



2016 Traffic Monitoring Guide Nonmotorized Data Format August 2024 Updates



U.S. Department
of Transportation

**Federal Highway
Administration**

U.S. Department of Transportation
Federal Highway Administration
Office of Highway Policy Information
1200 New Jersey Ave., SE
Washington, D.C. 20590

<https://www.fhwa.dot.gov/policyinformation>

FHWA-HPL-24-020

Notes:

- Station and Record files developed based on the original formats of the 2016 TMG Chapters 7.9 and 7.10 (before this August 2024 updates) will continue to be acceptable by TMAS2.8 without updates.
- Post-August 2024 data are encouraged to leave the OPTIONAL data field blank.
- Data providers are encouraged to use the Nonmotorized Station Record Generator to generate the Station Record file.

7.9 NONMOTORIZED STATION RECORD FORMAT (FIXED WIDTH)

Introduction

Collecting and reporting Nonmotorized travel is growing in importance due to the significant efforts being made to encourage investment and use of more active modes of transportation (e.g., walking, biking, scooting, battery-powered devices). It is, therefore, important to be able to track changes in walking, biking, scooting, etc. that result from changes in public attitudes and land use, the implementation of new policies, and the construction of new facilities.

Two types of records are needed for submitting Nonmotorized data to FHWA's TMAS system.

- Nonmotorized Station Record – Section 7.9
- Nonmotorized Count Record – Section 7.10

The Station Record is needed for reporting all Nonmotorized data to FHWA. The Station Record is composed of data fields, which provide information related to where the monitored site is located and other relevant attributes that can be used in conjunction with the Count Record for specific data analysis. If a Nonmotorized Station Record is omitted, any succeeding Count Records containing Nonmotorized data will not be processed in TMAS.

The TMAS software retains all approved Station Records as of December 31st of each year. FHWA recommends that a yearly review of all Station Record fields be conducted to ensure the records are current and accurately reflect what is in the field.

A Station Record file is a text file often designated by the .txt file extension. Before uploading the file to TMAS, the file extension should be renamed to .snm where snm stands for station non-motorized.

Below is an example Station Record file naming convention.

StationABC123.SNM

Summary

The Station Record consists of the data fields listed in Table 7-31. These data fields must be organized by the following fixed width column format indicated below. Any misalignment of the data fields will lead to errors and the rejection or misinterpretation of the data.

Below is a summary table listing all the formatting attributes of the Station Record's data fields.

Table 7-31. SUMMARY OF THE NONMOTORIZED STATION RECORD FIELDS

Field	Columns	Width	Description	Type	Importance
1	1	1	Nonmotorized Station Record Identifier (L)	Alphanumeric	Required
2	2-3	2	State FIPS Code	Integer	Required
3	4-6	3	County FIPS Code	Integer	Required
4	7-12	6	Station ID	Alphanumeric	Required
5	13-14	2	Function Class and Area Type	Alphanumeric	Optional
6	15	1	Trail Direction or Roadway Direction	Integer	Optional
7	16	1	Where the Count Occurs	Integer	Optional
8	17	1	Direction of Bicycle/Pedestrian Movement	Integer	Required
9	18	1	Further Travel Location Indicator	Integer	Optional
10	19	1	Intersection	Integer	Optional

11	20	1	Type of Count	Integer	Required
12	21	1	Method of Counting	Integer	Optional
13	22	1	Type of Sensor	Alphanumeric	Optional
14	23-26	4	Year of Data	Integer	Optional
15	27	1	Factor Group 1	Integer	Optional
16	28	1	Factor Group 2	Integer	Optional
17	29	1	Factor Group 3	Integer	Optional
18	30	1	Factor Group 4	Integer	Optional
19	31	1	Factor Group 5	Integer	Optional
20	32	1	Primary Count Purpose	Alpha	Optional
21	33-34	2	Posted Speed Limit	Integer	Optional
22	35-38	4	Year Station Established	Integer	Optional
23	39-42	4	Year Station Discontinued	Integer	Optional
24	43	1	National Highway System	Alpha	Optional
25	44-51	8	Latitude	Integer	Required
26	52-60	9	Longitude	Integer	Required
27	61-62	2	Posted Route Sign	Integer	Optional
28	63-70	8	Posted Route Sign Number	Integer	Optional
29	71-130	60	LRS Route ID	Integer	Optional
30	131-138	8	LRS Location Point	Integer	Optional
31	139-188	50	Station Location	Alphanumeric	Optional
32	189-239	51	Other Notes	Alphanumeric	Optional

Details

A list of the Station Record's 32 data fields is shown below. Each data field or variable includes a detailed explanation as well as a list of the possible values allowed for each field. Lastly, the corresponding fixed width column formats for each data field is also included.

1. NONMOTORIZED STATION RECORD IDENTIFIER (FIELD 1/COLUMN 1/WIDTH 1) – REQUIRED

- The letter "L" is always coded to indicate that this file is a nonmotorized (bicycle and/or pedestrian) Station Record. This field is not case-sensitive.

