

APPENDIX B. TERMINOLOGY

This chapter introduces the terms that will be used in this report and describes the different HOV facility types that will be presented later in the report.

B.1 TERMS

This report uses several terms defined as follows:

HOV's:	High Occupancy Vehicles are motorized rubber-tired vehicles carrying 2 or more persons. This definition includes carpools, vanpools, taxis, and buses. This term may include single occupant motorcycles and scooters if local laws allow motorcycles to use the HOV lanes.
SOV's:	Single Occupant Vehicles are motorized, rubber-tired vehicles with only a driver. This term generally excludes single occupant motorcycles and scooters if they are allowed by local laws to use the HOV facility.
Mixed-Flow Lanes:	Lanes where both SOV's and HOV's are allowed to operate.
HOV Lanes:	Lanes where only HOV's with a minimum allowed number of persons per vehicle are allowed to operate. HOV lanes technically include lanes dedicated to the exclusive use of transit, however; there is already a great deal of published research on bus lanes and bus ways (see NCHRP 155, 'Bus Use of Highways': for example). Consequently, this report focuses on HOV lanes where Carpools, Vanpools, and transit buses share the facility together.
HOV Facility:	This term can include HOV lanes, exclusive bus-ways, and park and ride lots. However, this report will use this term primarily for HOV lanes only, since that is the focus of this research. Bus lanes, bus streets, and park and ride lots will generally be excluded from the usage of this term in this report, unless specifically identified in the text.
Facility:	This term will be used in this report to refer to a specific roadway, such as a freeway, an expressway, or an arterial street.
Corridor:	A corridor includes the facility in which the HOV lanes are located plus nearby parallel roadways (within one mile each side of the facility) that might offer alternative paths for HOV's and SOV's currently using the subject facility.
System.:	A system consists of an integrated network of HOV facilities within a single metropolitan area.
Network:	This report uses this term interchangeably with "system".
Quick Response:	Quick response, as defined in this report, is used to describe a general set of planning procedures that require a minimal amount of input data in order to produce approximate estimates of various performance measures such as speed, travel time, delay, and air pollutant emissions. The procedures may consist of

complex equations and default assumptions, but because they are implemented in a computer software program, they produce results in a short amount of time.

Regional Planning

Models: This report uses the term, "regional planning models" to refer to the Urban Transportation Planning System (UTPS) 1 like model systems typically used by metropolitan planning organizations (MPO' s) to forecast travel demand and determine its impacts on the regional transportation system.

Region: This term is used in this report to refer to a metropolitan area often including many different cities in a contiguous area.

B.2 TYPES OF HOV LANES

HOV facilities are operated on exclusive right-of-ways or shared right-of-ways with freeways, in separate rights-of-ways, on arterials, and at metered freeway entrance ramps or toll facilities. Although most of the available data on HOV facilities cover only the first two types, this report attempts to include both arterial and ramp and toll bypass HOV facilities where data is available. For the purposes of this study, HOV facilities were classified by type. Most freeway HOV facilities can be categorized into one of six types. These HOV facility types are defined below. For arterial facilities, the types of facilities vary widely and the definition provided is very general.

These definitions are taken from the ITE report on "The Effectiveness of High-Occupancy Vehicle Facilities" and the U.S. Department of Transportation report entitled "A Description of High-Occupancy Vehicle Facilities in North America."³ Both of these sources provide a good overview of HOV facilities.

Freeway HOV Facility Types

Freeway HOV facilities fall into four basic categories: Separated, Concurrent Flow, Contra-Flow, and Queue Bypass.

Separated Facilities

Separated facilities are separated from mixed-flow facilities by a barrier or they are placed in exclusive right-of-ways. They consist of busways, reversible one-way facilities, or two-way facilities

Busway - A roadway or lane(s) developed in a separate right-of-way for exclusive use by high-occupancy vehicles. These facilities are designated for bus use only and are typically two-lane, two-way facilities. Examples of busways are the University of Minnesota inter-campus busway in Minneapolis, the East and South Pathways in Pittsburgh, Pennsylvania, and the transitways in Ottawa, Canada.

1 Urban Mass Transportation Administration. Urban Transportation Planning System - Reference Manual. Washington, D.C., 1976.

