# WEST VIRGINIA HIGHWAYS
## *Classification Systems, Characteristics and Usage*

Highway classifications are the result of the assignment of individual roads and streets into similar groups according to the character of service each is intended to provide. Highways may be classified into these groups using a variety of systems to serve a number of purposes. West Virginia's highways are classified according to ownership (the jurisdictional system); according to the nature of the trips they serve (the National Highway Functional Classification System and the West Virginia Legal Functional Classification System); according to eligibility for matching assistance from the federal government (the federal-aid system); and according to the types of roadway sign shields used to guide motorists (the sign system). Since these classifications exist concurrently and are widely misunderstood, each of these classification systems is further described in this section. Additionally, mileage tables for both the Interstate and Appalachian Development Highway Systems have been included separately. It should be noted that these classification systems are not mutually exclusive and that mileage may vary among the systems. Throughout this chapter, an urban area will denote an area with 5,000 or more persons that encompasses, at a minimum, the land area delineated by the US Bureau of the Census, which establishes urban areas based on the density of the population.

## The Jurisdictional System

Except for minor amounts of federal highway mileage under the jurisdiction of the US Forest Service and the National Park Service, practically all of the public roads and streets in West Virginia are under the jurisdiction of State and local governments; however, an undetermined number of miles of public roadway exists that is not under the jurisdiction of any specific governing body. The origin of these roads, known as "orphan roads," may be traced to the Tax Limitation Amendment of 1932, passed during the Great Depression, which limited the amount of funds that might be raised from local property taxes to such a degree that the counties throughout the State would be unable to finance the construction and maintenance of local roads. The following year, the West Virginia Legislature mandated that practically all roads be incorporated into the State road system and the counties relieved of the responsibility for their upkeep, although each county court was required at that time to furnish an inventory of all its county-district roads to the State Road Commission (now the Division of Highways). Due to the fact that many roads and bridges then in existence were not considered by the counties to be part of the county-district system, these facilities were not incorporated into the State road system, and became known as orphan roads. Since that time, other roads have been placed in public use without being added to the State road system; these roads also are orphan roads. Therefore, roads used by the traveling public that are not under the jurisdiction of federal, State or municipal agencies, that were not transferred by the various counties to the State Road Commission in 1933, and have not been added to the State road system by official action of the Division of Highways (DOH), generally compose the orphan road system.

As previously mentioned, the 1933 Legislature relieved the counties of the responsibility of maintaining roads. Although some counties own and maintain a small number of bridges in the State, West Virginia is one of only four states (Delaware, North Carolina, and Virginia are the others) in which there is no county and/or township ownership of highways. As a result, the West Virginia DOH is responsible for maintaining more than 91 percent (see Table II-1, page II-2) of all public highway mileage in the State—the highest such percentage in the nation.

**TABLE II-1**

## West Virginia Highways: Jurisdictional System

***As of December 31, 1996***

| AGENCY WITH JURISDICTION | RURAL MILEAGE | URBAN MILEAGE | TOTAL PUBLIC HIGHWAY MILEAGE | PERCENT OF STATE TOTAL |
|---|---|---|---|---|
| US Forest Service<br>*National Park Service* | 517 | 0 | 517 | 1.38% |
| WV Department of Transportation<br>*Division of Highways* | 33,572 | 702 | 34,274 | 91.80% |
| WV Department of Transportation<br>*Parkways, Economic Development and Tourism Authority* | 72 | 15 | 87 | 0.23% |
| Municipalities | 966 | 1,492 | 2,458 | 6.58% |
| **TOTAL** | 35,127 | 2,209 | **37,336** | 100.00% |

SOURCE: West Virginia Department of Transportation, Division of Transportation Planning, Roadway Records and Statistics Section. PR 528-*Summary of Existing State and Local Roads and Streets.* Charleston, WV: 1997.

# National Highway Functional Classification System

Highway functional classification is the grouping of roads, streets, and highways into systems of similar characteristics based primarily on the length of trips served. Additionally, functional classification defines the role that a particular road or street plays in serving the flow of trips through a highway network and analyzes the services provided or that should be provided by each highway facility in serving the two principal functions of a highway: mobility and access to adjoining land at the trip ends. Two nationwide studies of highway functional classification were conducted during the period 1969-1971: the first study required the functional classification of existing (1968) highways, while the second study used the same functional classes and basic functional criteria as the first study, but provided for the classification to be based on projected 1990 facilities and usage. The Federal-Aid Highway Act of 1973 required the use of functional highway classification to update and modify the federal-aid highway systems by July 1, 1976; this legislative requirement is still in effect and the National Highway Functional Classification System has been in use since that time.

