREET PEDESTRIAN COUNT





Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	067	Washington County's code is 067
4	Station ID	C	OAKPED	Indicates pedestrian count on Oak Street
5	Functional classification of the roadway	C	6U	An urban, minor collector roadway (Tigard does not distinguish between major and minor collectors. Oak Street changes to a local street farther east so the minor collector designation is used)
6	Direction of route	C	7	West, to correspond with increasing building numbers
7	Location of count relative to roadway	C	1	Traffic on the side of the road for the listed direction of route is being counted (right side when facing west)
8	Direction of movement	C	3	Travel in both directions is being counted
9	Facility type	C	4	In a striped bicycle lane (also includes paved shoulder facilities used by bicycles or pedestrians); if the shoulder facility is not suitable for bicyclists, Facility Type 3 ("sidewalk") should be coded.
10	Intersection	O	0	Not at an intersection
11	Type of count	C	1	Only pedestrians are counted
12	Method of counting	C	1	A video camera is set up and later reduced
13	Type of Sensor	O	1	Video data is captured and manually reduced
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken to report pedestrian demand
21	Posted speed limit	O	25	
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	45444167	Indicates location of master device for data collection
26	Longitude	C	122769481	
27	Posted route signing	O	_1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	Oak St east of 90th, N. side peds in shoulder	
32	Other notes	O	Dir of route based on increasing building numbers	

ROADWAY CROSSINGS

The following examples include roadway crossing locations, including intersection crosswalks, midblock crossings, underpasses, and overpasses. Some of the *station location* fields that the user should pay special attention to when coding midblock crossings include:

- **Functional Classification of the Roadway, Field 5:** the functional classification refers to the roadway the crossing crosses or passes over/under.
- **Direction of Route, Field 6:** the direction entered is for the roadway with the crossing (as opposed to the direction of users that are crossing) or the roadway being passed over/under.
- **Location of Count Relative to Roadway, Field 7:** for crossings, the location of the count relative to the roadway is perpendicular to the roadway (that is, crossing the street).
- **Direction of Movement, Field 8:** dictated by direction of users being counted. For crossings, the direction of movement is one of the following:
 - 3. Travel in both (all directions): if users crossing in both directions are counted
 - 5. Travel monitored perpendicular to Direction of Route, crossing from left to right (facing Direction of Route)
 - 6. Travel monitored perpendicular to Direction of Route, crossing from right to left (facing Direction of Route)
- **Facility Type, Field 9:** potential facility types for roadway crossings are shown in Exhibit 47.
- **Intersection, Field 10:** crossing may or may not be at an intersection.

Exhibit 47. **FACILITY TYPES FOR ROADWAY CROSSINGS**

<p>1 - in roadway right of way (shared space)</p> <p>Use if those counted are crossing mid-block without a marked crosswalk, or where a crosswalk is present, if those crossing outside the crosswalk are also being counted. Note in “Other Notes” the specific scenario. The fact that crossing traffic is counted is indicated in Field 7 (Location of Count Relative to Roadway).</p>	
<p>2 - Crosswalk (legal crossing)</p> <p>Use for both mid-block crossings and those associated with an intersection. Use for all legal crosswalks, even those not striped (like at a residential intersection). If this code is used at a marked crossing, it suggests only those using the crosswalk are being counted.</p>	
<p>5 - Overpass</p> <p>Use when an overpass is available as an option for multimodal users crossing a roadway. The functional classification and direction of route refer to the roadway the overpass crosses.</p>	
<p>6 - Underpass</p> <p>Use when an underpass is available as an option for multimodal users crossing a roadway. The functional classification and direction of route refer to the roadway the underpass goes under.</p>	

EXAMPLE 1: SW 15TH STREET MIDBLOCK CROSSING

The example below walks through setting up the station location record for a count collected at a midblock crossing on SW 15th Street in Corvallis, Oregon. SW 15th Street is a north/south roadway with ascending street numbers in the southbound direction, so south is considered the direction of route. Pedestrians crossing at the midblock location are being counted to assess whether an upgraded crossing treatment is warranted. A video camera is temporarily set-up at the location to record pedestrian movements and then reduced. Exhibit 48 shows the potential codes for Direction of Movement based on the pedestrian movements counted. The example in Table 35 is for counting all pedestrians.