2 Institute of Transportation Engineers. "The Effectiveness of High-Occupancy Vehicle Facilities - An Informational Report." 1988.

3 Katherine F. Turnbull and James W. Hanks. A Description of High-Occupancy Vehicle Facilities in North America, Final Report, Prepared for the Office of Planning, Urban Mass Transportation Administration and the Texas State Department of Highways and Public Transportation, July 1990.

Barrier-Separated, Two-Way Facilities - A roadway or lane(s) developed within the freeway right-of-way that is physically separated from the general purpose freeway lanes for exclusive use by HOVs. Most of these facilities are separated from the general purpose lanes with a concrete barrier. A few are separated with a wide painted buffer. Access and egress is limited to a few points along the corridor. These facilities are usually open to all types of HOV's and are two-way facilities. Example of barrier-separated, two-way facilities are the El Monte I-10 in Los Angeles, the I-25 in Denver, and the I-66 in northern Virginia.

Barrier-Separated, Reversible Facilities - A roadway or lane(s) developed within the freeway right-of-way that is physically separated from the general purpose freeway lanes for exclusive use by HOV's. Most of these facilities are separated from the general purpose lanes with a concrete barrier. A few are separated with a wide painted buffer. Access and egress points are typically three to five miles apart. The roadway or lanes are reversible corresponding to the peak direction of traffic. These facilities are usually open to all types of HOV's. The Shirley Highway has barrier-separated, reversible flow lanes for HOV's. Other examples are the Katy, North, Northwest, and Gulf transitways in Houston, Texas and the I-15 freeway in San Diego, California.

Concurrent Flow Lanes

Concurrent flow lanes are generally separated from mixed flow lanes only by a painted stripe on the pavement. Concurrent flow lanes may be access limited (entry and exit is allowed only at specific points) or unlimited access (HOV's can enter and leave the lane at any place).

A Concurrent Flow Lane is not physically separated from the general purpose freeway lanes and is designated for use by HOV's for all or a portion of the day. These facilities are usually located on the inside lane or shoulder. Most HOV facilities in the U.S. and Canada are concurrent flow HOV lanes, including the I-5, I-90, and I-405 in Seattle, Washington, the I-95 in Miami, and US 101, I-280, and I-880 in the San Francisco Bay Area.

Contra-Flow Lanes

A Contra-flow Lane is a freeway lane in the off-peak direction of travel that is designated for use by HOV's traveling in the peak direction. The lane is separated from the off-peak direction general purpose travel lanes by some type of changeable treatment, such as plastic pylons or posts. These lanes are typically operated during the peak periods only. Examples of contra-flow facilities are Kalaniana'ole and Kahekili Highways in Honolulu, Hawaii, the Lincoln Tunnel between New Jersey and New York City, and the Long Island Expressway in New York.

Queue Bypass Lanes

A Queue Bypass is a lane or set of lanes used in conjunction with tolls or ramp metering that is for the exclusive use by HOV's to avoid the wait at the tolls or the ramp meter. Toll bypass facilities are used in the San Francisco Bay Area at the approaches to the Bay Bridge, the San Mateo Bridge, and the Dumbarton Bridge. Examples of ramp meter bypasses include over 250 entry ramps in Los Angeles and Orange Counties and various entry ramps in Seattle, Minneapolis, and San Diego.

Expressway and Arterial HOV Facilities

Expressway and arterial HOV facilities may consist of bus lanes, concurrent flow lanes, contra-flow lanes, or exclusive bus streets. This report does not focus on exclusive transit facilities, so bus lanes and bus streets are not discussed here.

Both expressways and arterials are controlled by traffic signals. Expressways operate at high speeds with little or no driveway access allowed to property fronting the expressway. Arterials operate at lower speeds, often have curbside parking, and allow numerous driveways between signals.

An expressway or an arterial HOV facility is a lane (or set of lanes) designated for the exclusive use of HOV's. Arterial and expressway HOV lanes vary from reserved lanes for buses to lanes that operate similar to freeway HOV lanes. Typical arterials with HOV lanes have multiple points of access and egress and are signalized. Arterial and expressway facilities differ from freeway facilities in that they must deal with turning movements, signals, pedestrians, and driveways. Most arterial and expressway HOV facilities are concurrent flow. Examples are the Montague and San Tomas Expressways in Santa Clara County, California.