The functional systems used within this classification are arterial highways (principal and minor), which generally handle long trips; collector facilities (major and minor), which collect and disperse traffic between the arterials and the lower level; and local roads and streets, which serve the land access function to residential areas, individual farms, and other local areas. These systems may be divided into rural and urban area classifications and are further described as follows:

***Urban Principal Arterial System***—serves the major centers of activity of a metropolitan area, the highest traffic volume corridors, the majority of both the trips entering and leaving an urban area, and the through movements to bypass the central city; carries intra-urban and intercity bus travel, travel between major inner city communities, between central business districts, etc.; includes almost all fully- and partially-controlled access facilities; stratified into three subsystems:

*Interstate*—multi-lane routes with access fully-controlled, which serve the national defense and connect the nation's principal metropolitan areas

*Other Freeways and Expressways*—non-Interstate principal arterials with access fully-controlled

*Other Principal Arterials*—arterial routes with no control of access

***Urban Minor Arterial System***—interconnects with and augments the urban principal arterial system; provides service to trips of moderate length; distributes travel to geographic areas smaller than those identified with the higher system; contains facilities that place more emphasis on land access than the higher system; and offer a lower level of traffic mobility

***Urban Collector System***—provides both land access service and traffic circulation within residential neighborhoods, commercial and industrial areas

***Urban Local System***—provides direct access to abutting land and access to the higher order systems; offers lowest level of mobility and usually contains no bus routes; service to through traffic movement usually is deliberately discouraged

***Rural Principal Arterial System***—connected network of continuous routes that serve corridor movements having trip length and travel density characteristics indicative of substantial intrastate or interstate travel, stratified into two subsystems:

*Interstate*—all designated routes of the Interstate System

*Other Principal Arterials*—all non-Interstate principal arterials

***Rural Minor Arterial System***—link cities and larger towns (and other travel generators, e.g., resort areas, that are capable of attracting travel over similarly long distances) and form an integrated network providing interstate and intercounty service

***Rural Collector System***—primarily serve intra-county travel and constitute those routes on which predominant travel distances are shorter than on arterial routes, subclassified into two subsystems:

*Major Collector*—provide service to any county seat or larger town not on an arterial route and to other traffic generators of equivalent intra-county importance, e.g., schools, county parks, etc.

*Minor Collector*—provide service to smaller communities not on an arterial route and collect traffic from local roads and bring all developed areas within a reasonable distance of a collector road

***Rural Local System***—provide access to adjacent or abutting lands and provide service to travel over relatively short distances.

Table II-2, page II-5, presents this classification for West Virginia, by depicting both rural and urban mileage totals for the various systems.

**TABLE II-2**

**West Virginia Highways: National Highway Functional Classification System**

***As of December 31, 1996***

| NATIONAL HIGHWAY FUNCTIONAL CLASSIFICATION SYSTEM | STATE-MAINTAINED HIGHWAY MILEAGE | PERCENT OF TOTAL |
|---|---|---|
| Urban Principal Arterial System | | |
| Interstate (including the WV Turnpike) | 97.73 | 0.28% |
| Other Freeways and Expressways | 9.37 | 0.03% |
| Other Principal Arterials | 203.88 | 0.59% |
| Urban Minor Arterial System | 419.63 | 1.22% |
| Urban Collector System | 443.04 | 1.29% |
| Urban Local System | 194.62 | 0.57% |
| ***Subtotal: Urban System*** | ***1,368.27*** | 3.98% |
| Rural Principal Arterial System | | |
| Interstate (including the WV Turnpike) | 456.86 | 1.33% |
| Other Principal Arterials | 1,052.26 | 3.06% |
| Rural Minor Arterial System | 1,563.06 | 4.55% |
| Rural Major Collector System | 6,018.72 | 17.52% |
| Rural Minor Collector System | 2,335.88 | 6.80% |
| Rural Local System | 21,566.28 | 62.76% |
| ***Subtotal: Rural System*** | ***32,993.06*** | 96.02% |
| **TOTAL: Urban and Rural Systems** | **34,361.33** | 100.00% |

SOURCE: West Virginia Department of Transportation, Division of Transportation Planning, Roadway Records and Statistics Section. PR-528-*Summary of Existing State and Local Roads and Streets*, and Mileage Report HW2395A. Charleston, WV: 1997.

## The Federal-aid Highway System

The US Government provides substantial financial assistance to the states for highway-related purposes by means of apportionment of funds from the Highway Trust Fund. These funds may be expended by a state only for specific purposes, in strict accordance with both the guidelines established by the US Congress and the regulations of the US Department of Transportation, Federal Highway Administration (FHWA). To fulfill these requirements, and for fund allocation purposes, the federal-aid highway classification system was established.