Exhibit 48. **SW 15TH STREET LOOKING NORTH (TOP), GRAPHIC SHOWING AERIAL VIEW (BOTTOM)**

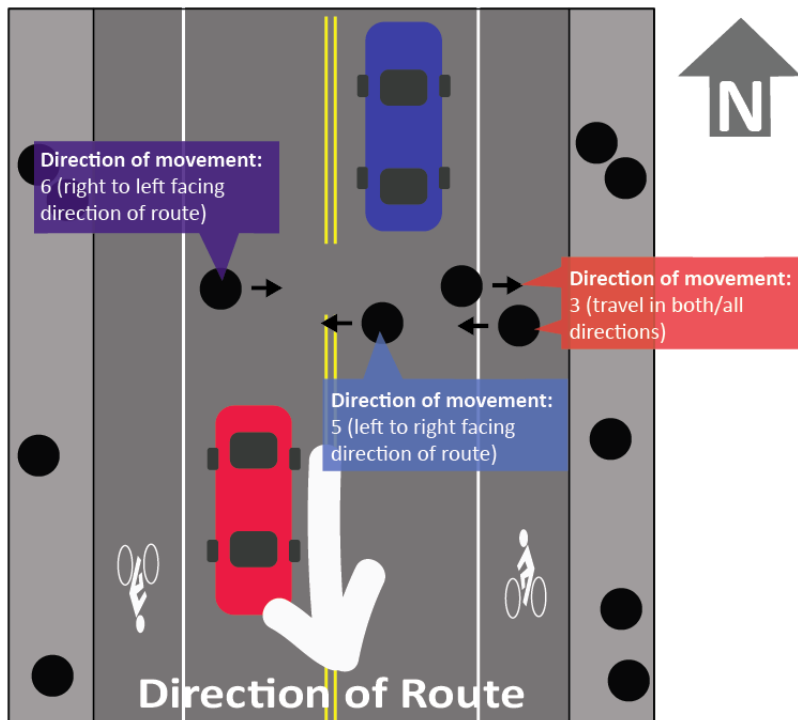


TABLE 35. STATION LOCATION DATA FIELDS – SW 15TH STREET MIDBLOCK CROSSING

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	003	Benton County's code is 003
4	Station ID	C	15STXC	Indicates crossing count on SW 15 th Street
5	Functional classification of the roadway	C	7U	An urban, collector roadway (Corvallis does not distinguish between major and minor collectors, so major collector is used)
6	Direction of route	C	5	South, to correspond with increasing building numbers
7	Location of count relative to roadway	C	4	Travel moving perpendicular to the street (crossing the street)
8	Direction of movement	C	3	Travel in both (all) directions
9	Facility type	C	2	Count is collected at a crosswalk
10	Intersection	O	0	Not at an intersection
11	Type of count	C	1	Only pedestrians are counted
12	Method of counting	C	1	A video camera is temporarily set-up to collect video footage of the site and later reduced
13	Type of Sensor	O	1	Video data is captured and manually reduced
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	L	Count taken to assess potential changes to facility (upgraded crossing)
21	Posted speed limit	O		
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	44563658	Indicates location of master device for data collection
26	Longitude	C	123274047	
27	Posted route signing	O	┘1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	15 th St midblock XC, S of Jefferson	
32	Other notes	O	Dir of route based on increasing building numbers	

EXAMPLE 2: MAIN STREET PEDESTRIAN CROSSING

The example below walks through setting up the station location record for a count collected at a crossing on Main Street in Banks, Oregon. Main Street (Nehalem Hwy 102) is a north/south roadway with increasing mileposts in the southbound direction, so this is considered the direction of route. The crossing is located between the inbound and outbound driveways to Banks High School on the east side of Main Street. The crossing is striped and signed with an overhead sign and flashing beacon.

Exhibit 49. MAIN STREET LOOKING NORTH TOWARD CROSSING



TABLE 36. STATION LOCATION DATA FIELDS – MAIN STREET PEDESTRIAN CROSSING

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	067	Washington County's code is 067
4	Station ID	C	MAINXC	Indicates crossing count on Main Street
5	Functional classification of the roadway	C	3U	A principal arterial (Main Street is classified as a statewide highway)
6	Direction of route	C	5	South, to correspond with increasing milepost
7	Location of count relative to roadway	C	4	Travel moving perpendicular to the street (crossing the street)
8	Direction of movement	C	3	Travel in both (all) directions
9	Facility type	C	1	Count is taken in the roadway right of way (this is selected as opposed to exclusively in a crosswalk to include those crossing outside the crosswalk)
10	Intersection	O	1	Count is taken at an intersection (because the count is taken between two driveways with significant traffic, we consider it an intersection)
11	Type of count	C	1	Only pedestrians are counted
12	Method of counting	C	1	A video camera is temporarily set-up to collect video footage of the site and later reduced
13	Type of Sensor	O	1	Video data is captured and manually reduced
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken to report use of crossing
21	Posted speed limit	O	25	
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	45614483	Indicates location of master device for data collection
26	Longitude	C	123114378	
27	Posted route signing	O	_4	State route
28	Posted signed route number	O	00000102	
29	LRS identification	O	010200100S00	
30	LRS location point	O		
31	Station location	O	Main St HS crossing	
32	Other notes	O	Includes outside marked crosswalk (within 50 ft)	

EXAMPLE 3: JAY STREET PEDESTRIAN CROSSING

The example below walks through setting up the station location record for a count collected on SW Jay Street in Aloha, Oregon. While there is not a marked crossing location today, crossing data is being collected to assess the need for a marked crossing and appropriate treatment. As shown in Exhibit 50, pedestrians cross at this location to walk between the Costco warehouse on the south side of SW Jay Street and parking lot on the north side of SW Jay Street. SW Jay Street runs east/west with increasing building numbers in the westbound direction, so the direction of route is considered west.

Exhibit 50. SW JAY STREET LOOKING WEST (TOP), AERIAL VIEW (BOTTOM)



TABLE 37. STATION LOCATION DATA FIELDS – MAIN STREET PEDESTRIAN CROSSING

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	067	Washington County's code is 067
4	Station ID	C	JAYSXC	Indicates crossing on SW Jay Street
5	Functional classification of the roadway	C	6U	An urban minor collector (SW Jay Street is classified as a Neighborhood Route, which is a lower order roadway than a collector and higher order roadway than a local roadway. Minor collector is selected as the best fit out of the available codes)
6	Direction of route	C	7	West, to correspond with increasing building numbers
7	Location of count relative to roadway	C	4	Travel moving perpendicular to the street (crossing the street)
8	Direction of movement	C	3	Travel in both (all) directions
9	Facility type	C	1	Count is taken in the roadway right of way (this is selected as there is not a marked crosswalk)
10	Intersection	O	1	Count is taken at an intersection (because the count is taken adjacent to two driveways with significant traffic, we consider it an intersection)
11	Type of count	C	1	Only pedestrians are counted
12	Method of counting	C	1	A video camera is temporarily set-up and later reduced
13	Type of Sensor	O	1	Video data is captured and manually reduced
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	L	Count taken to assess appropriate crossing treatment
21	Posted speed limit	O	25	
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	45509719	Indicates location of master device for data collection
26	Longitude	C	122842478	
27	Posted route signing	O	1	Route is not signed
28	Posted signed route number	O		
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O	Jay St XC at Costco, west of 158 th	

Field	Description	Type	Entry	Notes
32	Other notes	O		XC unmarked, dir of route inc building numbers

EXAMPLE 4: SW NAITO PARKWAY UNDERPASS

The example below walks through setting up the station location record for a count collected on an underpass of SW Naito Parkway in Portland, Oregon. The underpass has two entrances, shown in Exhibit 51, and allows pedestrians to avoid crossing SW Naito Parkway, a multi-lane, high-volume roadway. Counts are taken on one side of the underpass using a video camera in order to assess how much use the underpass is getting and evaluate potential future pedestrian connections in the area. SW Naito Parkway runs north/south, with increasing mileposts in the southbound direction, so the direction of route is considered south. The functional classification, speed limit, etc. refer to SW Naito Parkway.

