

Ohio Department of Transportation

Highway Functional Classification System

Concepts, Procedures and Instructions

Introduction

This document provides recommended guidance for assigning functional classification to roadways and streets within Ohio. It is based on *Highway Functional Classification: Concepts, Criteria and Procedures, 2013 Edition* published by the Federal Highway Administration (FHWA), which can be downloaded from the following link:

www.fhwa.dot.gov/planning/processes/statewide/related/highway_functional_classifications

The Purpose for Classifying Highways

Highway functional classification is used to determine which roads, streets and highways are eligible for federal transportation funds. It is used to establish design criteria for various roadway features, and also serves as a management tool to measure a route’s importance in project selection and program management.

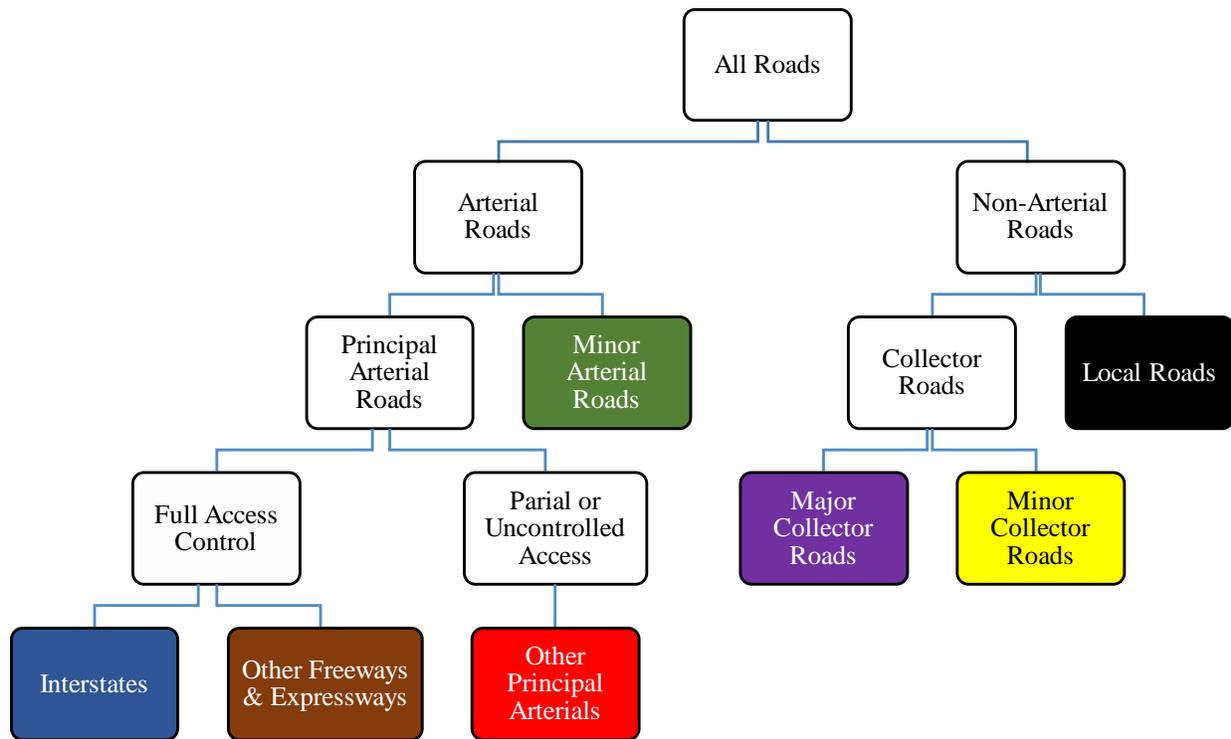
Highway Functional Classification Concepts

Most vehicle travel occurs through a network of interdependent roadways, with each roadway segment moving traffic through the system towards destinations. The concept of functional classification defines the role a particular roadway segment plays in serving this flow of traffic. Roadways are assigned to one of the seven (7) classifications within a hierarchy, as shown in Table 1 and Figure 1 below, according to the character of travel service each roadway provides. Note in both the table and graphic each roadway classification is color-coded. These colors are used on ODOT highway functional classification maps for easy identification.