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

- Use the table below to code the two-digit state FIPS code. The state FIPS code indicates in which state the Station is located.

TABLE 7-32. STATE NAME & FIPS CODES

Name	FIPS	Name	FIPS	Name	FIPS
Alabama	01	Louisiana	22	Oklahoma	40
Alaska	02	Maine	23	Oregon	41

Arizona	04	Maryland	24	Pennsylvania	42
Arkansas	05	Massachusetts	25	Rhode Island	44
California	06	Michigan	26	South Carolina	45
Colorado	08	Minnesota	27	South Dakota	46
Connecticut	09	Mississippi	28	Tennessee	47
Delaware	10	Missouri	29	Texas	48
District of Columbia	11	Montana	30	Utah	49
Florida	12	Nebraska	31	Vermont	50
Georgia	13	Nevada	32	Virginia	51
Hawaii	15	New Hampshire	33	Washington	53
Idaho	16	New Jersey	34	West Virginia	54
Illinois	17	New Mexico	35	Wisconsin	55
Indiana	18	New York	36	Wyoming	56
Iowa	19	North Carolina	37		
Kansas	20	North Dakota	38		
Kentucky	21	Ohio	39		

3. COUNTY FIPS CODE (FIELD 3/COLUMNS 4-6/WIDTH 3) – REQUIRED

- The County FIPS code ranges from 1 to 3 digits. If a county has only one or two digits, add zero(s) in front of the code to ensure a total of 3 digits.
- County FIPS codes for all US counties are maintained by the US Census Bureau and can be found online at transition.fcc.gov/oet/info/maps/census/fips/fips.txt

4. STATION ID (FIELD 4/COLUMNS 7-12/WIDTH 6) – REQUIRED

- The Station ID is a six-character identifier for a counting site and per counting device, and/or travel direction.
 - Example: If a counting site has two different counting devices monitoring different travelers and generating different count datasets to report, then that would constitute two stations. Two (2) Station Records with different Station IDs should be used.
- While the Station ID is location and device specific, it may also be traveling direction specific depending on how the count data is reported. If the count data being reported is direction specific (i.e., the values for Field 8 “Direction of Bicycle/Pedestrian Movement” are different) then it is recommended that the same Station ID be used for both directions, since the Direction of Bicycle/Pedestrian Movement will be the unique identifier. The reporting agency may also elect to create unique Station IDs for each traveling direction.
 - Example 1: A counting site located on County Road 109 at mile marker 9.8 is monitoring travel on both the north and south bound bicycle lanes. If the gathered count data is to be reported as individual directional counts (i.e., two separate datasets), one for the northbound direction and another for the southbound. Then the agency has the option to use two different Station IDs for each direction. (e.g., the first Station ID could be N123AB for the northbound data and the second Station ID could be S123AB for the

southbound data). Or the agency can elect to use the same Station ID (recommended) for each direction but specify the unique directions in Field 8 of the Station Record and Field 9 of the Count Record.

- Example 2: A counting site is monitoring travel on a trail with north and southbound pedestrian traffic. If the gathered count data is to be reported as combined directional counts (i.e., all counts entered into one dataset) then there will only be one Station Record with one Station ID.
- The Station ID should be unique for a given State and County. It is good practice to maintain the same Station ID from one year to the next.
- The Station ID must be alphanumeric (containing only letters and numbers). No other symbols such as a star *, exclamation mark !, hashtag #, parenthesis (), ampersand & or dots... can be used. Station ID example: ESP456
- If a Station ID is less than 6 alphanumeric characters, zero(s) should be added as prefixes to ensure the length of the Station ID is 6 columns.

5. FUNCTION CLASS AND AREA TYPE (FIELD 5/COLUMNS 13-14/WIDTH 2) – OPTIONAL

- This two-digit field identifies the Function Class (FC) and Area Type of a trail or roadway that the bicycle lane(s) and/or sidewalks are part of. The first digit represents the FC and second digit signifies the Area Type.
- Bicycle lanes and sidewalks can be and are often part of public streets/roadways where motorized, non-motorized, and micro-powered e-device travel occurs.
- When the bicycle travel lanes and/or sidewalks are part of a roadway, use one of the 7 FHWA Roadway Function Classes to code the road’s class.
- When bicycle travel lane(s) or other non-motorized travel lanes are not part of the roadway or public street, the bicycle lane(s) are referred to as trails or shared-use paths and code 8 should be used.
- For scenarios which are not covered by codes 1 through 8, use code 9.
- Area Type can be either urban or rural. The letter U is the code for an urban area and the letter R is the code for a rural area.