Exhibit 51. **ACCESS POINTS TO SW NAITO PARKWAY UNDERPASS (TOP), UNDERPASS LOOKING WEST (BOTTOM)**





TABLE 38. STATION LOCATION DATA FIELDS – SW NAITO PARKWAY UNDERPASS

Field	Description	Type	Entry	Notes
1	Nonmotorized station/location record identifier (L)	C	L	L indicates this is a count station/location
2	State FIPS Code	C	41	Oregon's code is 41
3	County FIPS Code	C	051	Multnomah County's code is 051
4	Station ID	C	NAITOU	Indicates underpass of SW Naito Parkway
5	Functional classification of the roadway	C	3U	An urban other principal arterial (refers to SW Naito Parkway)
6	Direction of route	C	5	South, to correspond with increasing mileposts
7	Location of count relative to roadway	C	4	Travel moving perpendicular to the street (crossing the street)
8	Direction of movement	C	3	Travel in both (all) directions
9	Facility type	C	6	Count is taken in an underpass that allows pedestrians to avoid crossing SW Naito Parkway
10	Intersection	O	0	Not at an intersection
11	Type of count	C	1	Only pedestrians are counted
12	Method of counting	C	1	A video camera is temporarily set-up to collect video footage of the site and later reduced
13	Type of Sensor	O	1	Video data is captured and manually reduced
14	Year of Data	C	2016	
15	Factor Group 1	O		
16	Factor Group 2	O		
17	Factor Group 3	O		
18	Factor Group 4	O		
19	Factor Group 5	O		
20	Primary count purpose	O	P	Count taken to assess use of underpass and planning for pedestrian routes in the area
21	Posted speed limit	O	40	Refers to SW Naito Parkway
22	Year station established	C	2016	
23	Year station discontinued	O		
24	National highway system	O	N	
25	Latitude	C	45499964	Indicates location of master device for data collection
26	Longitude	C	122677525	
27	Posted route signing	O	4	Naito is signed as State Highway 99
28	Posted signed route number	O	00000099	
29	LRS identification	O		There is no LRS for this location
30	LRS location point	O		
31	Station location	O		Naito underpass at Grover St, S. side
32	Other notes	O		Dir of route increasing MPs

INTERSECTIONS

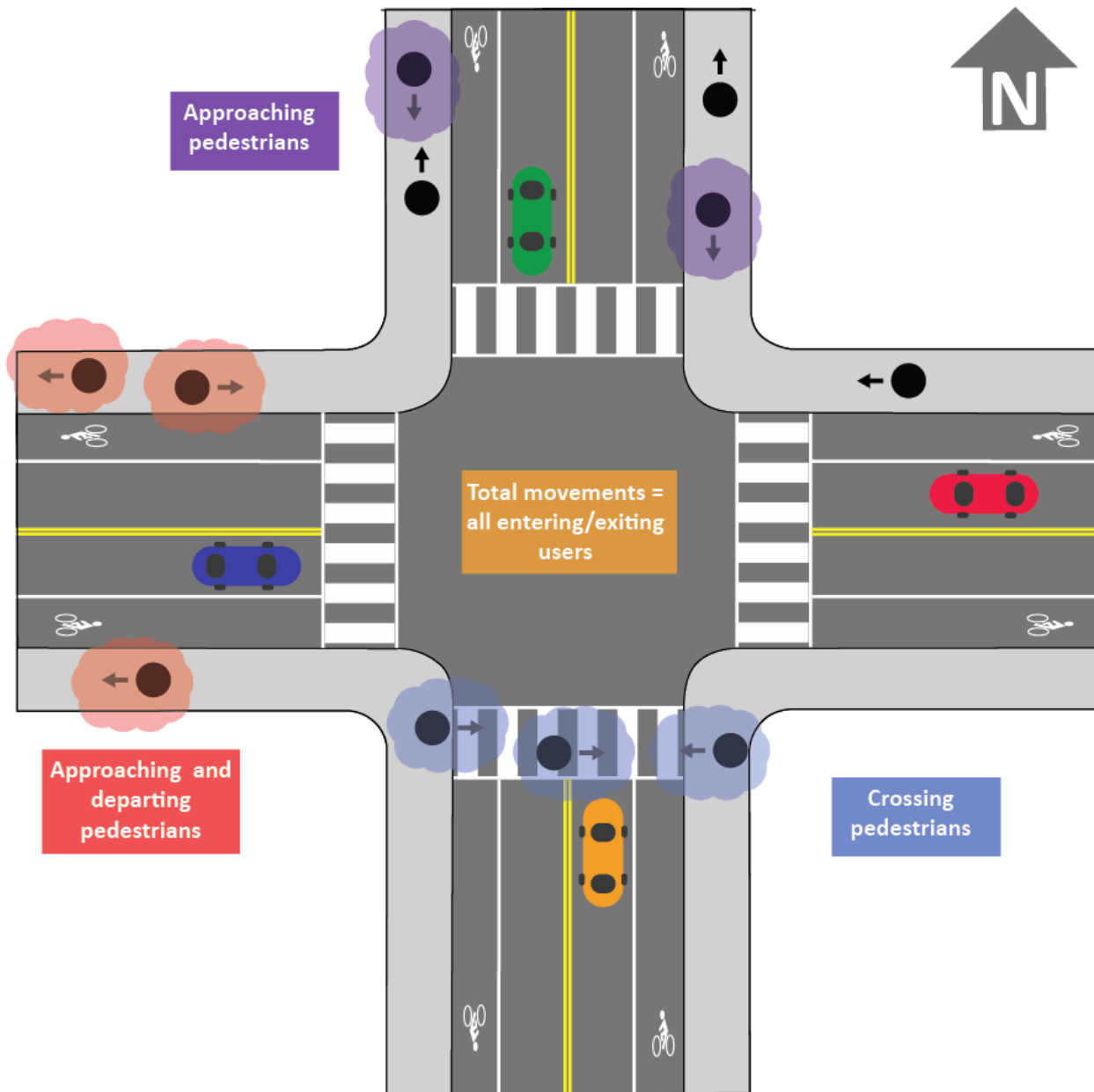
The TMG format directly supports counts of total movements through intersections. It can be adapted to report movements approaching or departing intersections, or crossing in specific directions, but these must be broken down into counts along or across the roadways entering and leaving the intersection and reported separately. The format does not support explicit turning movement counts (where the entry and exit directions from the intersection are linked).

Some of the *station location* fields that the user should pay special attention to when coding intersection counts are shown in Table 39. The table shows how these codes are used based on what is being counted, with potential options illustrated in Exhibit 52.