Practically all of the roads and streets in West Virginia are under the jurisdiction of the State and local governments. Federal-aid highways are those segments of State and local system mileage eligible for federal aid (except under special circumstances, this system excludes roads that are functionally classified as rural minor collector or rural or urban local). The designation of a road or street as a federal-aid highway does not alter its status as a State road or city street; a federal-aid highway designation simply means that, because of the federal interest in this type facility, a road has been made eligible for federal-aid construction funds.

For over twenty years, the Federal-Aid Highway Program had been directed primarily toward the construction and improvement of four federal-aid systems: Interstate, primary, secondary, and urban. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) eliminated these four historical federal-aid systems, and replaced them with two federal-aid systems: the National Highway System (NHS) and the Interstate System, which is a component of the NHS. Additionally, the Surface Transportation Program (STP) was created for all roads not functionally classified as local or rural minor collector. Mileage for these systems is depicted in Table II-3, page II-7.

The NHS consists of nearly 160,955 miles of major roads in the United States, including all Interstate System routes, a large percentage of urban and rural principal arterials, the defense strategic highway network, and strategic highway connectors. A representation of West Virginia's National Highway System is depicted on the map located at the end of this chapter (NHS Connections to Major Intermodal Terminals are not depicted on the map, due to their relatively short lengths). The Dwight D. Eisenhower National System of Interstate and Defense Highways (the Interstate System) was originally established by the Federal-Aid Highway Act of 1944. The Federal-Aid Highway Act of 1956 and the companion Highway Revenue Act of 1956 further defined the purpose and extent of this system and, as subsequently amended, dedicated a group of federal excise taxes on motor fuel and automotive products to the support of federal-aid highway activities. The Interstate system connects, as directly as practicable, the nation's principal metropolitan areas, cities, and industrial centers; serves the national defense; and connects at suitable border points with routes of continental importance. West Virginia's Interstate System mileage is depicted in Table II-4, page II-8. The Surface Transportation Program (STP) is a block grant type program that may be used by the states and localities for any roads (including NHS) that are not functionally classified as local or rural minor collectors.

**TABLE II-3**

**West Virginia Highways: Federal-Aid Highway System**

***As of December 31, 1996***

| FEDERAL-AID HIGHWAY SYSTEM | RURAL MILEAGE | URBAN MILEAGE | TOTAL STATE-MAINTAINED HIGHWAY MILEAGE | PERCENT OF TOTAL |
|---|---|---|---|---|
| National Highway System *(excluding Interstate System)* | 1,042.26 | 100.01 | 1,142.27 | 3.32% |
| Interstate System (including the WV Turnpike) | 456.86 | 97.73 | 554.59 | 1.61% |
| Surface Transportation Program | 7,643.61 | 983.87 | 8,627.48 | 25.11% |
| NHS Connections to Major Intermodal Terminals | 6.62 | 17.79 | 24.41 | 0.07% |
| **TOTAL FEDERAL-AID ELIGIBLE** | 9,149.35 | 1,199.40 | 10,348.75 | 30.12% |
| Ineligible to receive Federal aid | 23,843.71 | 168.87 | 24,012.58 | 69.88% |
| STATE TOTAL | 32,993.06 | 1,368.27 | 34,361.33 | 100.00% |

SOURCE: West Virginia Department of Transportation, Division of Transportation Planning, Roadway Records and Statistics Section. PR 528-*Summary of Existing State and Local Roads and Streets*, and Mileage Report HW2395A. Charleston, WV: 1996.

**TABLE II-4**

**West Virginia Highways: Interstate System***

***As of December 31, 1996***

| INTERSTATE | YEAR COMPLETED** | RURAL MILEAGE | URBAN MILEAGE | TOTAL MILEAGE |
|---|---|---|---|---|
| I-64 | 1988 | 88.49 | 36.38 | 124.87 |
| I-64 Suppl. | | 1.27 | 0.30 | 1.57 |
| I-68*** | 1976 | 29.86 | 2.20 | 32.06 |
| I-68 Suppl. | | 2.87 | 0.00 | 2.87 |
| I-70 | 1971 | 6.38 | 8.07 | 14.45 |
| I-77 | 1976 | 90.65 | 10.20 | 100.85 |
| I-77 Suppl. | | 0.43 | 0.67 | 1.10 |
| I-77 (*WV Turnpike*) | 1987 | 71.74 | 14.62 | 86.36 |
| I-79 | 1979 | 140.08 | 20.44 | 160.52 |
| I-81 | 1966 | 25.09 | 0.91 | 26.00 |
| I-470 | 1983 | 0.00 | 3.94 | 3.94 |
| **TOTAL** | | 456.86 | 97.73 | 554.59 |

***** Mileage includes Interstate connector roads

****** Final segment of new construction (or reconstruction) was completed and opened to traffic

******* Corridor E was redesignated (from US 48) as I-68 in 1991; the mileage is not included in the Interstate apportionment funding formula.