TABLE 7-33. FUNCTION CLASS & AREA TYPE CODES

Code	Description
1U	Urban--Interstate
2U	Urban--Principal Arterial – Other Freeways and Expressways
3U	Urban--Principal Arterial – Other
4U	Urban--Minor Arterial
5U	Urban--Major Collector
6U	Urban--Minor Collector
7U	Urban--Local
8U	Urban--Trail or Shared-Use Path (independent alignment)
9U	Urban--Other Facility Type
1R	Rural--Interstate

2R	Rural--Principal Arterial – Other Freeways and Expressways
3R	Rural--Principal Arterial – Other
4R	Rural--Minor Arterial
5R	Rural--Major Collector
6R	Rural--Minor Collector
7R	Rural--Local
8R	Rural--Trail or Shared-Use Path (independent alignment)
9R	Rural--Other Facility Type

6. TRAIL DIRECTION OR ROADWAY DIRECTION (FIELD 6/COLUMN 15/WIDTH 1) – OPTIONAL

- This one-digit field identifies the trail direction or roadway direction (when the bicycle lane(s) or sidewalks are part of the roadway).
- The direction of a roadway can be one of two directional scenarios: one-way or two-way.
- For a one-way facility (e.g., a one-way street), the possible directions are north (N), northeast (NE), east (E), southeast (SE), south (S), southwest (SW), west (W), or northwest (NW).
- For a two-way facility (e.g., a two-way street), the possible directions are North-South, East-West, Northeast-Southwest, or Northwest-Southeast.
- All trails are two-way facilities and should use either codes 0 or 9.

TABLE 7-34. TRAIL, ROADWAY, OR OTHER FACILITY DIRECTION CODES

Directional Scenario	Code	Description
Two-way	0	East-West or Northwest-Southeast
One-way	1	North
One-way	2	Northeast
One-way	3	East
One-way	4	Southeast
One-way	5	South
One-way	6	Southwest
One-way	7	West
One-way	8	Northwest
Two-way	9	North-South or Northeast-Southwest

7. WHERE THE COUNTED TRAVEL OCCURS (FIELD 7/COLUMN 16/WIDTH 1) – OPTIONAL

- This field indicates on which side of the roadway the actual count occurs. Counts can occur on one side of the roadway (i.e., the right side or the left side), on both sides of the roadway or perpendicular to the roadway.
- Counts taken on one side of the roadway can be determined by the following instructions.

- For a one-way facility: when facing in the direction of the facility, the right-hand side of the facility is defined as “right” and the left-hand side is termed “left.”
- For a two-way facility: when facing in the direction of the first directional word, the right-hand side of the facility is defined as “right” and the left-hand side is termed “left.”
 - Example: Given a two-way East-West facility, the first directional word is “East”. Therefore, when facing in the East direction, the right-hand side of the facility is defined as “right” and the left-hand side is termed “left.”
- Counts taken on trails should use code 3.

TABLE 7-35. WHERE THE COUNTED TRAVEL OCCURS CODES

Code	Description
1	The count is taken on the right side of the roadway
2	The count is taken on the left side of the roadway
3	The count is taken on a trail, or the count is taken on both sides of the roadway
4	The count is taken perpendicular to the roadway (i.e., crossing the street)

8. DIRECTION OF BICYCLE/PEDESTRIAN MOVEMENT (FIELD 8/COLUMN 17/WIDTH 1) – REQUIRED

- This field indicates the bicycles/pedestrians travel direction, relative to the trail or roadway direction.
- If the count data being reported is direction specific (i.e., individual directional counts are being collected creating two separate datasets) and both Station Records are using the same Station ID. Then the values for the Direction of Bicycle/Pedestrian Movement field in each record must be coded differently.
 - Example: A counting site located on a two-way East-West facility is monitoring travel on both the eastbound and westbound bicycle lanes. If the gathered count data is to be reported as individual directional counts (i.e., two separate datasets). Then the eastbound bicycle lane should be coded with a 1 and the westbound bicycle lane should be coded with a 2 because the direction of the facility is east. In a two-way East-West facility, the first directional word is “East”, which determines the direction of the facility.
- If the count data being reported is not direction specific (i.e., combined directional counts are being collected and all counts entered into one dataset) use code 3. In this case there will only be one Station Record.
 - Example: A counting site located on a two-way East-West facility is monitoring travel on a sidewalk with eastbound and westbound pedestrian traffic. If the gathered count data is to be reported as combined directional counts (i.e., all counts entered into one dataset) or if initially collected by direction and then combined into one data set (for example, row n for direction 1, row n+1 for direction 2) then the direction of pedestrian movement should be coded with a 3 since counts in both directions are being collected and combined.
- For Station Records reporting individual directional counts the unique direction codes in Field 8 of the Station Record must match the unique direction codes in Field 9 of the Count Record.

TABLE 7-36. DIRECTION OF BICYCLE & PEDESTRIAN MOVEMENT CODES

Code	Description
1	Bicycles/pedestrians traveling in the direction of the facility
2	Bicycles/pedestrians traveling in the opposite direction of the facility

3	Bicycles/pedestrians travelling in both directions
4	Bicycles/pedestrians travelling at an intersection
5	Bicycles/pedestrians crossing the facility from left to right when faced in the direction of the facility
6	Bicycles/pedestrians crossing the facility from right to left when faced in the direction of the facility.

