

COMPLETE STREETS OF LOUISIANA: DESIGN AND IMPLEMENTATION



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COMPLETE STREETS OF LOUISIANA: DESIGN AND IMPLEMENTATION

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CREDITS

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ABOUT THIS COURSE

The ***Complete Streets of Louisiana: Design and Implementation*** course introduces participants to the Complete Streets initiative and Louisiana's policy for implementation. The course expands knowledge on how to apply the Complete Streets principles within the project delivery process suggested by the Louisiana Department of Transportation and Development.

By the end of the course, the learner will be able to:

- Explain the purpose and design of the Complete Streets initiative
- Discuss the benefits of Complete Streets and considerations for accommodation
- Identify state and federal mandates as they relate to the Complete Streets framework
- Describe the design process of project delivery as it pertains to the Complete Streets implementation
- Determine how Complete Streets can be implemented in designing new and existing roadwayS

The learner is expected to complete two milestones for the course, which include:

- Completing the web-based training *Complete Streets of Louisiana: Introduction to Complete Streets*
- Attending the instructor led training *Complete Streets of Louisiana: Complete Streets Design*

Note: *The milestones are to be completed in the order presented.*

CHAPTER 1
INTRODUCTION TO COMPLETE STREETS

INTRODUCTION

In its most basic form, transportation is the movement of people and goods. As humans evolved, so did their modes of transportation. As cities were formed, streets were created, enhancing mobility, economic activity, and social functions. With the advent of motorized vehicles, streets were designed to better accommodate them, rather than pedestrians or bicyclists. As traffic congestion becomes increasingly problematic, walking and bicycling are once again becoming more viable options for transportation for short distance trips, especially in urban settings. Today, streets are viewed as a means of connecting within the community by providing access by car, transit, bicycles, and walking. A highway serves as an efficient means of travel for vehicles for longer distances and higher speeds. The design of both should take into consideration the needs of all road users and accommodate them in a safe and efficient manner.

With this in mind, the concept of Complete Streets was developed to allow for the design of elements into roadway plans that accommodate non-motorized traffic with uniform and regulated policies.

The purpose of the Complete Streets framework is to create a comprehensive, integrated, connected transportation network that balances access, mobility, and safety. The Complete Streets Policy, adopted by Louisiana, was signed into law during the 2014 state legislative session (R.S. 48:22.1).

INTRODUCTION TO THE COMPLETE STREETS CONCEPT

1 - 1 Complete Streets Defined and Explained

Complete Streets, also known as a universal design, is defined as roadways that are designed and operated to enable safe access and travel for all users, including pedestrians, bicyclists, motorists, and transit users of all ages and abilities, within the transportation facility. A Complete Street may include any combination of sidewalks, bike lanes (or wide-paved shoulders), special bus lanes, comfortable and accessible transit stops, frequent and well-maintained crossing opportunities, median islands, accessible pedestrian signals, and curb extensions. The Complete Streets philosophy aims to balance safety and convenience for everyone using the road.

The Louisiana Department of Transportation and Development (DOTD) is required by Act 470 of Louisiana State Legislature to adopt and maintain a Complete Streets Policy and make reasonable efforts to engage interested stakeholders through an advisory group known as the Complete Streets Advisory Council. DOTD is required to annually submit a written progress report in conjunction with the Highway Priority Program, which shall include process-oriented and outcome-oriented performance measures.

1 - 2 Rationale of the Complete Streets Initiative

The need and want to travel outside of the auto-travel norm has increased nationally over the past years. Between 2005 to 2010, a study provided by U.S. Center for Disease Control and Prevention found a six percent increase in adults who preferred to walk. Implementing a policy that adheres to the safety of *all* on the roadway is an initiative taken by many state, regional, and local agencies. In response to the increasing demand and/or need of transportation facilities for people using alternate means of travel, transportation facility designs that include components that address the needs of *all* users for *all* projects.

1 - 3 Background

According to the Complete Streets Final Report (2010), the term Complete Streets was first used by America Bikes in 2003 as a part of their effort to amend the U.S. transportation law. Many jurisdictions across the United States have adopted Complete Streets policies and many involved a combination of laws, resolutions, and internal policies. In 2010, DOTD adopted a Complete Streets policy. This policy was adopted with the intention to create a comprehensive, integrated, and connected transportation network for Louisiana that balances the access, mobility, and safety needs of motorists, transit users, bicyclists, and pedestrians of all ages and abilities. This policy was signed into law, Act 470 R.S.48:22.1.

