

Purpose, Policies and Objectives, and Definitions

Purpose

The purpose of this Manual is to provide uniform minimum standards and criteria for the design, construction, and maintenance of all transportation facilities off the State Highway System (SHS), roads, highways, bridges, sidewalks, curbs and curb ramps, crosswalks, bicycle facilities, underpasses, and overpasses used by the public for vehicular and pedestrian traffic as directed by **Sections 20.23(3)(a), 316.0745, 334.044(10)(a), and 336.045, F.S.**

The Florida Greenbook encourages context-based transportation planning and design. Context-based planning and design offers a diverse approach using existing tools in creative ways to improve the transportation system and meet the needs of users of all ages and abilities. This includes pedestrians, bicyclists, transit riders, motorists, and freight handlers. Planning and design of streets and highways must be based on the surrounding development patterns for existing and planned land development patterns. The approach also considers community needs, trade-offs between those needs, and alternatives to achieve multiple objectives. Context-based design principles help to promote safety, quality of life, and economic development.

In the following statutory excerpts, the term "Department" refers to the Florida Department of Transportation.

Section 20.23, F.S. Department of Transportation. There is created a Department of Transportation which shall be a decentralized agency.

(3)(a) The central office shall establish departmental policies, rules, procedures, and standards and shall monitor the implementation of such policies, rules, procedures, and standards in order to ensure uniform compliance and quality performance by the districts and central office units that implement transportation programs. Major transportation policy initiatives or revisions shall be submitted to the commission for review.

Section 316.0745, F.S. Uniform signals and devices.

(1) The Department of Transportation shall adopt a uniform system of traffic control devices for use on the streets and highways of the state. The uniform system shall, insofar as is practicable, conform to the system adopted by the American Association of State Highway Transportation Officials and shall be revised from time to time to include changes necessary to

conform to a uniform national system or to meet local and state needs. The Department of Transportation may call upon representatives of local authorities to assist in the preparation or revision of the uniform system of traffic control devices.

Section 334.044, F.S. Department; powers and duties. The department shall have the following general powers and duties:

(10)(a) To develop and adopt uniform minimum standards and criteria for the design, construction, maintenance, and operation of public roads pursuant to the provisions of **Section, 336.045, F.S..**

Section 336.045, F.S. Uniform minimum standards for design, construction, and maintenance; advisory committees.

(1) The department shall develop and adopt uniform minimum standards and criteria for the design, construction, and maintenance of all public streets, roads, highways, bridges, sidewalks, curbs and curb ramps, crosswalks, where feasible, bicycle ways, underpasses, and overpasses used by the public for vehicular and pedestrian traffic. In developing such standards and criteria, the department shall consider design approaches which provide for the compatibility of such facilities with the surrounding natural or manmade environment; the safety and security of public spaces; and the appropriate aesthetics based upon scale, color, architectural style, materials used to construct the facilities, and the landscape design and landscape materials around the facilities.

(2) An advisory committee of professional engineers employed by any city or any county in each transportation district to aid in the development of such standards shall be appointed by the head of the department. Such committee shall be composed of one member representing an urban center within each district; one member representing a rural area within each district; one member within each district who is a professional engineer and who is not employed by any governmental agency; and one member employed by the department for each district.

(4) All design and construction plans for projects that are to become part of the county road system and are required to conform with the design and construction standards established pursuant to subsection **(1)** must be certified to be in substantial conformance with the standards established pursuant to subsection **(1)** that are then in effect by a professional engineer who is registered in this state.

These standards are intended to provide basic guidance for developing and maintaining a highway system with reasonable operating characteristics and a minimum number of hazards.

Standards established by this Manual are intended for use on all transportation facilities off the State Highway System (SHS). Certain projects off the SHS but on the National Highway System (NHS) utilizing federal funds may be required to follow additional design criteria. Please see [Chapter 19 of the FDOT's Local Agency Program Manual](#) for further information. Information on roadways included in the NHS is found at the FDOT's website: [National Highway System Maps](#).

Standards are provided for the design of new construction and reconstruction projects as well as maintenance and resurfacing projects. It is understood that existing streets and highways may not conform to all minimum standards applicable to the design of new and reconstruction projects. For existing roads not being replaced or reconstructed, it is intended the requirements provided in **Chapter 10 – Maintenance and Resurfacing** are applied. For all projects, there may be practical reasons a certain standard is not met. A process is provided in **Chapter 14 – Design Exceptions and Variations** to address those situations.