9. FURTHER TRAVEL LOCATION INDICATOR (FIELD 9/COLUMN 18/WIDTH 1) – OPTIONAL

- The further travel location indicator describes additional information related to the counting site. Use one of the codes below.

TABLE 7-37. FURTHER TRAVEL LOCATION INDICATOR CODES

Code	Description
0	Trail or Shared-Use Path (independent alignment)
1	Shared lane (bicyclist traveling in the same lane as motorized vehicles)
2	Crosswalk
3	Sidewalk
4	Striped bicycle lane(s) with no physical barrier separating it from motorized traffic
5	Bicycle lane(s) with physical barrier separating it from motorized traffic lane
6	Overpass (example pedestrian and or bicycle bridge)
7	Underpass (example pedestrian and or bicycle tunnel)
8	General area (example city square or plaza)

10. INTERSECTION (FIELD 10/COLUMN 19/WIDTH 1) – OPTIONAL

- Indicates whether the count is taken at an intersection and if so whether it is a roundabout or not. Use one of the codes below.

TABLE 7-38. INTERSECTION CODES

Code	Description
0	For a count not taken at an intersection
1	For a count taken at an intersection, but not an intersection with a roundabout
2	For a count taken at an intersection with a roundabout

11. TYPE OF COUNT (FIELD 11/COLUMN 20/WIDTH 1) – REQUIRED

- Indicates what type of traveler is being counted. Use one of the codes below.

TABLE 7-39. TYPE OF COUNT CODES

Code	Description
0	Animals not listed below
1	Pedestrians only
2	Bicycles only

3	Equestrians only
4	Person in wheelchair only
5	Pedestrians using assistive devices such as, skates, skateboard, Segway or hoverboards
6	All-terrain vehicles on a trail such as a snowmobile or some form of ATV
7	Bicycle and pedestrians only (the sum of codes 1 and 2)
8	All non-motorized traffic (the sum of codes 1 through 5)
9	All traffic using the facility (the sum of codes 1 through 6)

12. METHOD OF COUNTING (FIELD 12/COLUMN 21/WIDTH 1) – OPTIONAL

- Indicates the method used to conduct the count. Use one of the codes below.

TABLE 7-40. METHOD OF COUNTING CODES

Code	Description
1	For a count taken by Human Observation and typically done for only a few hours
2	For a count taken at a Temporary Counting Site using a portable counting station and typically done for several days or a couple weeks
3	For a count taken at a Permanent Counting Site using a continuous counting station and always done 24/7 365 days a year

13. TYPE OF SENSOR (FIELD 13/COLUMN 22/WIDTH 1) – OPTIONAL

- Indicates the specific sensor technology used to conduct the count. Use one of the codes below.

TABLE 7-41. TYPE OF SENSOR CODES

Code	Description
1	Video Image with Manual Reduction at a later time
2	Active Infrared (emits an infrared beam to a receiver)
3	Pressure sensor/mat
H	Human Observation
I	Passive Infrared (captures radiation emitted by surrounding objects)
K	Laser/Lidar
L	Inductive Loop
M	Magnetometer
P	Piezoelectric
Q	Quartz Piezoelectric
R	Air Tubes
S	Sonic/Acoustic
T	Tape Switch
U	Ultrasonic

V	Video Image with Automated or Semi-automated Reduction
W	Microwave Radar
X	Radio Wave Radar
Z	Other Sensor Type

14. YEAR OF DATA (FIELD 14/COLUMNS 23-26/WIDTH 4) – OPTIONAL

- Indicates the four-digit year in which the counts were taken.

15 - 19. FACTOR GROUPS (FIELDS 15-19/COLUMNS 27-31/WIDTH 4) – OPTIONAL

- The Factor Group fields provide a total of five single digit fields that list the identifiers used to factor the count provided. The values in these fields are not the factors themselves, but simply identifiers of the Factor Groups used. The factors are used by agencies collecting the counts to convert Temporary Counting Site data to estimates of daily travel or annual travel.
- In the case of Permanent Counting Sites, these identifiers describe which Factor Group the 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/WIDTH 4) – OPTIONAL

- Indicates the primary purpose of the data collection. If the data serves multiple purposes, select the purpose considered the most important or the greatest impetus for establishing the data collection location.

TABLE 7-42. PRIMARY COUNT PURPOSE CODES

Code	Method of Counting
E	Enforcement purposes
L	Facility design purposes
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

21. POSTED SPEED LIMIT (FIELD 21/COLUMNS 33-34/WIDTH 2) – OPTIONAL

- The 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.

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

- This field is used to code the four-digit year the count station was established.

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

- This field is used to code the four-digit year the count station was discontinued.
- Discontinued count stations are Station IDs permanently retired due to a facility being realigned, or a permanent counter being removed. When this occurs the corresponding Station Record(s) should be updated in TMAS with the final year of operation filled in.