Louisiana's Complete Streets policy was recognized by the National Complete Streets Coalition in 2011 as being one of the best in the nation for its comprehensiveness and strength. It addressed ten critical elements:

1. Setting a vision
2. Including all users
3. Applying to new and retrofit projects
4. Making exceptions specific and clear
5. Encouraging connectivity
6. Covering all roads
7. Directing the use of design criteria while recognizing the need for flexibility
8. Recognizing that solutions must complement the context of the area
9. Establishing performance measures
10. Including specific next steps for the implementation of the policy

This policy was awarded the "Innovation for Sustaining Places Award: Best Practices" in 2011 for the inclusive engagement process used to develop the policy through the Complete Streets Work Group.

Adoption of the policy, however, is just the first step towards achieving its goals. Implementation of the policy includes both formalized strategic activities as well as informal activities that DOTD engages in to further the goals of the policy. EDSM II.2.1.14 was created to clarify the responsibilities and design guidelines. Because the Complete Streets policy applies to “all projects” and all stages of the project delivery process, the responsibility for implementation falls to many individuals within the Department. Some individuals may recognize changes that can be made to further the goals of the policy, while other activities to implement the policy are identified through a more formalized implementation planning process. Formal roles can be created to oversee implementation planning or activities.

1 - 4 Framework, Goals, and Objectives

The framework for Complete Streets includes performance-based planning, which involves quantitative evaluation to determine how well it is aligned with established goals. The established goals lead to setting specific and measurable objectives that are reasonable and time-oriented. This, in turn, leads to the performance measure to determine the progress made towards the objective. Two categories of measures for Complete Streets include the following:

- *Process-Oriented Performance Measures* track efforts made towards the achievement of goals. They track steps taken to change institutional processes, such as rewriting design guides, changing procedures, and providing training and education so that the individuals involved with the development of projects understand their new responsibilities.
- *Outcome-Oriented Performance Measures* track salient physical features or things that are experienced by people that come about as a result of those changes being made. While process-oriented performance measures are usually available right away, sometimes it takes years for outcomes to be visible.

The following goals were developed for the State of Louisiana for the Complete Streets policy:

1. Safely and efficiently accommodate all road users (motorists and non-motorists such as but not limited to pedestrians, transit users, and bicyclists of all ages and abilities).
2. Create a network that balances integration, context sensitivity, access and mobility for all road users.
3. Provide leadership and establish exceptional partnerships with local public agencies on implementation of Louisiana’s Complete Streets policy.

1 - 5 Roles and Responsibilities

With the new implementation of policies for road design, many roles and responsibilities have been defined by DOTD. The roles and responsibilities are defined in the following table.

Role	Responsibility
DOTD	Work with and collaborate with Metropolitan Planning Organizations (MPOs), transit agencies, parishes, municipalities, and other stakeholders to do the same
DOTD	Offer internal and external training opportunities and other resource tools in engineering, education, enforcement, encouragement, and evaluation
DOTD	Ensure projects do not become barriers to pedestrians, bicyclists, and transit users by providing appropriate safe crossings, providing corridor continuity, and ensuring transportation projects comply with the current accessibility guidelines
DOTD	Provide the leadership to implement this policy on all transportation projects that involve federal or state funding or approval
Complete Streets Advisory Council	Act as liaison between the public and DOTD for issues related to Complete Streets

INITIATIVE RATIONALE AND BENEFITS

1 - 6 Benefits of Complete Streets Implementation

Many of the benefits of Complete Streets are difficult to quantify, because they deal with issues related to quality of life, and project costs and benefits will vary tremendously on a project-by-project basis, depending on the context. Research on the health and safety benefits of Complete Streets is becoming more widely available. The following are examples of the benefits of the Complete Streets policy:

- Improved Safety
- Increased Mobility and Safety for Children
- Increased Mobility for Disabled Individuals
- Increased Mobility for Seniors
- Promoted Active Living
- Support for Environmental Policies Aimed at Reducing Emissions
- Support for Economic Development
- Lower Household Transportation Costs

ROUTINE ACCOMMODATIONS

The State of Louisiana strives to accommodate all users on the transportation network, which primarily includes motorists, pedestrians, bicyclists, and transit users. The policy of accommodating bicycling and walking as a routine part of planning, designing, constructing, operating, and maintaining highways is a **routine accommodation**, according to EDSM II.2.1.14.

