

Summary of Functional Classification Guidelines¹

Concepts, Definition, and System Characteristics

Concept: Functional classification is the process by which streets and highways are grouped in classes (systems) according to the character of service provided.

- Arterials provide direct, relatively high speed service for longer trips and large traffic volumes. Mobility is emphasized, and access is limited.
- Collectors provide a bridge between arterials and local roads. Collectors link small towns to arterials as well as collect traffic from local roads.
- Local roads provide direct access to individual homes and farms.

Rural and urban transportation systems have different characteristics and needs, and thus the roads in each type of system are evaluated and classified according to different criteria.

Area definition: The Bureau of the Census defines an area as urban if it is densely populated, and it is not within an urbanized area. Densely populated is defined as a population density greater than 1,000 people per square mile in a core or cores of census blocks with surrounding census blocks of at least 500 people per square mile. An urbanized area is defined as a densely populated area exceeding a population of 50,000. Minnesota has seven urbanized areas, each of which is evaluated as a whole instead of as groups of individual urban areas. Minnesota's seven urbanized areas are Duluth/Superior, Fargo/Moorhead, Grand Forks/East Grand Forks, La Crosse/La Crescent, Minneapolis/St. Paul, Rochester, and St. Cloud. Areas that are not classified as urban or urbanized are defined as rural.

System characteristics: Rural systems are composed of principal arterials, minor arterial roads, collector roads, and local roads. Table 1 provides guidelines for the percent of vehicle miles traveled (VMT) and miles for each functional classification within a rural system.

Rural principal arterials provide statewide and interstate travel with high travel speeds and limited access. Principal arterials serve a majority of larger urban areas. Minor arterials link cities, larger towns, and other major traffic generators to provide interstate and inter-county travel. All developed areas of the State should be within a reasonable distance of a principal or minor arterial road. Rural collectors link larger towns and major traffic generators not served by arterials, collect traffic from local roads, and provide for intra-county travel. Local roads primarily provide access to adjacent land.

Table 1 – Guidelines on extent of rural functional systems

System	Range (Percent)	
	VMT	Miles
Principal arterial system	30 – 55	2 – 4
Principal arterial plus minor arterial road system	45 - 75	6 – 12
Collector road system	20 - 35	20 – 25
Local road system	5 - 20	65 - 75

¹ Source: FHWA Functional Classification Guidelines, <http://www.fhwa.dot.gov/planning/fctoc.htm>

Urban systems are composed of principal arterials, minor arterial streets, collector streets, and local streets. Table 2 provides guidelines for the percent of VMT and miles for each functional classification within an urban system. Classification continuity should be maintained across a rural/urban boundary.

Urban principal arterials primarily provide continuity from the rural principal arterials for through traffic and between major centers within the urban area. Urban minor arterial streets provide intra-community travel, do not penetrate neighborhoods, and are generally spaced no more than 1 mile apart in fully developed areas. Urban collector streets provide land access and traffic circulation within neighborhoods. Urban local streets provide access to abutting land.

Table 2 – Guidelines on extent of urban functional systems

System	Range (Percent)	
	VMT	Miles
Principal arterial system	40 - 65	5 - 10
Principal arterial plus minor arterial street system	65 - 80	15 - 25
Collector street system	5 - 10	5 - 10
Local street system	10 - 30	65 - 80

Suggested Procedures for Rural and Urban Area Classification

Several competing criteria require consideration for functionally classifying roads in urban and rural areas. These criteria include service to urban areas/travel generators, service to urban activity centers, system continuity, land use, route spacing, trip length, traffic volume, and control of access.

Separate procedures have been developed for functionally classifying roads in rural, small urban, and urbanized areas. A very brief summary of the classification process for each area type is provided below.

Classification procedures for rural areas

1. Prepare a map of existing routes.
2. Identify and rank population centers and other travel generators, such as recreation centers. Population/travel centers that are in adjacent states must be taken into consideration. Ranking of population centers/travel generators should be based upon criteria such as population, retail trade, employment, and annual number of visitors.
3. Group population centers/travel generators in to 6 to 8 groups.
4. Map population centers/travel generators using different symbols to differentiate between groups.
5. Delineate urban and urbanized areas.
6. Delineate all routes on the Interstate system. The Interstate routes are rural principal arterial routes.
7. Select additional principal arterial and minor arterial routes to connect the groups of the largest population centers/travel generators over longer travel distances with higher travel speeds. Continuity in classification should be maintained across all boundaries. Ensure that that principal and minor arterial mileage meets the guidelines in Table 1.
8. Assess local needs by identifying population centers/travel generators not served by the principal arterial system. Also assess existing freeway interchanges and important river crossings.
9. Select rural collector routes to connect county seats and population centers/travel generators not served by the principal arterial system to one another and to the principal arterial system. Ensure that that collector mileage meets the guidelines in Table 1.
10. Classify as local roads all remaining roads not classified as principal arterial, minor arterial, or collector.

Classification procedures for small urban areas

1. Determine the boundary of the urban area and prepare a map of existing roads and the urban area.
2. Identify and map land service characteristics, such as major traffic generators and points at which rural arterial and collector routes intercept the urban boundary.

3. Delineate all routes on the Interstate system, other freeways, and routes that will provide continuity through the urban area from defined rural principal arterials. These routes are principal arterials. In urban areas over 25,000, additional principal arterial routes may be added to serve activity centers of regional importance.
4. Select urban minor arterial streets to provide adequate circulation within and access to the remaining urban activity centers not served by principal arterials. Minor arterial route spacing can vary from 1/8 mile in the central business district to 2 miles in suburban areas. Minor arterial streets should not penetrate neighborhoods. Ensure that that principal and minor arterial mileage meets the guidelines in Table 2.
5. Select urban collector streets such that adequate land access and traffic circulation are provided within neighborhoods. Ensure that that collector mileage meets the guidelines in Table 2.
6. Classify as urban local streets all remaining roads not classified as principal arterial, minor arterial, or collector.

Classification procedures for urbanized areas

1. Determine the boundary of the urbanized area and prepare a map of existing roads in and around the urbanized area.
2. Identify and map major trip generation centers and areas of regional or community importance, and points at which rural arterial routes intercept the urbanized area boundary.
3. Select urban principal arterials such that there is continuity between rural principal arterials and such that principal arterials serve major trip generators and points of regional or community importance (i.e., business districts of the central city, major airports, regional shopping malls, large colleges, large hospitals, etc.).
4. Select urban minor arterial streets such that there is continuity between rural minor arterial roads and adequate circulation within and access to the significant trip generation centers not served by principal arterials. Minor arterial route spacing can vary from 1/8 mile in the central business district to 3 or more miles in low density areas. Arterial streets should not penetrate neighborhoods. Ensure that that principal and minor arterial mileage meets the guidelines in Table 2.
5. Select urban collector streets such that adequate land access and traffic circulation are provided within neighborhoods, and access from local road to arterials is provided. Ensure that that collector mileage meets the guidelines in Table 2.
6. Classify as urban local streets all remaining roads not classified as principal arterial, minor arterial, or collector.