24. NATIONAL HIGHWAY SYSTEM (FIELD 24/COLUMN 43/WIDTH 1) – OPTIONAL

- Indicate with a Y (for yes) or N (for 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.

25. LATITUDE (FIELD 25/COLUMNS 44-51/WIDTH 8) – REQUIRED

- Latitude refers to the geolocation of the nonmotorized counting site in decimal degree format.
- The latitude needs to be reported to 6 decimal places.
- The latitude has a total of 8 allocated digits (columns) in length.
- The latitude is based on the World Geodetic System 1984 (WGS84) defined and maintained by the US National Geospatial-Intelligence Agency. All US satellite-based survey, navigation, and mapping systems are based on the WGS84.
- All US locations except American Samoa are in the northern hemispheres with a positive latitude as XX.XXXXXX degrees. For example, the U.S. Capital Visitor Center has a latitude of 38.889601 degrees. The entry for this location should be coded as 38889601, with the period removed. American Samoa has a latitude of -14.271012 degrees. The entry for this location should be coded as 14271012, with both the period and negative sign removed.

26. LONGITUDE (FIELD 26/COLUMNS 52-60/WIDTH 9) – REQUIRED

- Longitude refers to the geolocation of the nonmotorized counting site in decimal degree format.
- The longitude needs to be reported to 6 decimal places.
- The longitude has a total of 9 allocated digits (columns) in length.
- The longitude is based on the World Geodetic System 1984 (WGS84) defined and maintained by the US National Geospatial-Intelligence Agency. All US satellite-based survey, navigation, and mapping systems are based on the WGS84.
- All US locations except Guam and the Northern Mariana Islands are in the western hemisphere with a negative longitude as -XXX.XXXXXX degrees. For reporting purpose, ignore both the negative and the period signs. For example, the Golden Gate Bridge in San Francisco has a longitude of -122.478611 degrees. The entry for this location should be coded as 122478611, with both the period and negative sign removed. The US Capital Visitor Center has a longitude of -77.009056 degrees. The entry for this location should be coded as 077009056 with both the period and negative sign removed and a lead zero added making it 9 digits wide.

27. POSTED ROUTE SIGN (FIELD 27/COLUMNS 61-62/WIDTH 2) – OPTIONAL

- Indicates the type of route based on the HPMS Field Manual. Use one of the codes below.

TABLE 7-43. POSTED ROUTE SIGN CODES

Code	Description
11	Not Signed
12	Interstate
13	U.S.
14	State
15	Off-Interstate Business Marker
16	County
17	Township
18	Municipal
19	Parkway Marker or Forest Route Marker
20	U.S. Bicycle Route
21	State or Local Bicycle Route
22	None of the above

28. POSTED SIGN ROUTE NUMBER (FIELD 28/COLUMNS 63-70/WIDTH 8) – OPTIONAL

- This field is used to record the route number appearing on the posted sign of the route identified in the previous field.
- If the route number is less than 8 digits, the entry should be right justified.
- Leave this field blank if Field #27 (Posted Route Sign) is coded blank or 11. Enter 8 zeros for this field if Field #27 is coded 22.

29. LINEAR REFERENCING SYSTEM (LRS) IDENTIFICATION (FIELD 29/COLUMNS 71-130/WIDTH 60) – OPTIONAL

- This field is used to record the LRS ID.
- Recommendation – leave it blank.

30. LINEAR REFERENCING SYSTEM (LRS) LOCATION POINT (FIELD 30/COLUMNS 131-138/WIDTH 8) – OPTIONAL

- This field is used to record the LRS location point.
- Recommendation – leave it blank.

31. STATION LOCATION (FIELD 31/COLUMNS 139-188/WIDTH 50) – OPTIONAL

- This field is used to record a short (50 character) English text description of the location (i.e., site name). It can also be used to indicate direction, type of count, the nearest major intersecting route, state border, 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.

32. OTHER NOTES (FIELD 32/COLUMNS 189-239/WIDTH 51) – OPTIONAL

- This field is used to record any special circumstances and may contain any printable character. It is limited to 51 characters.
- This field (or Field #31 “Station Location”) may also be used to provide additional information about how the “Direction of Route” was determined.
- If Field #11 (Type of Count) is coded as 8 (other animals), indicate the type(s) of animals here.
- This field can also be used 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). It can also be used explain the specific use of Factor Groups 1 through 5.

7.10 NONMOTORIZED COUNT RECORD FORMAT (FIXED WIDTH OR PIPE DELIMITED)

Introduction

Two types of records are needed for submitting Nonmotorized data to FHWA's TMAS system.