1 - 7 Pedestrians and ADA Considerations

According to EDSM II.2.1.14, a **pedestrian** is defined as any person afoot or utilizing a mobility aid. A **mobility aid** is a device, usable indoors and outdoors, used by individuals to allow them to ambulate independently. In most cases, these are prescribed by a physician for a medical condition that affects the user's ability to ambulate independently. Mobility aids include those powered by electricity (electric mobility aid or scooter) or by human power (wheelchair).

EDSM II.2.1.14 defines **pedestrian accommodation** as designing and managing the transportation network to expand travel opportunities for pedestrians by minimizing potential travel disruptions and maximizing safety. Accommodations may include:

- Dedicated pedestrian facilities, such as sidewalks and crosswalks
- Facilities for the semi-exclusive use of pedestrians, such as a shoulder
- Other design features to increase the safety of a facility for a pedestrian including signage, pedestrian signals (automatic or demand actuated), and other actions, such as retiming signals or reducing crossing width with curb extensions or median islands.

1 - 8 Bicyclists and Accommodation

A **bicycle** is typically defined as a human powered vehicle with two tandem wheels, but this may be expanded to include vehicles with three wheels (tricycle), four wheels (quadracycle), or single wheel (unicycle). This definition should not be expanded to include motorized mobility aids or travel devices, such as Segways, as noted in EDSM II.2.1.14.

EDSM II.2.1.14 defines **bicycle accommodation** as designing and managing the transportation network to expand travel opportunities for bicyclists by minimizing potential travel disruptions and maximizing safety. Bicycle accommodations may include:

- Facilities for the exclusive or semi-exclusive use of bicycles, such as bicycle lanes, bicycle paths, shared use paths, and marked shared lanes (sharrows)
- Other interventions to make a transportation network or facility safer or friendlier for bicycle users, such as wider outside travel lanes, signage, or bike boxes
- Installing drainage grates in a bicycle-friendly direction or avoiding chip-sealed surfaces

1 - 9 Transit and Accommodation

Transit users include those traveling using transportation provided by the city, such as buses and trolleys (streetcars). For transit to provide optimal service, streets must accommodate transit vehicles as well as access to stops. Transit considerations and accommodations include:

- Designated areas placed in locations, such as the side of a roadway, where transit users gather to board or exit
- Identified routes to board and exit the source, such as walkways to the designated area
- Accessible transit stops with signs, benches, shelters, and safe and convenient crossing opportunities.
- Street crossings near transit stops, benches at bus stops, and shade

1 - 10 American with Disabilities Act of 1990 and Accommodation

Within each category of road users, considerations for persons with disabilities should be emphasized, such as those with visual, physical, or auditory disabilities. The **Americans with Disabilities Act of 1990** is a federal law prohibiting discrimination against people with disabilities. This law requires public entities to provide accessible accommodations for people with disabilities. To ensure this law is followed in scoping and technical specifications for new construction and alterations undertaken by entities covered by the ADA, the **Americans with Disabilities Act Accessibility Guidelines (ADAAG)** were created.

Considerations for accommodation for those with disabilities include:

- Widened travel areas to accommodate mobility aids
- Tools that enhance the ability to determine location of designated areas for transit or pedestrian use, such as ramps and auditory crossing guides

1 - 11 Conclusion

DOTD recognizes the need for interdisciplinary coordination to effectively develop, operate, and maintain transportation networks. All projects shall consider the impact that improvements will have on safety for all users and make all reasonable attempts to mitigate negative impacts on non-motorized modes. Restricting non-motorized access is considered an appropriate strategy with the exception of those limited access facilities where pedestrians and bicyclists are prohibited by law. Facilities will be designed and constructed in accordance with current applicable laws and regulations, using best practices and guidance from the following, but not limited to:

- DOTD guidelines and manuals
- American Association of State Highway and Transportation Officials (AASHTO) publications
- The Manual on Uniform Traffic Control Devices (MUTCD)
- The Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- The Public Rights-of-Ways Guidelines (PROWAG)
- The National Association of City Transportation Officials (NACTO)

1 - 12 Chapter Review

Directions: Answer each question using the space provided.