SOURCE: West Virginia Department of Transportation, Division of Transportation Planning, Roadway Records and Statistics Section. PR 528-*Summary of Existing State and Local Roads and Streets*, and Mileage Report HW2395A. Charleston, WV: 1996.

# The West Virginia Legal Functional Classification System

For many years, highways in West Virginia were legally classified as either *"primary"* or *"secondary."* In 1967, the West Virginia Legislature passed a package of bills designed to abolish this highway classification system and replace it with one based on highway function—the West Virginia Legal Functional Classification System. Since that time, highways in West Virginia have been classified as either Expressway (X), Trunkline (T), Feeder (F), or State Local Service (SLS). This classification, commonly known as the X-T-F classification, indicates trip length characteristics and is based on both the present and *expected* level of service of West Virginia's highways. A brief description of each of these functional systems follows (Table II-5, page II-10, depicts the mileage for each of these systems):

***Expressways (X)***—serve metropolitan areas and provide major interstate and intrastate travel corridors

***Trunklines (T)***—intrastate network intended to serve smaller cities

***Feeders (F)***—serve smaller towns and industrial and recreational areas not served by the higher systems, while collecting traffic for the higher systems

***State Local Service (SLS)***—localized arterial and spur roads which provide access and socio-economic benefits to abutting properties; due to the large range of service this classification provides, it is necessary to further subclassify it as follows:

*Essential Arterial*—provides primary access between small population centers or localities

*Collector*—collects travel from the lower systems and distributes it to the higher systems

*Land Access*—provides access to any land area or associated improvement; also includes the following two subsystems:

- *Delta Road System*—consists of those roads in the public domain by virtue of common public use over a long period of time, where title to the right-of-way is indeterminate; although considered to be part of the SLS System, due to the lack of title to the right-of-way, delta roads are eligible only for routine maintenance and may not necessarily meet the standards set for SLS routes; the State assumed sole responsibility for maintenance of delta roads in 1966 and is currently eliminating this classification by either including these roads in the county route system or removing them from the State road inventory, depending on their current use
- *State Park and Forest Roads*—provide access within these areas for recreational and/or commercial (e.g., logging, mining, etc.) purposes; responsibility for the construction and maintenance of roads on publicly-owned lands within State parks and forests, and public hunting and fishing areas, was transferred from the Department of Natural Resources to the Department of Highways by legislative action in 1972

*Occasional Use*—lowest classification of a local road; provides access to a rural area on a low-volume basis

**TABLE II-5**

## West Virginia Highways: Legal Functional Classification System

***As of December 31, 1996***

| LEGAL FUNCTIONAL CLASSIFICATION SYSTEM | RURAL MILEAGE | URBAN MILEAGE | TOTAL STATE-MAINTAINED HIGHWAY MILEAGE | PERCENT OF TOTAL |
|---|---|---|---|---|
| Expressway (X) | 990.29 | 182.91 | 1,173.20 | 3.41% |
| Trunkline (T) | 1,460.44 | 92.60 | 1,553.04 | 4.52% |
| Feeder (F) | 3,230.68 | 197.12 | 3,427.80 | 9.98% |
| ***Subtotal: X-T-F System*** | 5,681.41 | 472.63 | ***6,154.04*** | 17.91% |
| State Local Service | | | | |
| Essential Arterial | 3,665.92 | 245.83 | 3,911.75 | 11.38% |
| Collector | 7,074.64 | 431.02 | 7,505.66 | 21.84% |
| Land Access (Excluding Delta, State Park and Forest Roads, and former FAU streets) | 16,546.01 | 243.87 | 16,789.88 | 48.86% |
| ***Subtotal: SLS System*** | 27,286.57 | 920.72 | ***28,207.29*** | 82.09% |
| **TOTAL: X-T-F and SLS Systems** | 32,967.98 | 1,393.35 | **34,361.33** | 100.00% |

SOURCE: West Virginia Department of Transportation, Division of Transportation Planning, Roadway Records and Statistics Section. PR 528-*Summary of Existing State and Local Roads and Streets.* Charleston, WV: 1996.