The Federal Highway Administration's [Manual on Uniform Traffic Control Devices, 11th Edition \(MUTCD\)](#) ~~[Manual on Uniform Traffic Control Devices, 2009 Edition \(MUTCD\)](#)~~, has been adopted by [Rule 14 – 15.010, F.A.C.](#), and establishes a uniform system of traffic control devices. ~~[The Manual on Uniform Traffic Control Devices \(2009 Edition with Revision Numbers 1 and 2, May 2012, MUTCD\)](#)~~ includes additional requirements.

When this Manual refers to guidelines and design standards given by current American Association of State Highway and Transportation Officials (AASHTO) publications, these guidelines and standards shall generally be considered as minimum criteria. The FDOT may have standards and criteria that differ from the minimum presented in this Manual or by AASHTO for streets and highways under its jurisdiction. A county or municipality may substitute standards and criteria adopted by the FDOT for some or all portions of design, construction, and maintenance of their facilities. The FDOT standards, criteria, and manuals must be used when preparing projects on the state highway system or the national highway system.

Criteria and standards set forth in other manuals, which have been incorporated by reference, shall be considered as requirements within the authority of this Manual.

This Manual is intended for use by qualified engineering practitioners for the communication of standards and criteria (including various numerical design values and use conditions). The design, construction, and maintenance references for the infrastructure features contained in this Manual recognize many variable and often complex process considerations. The engineering design process, and associated use of this Manual, incorporates aspects of

engineering judgment, design principles, science, and recognized standards towards matters involving roadway infrastructure.

Users of this Manual are cautioned that the strict application of exact numerical values, conditions or use information taken from portions of the text may not be appropriate for all circumstances. Individual references to design values or concepts should not be used out of context or without supporting engineering judgment.

The contents of this Manual are reviewed annually by the Florida "Greenbook" Advisory Committee. Membership of this committee is established by the above referenced **Section 336.045(2), F.S.** Comments, suggestions, or questions may be directed to any committee member.

Policies and Objectives

Specific policies governing the activities of planning, design, construction, reconstruction, maintenance, or operation of streets and highways are listed throughout this Manual. This manual uses a context-based design approach that considers the mobility, convenience, accessibility, and safety of all road users; and places an emphasis on the most vulnerable users of a given transportation facility. Decisions shall be predicated upon meeting the following objectives:

- A. Specifies all users** - Provide streets and highways with operating characteristics that support users of all ages and abilities.
 - ✓ Incorporate appropriate context-based design elements when planning and designing the transportation network.
 - ✓ Draw on all sources of transportation funding to implement context-based design.
 - ✓ Seek input from a variety of local stakeholders when designing or revising transportation projects to promote equity and meet the diverse needs of system users.
- B. Applies to all projects** - Each transportation agency should establish and maintain a program to promote context-based design in all activities on streets and highways under its jurisdiction.
 - ✓ Planning, design, construction, and maintenance activities are all essential activities for implementing context-based design.
- C. Procedure for exceptions and variations** – When proposed design elements do not meet the criteria contained in this Manual, sufficient detail and justification of such deviations must be documented.
 - ✓ Sufficient detail and explanation must be given to justify approval to those reviewing the request.
 - ✓ Consider potential mitigation strategies that may reduce the adverse impacts to highway safety and traffic operations.
- D. Creates a network** - Design, operate, and maintain a transportation system that provides a highly connected and diverse network of streets that accommodate all intended modes of travel.
 - ✓ Place a priority on connecting communities with economic and employment centers and visitor destinations.

- ✓ Prioritize non-motorized connectivity improvements to services, schools, parks, civic uses, regional connections, and commercial uses.
- ✓ Identify routes for freight traffic that provide access to industrial centers, warehouses, distribution centers (rail, freight, intermodal), and ports (airports, seaports, and space ports).
- ✓ Consider the “last mile” needs of freight handlers and transit riders.
- ✓ Seek opportunities to repurpose or add new rights of way to enhance connectivity for pedestrians, bicyclists, and transit or shift freight traffic to more appropriate corridors.

E. Adoptable by all agencies - A well-connected, diverse transportation system supports Florida’s existing and future economic development.

- ✓ Increase productivity by improving the accessibility of people and businesses to reach jobs, services, goods, and activities.
- ✓ Increase level of accountability for metropolitan, regional, and local agencies to demonstrate the need, economic impact, and return of transportation investments.
- ✓ Strengthen local policies, ordinances requiring new development or redevelopment to provide interconnected street networks with small blocks that connect with existing or planned streets on the perimeter.
- ✓ Support regional land use, economic development goals, and regional vision.