1. What is the definition of a Complete Street?

2. List three examples of what a Complete Street may include:

3. The _____ provides performance measures to meet the multimodal needs that are relevant to the individuals using them.

4. What are two of the ten elements of the Louisiana Complete Streets policy?

- a. _____
- b. _____

5. In what stages of the project delivery process does the Complete Streets policy get considered? _____

6. What are the three goals for the State of Louisiana's Complete Streets policy?

- a. _____
- b. _____
- c. _____

7. What is the purpose for the Complete Streets policy? _____

8. Give two significant benefits of the Complete Streets policy.
- a. _____
 - b. _____

9. Why were these two benefits chosen over the rest? _____
- _____
- _____
- _____
- _____
- _____

10. Give an accommodation for each road user.
- a. Pedestrian-_____
 - b. Bicyclist-_____
 - c. Transit User-_____

CHAPTER 2
COMPLETE STREETS PROCEDURES AND DESIGN

COMPLETE STREETS OVERVIEW

The Complete Streets Policy was signed into law by the State of Louisiana in 2014 (R.S. 48:22.1) as an effort to better address the needs of non-motorized users and to create a comprehensive, integrated, connected transportation network that balances access, mobility, and safety needs of motorists, transit users, bicyclists, and pedestrians of all ages and abilities. Complete Streets considerations that adhere to the policy include, but are not limited to, the implementation of sidewalks, bike lanes (or wide-paved shoulders), special bus lanes, comfortable and accessible transit stops, frequent and well-maintained crossing opportunities, median islands, accessible pedestrian signals, and curb extensions. The Louisiana Department of Transportation and Development (DOTD) is required to adopt and maintain a Complete Streets policy by Act 470 and is required to submit a written progress report in conjunction with the Highway Priority Program, which includes process-oriented and outcome-oriented performance measures.

- *Process Oriented Performance Measures* track efforts made towards the achievement of goals. They track steps taken to change institutional processes, such as rewriting design guides, changing procedures, and providing training and education so that the individuals involved with the development of projects understand their new responsibilities.
- *Outcome Oriented Performance Measures* track salient physical features or things that are experienced by people that come about as a result of those changes being made. While process-oriented performance measures are usually available right away, sometimes it takes years for outcomes to be visible.

In addition to setting performance measures, identified goals by the State of Louisiana, include:

- Safely and efficiently accommodate all road users (motorists and non-motorists such as, but not limited to, pedestrians, transit users, and bicyclists of all ages and abilities)
- Create a network that balances integration, context sensitivity, access, and mobility for all road users
- Provide leadership and establish exceptional partnerships with local public agencies on implementation of Louisiana's Complete Streets policy

The need and want to travel outside the auto-travel norm has increased nationally over the past years, creating the demand and/or need of transportation facilities for people using alternate means of travel and the design of transportation facilities that includes components that address the needs of *all* users for *all* projects. The State of Louisiana strives to accommodate all users on the transportation network, which primarily includes motorists, pedestrians, bicyclists, and transit users. As a result, the Complete Streets Policy is being institutionalized through the planning, design, construction, operations, and maintenance processes.

FEDERAL REGULATIONS AND LOUISIANA POLICIES

Many policies and procedures drive decision-making and planning processes for LADOTD, which includes federal guidelines and state policies. However, each fosters the same goals and mission as set by the Complete Streets policy.

2 - 1 Federal Guidelines and Guidance

The Federal Highway Administration's (FHWA) 2000 Policy on Integrating Bicycle and Walking into Transportation Infrastructure established the following guidance:

- “Due consideration” of bicycle and pedestrian needs should include, at a minimum, a presumption that bicyclist and pedestrians will be accommodated in the design of new and improved transportation facilities
- To varying extents, bicyclists and pedestrians will be present on all highways and transportation facilities where they are permitted and it is clearly the intent of TEA-21 that all new and improved transportation facilities be planned, designed, and constructed with this fact in mind.
- The decision not to accommodate bicyclists and pedestrians should be the exception rather than the rule

Even prior to the above mentioned policy, the Federal Highway Administrator explained “We expect every transportation agency to make accommodation for bicycling and walking a *routine part* of their planning, design, construction, operations, and maintenance activities”.