- Nonmotorized Station Record - Section 7.9
- Nonmotorized Count Record - Section 7.10

The Nonmotorized Count Record is used to report the actual count data to FHWA. The Count Record provides count data and other information related to the count, which can be used in conjunction with the Station Record for specific data analysis. To submit a Count Record to FHWA's TMAS, a corresponding Station Record must first be uploaded and approved in TMAS. If a Nonmotorized Station Record has not been uploaded into TMAS, then the Count Record will not be processed. A Count Record file is a text file often designated by the .txt file extension. Before uploading the file to TMAS, the file extension should be renamed to .cnm where cnm stands for counting non-motorized.

Below is an example Count Record file naming convention.

Count123abc.CNM

Summary

The Count Record consists of the data fields listed in Table 7-44. These data fields need to be organized by the fixed width column format. Any misalignment of the data field will cause data errors, which can lead to misinterpretation and the rejection of the data.

A Count Record allows nonmotorized data items to be reported at a variety of time intervals. The following table lists the data items that are required and optional when reporting nonmotorized counts.

Table 7-44. SUMMARY OF THE NONMOTORIZED COUNT RECORD FIELDS

Field	Columns	Width	Description	Type	Importance
1	1	1	Nonmotorized Count Record Identifier (N)	Alphanumeric	Required
2	2-3	2	State FIPS Code	Alphanumeric	Required
3	4-6	3	County FIPS Code	Alphanumeric	Optional
4	7-12	6	Station ID	Alphanumeric	Required
5	13-20	8	Latitude	Integer	Optional
6	21-29	9	Longitude	Integer	Optional
7	30	1	Trail Direction or Roadway Direction	Alphanumeric	Optional
8	31	1	Where the Count Occurs	Alphanumeric	Optional
9	32	1	Direction of Bicycle/Pedestrian Movement	Alphanumeric	Required
10	33	1	Further Travel Location Indicator	Alphanumeric	Optional
11	34	1	Intersection	Alphanumeric	Optional
12	35	1	Type of Count	Alphanumeric	Required
13	36	1	Helmet Usage	Alphanumeric	Optional
14	37	1	Gender	Alphanumeric	Optional
15	38	1	Age	Alphanumeric	Optional

16	39	1	Type of Sensor	Alphanumeric	Optional
17	40	1	Precipitation	Alphanumeric	Optional
18	41-43	3	High Temperature	Integer	Optional
19	44-46	3	Low Temperature	Integer	Optional
20	47-50	4	Year of Count	Integer	Required
21	51-52	2	Month of Count	Integer	Required
22	53-54	2	Day of Count	Integer	Required
23	55-58	4	Count Start Time (Military format)	Alphanumeric	Required
24	59-60	2	Count Interval (05,10,15,20,30,60) minutes	Alphanumeric	Required
25-xxx	61-xxx	5	Counts for each interval (fields 25 through 312) as appropriate/column (61 onward to 1550) with each count data field width of 5 columns	Integer	Required

Details

1. NONMOTORIZED COUNT RECORD IDENTIFIER (FIELD 1/COLUMN 1/WIDTH 1) - REQUIRED

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

2. STATE FIPS CODE (FIELD 2/COLUMNS 2-3/WIDTH 2) - REQUIRED

- Enter the two-digit state FIPS code using the table below.

TABLE 7-45. STATE NAME & FIPS CODES

Name	FIPS	Name	FIPS	Name	FIPS
Alabama	01	Louisiana	22	Oklahoma	40
Alaska	02	Maine	23	Oregon	41
Arizona	04	Maryland	24	Pennsylvania	42
Arkansas	05	Massachusetts	25	Rhode Island	44
California	06	Michigan	26	South Carolina	45
Colorado	08	Minnesota	27	South Dakota	46
Connecticut	09	Mississippi	28	Tennessee	47
Delaware	10	Missouri	29	Texas	48
District of Columbia	11	Montana	30	Utah	49
Florida	12	Nebraska	31	Vermont	50
Georgia	13	Nevada	32	Virginia	51
Hawaii	15	New Hampshire	33	Washington	53
Idaho	16	New Jersey	34	West Virginia	54
Illinois	17	New Mexico	35	Wisconsin	55
Indiana	18	New York	36	Wyoming	56

Iowa	19	North Carolina	37		
Kansas	20	North Dakota	38		
Kentucky	21	Ohio	39		

3. COUNTY FIPS CODE (FIELD 3/COLUMNS 4-6/WIDTH 3) - OPTIONAL

- The County FIPS code ranges from 1 to 3 digits. If a county has only one or two digits, add zero(s) in front of the code to ensure a total of 3 digits.
- County FIPS codes for all US counties are maintained by the US Census Bureau and can be found online at transition.fcc.gov/oet/info/maps/census/fips/fips.txt

4. STATION ID (FIELD 4/COLUMNS 7-12/WIDTH 6) - REQUIRED

- The Station ID is a six-character identifier for a counting location, per counting device, and/or travel direction.
- Enter the same Station ID that was used in the corresponding Station Record.

5. LATITUDE (FIELD 5/COLUMNS 13-20/WIDTH 8) – OPTIONAL

- Repeated data field from the corresponding Station Record file.
- Recommendation – leave it blank.