# The Sign System

The Sign System was established many years ago as a means of aiding the traveling public by providing a guide system for motorists. This classification consists of all public roadways that are identified by a distinctive route number sign, such as the Interstate System "shield." These signs are only intended to provide information to the public and are not intended to indicate any special funding source. This system is classified in a hierarchal manner as follows:

***Interstate System***— high-speed, high-volume highways with full control of access that serve major metropolitan areas throughout the United States; the American Association of State Highway Officials (AASHO) in 1958 adopted a manual on signing for this system, with the manual prescribing a red-white-and-blue shield as the Interstate route number marker; AASHO also developed a complete numbering system for Interstate routes, as follows:

Those routes with odd numbers run south to north

Those routes with even numbers run west to east

Major routes have one- or two-digit numbers

Long, evenly spaced routes have numbers ending in 5 or 0

Lowest numbers are in the west and south, to avoid conflict locally with the US Route numbers

In urban areas, the main route numbers are carried through the area on the paths of the major traffic streams

Connecting circumferential or loop routes at urban areas have three-digit numbers, using the main route number with an even-number prefix

Radial and spur routes also have three-digit numbers, with an odd-number prefix

***United States Numbered Route System***— routes with partial control of access that carry interstate travel not served by the Interstate System; routes composing this system are under state jurisdiction (not federal) and have no connection with federal control nor the designation of federal funds for road construction; the administration and maintenance of system records is the responsibility of the American Association of State Highway and Transportation Officials (AASHTO), formerly known as AASHO; this system, with its black-and-white "US shield" marker, was adopted in 1926, and has the following numbering plan:

Those routes with odd numbers run south to north

Those routes with even numbers run west to east

Long distance routes across the country have multiple numbers of 10

Principal north-south routes have numbers such as 1, 5, 11, 15

Where necessary, this system may have special route designations, as follows:

- *Business Route*— principally within the corporate limits of a city; provides the public an opportunity to travel through the business part of the city; connects with the regular numbered route at the opposite side of the city limits
- *By-Pass* or *Relief Route*— route which entirely bypasses a city or congested area; joins with the regular numbered route beyond the city or congested area
- *Alternate Route*— begins at a point where it leaves the main numbered route; may pass through certain cities or towns, then connect back with the regular route at some distant point; route is designated only if both routes are needed to

accommodate the traffic demand

•*Temporary Route*—necessary in some cases to carry a number temporarily over a road that ultimately will not be the permanent location of that number

***West Virginia (WV) State Route System***—serves intrastate travel and connects the larger cities within the State; the WV State Road Commission (SRC) assigned numbers to the various State routes in 1922; originally, south-north State routes were assigned even numbers and west-east routes were assigned odd numbers; adopted by the SRC in 1926, the current State route marker is rectangular with black numbers on a white background

***County Route System***—serves intra-county travel and provides land access to the more rural areas of the State; system was established in 1933, when the public roads under the former county-district road system were placed under the jurisdiction of the WV State Road Commission; originally, the main county routes were assigned whole numbers, with those roads branching from the main route assigned fractions (the main county route is the numerator); route numbers do not repeat within a county; the county route marker has a black number inside a white circle on a green background, usually with the local name of the route

***Delta Road System***—system was established in 1966 to provide maintenance for those public roads serving as mail routes, school bus routes, etc., which were not (at that time) under the jurisdiction of the Department of Highways; roads are eligible only for routine maintenance; the delta road marker has a black number inside a white triangle on a green background

***State Park and Forest Road System***—roads used for public travel inside the boundaries of State parks, forests and public hunting and fishing areas; responsibility for these roads was transferred to the Department of Highways from the Department of Natural Resources in 1972; the Division of Highways does not install these signs, which are wooden, with black numbers inside a hexagon

***Other systems***—routes that serve localized travel and are not included within one of the higher systems, e.g., municipal roads and US Forest Service roads

Table II-6, page II-13, represents the mileage for the various sign systems within West Virginia. With some exceptions, in situations where two or more routes intersect and follow the same traveled way, mileage is associated with the route in the higher sign system; if the sign system is the same, the lower route number generally controls. It is important to note that a state must obtain the approval of AASHTO to designate a new route or alter an existing route on the Interstate and US Numbered Route systems.