The three exceptions that are commonly found in Complete Streets policies also originated in this FHWA policy statement, though in this instance exceptions are specific to urbanized areas. The policy sets up different guidance for the use of shoulders in rural areas. This accounts for some of the variations to the exceptions seen in other state policies, which include:

- Bicycle and pedestrian ways shall be established in *new construction and reconstruction projects* in all urbanized areas unless one or more of the following conditions are met:
 - Bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, a greater effort may be necessary to accommodate bicyclists and pedestrians elsewhere within the right of way or within the same transportation corridor.
 - The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. Excessively disproportionate is defined as exceeding twenty percent of the costs of the larger transportation project.
 - Where scarcity of population or other factors indicate an absence of need.

In the 2008, FHWA issued Guidance on Bicycle and Pedestrian Provisions of Federal Transportation Legislation. This guidance reiterated earlier intentions, that “SAFETEA-LU confirmed and continued the principle in federal surface transportation law that the safe accommodation of non-motorized users shall be considered during the planning, development, and construction of all federal-aid transportation projects and programs. To varying extents, bicyclists and pedestrians will be present on all highways and transportation facilities where they are permitted and it is clearly the intent of the federal surface transportation law that all new and improved transportation facilities be planned, designed, and constructed with this fact in mind.”

Furthermore, it discussed the incorporation of bicycle and pedestrian facilities as “incidental” costs to be part of all projects and provided an explanation of the flexibility of federal funding, noting, “Federal surface transportation law provides tremendous flexibility to States and Metropolitan Planning Organizations (MPOs) to fund bicycle and pedestrian improvements from a wide variety of programs. Virtually, all the major transportation funding programs can be used for bicycle and pedestrian-related projects.”

2 - 2 State of Louisiana Efforts and Policies

Throughout 2008 and 2009, DOTD was engaged in an update to their 1998 Bicycle and Pedestrian Plan. This planning process included extensive public participation, involved interviews with DOTD staff, and work with an advisory committee comprised of advocates, agencies, and MPOs. The plan was based on Complete Streets principles and established policy, planning, and implementation strategies to fully incorporate bicycling and walking into Louisiana’s transportation network by planning and designing roadways that accommodate bicycling and walking.

Senate Concurrent Resolution 110 was passed during the 2009 Legislative Session, requesting the formation of a Complete Streets Work Group to be convened by the DOTD to develop a statewide policy on the design and construction of roadways that maximize use by all users whether they choose to bike, walk, ride transit, or drive a car. SCR 110 established the twenty-three member organizations of the Work Group and a timeline in which to develop their policy and associated undertakings.

While the State Bicycle and Pedestrian plan fundamentally develops policy, planning, and implementation strategies for Complete Streets at the state-level, the advocacy community expressed a desire for a clear mandate for Complete Streets and greater assurance at high levels within the Department that the policies developed would be implemented. Because the bicycle and pedestrian plan was in the process of review when the resolution was first being developed, the concepts of the Work Group emerged. Fundamentally, the differences between the outcomes of the State Bicycle and Pedestrian Plan and the Complete Streets Policy are as follows:

- The Complete Streets policy was created for formal adoption by the Secretary of Transportation; whereas, the Bicycle and Pedestrian plan used similar language within a planning document.
- The Complete Streets policy conveys a more active message, though in practice, most recommended changes to the Department procedures are either the same or very similar.
- The exceptions criteria have been simplified and strengthened in the Complete Streets policy; they require approval by the Chief Engineer; and set up a formal appeals process for municipalities

In addition to requiring the DOTD to adopt and maintain a Complete Streets Policy, Revised Statute 48:22.1 requires DOTD to adopt performance measures to evaluate the effectiveness of the Complete Streets Policy in coordination with an advisory group to be known as the Complete Streets Advisory Council. The creation of the Complete Streets Advisory Council has built on a growing synergy between advocates engaged in a variety of related fields-public health, obesity prevention, advocacy for the elderly and for the people with disabilities, and the education community, to strengthen and support the on-going efforts of DOTD through actions beyond those of the Department.

2 - 3 State of Louisiana Revised Statutes

The Louisiana Revised Statutes: Support and Hindrance for Complete Streets developed in 2010, reviews how current state law can support and hinder Complete Streets policy implementation.