TABLE 39. INTERSECTION STATION LOCATION FIELDS

Field	Total Movements	Approaching/Departing Movements	Crossing Movements
5. Functional Classification of the Roadway	9 (general activity count)	Code the functional classification of the roadway users are on	Code the functional classification of the roadway users are crossing
6. Direction of Route	Code based on higher order roadway	Code based on roadway users are on	Code based on roadway users are crossing
7. Location of Count Relative to Roadway	3 (both sides of the road)	1 (traffic on side of road for direction of route), 2 (opposite side of road) or 3 (both sides of road)	4 (perpendicular to roadway)
8. Direction of Movement	4 (travel at an intersection including all movements)	1 (direction of route), 2 (opposite direction of route), or 3 (travel in both directions)	3 (travel in both directions), 5 (crossing left to right), or 6 (crossing right to left)
9. Facility Type	9 (general area count)	Based on facility (e.g. whether bike lanes, shared roadway, etc.)	2 (exclusively in a crosswalk)
10. Intersection	1 (intersection) or 2 (roundabout)	1 (intersection) or 2 (roundabout)	1 (intersection) or 2 (roundabout)

Exhibit 52. INTERSECTION COUNT OPTIONS



The examples below walk through setting up the station location record for a count collected at a fictional intersection of A Street (minor arterial) and 1st Avenue (local roadway). The examples walk through a variety of scenarios to show how the station location fields change based on the data being collected.

SCENARIO 1: COUNTING EASTBOUND BICYCLISTS ON A STREET

Exhibit 53. EASTBOUND BICYCLISTS

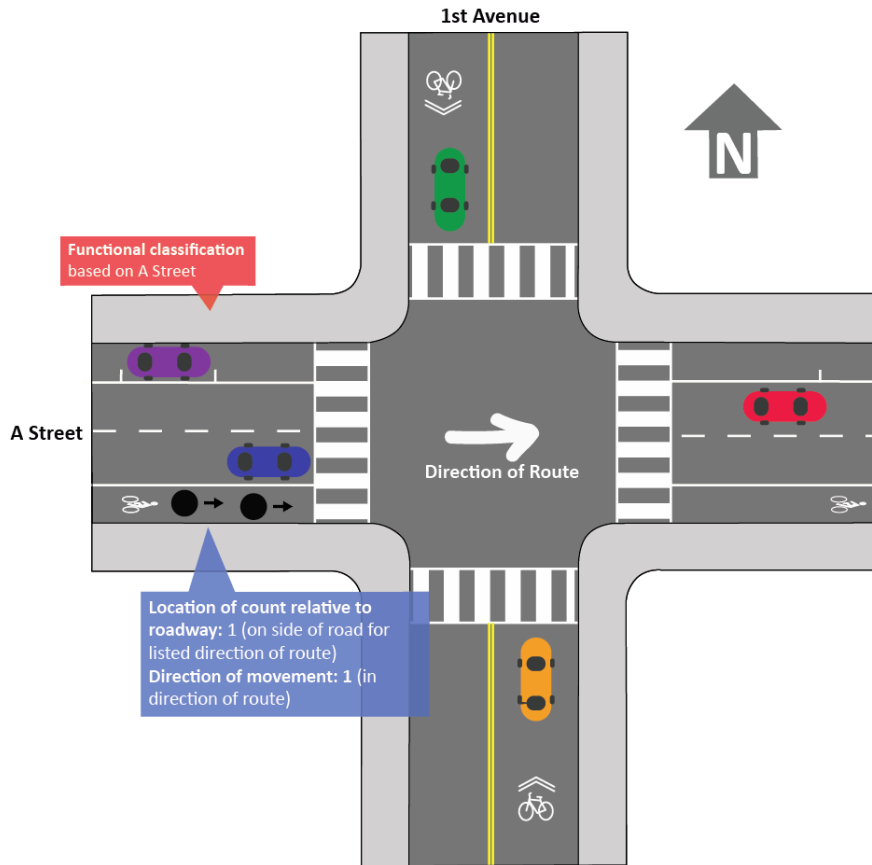


TABLE 40. STATION LOCATION DATA FIELDS – EASTBOUND BICYCLISTS

Field	Description	Type	Entry	Notes
5	Functional classification of the roadway	C	4U	An urban, minor arterial roadway (based on A Street)
6	Direction of route	3	5	East, to correspond with increasing building numbers on A Street
7	Location of count relative to roadway	C	1	Traffic on the side of the road for listed direction of route
8	Direction of movement	C	1	Travel in direction of route (eastbound)
9	Facility type	C	4	Count is collected in a striped bicycle lane
10	Intersection	O	1	Count is taken at an intersection (not a roundabout)
11	Type of count	C	2	Only bicycles are counted
21	Posted speed limit	O		
27	Posted route signing	O	1	
28	Posted signed route number	O		Refers to A Street
29	LRS identification	O		
30	LRS location point	O		
32	Other notes	O		EB bicyclists on A St approaching 1 st Ave counted