**TABLE II-6**

## West Virginia Highways: Sign System

***As of December 31, 1996***

| SIGN SYSTEM | RURAL MILEAGE | URBAN MILEAGE | TOTAL STATE-MAINTAINED HIGHWAY MILEAGE | PERCENT OF STATE TOTAL |
|---|---|---|---|---|
| Interstate System (includes the WV Turnpike) | 456.86 | 97.73 | 554.59 | 1.60% |
| United States (US) Numbered Route System | 1,618.45 | 213.91 | 1,832.36 | 5.28% |
| West Virginia (WV) State Route System | 3,358.05 | 244.96 | 3,603.01 | 10.39% |
| County Route System | 27,038.23 | 820.15 | 27,858.38 | 80.31% |
| Delta Road System | 310.73 | 16.60 | 327.33 | 0.94% |
| State Park and Forest Road System | 185.66 | 0.00 | 185.66 | 0.54% |
| Other systems * | 25.08 | 300.57 | 325.65 | 0.94% |
| **TOTAL** | 32,993.06 | 1,693.92 | **34,686.98** | 100.00% |

* Includes city streets which are not under the jurisdiction of the WVDOH, but are eligible for federal-aid highway funding (former Federal-Aid Urban (FAU) streets).

SOURCE: West Virginia Department of Transportation, Division of Transportation Planning, Roadway Records and Statistics Section. PR 528-*Summary of Existing State and Local Roads and Streets.* Charleston, WV: 1996.

# The Appalachian Development Highway System

The slow economic development of the Appalachian region may be attributed to the region's lack of adequate transportation. Historically, the region's rugged, mountainous terrain has caused road construction to be an expensive undertaking. To minimize the cost, roads were built to follow the region's topography, resulting in a highway system of winding roads following stream valleys and troughs between mountains, characterized by low travel speeds and long travel distances. These factors profoundly discouraged commerce and industrial development within the region, caused construction of major transportation routes to bypass Appalachia, and severely limited the size of available labor pools. With very few exceptions, Appalachian communities were not able to compete for large employers, due to poor access to national markets. Modest economic recessions in 1953 and 1958 also resulted in the loss of several thousand jobs within the region.

In 1960, the governors of eight Appalachian states (Alabama, Kentucky, Maryland, North Carolina, Pennsylvania, Tennessee, Virginia, and West Virginia) formed the Conference of Appalachian Governors (CAG), in an effort to raise the region to the levels of prosperity enjoyed by other regions of the United States. To accomplish this task, the CAG determined specifics the region needed to become more competitive nationally, such as improvements in access and infrastructure, the formation of a comprehensive, region-wide agency to redevelop the region, and flexible matching formulas. As a result, President John F. Kennedy established a special study commission, coordinated by the US Department of Commerce, to examine the needs of Appalachia. This commission, known as the President's Appalachian Regional Commission (PARC), identified areas with high growth potential to receive priority attention and established the routing of new highways, designated as "corridors," to be constructed to near-Interstate standards. Following the expansion of the PARC to include five other Appalachian states (Georgia, Mississippi, New York, Ohio, and South Carolina), President Lyndon B. Johnson supported a bill creating the Appalachian Regional Commission (ARC) and the Appalachian Regional Development Act of 1965 was subsequently passed by the US Congress. The purpose of this Act was to provide a highway system (with local access roads) which, in conjunction with the Interstate System and other federal-aid highways in the region, would provide service to Appalachian areas with development potential where commerce and communication had been inhibited by a lack of adequate access. This Act is especially noteworthy because it marks one of the few times the federal government has designated a specific geographic area for special funding to enhance its economy (the Tennessee Valley Authority is another notable example).

Although transportation oriented, the Appalachian Development Highway Program has historically been viewed from the federal level as a socio-economic program intended to benefit the entire country. For this reason, the Program always has been funded from the federal General Fund, rather than the Highway Trust Fund. This funding has allowed the construction of a network of Appalachian Development Highways, each with a unique one-letter designation, throughout the thirteen states within the Appalachian Region (see Map located at the end of this chapter). These high-speed, multi-lane, partially-controlled access highways have provided service to hospitals, businesses, homes, markets and many other amenities which were previously inaccessible. This program has greatly benefitted West Virginia (the only state located entirely within the Appalachian boundary defined by the US Congress) by allocating the State over $1 billion in federal funds (23% of

the national total) for the development of the Appalachian Highway System; West Virginia's Appalachian Corridor System mileage is depicted in Table II-7, page II-15.