- **Support for Complete Streets**-The existing revised statutes include language that supports Complete Streets principles. For example, the DOTD, municipalities, and parishes may fund bicycle paths and the DOTD shall recommend construction standards and provide a uniform system of marking bicycle paths (RS 48:163.1). Most of the supporting revised statutes relate to the system users, which include:
 - **Pedestrians** have the right-of-way in cross walks and on sidewalks (RS 32:212 and RS: 32:219). When crossing at locations other than cross walks, pedestrians must yield the right-of-way to all vehicles. Pedestrians must use marked crosswalks when they are located between adjacent intersections with operating traffic-control signals (RS 32:213). Pedestrians walking along a highway must walk on the left side of the highway or its shoulder, facing traffic (RS 32:211).
 - **Mobility aids operators** have the same rights as an able-bodied pedestrian to use streets, sidewalks, and walkways. During daylight hours, they can also use road and streets with a posted speed limit of twenty-five miles per hour or less, marked bicycle paths, or designated bicycle lanes, within residential subdivisions and on any street or road necessary to cross because of physical barriers (RS 32:206).
 - **Bicyclists** are granted all of the rights and shall be subject to all the duties applicable to the driver of a vehicle (RS 32:194). The Department may also construct bicycle paths and must document the reasons for excluding such facilities in new construction projects (RS 48:21).

- **Motorists** must exercise due caution to avoid collisions with pedestrians and exercise precaution upon observing confused or incapacitated persons upon the highway (RS 32:214). Drivers must take necessary precautions to avoid injuring or endangering pedestrians guided by a guide dog, carrying a white cane, or utilizing a wheelchair or motorized wheelchair for transportation who are crossing or attempting to cross public streets, highway, or near an intersection or crosswalk (RS 32:217). Vehicle doors must only be opened if it is reasonably safe to do so and must not be left open on a side of vehicle available to moving traffic (RS 32:283). During the 2009 Regular Legislative Session, two additional laws were passed to guide motorists and protect bicyclists. The harassment of bicyclists is prohibited (RS 32:201) and at least three feet of clearance must be provided when a driver is passing a bicyclist (RS 32:76.1).

LOUISIANA DEPARTMENT OF TRANSPORTATION PROCEDURES

2 - 4 Engineering Directives and Standards Manual (EDSM)

The Louisiana Department of Transportation and Development's Office of Engineering developed EDSM No: II.2.1.14, which serves as a companion to the Louisiana Complete Streets Policy. The purpose of the EDSM is to clarify the Complete Streets policy, which applies to the state highway system and to the local roads where state or federal funds will be used, as well as to any improvements to the state highway system funded by a private entity, parish, or local government that are constructed by permit. The Louisiana State statutes referenced in EDSM II.2.1.14 include:

- Louisiana Revised Statute RS 32:1 Definitions
- Louisiana Revised Statute RS 48:22.1 Complete Streets, Findings, Requirements, Exceptions
- Louisiana Revised Statute RS 48:163.1 Use of Highway Funds for Bicycle Facilities

The EDSM states that the Project Manager may request a waiver from the Chief Engineer with proper justification. Otherwise, these standards shall apply immediately for all projects not in final plan development at the time of the revision date of the EDSM.

PROJECT DELIVERY PROCESS AND STAGE 0

2 - 5 Project Delivery Process

DOTD follows a set of processes for completing projects to promote accountability and efficiency, which is considered the project delivery process. As stated, the Complete Streets Policy is required to be considered in *all* stages of the project delivery process with exceptions noted. DOTD defined each stage and narrowed responsibility within each stage of the project delivery process using the Project Delivery manual (available in Resources), which include:

Stage 0: Feasibility

Stage 0 of the Project Delivery Process is also considered the “Go/No Go” decision. This stage includes:

- Preliminary identification of purpose and need
- Initial project concepts defined
- Preliminary environmental review
- Preliminary project estimate and budget determination
- Expected funding sources identified

Stage 1: Planning/Environmental

Stage 1 of the Project Delivery Process is considered the “Planning/Environmental” stage, which is expected last one to two years. This stage includes:

- The appointment of the Project Manager
- Team examination of proposed actions
 - Conducts field surveys
 - Identifies environmental issues
 - Addresses public concerns
 - Develops alternatives
 - Prepares environmental documents
 - Holds public meetings and hearings

Stage 2: Funding Project Prioritization

Stage 2 of the Project Delivery Process is considered the “Funding/Prioritization” stage, which is expected to be indefinite. This stage includes:

- Funding source is identified
- Updated cost estimates made
- Project plans created
- Project delivery date (PDD) determined
- Program fiscal year identified

Stage 3: Final Design Process

Stage 3 of the Project Delivery process is the “Final Design Process”, which is expected to take one to three years. This stage includes:

- Surveying
- Geotechnical investigations
- Road and bridge design
- Real estate acquisition
- Utility agreements
- Environmental permits being obtained
- Preparation of traffic management plan

Stage 4: Letting

Stage 4 of the Project Delivery process is the “Letting stage”, which is expected to last one year. This stage includes:

- Preparation of contracts and specifications
- Advertisement of project for bids
- Receipt of bids
- Award the contract

Stage 5: Construction

Stage 5 of the Project Delivery Process is the “Construction” phase, which can take one to three years. This stage includes:

- Project schedule
- Contractor responsibility
- Project inspection
- Sampling and testing
- Creating and processing change orders
- Environmental mitigation
- Public information plan
- Construction impact mitigation
- Final inspection, acceptance, and audit

Stage 6: Operation

Stage 6 of the Project Delivery Process is the “Operations” stage, which is ongoing. This stage includes:

- Disposing of excess of right-of-way
- Documenting of additional utilities permitted
- Complying with post-construction environmental commitments
- Monitoring of materials performance and warranties
- Testing and inspecting of materials
- Identifying design features that complicate maintenance activities/impede efficient traffic operations
- Performing of general maintenance
- Performing of general traffic operations functions

2 - 6 Stage 0 and Complete Streets

Although each stage is required to consider the Complete Streets policy, Stage 0: Feasibility involves specific consideration of the policy. The purpose of Stage 0: Feasibility is to reach a decision regarding the project's feasibility and whether the project should continue through the project delivery process.

DOTD uses two methods to identify candidate highway projects within Stage 0: Feasibility, which include:

1. **Technical method** gathers and analyzes data regarding the physical condition, operation characteristics, safety performance, and congestion on state highways.
2. **Customer input** seeks input from DOTD customers, which are the general public, state and local elected officials, and metropolitan planning organizations (MPOs), etc.

Stage 0 is required on all projects, but with varying levels of documentation (see the Stage 0 Manual). If the project does not include Complete Streets elements in the Stage 0, documented justification must be provided or the project will not move forward. The steps of the Stage 0 process are as follows:

1. Define and articulate the purpose and need of the project. This is done by collecting existing data (i.e., vehicular/bicycle/pedestrian counts, crash data, roadway conditions, existing geometry, traffic control devices) and interpreting this data through technical analysis to determine meaningful reasons to implement the proposed project.
2. Develop the scope of a project that will address the identified purpose and need. All road users, whether present or not, must be considered during scope development in accordance with the Complete Streets Policy. For any project that does not include Complete Streets facilities in the proposed scope, documented justification must be provided.

3. Preliminary review of the project area with regard to the natural and human environment, including context (e.g. adjacent land uses, community features) and then performing an initial check for potential impacts to the environment.
4. Develop a preliminary cost estimate including but not limited to the costs of right-of-way acquisition, utility relocations, construction, environmental studies, mitigation, and engineering design.
5. Identify potential funding sources.

Any significant changes to the project scope or budget must be submitted to the Program Manager for approval. If any project does not include Complete Streets elements in Stage 0, documented justification must be provided or the project will not move forward. See the Stage 0 Manual for further clarification and information.

The Stage 0 Checklist includes specific questions to ensure adequate consideration of the Complete Streets Policy. The questions are as follows:

1. If the project includes a state-owned route, please refer to the statewide bicycle planning tool (see DOTD GIS Gallery). What priority does the network analysis indicate within the project limits?
2. Early coordination with local public agencies is required. Please indicate on what date and with whom contact was made (see LPA resource).
3. Has this route been identified in a local plan (see EDSM II.2.1.14)? If so, please attach or reference.
4. What is the current and future context of the road as it relates to complete streets considerations (e.g., rural/urban, future land use plans, future developments, zoning changes)? Please provide an explanation.
5. What pedestrian/bicyclist/transit facilities are proposed as part of the project?