Table 1: Highway Functional Classification Identification

#	Description
Principal Arterial Roads	
01	Interstates
02	Other Freeways or Expressways
03	Other Principal Arterial Roads
Minor Arterial Roads	
04	Minor Arterial Roads
Collector Roads	
05	Major Collector Roads
06	Minor Collector Roads
Local Roads	
07	Local Roads

Figure 1: Highway Functional Classification Hierarchy



Federal Funding Eligibility

To qualify for federal funding a roadway must be classified as a Minor Collector and above in urban areas and a Collector and above in rural areas, although there is a provision in federal law - 23 USC 133 (d)(3) - which permits spending up to 15% of Surface Transportation Program (STP) funds sub-allocated to rural areas less than 5,000 population on Minor Collectors. A roadway eligible for federal assistance is commonly known as a federal aid route.

Access versus Mobility

Roads and highways serve two primary transportation functions – mobility and access. While these two functions lie at opposite ends of the continuum of roadway function, most roads provide some combination of each, so it is a roadway’s PRIMARY purpose which defines the classification to which it belongs. However, other factors such as trip length, speed limit, volume and traffic mix also need to be considered

- Roadway mobility function: Focuses on traffic flow and provides few opportunities for entry and exit.
- Roadway accessibility function: Focuses on and provides many opportunities for entry and exit, at the expense of interrupted traffic flow.

System Continuity

Because the roadway system is an interconnected network of facilities channeling traffic in both directions from Arterials to Collectors, then to Locals and back again, the concept of continuity is important. Basic tenets of the functional classification network is connectivity and continuity - generally speaking, each federal aid route should connect to another federal aid route to create a closed, connected network and a roadway of a higher classification should not connect to a single roadway of lower classification. It is permissible for a higher classified road to connect to two or more roads with lower classification which combined provide comparable service; and there is an exception to the connectivity guideline for a Collector road if it serves a major destination, and for topological or other constraining reason(s) cannot connect to another Collector or higher classified roadway.

Roadway Definitions and Characteristics

As mentioned previously, roadways are categorized as Principal Arterials, Minor Arterials, Collectors and Local Roads. Additionally, Principal Arterials and Collectors are further subcategorized, creating a total of 7 classifications or sub-classifications. The definition and characteristics of each classification are discussed below.

Principal Arterials

Interstates (Classification 01) - Interstates are the highest classification of Arterials and are designed and constructed with mobility and long-distance travel in mind. Determining the functional classification designation of many roadways can be somewhat subjective, but with the Interstate category of Arterials, there is no ambiguity. Roadways in this functional classification category are officially designated as Interstates by the U.S. Secretary of Transportation, and all routes that comprise the Dwight D. Eisenhower National System of Interstate and Defense Highways belong to the Interstate functional classification category.

Other Freeways and Expressways (Classification 02) - Roadways in this functional classification category look very similar to Interstates. While there can be regional differences in the use of the terms 'freeway' and 'expressway', for the purpose of functional classification the roads in this classification have directional travel lanes, are usually separated by some type of physical barrier, and access and egress points are limited to on/off ramp locations or a very limited number of at-grade intersections. Like Interstates, these roadways are designed and constructed to maximize mobility and do not directly serve abutting land uses.

Other Principal Arterials (Classification 03) - These roadways usually serve cities and metropolitan areas, but also can provide a high degree of mobility to and throughout rural areas. Unlike Interstates, Freeways, and Expressways, Other Principal Arterials can directly service abutting land uses via driveways and at-grade intersections.