SCENARIO 2: COUNTING NORTHBOUND BICYCLISTS ON 1ST AVE

Exhibit 54. **NORTHBOUND BICYCLISTS**

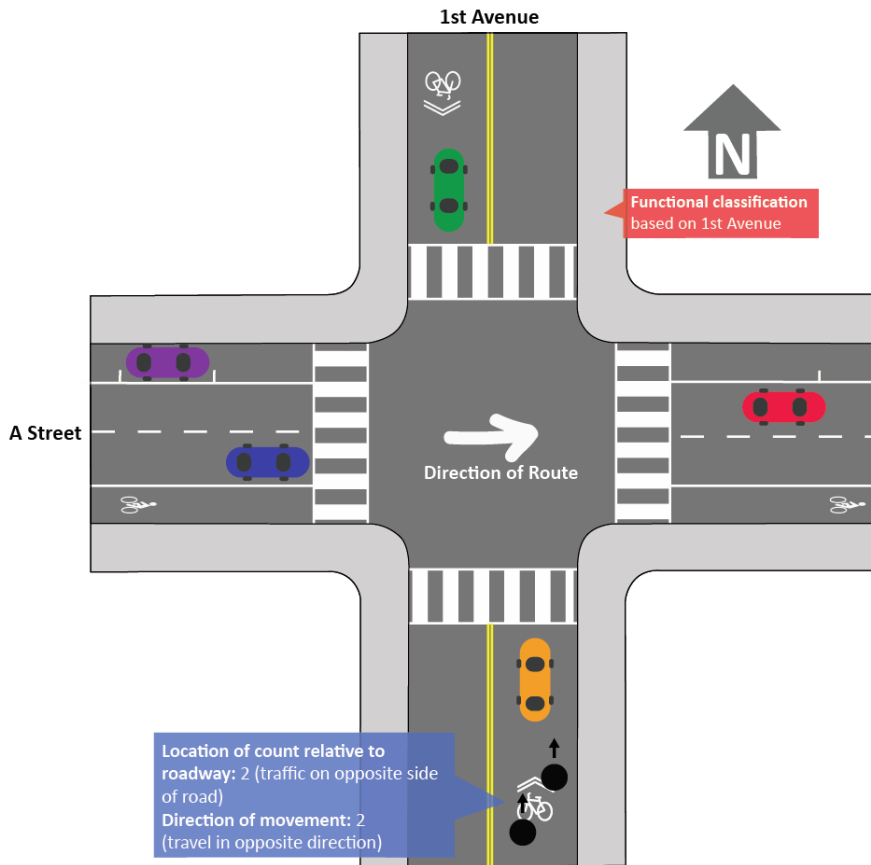


TABLE 41. STATION LOCATION DATA FIELDS – NORTHBOUND BICYCLISTS

Field	Description	Type	Entry	Notes
5	Functional classification of the roadway	C	7U	An urban, local roadway (based on 1 st Avenue)
6	Direction of route	C	5	South, to correspond with increasing building numbers on 1 st Avenue
7	Location of count relative to roadway	C	2	Traffic on the opposite side of the road for listed direction of route
8	Direction of movement	C	2	Travel in opposite direction of route
9	Facility type	C	1	Count is collected in a shared roadway
10	Intersection	O	1	Count is taken at an intersection (not a roundabout)
11	Type of count	C	2	Only bicycles are counted
21	Posted speed limit	O		
27	Posted route signing	O	1	
28	Posted signed route number	O		Refers to 1 st Avenue
29	LRS identification	O		
30	LRS location point	O		
32	Other notes	O		NB bicyclists on 1 st Ave approaching A St counted

SCENARIO 3: COUNTING BICYCLISTS ON NORTH LEG

Exhibit 55. BICYCLISTS ON NORTH LEG

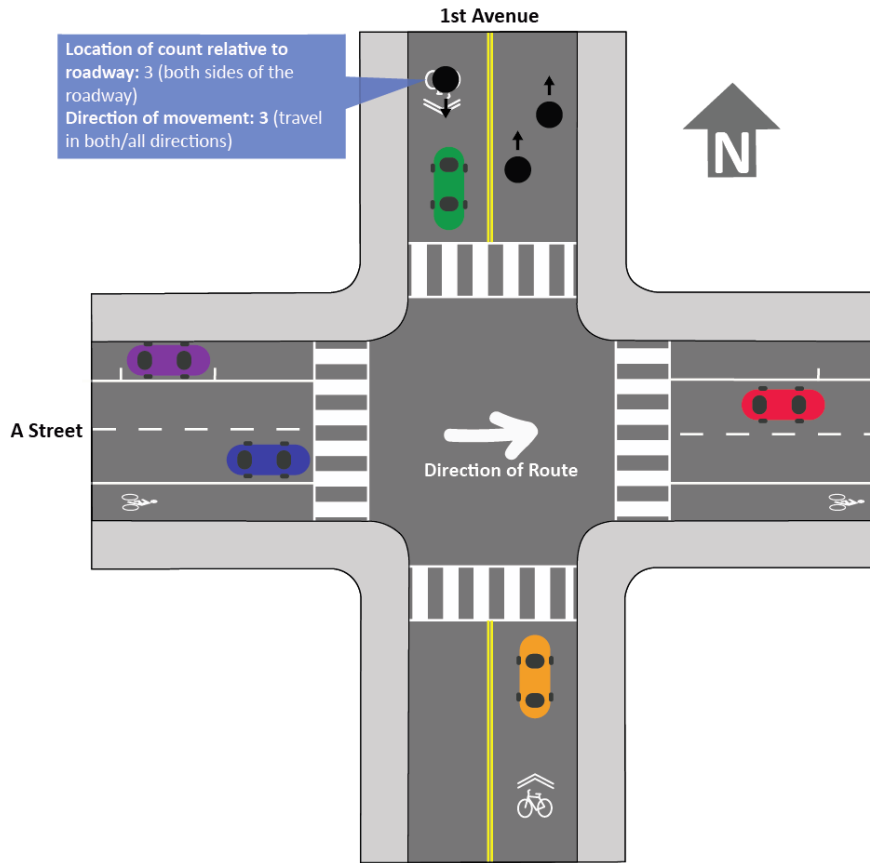


TABLE 42. STATION LOCATION DATA FIELDS – BICYCLISTS ON NORTH LEG

Field	Description	Type	Entry	Notes
5	Functional classification of the roadway	C	7U	An urban, local roadway (based on 1 st Avenue)
6	Direction of route	C	5	South, to correspond with increasing building numbers on 1 st Avenue
7	Location of count relative to roadway	C	3	Traffic on both sides of the road combined
8	Direction of movement	C	3	Travel in both directions
9	Facility type	C	1	Count is collected in a shared roadway
10	Intersection	O	1	Count is taken at an intersection (not a roundabout)
11	Type of count	C	2	Only bicycles are counted
21	Posted speed limit	O		
27	Posted route signing	O	1	
28	Posted signed route number	O		Refers to 1 st Avenue
29	LRS identification	O		
30	LRS location point	O		
32	Other notes	O		Bicyclists on 1 st Ave north of A St counted