F. Latest and best design criteria - Provide uniformity and consistency in the design and operation of streets and highways.

- ✓ Strive to design and maintain facilities that are consistent with the local context, through single projects or incremental improvements over time.
- ✓ Document conditions that may preclude achieving full multi-modal design, such as environmental, historical or cultural constraints, limited right of way, or disproportionate cost.
- ✓ Anticipate needs of connected and autonomous vehicles and other emerging technologies.

G. Context-sensitive - Transportation investments should align with land use, and support a community’s quality of life. A context-based approach helps communities and regions make sound decisions which support their long-term vision.

- ✓ Harmonize the transportation system with adjacent existing or proposed context such as neighborhoods, business districts, commercial areas, and public services (schools, parks, health, and entertainment centers).

- ✓ Design streets with a strong sense of place; use architecture, landscaping, streetscaping, public art, and signage to reflect the community, neighborhood, history, and natural setting.
- ✓ Highlight natural features such as waterways, trees, scenic views, slopes, and preserved lands and minimize impacts.

H. Establishes performance measures - Develop and maintain a transportation system that provides a safe environment.

- ✓ Understand that children, elderly adults, and persons with disabilities may require appropriate accommodations.
- ✓ Establish and maintain procedures for construction, maintenance, utility, and emergency operations that provide for safe operating conditions during these activities.
- ✓ Use existing street pavement widths as efficiently as possible to accommodate all modes of transportation, recognizing that allocating designated space by mode is preferred, but shared facilities may be the most practical solution in some cases.

I. Includes specific next steps for implementation.

- ✓ Understand the priorities and concerns by reaching out to stakeholders, collect data, synthesize issues and opportunities, and define context classifications.
- ✓ Define the project's purpose, needs and evaluation measures (i.e., person throughput, network completeness, street connectivity, access to jobs, housing, retail, public facilities).
- ✓ Define and evaluate alternatives.

Additional general and specific objectives related to various topics and activities are listed throughout this Manual. Where specific standards or recommendations are not available or applicable, the related objectives shall be utilized as general guidelines.

Definitions of Terms

The following terms shall, for the purpose of this Manual, have the meanings respectively ascribed to them, except instances where the context clearly indicates a different meaning.

The [Manual on Uniform Traffic Control Devices \(11th Edition, MUTCD\)](#) [Manual on Uniform Traffic Control Devices \(2009 Edition with Revision Numbers 1 and 2, May 2012, MUTCD\)](#) includes additional information on terms used in conjunction with the application of the MUTCD.

Alley	A narrow right of way to provide access to the side or rear of individual land parcels.
Annual Average Daily Traffic (AADT)	The total volume of traffic on a highway segment for one year, divided by the number of days in the year. This volume is usually estimated by adjusting a short-term traffic count with weekly and monthly factors.
Average Daily Traffic (ADT)	The total traffic volume during a given time period (more than a day, less than a year) divided by the number of days in that time period.
Auxiliary Lane	A designated width of roadway pavement marked to separate speed change, turning, passing, and climbing maneuvers from through traffic.
Average Running Speed	For all traffic, or component thereof, the summation of distances divided by the summation of running times.
Bicycle Lane (Bike Lane)	A portion of a roadway that has been designated for preferential use by bicyclists by pavement markings, and if used, signs. They are one-way facilities that typically carry traffic in the same direction as adjacent motor vehicle traffic.
Boarding And Alighting (B&A) Area	A firm, stable, slip resistant surface that accommodates passenger movement on or off a transit vehicle.

Border Area	The border area provides space for roadside design components (e.g., signing, drainage features, sidewalks, and traffic control devices), a buffer between vehicles and pedestrians, and permitted public utilities. It also provides space for construction and maintenance of the facility.
Bridge	A structure, including supports, erected over a depression or an obstruction, such as water, a highway, or a railway, having a track or passageway for carrying traffic or other moving loads, and having a total span of more than 20 feet between undercopings of abutments.
Clear Zone	The unobstructed, traversable area beyond the edge of the traveled way for the recovery of errant vehicles. The clear zone includes shoulders and bicycle lanes.
Context Classification System	Broadly identifies the built environments in Florida, based upon existing and future land use characteristics, development patterns, network scale, and roadway connectivity of an area.
Corridor	A strip of land between two termini within which traffic, topography, environment, population, access management, and other characteristics are evaluated for transportation purposes.
Cross Slope	The transverse slope and/or superelevation described by the roadway section geometry.
Crosswalk	Portion of the roadway at an intersection included within the connections of lateral lines of the sidewalks on opposite sides of the highway, measured from the curbs or in the absence of curbs from the traversable roadway. Crosswalks may also occur at an intersection or elsewhere distinctly indicated for pedestrian crossing.