6. LONGITUDE (FIELD 6/COLUMNS 21-29/WIDTH 9) - OPTIONAL

- Repeated data field from the corresponding Station Record file.
- Recommendation – leave it blank.

7. TRAIL DIRECTION OR ROADWAY DIRECTION (FIELD 7/COLUMN 30/WIDTH 1) - OPTIONAL

- Repeated data field from the corresponding Station Record file.
- Recommendation – leave it blank.

8. WHERE THE COUNT OCCURS (FIELD 8/COLUMN 31/WIDTH 1) - OPTIONAL

- Repeated data field from the corresponding Station Record file.
- Recommendation – leave it blank.

9. DIRECTION OF BICYCLE/PEDESTRIAN MOVEMENT (FIELD 9/COLUMN 32/WIDTH 1) - REQUIRED

- Enter the same value or values that were used in the corresponding Station Record file.

10. FURTHER TRAVEL LOCATION INDICATOR (FIELD 10/COLUMN 33/WIDTH 1) - OPTIONAL

- Repeated data field from the corresponding Station Record file.
- Recommendation – leave it blank.

11. INTERSECTION (FIELD 11/COLUMN 34/WIDTH 1) - OPTIONAL

- Repeated data field from the corresponding Station Record file.
- Recommendation – leave it blank.

12. TYPE OF COUNT (FIELD 12/COLUMN 35/WIDTH 1) - REQUIRED

- Indicates the type of traveler being counted. Use one of the codes from the table below.

TABLE 7-46. TYPE OF COUNT CODES

Code	Description
0	Animals not listed below
1	Pedestrians only
2	Bicycles only
3	Equestrians only
4	Person in wheelchair only
5	Pedestrians using assistive devices such as, skates, skateboard, Segway or hoverboards
6	All-terrain vehicles on a trail such as a snowmobile or some form of ATV
7	Bicycle and pedestrians only (the sum of codes 1 and 2)
8	All non-motorized traffic (the sum of codes 1 through 5)
9	All traffic using the facility (the sum of codes 1 through 6)

13. HELMET USAGE (FIELD 13/COLUMN 36/WIDTH 1) - OPTIONAL

- Indicates whether the traveler was using a Helmet. Use one of the codes from the table below.

TABLE 7-47. HELMET USAGE CODES

Code	Description
	Identification of wearing helmet or not is not pursued. Leave code blank
N	Travelers without wearing helmet
H	Travelers wearing helmet
I	Indeterminate (observer could not identify)

14. GENDER (FIELD 14/COLUMN 37/WIDTH 1) - OPTIONAL

- Indicates the Gender of the traveler. Use one of the codes from the table below.

TABLE 7-48. GENDER CODES

Code	Description
	Leave code blank – all genders (no identification)
M	Perceived male
F	Perceived female
I	Indeterminate (observer could not identify)

15. AGE (FIELD 15/COLUMN 38/WIDTH 1) - OPTIONAL

- Indicates the Age of the traveler. Use one of the codes from the table below.

TABLE 7-49. AGE CODES

Code	Description
	Leave code blank all ages (no age identification)
C	Child (pre-teen)
A	Adult (teen or older)
I	Indeterminate (observer could not identify)

16. TYPE OF SENSOR (FIELD 16/COLUMN 39/WIDTH 1) - OPTIONAL

- Indicates the type of sensor being used at the counting site. Use one of the codes from the table below.

TABLE 7-50. TYPE OF SENSOR CODES

Code	Description
1	Video Image with Manual Reduction at a later time
2	Active Infrared (emitted infrared beam and receiver)
3	Pressure sensor/mat
H	Human Observation
I	Passive Infrared (infrared radiation emitted by surrounding objects. E.g., infrared camera)
K	Laser/Lidar
L	Inductive Loop
M	Magnetometer
P	Piezoelectric
Q	Quartz Piezoelectric
R	Air Tubes
S	Sonic/Acoustic
T	Tape Switch
U	Ultrasonic
V	Video Image with Automated or Semi-automated Reduction
W	Microwave Radar
X	Radio Wave Radar
Z	Other Sensor Type

17. PRECIPITATION (FIELD 17/COLUMN 40/WIDTH 1) - OPTIONAL

- Indicate whether measurable precipitation fell during any count interval in this record. Code with a “Y” for yes or an “N” for no.

18. HIGH TEMPERATURE (FIELD 18/COLUMNS 41-43/WIDTH 3) - 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” at the station is not known, the local mean high temperature for the time period (e.g., daily, weekly, monthly, seasonally) will suffice.

19. LOW TEMPERATURE (FIELD 19/COLUMN 44-46/WIDTH 3) - 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” at the station is not known, the local mean low temperature for the time period (e.g., daily, weekly, monthly, seasonally) will suffice.

20. YEAR OF COUNT (FIELD 20/COLUMNS 47-50/WIDTH 4) - REQUIRED

- Code the four-digit year in which the count data was collected.