SCENARIO 4: COUNTING PEDESTRIANS CROSSING EAST LEG

Exhibit 56. PEDESTRIANS CROSSING EAST LEG

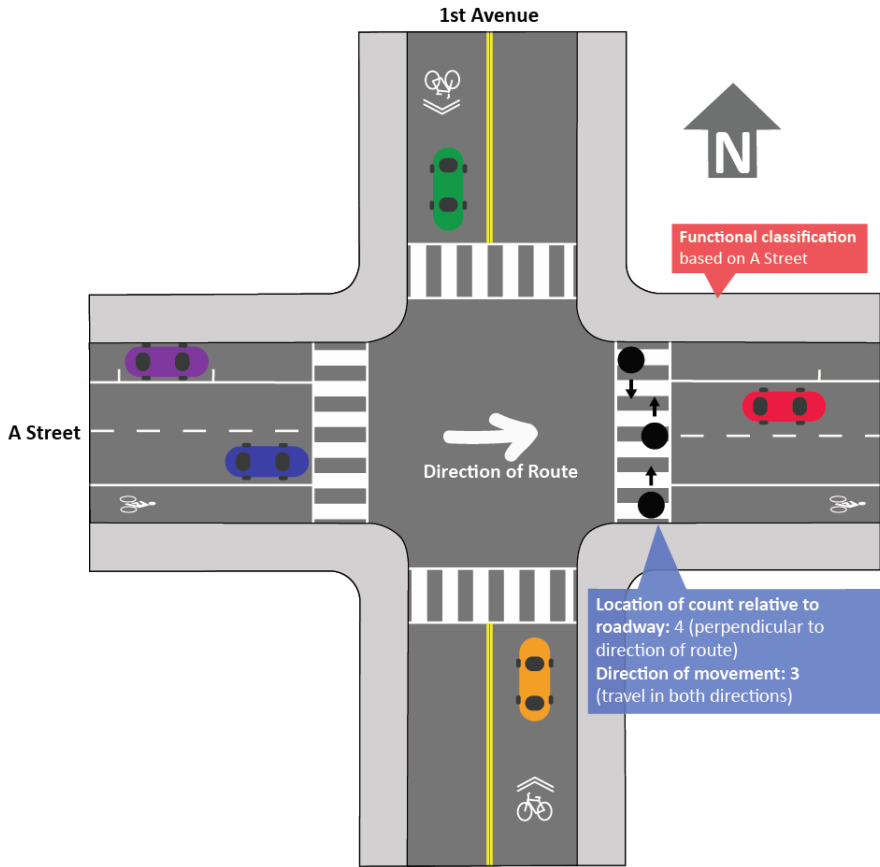


TABLE 43. STATION LOCATION DATA FIELDS – PEDESTRIANS CROSSING EAST LEG

Field	Description	Type	Entry	Notes
5	Functional classification of the roadway	C	4U	An urban, minor arterial roadway (based on A Street)
6	Direction of route	C	3	East, to correspond with increasing building numbers on A Street
7	Location of count relative to roadway	C	4	Traffic moving perpendicular to the roadway (crossing the street)
8	Direction of movement	C	3	Travel in both directions
9	Facility type	C	2	Exclusively in a crosswalk
10	Intersection	O	1	Count is taken at an intersection (not a roundabout)
11	Type of count	C	1	Only pedestrians are counted
21	Posted speed limit	O		
27	Posted route signing	O	1	
28	Posted signed route number	O		Refers to A Street
29	LRS identification	O		
30	LRS location point	O		
32	Other notes	O		Peds crossing west leg of A St at 1 st Ave counted

SCENARIO 5: COUNTING TOTAL BICYCLISTS AT INTERSECTION

Exhibit 57. TOTAL BICYCLISTS

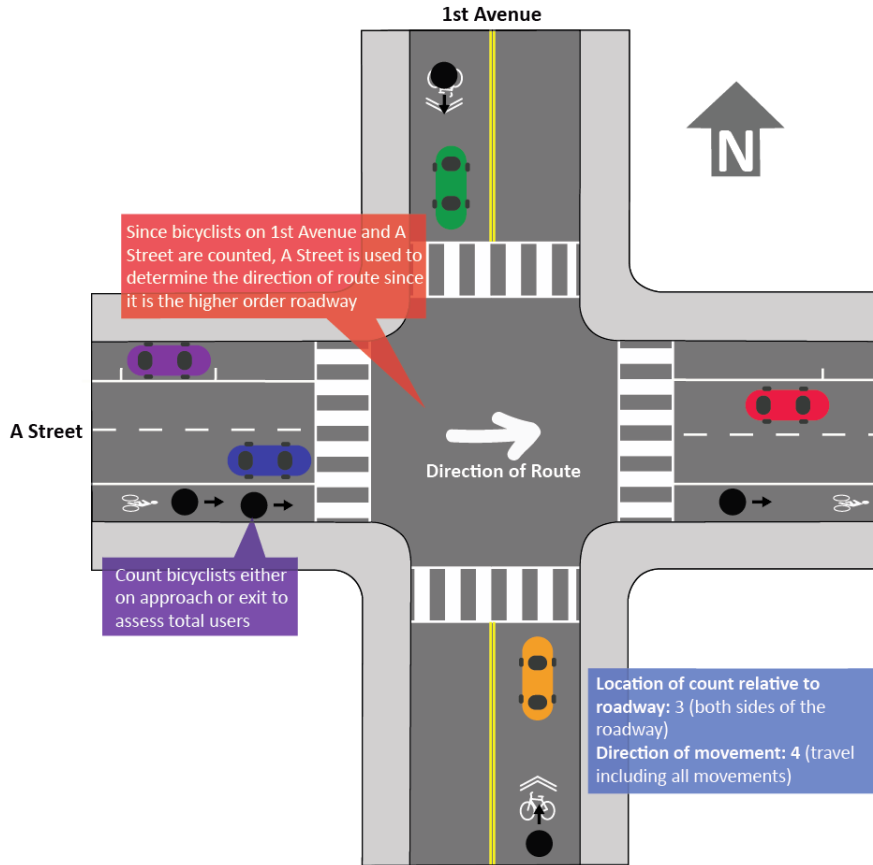


TABLE 44. STATION LOCATION DATA FIELDS – TOTAL BICYCLISTS

Field	Description	Type	Entry	Notes
5	Functional classification of the roadway	C	9U	An urban, general activity count
6	Direction of route	C	3	East, to correspond with increasing building numbers on A Street
7	Location of count relative to roadway	C	3	Traffic on both sides of the road (most suitable option for counting all volumes)
8	Direction of movement	C	4	Travel at an intersection including all movements
9	Facility type	C	9	General area count
10	Intersection	O	1	Count is taken at an intersection (not a roundabout)
11	Type of count	C	2	Only bicyclists are counted
21	Posted speed limit	O		
27	Posted route signing	O	1	
28	Posted signed route number	O		Refers to A Street
29	LRS identification	O		
30	LRS location point	O		
32	Other notes	O		All bikes using int. of A St and 1 st Ave counted