**TABLE II-7**

**West Virginia Highways: Appalachian Development Highway System**

***As of December 31, 1996***

| CORRIDOR | RURAL MILEAGE | URBAN MILEAGE | TOTAL MILEAGE |
|---|---|---|---|
| **D*** | 65.63 | 11.59 | 77.22 |
| **E**** | ----- | ----- | ----- |
| **G** | 78.85 | 7.28 | 86.13 |
| **H***** | 140.99 | 2.90 | 143.89 |
| **L** | 66.34 | 3.51 | 69.85 |
| **Q** | 20.73 | 6.34 | 27.07 |
| TOTAL | 372.54 | 31.62 | 404.16 |

***** Mileage is associated with existing traveled way; proposed route in Wood County will be new location.

****** Corridor E was redesignated (from US 48) as I-68 in 1991; the mileage is not included in the Interstate apportionment funding formula.

******* Mileage is associated with existing traveled way; proposed route in Hardy and Grant Counties will be new location. Since the proposed route for Hardy and Grant Counties currently has no route designation, mileage for these counties is based on Highway Performance Monitoring System (HPMS) reporting data.

SOURCE: West Virginia Department of Transportation, Division of Transportation Planning, Long Range Planning Section. *West Virginia National Highway System Report*. Charleston, WV: 1997.

# Road Surface Type

The knowledge of basic roadway characteristics and use is necessary for sound planning and management practices, as well as for the development and operation of the highway system. In order to achieve uniformity and consistency throughout the country, the US Department of Transportation has developed a classification system for various types of road surfaces. This classification system identifies only visible surface types on existing streets and roadways; many highways, either by original design or because of reconstruction, consist of more than one major type of construction material. A brief description of each classification of road surface type, from low type (A) to high type (K), follows:

## UNSURFACED:

***Primitive (A)***—earth road; may only be usable by four-wheel drive vehicles; publicly traveled by small number of vehicles

***Unimproved (B)***—earth road; maintained to permit bare passableness for motor vehicles; road may have been bladed and/or minor improvements may have been made locally

***Graded and Drained (C)***—earth road aligned and graded to permit reasonable, convenient use by motor vehicles; has drainage systems (natural and artificial) sufficient to prevent serious impairment of the road by normal surface water; with or without dust palliative treatment or a continuous course of special borrow material to protect the new roadbed temporarily and to facilitate immediate traffic service

## SOIL SURFACED, GRAVEL AND STONE:

***Soil Surface (D)***—earth road, the surface of which consists of mixed or stabilized soil

***Gravel or Stone (E)***—road with surface consisting of gravel, broken stone, slag, chert, caliche, iron ore, shale, chats, scoria, disintegrated rock, or other similar fragmented material that is coarser than sand

## PAVED:

***Bituminous Surface Treated (F)***—earth, soil surface, or gravel or stone road to which has been added by any process a bituminous surface coursewithh or without a seal coat, the total compacted thickness of which is less than one inch; seal coats include those known as chip seals, drag seals, plant-mix seals and rock asphalt seals

***Mixed Bituminous (G)***—subclassified as Low Type (G-1) or High Type (G-2), as follows:

*Low Type (G-1)*—road with a nonrigid base course having a combined thickness of surface and base less than seven inches, with a surface course of one inch or more in compacted thickness; composed of gravel, stone, sand, or similar material, mixed with bituminous materials under partial control with regard to grading and proportion

*High Type (G-2)*—road with a rigid base course of any thickness, or a nonrigid base course having a combined thickness of surface and base of seven inches or more, with a surface course of one inch or more in compacted thickness; composed of gravel, stone, sand, or similar material, mixed with bituminous materials under partial control with regard to grading and proportion

***Bituminous Penetration (H)***—subclassified as Low Type (H-1) or High Type (H-2), as follows:

*Low Type (H-1)*—road having a combined thickness of surface and base less than seven inches, with a surface course of one inch or more in compacted thickness; composed of gravel, stone, sand, or similar material bound with bituminous material introduced by downward or upward penetration

*High Type (H-2)*—road having a combined thickness of surface and base of seven inches or more, with a surface course of one inch or more in compacted thickness; composed of gravel, stone, sand, or similar material bound with bituminous material introduced by downward or upward penetration

***Asphaltic Concrete (I)***—road constructed of a surface course of one inch or more in compacted thickness, consisting of bituminous concrete or sheet asphalt, prepared in accordance with precise specifications controlling gradation, proportion, and consistency of composition, or of rock asphalt; surface course may consist of a combination of two or more layers, such as a bottom and top course, or a binder or wearing course

***Concrete (J)***—road consisting of portland cement concrete with or without a bituminous wearing surface less than one inch in compacted thickness

***Brick (K)***—road consisting of paving brick, stone, asphalt, wood and other block, or steel or wood with or without a bituminous wearing surface less than one inch in compacted thickness; includes roads with combination or wearing surfaces.