21. MONTH OF COUNT (FIELD 21/COLUMNS 51-52/WIDTH 2) - REQUIRED

- Code the two-digit month in which the count data was collected.

22. DAY OF COUNT (FIELD 22/COLUMNS 53-54/WIDTH 2) - REQUIRED

- Code the two-digit day in which the count data was collected.

23. COUNT START TIME FOR THIS RECORD (FIELD 23/COLUMN 55-58/WIDTH 4) - REQUIRED

- Record the local time in effect on the date of the count using the 24-hour military format (always use 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.

24. COUNT INTERVAL (FIELD 24/COLUMNS 59-60/WIDTH 2) - REQUIRED

- 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).

25. COUNTS FOR EACH INTERVAL (FIELDS 25-312) AS NEEDED (COLUMN 61 UP TO 1550) WITH EACH COUNT DATA FIELD A WIDTH OF (5 COLUMNS) - REQUIRED

- These fields are used to record the actual count data observed during each interval. The width of the data is 5 columns (maximum 99999)
- Right justify the integer being reported and blank fill leading columns as needed.
- An all-blank field is considered "missing" data. 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).
- If a counter was present and operating but no subjects were observed, a single zero, right justified, should be entered.

- The following 5 tables illustrates how counts are recorded for 5 counting intervals (05, 10, 15, 20, 30 and 60).

Count Record Examples

Layout with 60 Minutes Count Interval

Data Field #	1	...	22	23	24	25	26	...	47	48
Column Ranges	1	...	53-54	55-58	59-60	61-65	66-70	...	171-175	176-180
Data Field Name	Nonmotorized Count Indicator	...	Day of Count	Count Start Time	Count Interval	Interval 1	Interval 2	...	Interval 23	Interval 24
	N	...	15	0800	60	12	21	...	1	1
	N	...	16	0800	60	3	21	...	2	3
	N	...	17	0800	60	12	56	...	12	26

Layout with 30 Minutes Count Interval

Data Field #	1	...	22	23	24	25	26	...	71	72
Column Ranges	1	...	53-54	55-58	59-60	61-65	66-70	...	291-295	296-300
Data Field Name	Nonmotorized Count Indicator	...	Day of Count	Count Start Time	Count Interval	Interval 1	Interval 2	...	Interval 47	Interval 48
	N	...	15	0800	30	12	21	...	1	1
	N	...	16	0800	30	3	21	...	2	3
	N	...	17	0800	30	12	56	...	12	26

Layout with 20 Minutes Count Interval

Data Field #	1	...	22	23	24	25	26	...	95	96
Column Ranges	1	...	53-54	55-58	59-60	61-65	66-70	...	411-415	416-420
Data Field Name	Nonmotorized Count Indicator	...	Day of Count	Count Start Time	Count Interval	Interval 1	Interval 2	...	Interval 71	Interval 72
	N		15	0800	20	12	12		8	3
	N	...	16	0800	20	3	9	...	2	3
	N	...	17	0800	20	12	56	...	12	26

Layout with 15 Minutes Count Interval

Data Field #	1	...	22	23	24	25	26	...	119	120
Column Ranges	1	...	53-54	55-58	59-60	61-65	66-70	...	531-535	536-540
Data Field Name	Nonmotorized Count Indicator	...	Day of Count	Count Start Time	Count Interval	Interval 1	Interval 2	...	Interval 95	Interval 96
	N	...	15	0800	15	12	21	...	1	1
	N	...	16	0800	15	3	21	...	2	3
	N	...	17	0800	15	12	56	...	12	26

Layout with 10 Minutes Count Interval

Data Field #	1	...	22	23	24	25	26	...	165	166
Column Ranges	1	...	53-54	55-58	59-60	61-65	66-70	...	771-775	776-780
Data Field Name	Nonmotorized Count Indicator	...	Day of Count	Count Start Time	Count Interval	Interval 1	Interval 2	...	Interval 143	Interval 144
	N	...	15	0800	10	12	21	...	1	1
	N	...	16	0800	10	3	21	...	2	3
	N	...	17	0800	10	12	56	...	12	26

Layout with 5 Minutes Count Interval

Data Field #	1	...	22	23	24	25	26	...	311	312
Column Ranges	1	...	53-54	55-58	59-60	61-65	66-70	...	1491-1495	1496-1550
Data Field Name	Nonmotorized Count Indicator	...	Day of Count	Count Start Time	Count Interval	Interval 1	Interval 2	...	Interval 287	Interval 288
	N	...	15	0800	05	12	21	...	1	1
	N	...	16	0800	05	3	21	...	2	3
	N	...	17	0800	05	12	56	...	12	26



U.S. Department of Transportation
Federal Highway Administration

U.S. Department of Transportation
Federal Highway Administration
Office of Highway Policy Information
1200 New Jersey Ave., SE
Washington, D.C. 20590
<https://www.fhwa.dot.gov/policyinformation>
August 2024
FHWA-PL-24-020