

## **CHAPTER 1**

### **HIGHWAY FUNCTIONS**

#### **1.0 INTRODUCTION**

The function of a highway is to provide a facility that allows the movement of vehicles. Different types of facilities are needed for various vehicle travel movements. To differentiate between the types of highways, functional classifications have been developed so that engineers, administrators, and the general public can communicate about highways. There are classifications by route numbering (e.g., U.S., State, County), by administrative classification (e.g., National Highway System or Non-National Highway System), and by functional classification (the grouping of highways by the character of service they provide). This *Design Guide* deals with the design of highways by functional classifications.

#### **1.1 FUNCTIONAL CLASSIFICATIONS**

The functional classifications are:

- **Local Roads and Streets.** A local road or residential street primarily serves as access to a farm, residence, business, or other abutting property. Some such roads properly include geometric design and traffic control features more typical of collectors and arterials to encourage the safe movement of through traffic. On these roads, the through traffic is local in nature and extent rather than regional, intrastate, or interstate.

- **Collector Roads and Streets.**

**Rural Collectors.** A major part of the rural highway system consists of two-lane collector highways. The rural collector routes generally serve travel of primarily intra-county rather than statewide importance and constitute those routes on which predominant travel distances are shorter than on arterial routes.

**Urban Collectors.** A collector street is a public facility that includes the entire area within the right of way. The urban collector street also serves pedestrian and bicycle traffic and often accommodates public utility facilities within the right of way.

- **Rural and Urban Arterials.**

**Rural Arterials.** A major part of the rural highway system consists of rural arterials, which range from two-lane roadways to multilane, divided controlled-access arterials.

Urban Arterials. Urban arterials carry large traffic volumes within and through urban areas. Their design varies from freeways with fully controlled access to two-lane streets.

The urban arterial system, which includes arterial streets and freeways, serves the major centers of activity of a metropolitan area, the highest traffic volume corridors, and the longest trips.

- Freeways. The highest type of arterial highway is the freeway, which is defined as an expressway with full control of access. Full control of access is the condition where the right of owners or occupants of abutting land to access a freeway is fully controlled by public authority. Access connections to the freeway are with selected public roads only. Crossings at grade or direct private driveway connections are prohibited.

Highway functional classification determination is tied to the census, which is taken every ten years. Following the census, the urban boundaries are realigned. That realignment mostly affects off-system roads. Because there is a set percentage of roadway that can be on the National Highway System (NHS), new roadways are seldom added. Sometimes there are requests to change the functional classification, such as the rare instance in which significant construction has upgraded a collector to an arterial or a two lane is made into a four or six lane. The planning agencies –Transportation Planning Regions and Metropolitan Planning Organizations (TPRs and MPOs) – work with CDOT, which then takes the request to the Transportation Commission and the Federal Highway Administration (FHWA). Classification changes are made prior to design.

The key factor the designer needs to determine is whether the project is on a federal-aid highway, and if so, where the project lies on the system. The CDOT Division of Transportation Development (DTD) website contains the CDOT GIS data map, which is software customized to CDOT. More readily available is the DTD Highway Data (1), which has the "Classification List."

If money has been accepted, a construction contract is awarded, or a project is underway, the functional classification cannot be changed.

The basic concepts required for understanding the functional classification of highway facilities and systems are discussed at length in Chapter 1 of the *PGDHS (2)*.

**REFERENCES**

1. CDOT. *CDOT Traffic Volume Maps*. [[http://internal/App\\_DTD\\_DataAccess/index.cfm](http://internal/App_DTD_DataAccess/index.cfm)]
2. AASHTO. *A Policy on Geometric Design of Highways and Streets*, American Association of State Highway and Transportation Officials, Washington, D.C.: 2004.