Figure II-9, following page II-17, contains a representation of surface type trends for West Virginia's highway system, from 1934 to the present. These surface types have been grouped into three categories: 1) Unsurfaced, 2) Soil Surfaced, Gravel and Stone, and 3) Paved.

## Road Surface Width

The surface width of a roadway may have a profound effect on motorists. The comfort level experienced by a driver may be enhanced by the knowledge that the lane in which he or she is driving is wide enough to comfortably accommodate the driver's vehicle. Further, on two-lane roads, a driver may be less anxious if the traveled way is wide, especially when passing vehicles approaching from the opposite direction. Surface width may also provide an indication of the present or anticipated traffic volume of a roadway. Due to various constraints, however, the lane width of a roadway may not be as broad as a motorist may desire; as a result, lane widths vary from eight to twelve feet, depending on the type of service to be provided. The surface width of a paved roadway is found by adding the width of each lane, from edge line to edge line; for unsurfaced roads, surface width is that width from shoulder to shoulder. The DOH uses surface width in conjunction with traffic volume to identify deficient roadway segments. Figure II-10, following page II-19, provides an illustration of the State system mileage, classified into seven pavement width categories.

## Traffic Volume

Traffic volume may be defined as the number of vehicles that pass a point along a roadway or traffic lane per unit of time, commonly measured in units of vehicles per day, vehicles per hour, vehicles per minute, etc. One of the most important measures of traffic volume is the average daily traffic (ADT), which is the number of vehicles that pass a particular point on a roadway during a period of 24 consecutive hours, averaged over a period of 365 days. Since it is not practical to make continuous counts 365 days per year along every section of a highway system, the ADTs for many road sections are based on statistical sampling techniques. For specified road sections, ADT values provide the highway engineer, planner, and administrator with essential information needed for the determination of design standards, the systematic classification of highways, and the development of programs for improvement and maintenance. Figure II-11, following page II-19, provides an illustration of the State system mileage, classified into nine ADT categories.

The WVDOH uses portable tubular traffic counters, placed across the lanes of a roadway, which count the number of axles crossing the tube (using compressed air). Additionally, 51 permanent counters, which count vehicles by means of imbedded pavement loops, are located at various sites throughout the State. On the Interstate System, traffic counts are made every year on the segments between interchanges, and sometimes on ramps. On non-Interstate System routes, traffic counts are made on a three-year cycle (according to WVDOH Districts), covering all Highway Performance Monitoring System (HPMS) sample sections and other segments between major trip generators or intersections. For those segments not in the current counting cycle, an estimate of the ADT is made, based on historical trends and growth factors relating to the National Highway Functional Classification and the county in which the segment is located. The ADT measurement also is used in the determination of vehicle-miles of travel (VMT) for the different highway classifications. These VMT values are important for the development of highway financing and taxation schedules, the appraisal of safety programs, and as a measure of the service provided by highway transportation. The VMT for the National Highway Functional Classification in West Virginia is depicted in Table II-8,

**TABLE II-8**

**West Virginia Highways: Vehicle Miles of Travel**

for the National Highway Functional Classification System

***As of December 31, 1996***

| NATIONAL HIGHWAY FUNCTIONAL CLASSIFICATION SYSTEM | ANNUAL VEHICLE MILES OF TRAVEL | PERCENT OF TOTAL |
|---|---|---|
| Urban Principal Arterial System | | |
| Interstate (including the WV Turnpike) | 1,388.500 | 8.06% |
| Other Freeways and Expressways | 57.254 | 0.33% |
| Other Principal Arterials | 1,267.381 | 7.36% |
| Urban Minor Arterial System | 1,425.822 | 8.28% |
| Urban Collector System | 413.997 | 2.40% |
| Urban Local System | 113.979 | 0.66% |
| ***Subtotal: Urban System*** | ***4,666.933*** | 27.09% |
| Rural Principal Arterial System | | |
| Interstate (including the WV Turnpike) | 3,323.763 | 19.29% |
| Other Principal Arterials | 2,533.892 | 14.71% |
| Rural Minor Arterial System | 2,067.657 | 12.00% |
| Rural Major Collector System | 3,278.588 | 19.03% |
| Rural Minor Collector System | 429.815 | 2.49% |
| Rural Local System | 927.944 | 5.39% |
| ***Subtotal: Rural System*** | ***12,561.659*** | 72.91% |
| **TOTAL: Urban and Rural Systems** | **17,228.592** | 100.00% |

SOURCE: West Virginia Department of Transportation, Division of Transportation Planning, Traffic Analysis Section. Report HW8499A. Charleston, WV: 1997.