SCENARIO 6: COUNTING PEDESTRIANS ON NORTH SIDE OF A ST

Exhibit 58. PEDESTRIANS ON NORTH SIDE OF A STREET

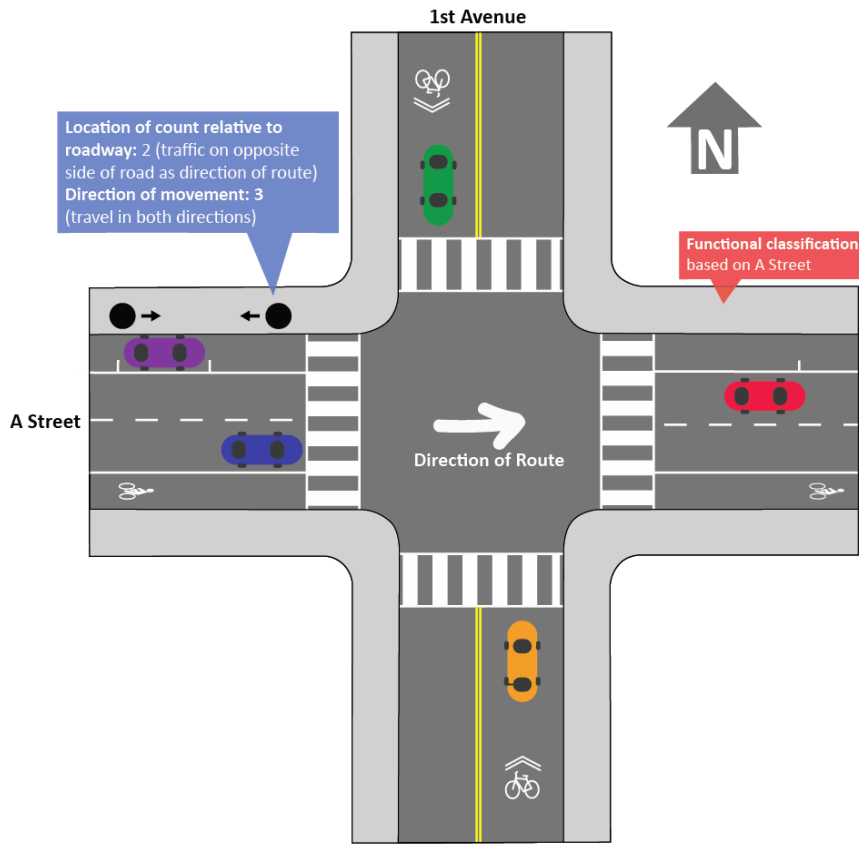
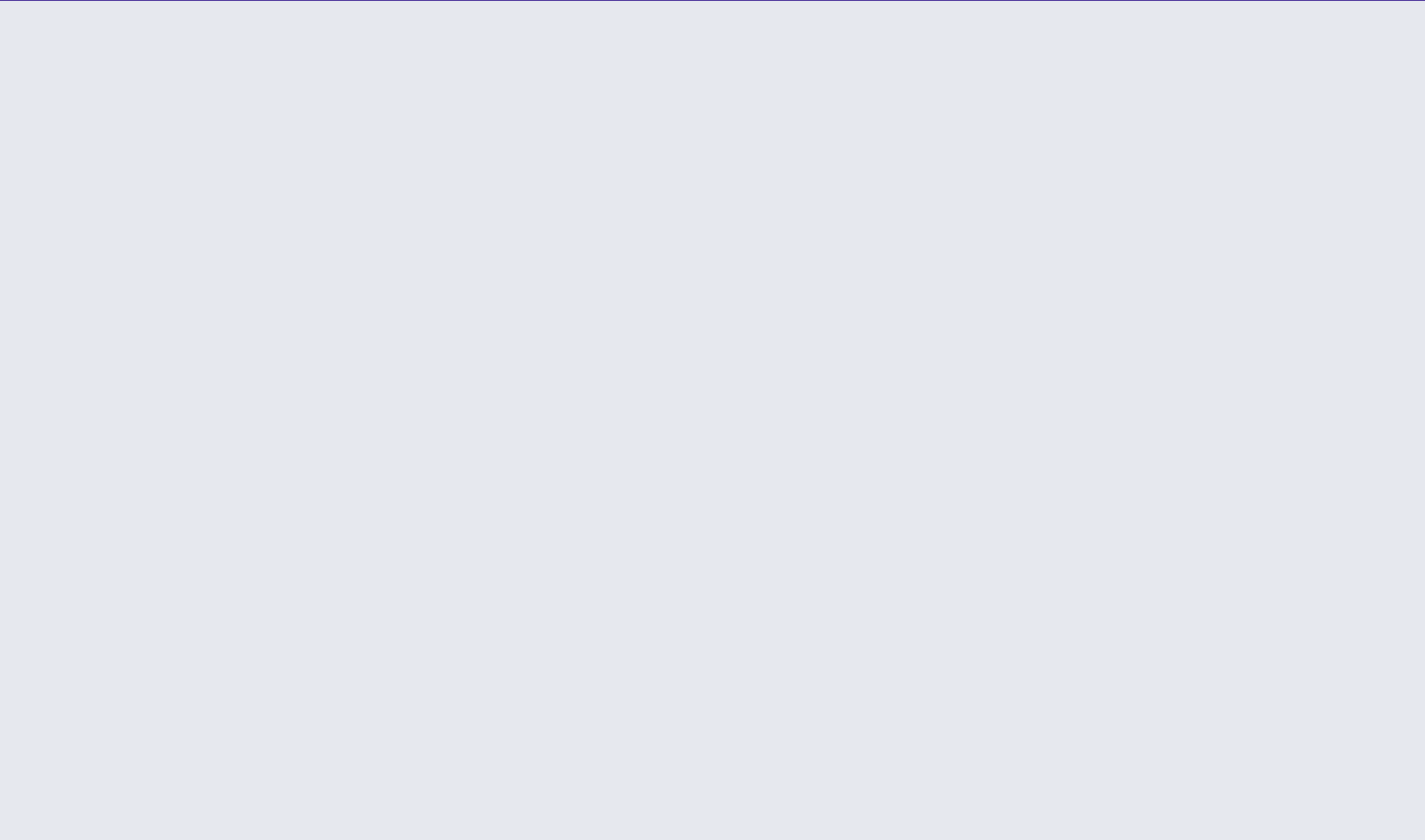


TABLE 45. STATION LOCATION DATA FIELDS – PEDESTRIANS ON NORTH SIDE OF A STREET

Field	Description	Type	Entry	Notes
5	Functional classification of the roadway	C	4U	An urban, minor arterial roadway (based on A Street)
6	Direction of route	C	3	East, to correspond with increasing building numbers on A Street
7	Location of count relative to roadway	C	2	Traffic on the opposite side of the road from listed direction of route
8	Direction of movement	C	3	Travel in both directions
9	Facility type	C	3	On a sidewalk
10	Intersection	O	1	Count is taken at an intersection (not a roundabout)
11	Type of count	C	1	Only pedestrians are counted
21	Posted speed limit	O		
27	Posted route signing	O	1	
28	Posted signed route number	O		Refers to A Street
29	LRS identification	O		
30	LRS location point	O		
32	Other notes	O		Peds on north side of A St at 1 st Ave counted



CHAPTER 7
GLOSSARY



GLOSSARY

The following list includes terms and acronyms referenced throughout the document and provides a short definition.

