

# 1. BASIC DESIGN CONTROLS

## Practices and Procedures

### 1-1 HIGHWAY SYSTEMS

#### 1-1.01 Highway Corridor Priority

See the [MaineDOT Asset Management – Highways](#) web page for descriptions and locations of the different corridor priorities.

#### 1-1.02 Functional Classification

Refer to Section 1.4 Functional Classification for Motor Vehicles in the *AASHTO Green Book*.

### 1-2 TRAFFIC VOLUME CONTROLS

#### 1-2.01 Definitions

1. Annual Average Daily Traffic (AADT) – The total yearly volume in both directions of travel divided by the number of days in the year.
2. Annual Average Daily Truck Traffic (AADTT) – The total yearly volume of heavy trucks in both directions of travel divided by the number of days in the year
3. Design Hourly Volume (DHV) – The one-hour volume in both directions of travel in the design year selected for determining the highway design. The DHV is typically the 30<sup>th</sup> highest hourly volume within the design year.
4. Level of Service (LOS) - A qualitative concept which has been developed to characterize acceptable degrees of congestion. In the *Highway Capacity Manual (HCM)*, the qualitative descriptions of each level of service (A to F) have been converted into quantitative measures for the capacity analysis for each highway element. This includes:
  - a. freeway mainline segments,
  - b. weaving areas,
  - c. freeway mainline/ramp junctions,
  - d. freeway ramps,
  - e. interchange ramp terminals
  - e. two-lane, two-way rural highways,
  - f. multilane rural highways (other than freeways),
  - g. signalized intersections,
  - h. unsignalized intersections (including roundabouts), and

i. urban/suburban arterials.

The *HCM* also has LOS measures for pedestrian use, bicycle use and transit.

5. **Capacity** - The maximum number of vehicles which can reasonably be expected to traverse a point or uniform section of a road during a given time period under prevailing roadway, traffic and control conditions. The time period most often used for analysis is 15 minutes. Capacity technically corresponds to the threshold between LOS E and F.
6. **Directional Distribution (D)** - The division, by percent, of the traffic volume in each direction of travel during the DHV, AADT or AADTT.

### **1-2.02 Selection of Design Year and DHV**

A highway should be designed to accommodate the traffic volumes that might occur within the life of the facility under reasonable maintenance. This involves projecting the traffic conditions for a selected future year. Recommended design years based on the project scope of work are presented in the table below. These are measured from the expected construction completion date. The design year may also vary depending on the project type.

<b>Project Scope of Work</b>	<b>Design Year</b>
New Construction/Reconstruction	20 years
Spot Improvements	12-20 years
Rehabilitation	12-20 years
Restoration/Resurfacing (Preservation)	12 years

### **1-2.03 Design Speed**

See [EI C3 - Design Speed](#).

## **1-3 PROJECT SCOPE OF WORK**

**New Construction/Reconstruction** – New horizontal and vertical alignment is considered new construction. Reconstruction consists of new pavement structure and may include changes to existing horizontal and vertical alignments.

**Rehabilitation** - These projects may involve significant improvements to the pavement structure, including a new pavement structure (from the subgrade up) for up to half of the project length. In general, rehabilitation projects warrant the consideration of more significant improvements to the geometric design than restoration/resurfacing projects.

**Restoration/Resurfacing (Preservation)** – These projects are usually intended to resurface, restore or rehabilitate the existing pavement.

**Spot Improvements** - Spot improvements are intended to correct an identified deficiency at an isolated location. The deficiency may be related to structural, geometric, safety, drainage or traffic control problems. These projects are not intended to provide a general upgrading of the highway.

## **1-4 CONTROLLING CRITERIA AND DESIGN EXCEPTIONS**

See the following references:

[Design Element Definitions](#)

[Design Exception Matrix and Glossary](#)

[Design Exceptions Explanation](#)

[Design Exception Request Form](#)

For Design Exceptions for entrances see [Design Guidance – Entrance Design](#)