Design Hour Volume (DHV)	Traffic volume expected to use a highway segment during the design hour of the design year. The DHV is related to the AADT by the “K” factor. It includes total traffic in both directions of travel.
Design Year	Both current and future traffic volumes are considered in design. Future traffic volumes expected to use a particular facility are projected for the design year, which is usually 10 to 20 years in the future.
Directional Design Hour Volume (DDHV)	Traffic volume expected to use a highway segment during the design hour of the design year in the peak direction.
Design Speed	A selected speed used to determine the various geometric design features of the roadway. The selected design speed should be a logical one with respect to the topography, anticipated operating speed, adjacent land use, and functional classification of the highway.
Design User	Anticipated users of a roadway (including pedestrians, bicyclists, transit riders, motorists, and freight handlers) that form the basis for each roadway’s design.
Design Vehicle	A vehicle, with representative weight, dimensions, and operating characteristics, used to establish highway design controls for accommodating vehicles of designated classes.
Driveway	An access from a public way to adjacent property.
Expressway	A divided arterial highway for through traffic with full or partial control of access and generally with grade separations at major intersections.
Federal Aid Highway	A highway eligible for assistance under the United States Code Title 23 other than a highway classified as a local road or rural minor collector.

Freeway or Limited Access Highway	A controlled access, divided arterial highway with grade separation at intersections.
Frontage Road or Street	A street or highway constructed adjacent to a higher classification street or other roadway network serving adjacent property or control access.
Grade Separation	A crossing of two roadways or a roadway and a railroad or pedestrian pathway at different levels.
High Speed	Speeds of 50 mph or greater.
High-Speed Rail	Intercity passenger rail service that is reasonably expected to reach speeds of at least 110 miles per hour.
Highway	A high-speed roadway (divided or undivided) intended for travel between destinations like cities and towns.
Street or Road	General terms, denoting a public way for purposes of traffic, both vehicular and pedestrian, including the entire area within the right of way. The term street is generally used for urban or suburban areas.
Intersection	The general area where two or more streets or highways join or cross.
Lateral Offset	The lateral distance from the edge of the traveled way or when applicable, face of curb, to a roadside object or feature.
Low Speed	Speeds less than or equal to 45 mph.
May	A permissive condition. Where "may" is used, it is considered to denote permissive usage.
Maintenance	A strategy of treatments to an existing roadway system that preserves it, retards future deterioration, and maintains or improves the functional condition.

New Construction	The construction of any public way (paved or unpaved) where none previously existed, or the act of paving any previously unpaved road, except as provided in Chapter 3, Section A of these standards.
Operating Speed	The rate of travel at which vehicles are observed traveling during free-flow conditions.
Paratransit	Comparable transportation service required by the ADA for individuals with disabilities who are unable to use fixed route transportation systems.
Pedestrian Access Route	A continuous and unobstructed path of travel provided for pedestrians with disabilities within or coinciding with a pedestrian circulation path.
Pedestrian Circulation Path	A prepared exterior or interior surface provided for pedestrian travel in the public right of way.
Preferential Lane	A street or highway lane reserved for the exclusive use of one or more specific types of vehicles or vehicles with at least a specific number of occupants.
Public Way	All public streets, roads, highways, bridges, sidewalks, curbs and curb ramps, crosswalks (where feasible), bicycle facilities, underpasses, and overpasses used by the public for vehicular and pedestrian traffic.
Ramp	1) Includes all types, arrangements, and sizes of turning roadways that connect two or more legs at an interchange. 2) A combined ramp and landing to accomplish a change in level at a curb (curb ramp).

Reconstruction

Streets and highways that are rebuilt primarily along existing alignment. Reconstruction normally involves full-depth pavement replacement. Other work that would fall into the category of reconstruction would be adding lanes adjacent to an existing alignment, changing the fundamental character of the roadway (e.g., converting a two-lane highway to a multi-lane divided arterial) or reconfiguring intersections and interchanges.

Recovery Area

A clear zone that includes the total roadside border area, starting at the edge of the traveled way, available for safe use by errant vehicles.

Residential Streets

Streets primarily serving residential access to the commercial, social, and recreational needs of the community. These are generally lower volume and lower speed facilities than the primary arterial and collector routes of the local system "or as adopted by local government ordinance".