Critical: means that a field must be supplied with a non-blank value (spaces are considered blanks) to describe the count completely.

FIPS Code: there are FIPS codes associated with each state and count. These codes were originally assigned in the Federal Information Processing Standards (FIPS) Publication 6, which was published (but has subsequently been withdrawn) by the National Institute for Standards and Technology. Current codes for US states and counties based on the original FIPS 6 publication are maintained by the US Department of the Census, and may be found online at <http://www.census.gov/geo/reference/codes/cou.html>.

Highway Performance Monitoring System (HPMS): a database of counts and other information for all federally classified roadways collected by each state and maintained by FHWA. HPMS includes a complete network of public roads indexed by a linear referencing system established in each state. HPMS is described online at: <http://www.fhwa.dot.gov/policyinformation/hpms.cfm>

Linear Reference System (LRS): a method of spatially referencing a location using measurement along a linear element based on a defined starting and ending point. LRS identifications are provided in the HPMS.

National Highway System (NHS): includes the Interstate Highway System as well as other roads important to the nation's economy, defense, and mobility. A map of the NHS is available online at http://www.fhwa.dot.gov/planning/national_highway_system/.

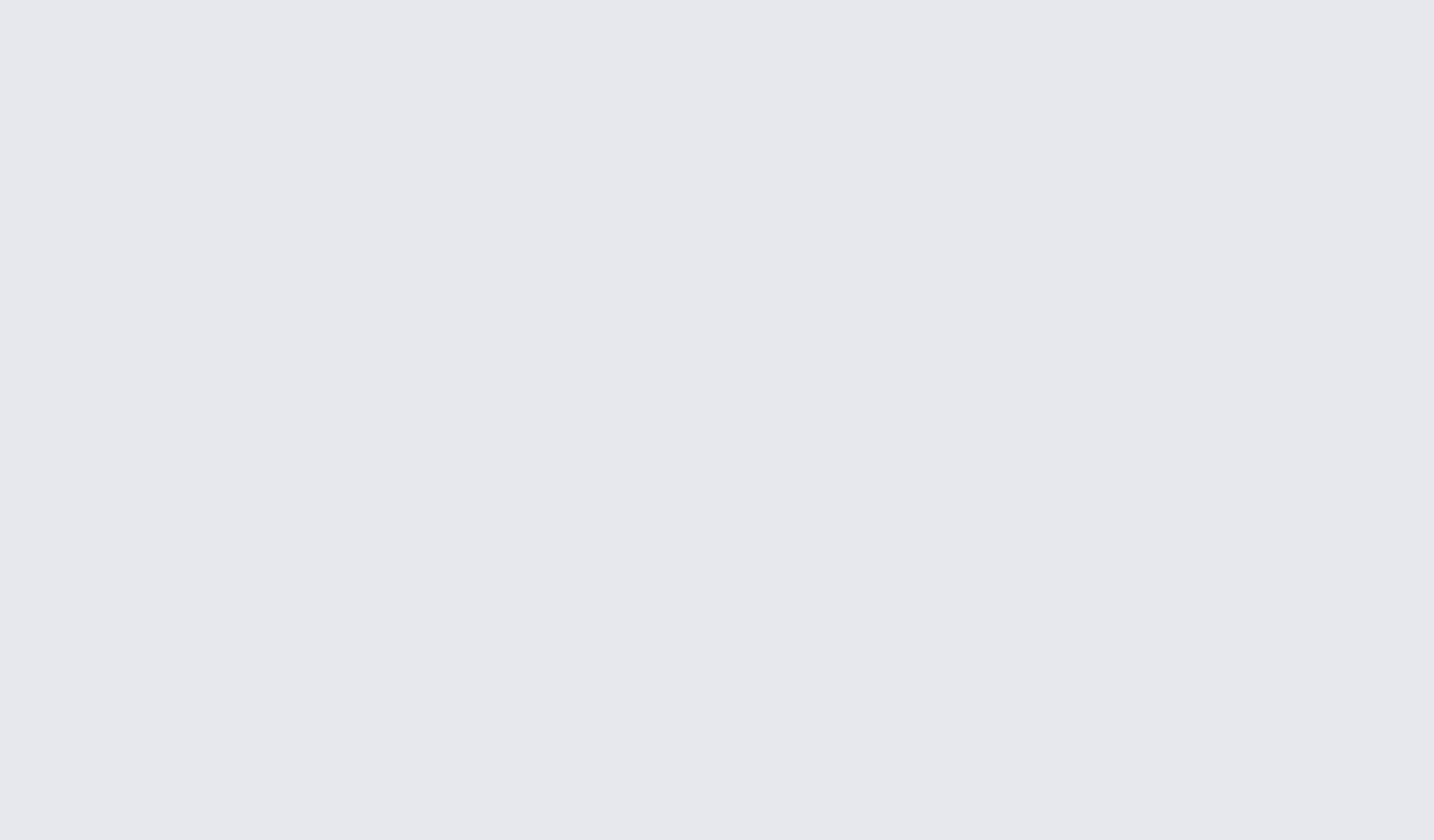
Nonmotorized Count Station Description Record: one of the two types of records the TMG specifies for a count. The count station description record is also referred to as the “station location record” since a principal function of that record is to describe where the count was collected, and because the record is identified in its first data field by the letter “L” (for Location).

Nonmotorized Count Data Record: one of the two types of records the TMG specifies for a count. Describes when the counts were collected and how many users were counted. The record is identified by the letter “N” in its first character (for “Nonmotorized”).

Optional: means that a field may be left blank.

Traffic Monitoring Analysis System (TMAS): a national database that receives a variety of traffic count data about motor vehicles collected by each state from automated traffic recording devices. TMAS is being extended so it can receive automated and manual counts of bicycles and pedestrians that are submitted voluntarily by various collecting agencies and clearinghouses.

Traffic Monitoring Guide (TMG): a manual published by FHWA on traffic count collection techniques and data formats for motorized and nonmotorized traffic. It is the principal reference for correctly collecting and formatting counts that are to be submitted to HPMS or TMAS.



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