Principal Arterial Characteristics are identified for urban and rural areas in Table 2 below:

Table 2: Principal Arterial Urban and Rural Characteristics

Urban	Rural
<ul style="list-style-type: none"> • Serve major activity centers, highest traffic volume corridors and longest trip demands • Carry high proportion of total urban travel on minimum of mileage • Interconnect and provide continuity for major rural corridors to accommodate trips entering and leaving urban area and movements through the urban area • Serve demand for intra-area travel between the central business district and outlying residential areas 	<ul style="list-style-type: none"> • Serve corridor movements having trip length and travel density characteristics indicative of substantial statewide or interstate travel • Connect all or nearly all Urbanized Areas and a large majority of urban areas with more than 25,000 population • Provide an integrated network of continuous routes without stub connections (dead ends)

Minor Arterials

Minor Arterials (Classification 04) provide service for trips of moderate length and offer connectivity to the higher Principal Arterial system. In an urban context, they interconnect and augment the higher Principal Arterial system and provide intra-community continuity.

In rural settings, Minor Arterials should be identified and spaced at intervals consistent with population density, so that all developed areas are within a reasonable distance of a higher level Principal Arterial. Additionally, Minor Arterials in rural areas are typically designed to provide relatively high overall travel speeds, with minimum interference to through movement.

Minor Arterial Characteristics are identified for urban and rural areas in Table 3 below:

Table 3: Minor Arterial Urban and Rural Characteristics

Urban	Rural
<ul style="list-style-type: none"> • Interconnect and augment the higher-level Arterials • Serve trips of moderate length at a somewhat lower level of travel mobility than Principal Arterials • Distribute traffic to smaller geographic areas than those served by higher-level Arterials • Provide more land access than Principal Arterials without penetrating identifiable neighborhoods • Provide urban connections for Rural Collectors 	<ul style="list-style-type: none"> • Link cities and larger towns (and other major destinations such as resorts capable of attracting travel over long distances) and form an integrated network providing interstate and inter-county service • Be spaced at intervals, consistent with population density, so that all developed areas within the State are within a reasonable distance of an Arterial roadway • Provide service to corridors with trip lengths and travel density greater than those served by Rural Collectors and Local Roads and with relatively high travel speeds and minimum interference to through movement

Major and Minor Collectors

Collectors serve the critical role of gathering and channeling traffic from Local Roads to the Arterial network. Collectors are broken down into two categories: Major Collectors (Classification 05) and Minor Collectors (Classification 06). The determination of whether a roadway is a Major Collector or Minor Collector is frequently one of the biggest challenges in

roadway functional classification. The distinctions are often subtle. Generally, Major Collector routes are longer; have fewer connecting driveways; have higher posted speed limits; are spaced at greater intervals; have higher annual average traffic volumes; and may have more travel lanes than Minor Collector routes.

Collector Road Characteristics are identified for urban and rural areas in Table 4 below:

Table 4: Collector Road Urban and Rural Characteristics

MAJOR COLLECTORS	
Urban	Rural
<ul style="list-style-type: none"> • Serve both land access and traffic circulation in higher density residential, and commercial/industrial areas • Penetrate residential neighborhoods, often for significant distances • Distribute and channel trips between Local Roads and Arterials, usually over a distance of greater than three-quarters of a mile • Operating characteristics include higher speeds and more signalized intersections 	<ul style="list-style-type: none"> • Provide service to any county seat not on an Arterial route, to the larger towns not directly served by the higher systems and to other traffic generators of equivalent intra-county importance such as consolidated schools, shipping points, county parks and important mining and agricultural areas • Link these places with nearby larger towns and cities or with Arterial routes • Serve the most important intra-county travel corridors
MINOR COLLECTORS	
Urban	Rural
<ul style="list-style-type: none"> • Serve both land access and traffic circulation in lower density residential and commercial/industrial areas • Penetrate residential neighborhoods, often only for a short distance • Distribute and channel trips between Local Roads and Arterials, usually over a distance of less than three-quarters of a mile • Operating characteristics include lower speeds and fewer signalized intersections 	<ul style="list-style-type: none"> • Be spaced at intervals, consistent with population density, to collect traffic from Local Roads and bring all developed areas within reasonable distance of a Collector • Provide service to smaller communities not served by a higher class facility • Link locally important traffic generators with their rural hinterlands