Resurfacing

Work to place additional layers of surfacing on highway pavement, shoulders, bridge decks and necessary incidental work to extend the structural integrity of these features for a substantial time period.

Right of Way

A general term denoting land, property or interest therein, usually in a strip, acquired or donated for transportation purposes. More specifically, land in which the State, the FDOT, a county, a transit authority, municipality, or special district owns the fee or has an easement devoted to or required for use as a public road.

Roadway

A prepared surface (asphalt, concrete, brick, or other materials) for use primarily by vehicles, including shoulders and adjacent bicycle lanes. A divided roadway provides a separation between opposing traffic lanes.

Rural Areas	Those areas outside of urban boundaries. Urban area boundary maps based upon the 2010 Census are located on the <u>FDOT's Urban Area 1-Mile Buffer Maps</u> .
Shall or Must	A mandatory condition. (When certain requirements are described with the "shall" or "must" stipulation, it is mandatory these requirements be met.)
Shared Lane	Roadways where no bicycle lanes or adjacent shoulders usable by bicyclists are present and where travel lanes are too narrow for bicyclists and motor vehicles to operate side by side.
Shared Roadway	A roadway that is open to pedestrian, bicycle, motor vehicle, street cars, and rail travel. This may be an existing roadway, street with wide curb lanes, or road with paved shoulders.
Shared Street	Street that includes a shared zone where pedestrians, bicyclists, and motor vehicles mix in the same space. The design supports slower vehicle speeds and lower motor vehicle volumes. It lacks design elements that suggest motor vehicle priority or segregate modes; and includes elements that suggest a pedestrian priority (e.g., gathering areas, seating, lighting, art, special plantings).
Shared Use Path or Multi - Use Trail	A facility with a firm, stable, slip-resistant surface physically separated from motorized vehicular traffic by an open space or barrier with minimal cross flow by motor vehicles. Users may include pedestrians, bicyclists, skaters, and others. Special design and approval is needed when travelers use vehicles such as golf carts or other motorized devices.
Should	An advisory condition. Where the word "should" is used, it is considered to denote advisable usage, recommended but not mandatory.

Slope	The relative steepness of the terrain, expressed as a ratio or percentage. Slopes may be categorized as positive (backslopes) or negative (foreslopes) and as parallel or cross slopes in relation to the direction of traffic. In this manual slope is expressed as a ratio of vertical to horizontal (V:H).
Surface Transportation System	Network of highways, streets, and/or roads.
System	Term can be applied to local system or expanded to desired limits of influence.
Traditional Neighborhood Development (TND)	TND refers to the development or redevelopment of a neighborhood or town using traditional town planning principles. Projects should include a range of housing types and commercial establishments, a network of well-connected streets and blocks, civic buildings and public spaces, and include other uses such as stores, schools, and places of worship within walking distances of residences.
Traffic	Pedestrians, bicyclists, motor vehicles, streetcars and other conveyances either singularly or together while using for purposes of travel any highway or private road open to public travel.
Traffic Lane	Includes travel lanes, auxiliary lanes, turn lanes, weaving, passing, and climbing lanes.
Travel Lane	A designated width of roadway pavement marked to carry through traffic and to separate it from opposing traffic or traffic occupying other traffic lanes. Generally, travel lanes equate to the basic number of lanes for a facility.
Traveled Way	The portion of the roadway for the movement of vehicles, exclusive of shoulders and bicycle lanes.
Turning Roadway	A connecting roadway for traffic turning between two intersection legs.

Urban Area

A geographic region comprising, as a minimum, the area inside the United States Bureau of the Census boundary of an urban place with a population of 5,000 or more persons, expanded to include adjacent developed areas as provided for by Federal Highway Administration (FHWA) regulations. Urban area boundary maps based upon the 2010 Census are located on the [**FDOT's Urban Area 1-Mile Buffer Maps**](#).

Urbanized Area

A geographic region comprising, as a minimum, the area inside an urban place of 50,000 or more persons, as designated by the United States Bureau of the Census, expanded to include adjacent developed areas as provided for by Federal Highway Administration (FHWA) regulations. Urban areas with a population of fewer than 50,000 persons which are located within the expanded boundary of an urbanized area are not separately recognized.

Vehicle

Every device upon, or by which any person or property is or may be transported or drawn upon a traveled way, excepting devices used exclusively upon stationary rails or tracks. Bicycles are defined as vehicles per Section 316.003, F.S.

Wide Outside Lane

Through lanes that provide a minimum of 14 feet in width. This lane should always be the through lane closest to the curb or shoulder of the road when a curb is not provided.