Local Roads

Local Roads (Classification 07) account for the largest percentage of all roadways in terms of mileage. They are not intended for use in long distance travel due to their provision of direct access to abutting land. They are often designed to discourage through traffic. Local Roads are often classified by default. In other words, once all Arterial and Collector roadways have been identified, all remaining roadways are classified as Local Roads. Local Road characteristics are identified for urban and rural areas in Table 5 below:

Table 5: Local Road urban and Rural Characteristics

Urban	Rural
<ul style="list-style-type: none"> • Provide direct access to adjacent land • Provide access to higher systems • Carry no through traffic movement • Constitute the mileage not classified as part of the Arterial and Collector systems 	<ul style="list-style-type: none"> • Serve primarily to provide access to adjacent land • Provide service to travel over short distances as compared to higher classification categories • Constitute the mileage not classified as part of the Arterial and Collector systems

Functional Classification Emphasis

When classifying roadways the emphasis should be on function and service rather than an urban versus rural distinction. Nevertheless, the classification process is influenced by the intensity and distribution of land development patterns. Roadway classification in urban areas is typically guided by a local comprehensive planning and design process. By comparison, rural development patterns are often more diverse, if not less orderly, thereby making functional classification determinations of some rural roadways more challenging.

Functional Classification VMT and Mileage Guidelines

Most times, roadway functional classification assignment is straightforward, especially for Interstates and Local Roads. However, there can be debate between adjacent classifications, for example, in deciding whether a given roadway should be classified as a Minor Arterial or Major Collector. In such cases, the physical characteristics - lane width, shoulder width, average annual daily traffic (AADT), divided/undivided status and access control, as well as Vehicle Miles Traveled (VMT) and Mileage Extent ranges for each classification, as shown in Table 6, should be used to determine “borderline” classifications.

Table 6: Functional Classification Physical Characteristics, VMT and Mileage Guidelines

Typical Characteristics	Arterials				Collectors		Local
	Interstates	Freeways and Expressways	Principal Arterial	Minor Arterial	Major Collector	Minor Collector	
Lane Width (Feet)	12	11 - 12	11 - 12	10 - 12	10 - 12	10 - 11	8 - 10
Inside Shoulder Width (Feet)	4 - 12	0 - 6	0	0	0	0	0
Outside Shoulder Width (Feet)	10 - 12	8 - 12	8 - 12	4 - 8	1 - 6	1 - 4	0 - 2
AADT (Rural) (000's)	12 - 34	4 - 18.5	2 - 8.5	1.5 - 6	0.3 - 2.6	0.2 - 1.1	0.1 - 0.4
AADT (Urban) (000's)	35 - 129	13 - 55	7 - 27	3 - 14	1.1 - 6.3		0.1 - 0.7
Divided/Undivided	Divided	Either	Either	Undivided	Undivided	Undivided	Undivided
Access:	Fully Controlled	Partial/Full Control	Partial/Uncontrolled	Uncontrolled	Uncontrolled	Uncontrolled	Uncontrolled
Mileage/VMT Extent							
Rural System							
Mileage Extent	1% - 2%	0% - 2%	2% - 5%	3% - 7%	10% - 17%	5% - 13%	66% - 74%
VMT Extent	18% - 34%	0% - 8%	12% - 29%	12% - 19%	12% - 24%	3% - 10%	7% - 20%
Urban System							
Mileage Extent	1% - 2%	0% - 2%	4% - 5%	7% - 12%	7% - 13%	7% - 13%	67% - 76%
VMT Extent	17% - 30%	3% - 18%	17% - 29%	15% - 22%	7% - 13%	7% - 13%	6% - 24%

Functional Classification Revisions and Updates

Decennial Update – Every 10 years the highway functional classification system in Ohio is updated following the decennial census. The update is necessary to address urban boundary adjustments and changes in how roadways across the state function due to variations in travel

patterns and demand brought on by changes in land use and development, population shifts, demographics and other socio-economic factors.

Individual Revisions – Aside from the decennial update, it is also ODOT’s responsibility to ensure the statewide functional system is kept up to date, so from time to time it is necessary to revise the functional classification of an individual roadway segment, entire roadway or a group of roads to address localized changes in traffic volumes and travel patterns. This maintenance process involves ongoing coordination with local governments and officials.

Special Circumstances – Occasionally functional classification revisions are necessary to address the results of planning studies or in response to federal mandates.

Responsibilities for Initiating and Processing Functional Classification Revisions

When processing functional classification revisions, whether as a result of the decennial statewide update or an individual request, ODOT and local governments must collaborate and coordinate efforts to ensure consent. Local governments must submit requested revisions in accordance with local procedures. Metropolitan Planning Organizations (MPOs) are responsible for initiating requests for revisions within their planning area boundaries. Rural Transportation Planning Organizations (RTPOs) are responsible for initiating requests for revisions within their jurisdictions. Counties and small urban areas are responsible for initiating requests for revisions in areas outside MPO and RTPO jurisdiction, other than those on State highways and US routes. (Note: A small urban area is defined as having greater than 5,000 but less than 50,000 population). ODOT district offices are responsible for initiating requests for revisions to State highways and US routes outside MPO and RTPO jurisdictions. The Office of Program Management is responsible for coordinating ODOT’s functional classification processes and procedures. Finally, the ODOT Functional Classification Committee reviews and acts on all requests for revisions. The respective responsibilities of each of these entities are outlined below.

Metropolitan Planning Organizations (MPOs) – The MPO shall review all requests from ODOT and local jurisdictions within its planning area boundary for compliance with federal and state highway functional classification criteria and make a determination of acceptance or disapproval based on local policies and procedures. The MPO shall then forward recommended revisions with a letter of approval and supporting documentation to the office of the ODOT District in which the MPO resides for review and processing.

Rural Transportation planning Organizations (RTPOs) – The RTPO shall review all requests from ODOT and local jurisdictions within its planning area boundary for compliance with federal and state highway functional classification criteria and make a determination of acceptance or disapproval based on local policies and procedures. The RTPO shall then forward recommended revisions with a letter of approval and supporting documentation to the office of the ODOT District in which the RTPO resides for review and processing.

Counties and Small Urban Areas – Counties and small urban areas outside the planning area boundary of an MPO or RTPO may submit requests for revisions directly to the office of the ODOT District in which the county or small urban area resides in accordance with local policies

and procedures; however, it is recommended but not required that requests be submitted through the County Engineer.

ODOT District Offices – ODOT District offices initiate requests for revisions to State highways and US routes outside the planning area boundaries of MPOs and RTPOs; coordinate requests for revisions to State highways and US routes within MPO planning area boundaries and RTPO jurisdiction with the appropriate MPO or RTPO; and review requests from MPOs, RTPOs, counties and small urban areas within the District. The District shall review requests for revisions from local agencies for compliance with highway functional classification concepts and criteria before forwarding said requests to the Office of Program Management within the Division of Planning.

Office of Program Management – The Office of Program Management is responsible for implementing ODOT’s highway functional classification policies and procedures; coordinating requests for revisions submitted by local agencies through the District offices with the ODOT Functional Classification Committee; and preparing all related communications to the Federal Highway Administration (FHWA), the Functional Classification Committee, ODOT District offices and local agencies.

ODOT Functional Classification Committee – The Functional Classification Committee is represented by staff from the Office of Program Management, Office of Technical Services and FHWA. The committee coordinates with the Office of Program Management regarding all functional classification matters and reviews; and has approval authority, subject to ODOT Executive Management concurrence, for all proposed revisions to the functional classification system.

Functional Classification Revisions - Required Documentation

All requests for highway functional classification revisions must include the following:

Transmittal Cover Letter – signed by the appropriate local official or officials which identifies the subject roadway or roadways in the request for revision. The cover letter must be signed by an MPO or RTPO official for proposed revisions within an MPO or RTPO jurisdiction, and from an official with jurisdiction over a roadway in an area outside an MPO or RTPO area. Officials with jurisdiction include mayors, city administrators and city council members for municipal streets in small urban areas and county commissioners or county engineers for county and township roads in rural areas. (Note: rural areas include incorporated and unincorporated villages and municipalities less than 5,000 population).

Statement of Justification – must demonstrate a change in roadway function for existing roadways as evidenced by changes in access, travel patterns, traffic volume and vehicle mix. Must demonstrate traffic and travel characteristics for new roadways consistent with the classification requested as supported by technical analysis or studies. Changes in function for existing roadways or recommended functions for new roadways are typically driven by modifications to adjacent land use, new or removed traffic generators, altered access, and new or

relocated alignments. Functional classification revisions will not be processed if the intent is solely to secure federal funding eligibility for proposed improvements.

Map – to identify the roadway or roadways proposed for revision. ODOT produced county or urban area functional classification maps are preferred over locally produced maps.

Supporting Documentation – applicable studies and reports and evidence of local cooperation and coordination. Evidence of local cooperation and coordination is not required for requests for revisions submitted by an MPO or RTPPO. For areas outside MPO and RTPPO jurisdiction, evidence of cooperation and support could be in the form of a letter of concurrence from the county commissioners or county engineer for revisions submitted by small urban areas and vice-versa. Requests for additions of new roadways will only be considered if evidence is provided to confirm construction of said roadway will be initiated within 4 years.

Functional Classification Revision Form – The form must be submitted with each request. Multiple requests from the same MPO, RTPPO, small urban area or county can be on a single form. For an MPO or RTPPO which represents multiple counties, multiple requests must be grouped by county.

A copy of the Ohio Functional Classification Revision Form with instructions is provided as Appendix 1.

Functional Classification Revision Process

The functional classification revision process is briefly summarized as follows:

- Local entity submits a proposed revision, with supporting documentation to the ODOT District office.
- ODOT district office reviews a local request for revision and forwards same to Office of Program Management along with a recommended course of action.
- ODOT Office of Program Management coordinates the review of a proposed revision or revisions with the ODOT Functional Classification Committee.
- ODOT Functional Classification Committee reviews a proposed revision or revisions and approves or denies said revision or revisions, subject to ODOT Executive Management concurrence.
- ODOT Office of Program Management forwards Functional Classification Committee approved revisions to FHWA for concurrence and conversely, notifies the appropriate District Office if a proposed revision is not approved.
- ODOT Office of Program Management notifies the ODOT Functional Classification Committee, District Office and local agency of FHWA approval action. Revised functional classification becomes effective immediately with FHWA approval.

APPENDIX 1

Functional Classification Revision From and Instructions

Ohio Functional Classification Form Instructions

Column Heading Definitions

- SR – State Route Number
- CR/TR – County or Township Route Number
- Roadway Name – Street name in addition to route number
- Functional Classification Old – Current classification
- Functional Classification New – Proposed Classification
- U – Urban
- R – Rural

Beginning and Ending Termini – Describe the route direction from south to north or west to east. For state routes, include beginning and ending log points.

Mileage Revisions

- Add Miles – For a new roadway, the number of miles of new classification to be added to inventory. For revisions, the number of revised miles of the new classification to be added to inventory.
- Delete Miles – For an abandoned and orphaned roadway, the number of miles to be deleted from inventory. For revisions, the number of revised miles of the existing classification to be reduced.
- A request for revisions must include both added miles for the new classification and deleted miles for the existing classification.