BICYCLE PLANNING TOOL

2 - 7 The Bicycle Planning Tool

The Louisiana Bicycle Planning Tool is an internal DOTD product, which will aid in the decision-making process for state road network facilities. This internal product should be utilized in the Stage 0 process for determining what type (if any) of bicycle facility is appropriate for any given segment of roadway throughout the DOTD-maintained state road network. This tool also helps to prioritize resources to high priority segments, where there is a high demand and poor Bike Level of Service (BLOS).

Demand was derived using revealed demand (actual counts, Strava data, preferred routes by cycling, and advocacy groups), building a network (local and regional bike plans, connectivity within an existing system), and derived demand (population density, intersection density, zero-vehicle households, commute to work by bicycle surveys, context, and community destinations). BLOS determines the existing conditions of the roadways and determines the suitability of various roadways for bicycling using factors such as compatibility, friendliness, safety, convenience, comfort, user stress, level of service. The BLOS score is based upon pavement condition, pavement width, shoulder width, number of lanes, traffic volume, speed, percent of heavy vehicles, and other factors.

Although all new or reconstruction projects must consider all road users in accordance with the Complete Streets Policy, extra care should be taken when a project location is identified as a high priority route in the Bicycle Planning Tool.

The Bicycle Planning Tool is available on DOTD's GIS Gallery. The network analysis layer indicates priority and the recommended bicycle facility indicates a recommended facility type.

LOCAL PLANS

2 - 8 Local Plans Introduced

The consideration of local plans is vital to the success of a project and is necessary during pre-construction activities. Coordinating with local agencies and consulting local plans is vital to the development of successful projects. Local plans provide a view into the community values and needs that were identified through a formal stakeholder input process. If a new construction project is deemed necessary and feasible, identifying any local plans or policies related to the project will inform the project development process and enhance stakeholder support. An example local plan was acquired from the Rapides Area Planning Commission that follows the Complete Streets framework. Within the plan, many considerations are made that includes the purpose and vision of the plan, existing condition of the area, goals and strategies to remedy, adoption measures of the plan, and funding sources to promote putting the plan into action.

2 - 9 Alexandria/Pineville Bicycle & Pedestrian Plan

The Rapides Area Planning Commission created The Bicycle and Pedestrian Plan (BPP) to serve as a guide for improving bicycle and pedestrian activities in the Alexandria/Pineville Metropolitan Planning Area (MPA) in Central Louisiana. The plan emphasized education, promotion, policy, and projects to integrate biking and walking into the existing transportation network. The process of this plan development involved the following:

- Literature review
- Data analysis
- Establishment of demand
- Consumer input
- Identification of goals
- Definition of strategies and objectives
- Establishment of project list
- Identification of funding and sources

The plan reinforces the value of serving all users of the transportation network, regardless of age and/or abilities.

Purpose and Vision

As stated in the BPP, the purpose of the plan was to connect existing facilities through new routes with signage, propose a robust network of walkways and/or bicycle routes, and ensure safe, efficient, and effective alternate transportation solutions. In addition, the purpose was to support the area's mobility, quality of life, tourism, and economic goals. The Rapides Area Planning Commission created the BPP with the anticipation of reducing bicycle and pedestrian fatalities and/or injuries, increasing safety for all users of the transportation network, promoting alternate transportation modes, and improving connectivity.

Existing Condition

To determine future initiatives, the Rapides Area Planning Commission deemed it necessary to analyze the existing condition, specifically focusing on conditions that may impact mobility. The initial step to analyzing the existing condition was to determine non-motorized user characteristics, identify typical commute patterns, examine fatality data, and survey during the consumer engagement process.

Goals, Strategies, and Recommendations

Upon completion of the existing condition analysis, goals and strategies were identified from citizen advisory committee meetings, input from MPO staff, online surveys, and agency consultations for the Alexandria/Pineville Area BPP. Some example goals and strategies are provided below, as acquired by the BPP.

- **Goal 1-** Increase accessibility for all road users by providing a connected bicycle and pedestrian network
 - Strategy 1-Develop a comprehensive GIS inventory for existing bicycle and pedestrian facilities; design and prioritize future improvements to connect with or fill the gap of existing conditions
 - Strategy 4-Consider bicycle and pedestrian facilities for new construction projects

- **Goal 2-** Increase safety for bicyclists and pedestrians
 - Strategy 1-Analyze crash reports and understand crash trends while engaging (public workshop, safety coalition, and law enforcement) to identify safety problems before crashes occur

Recommendations were also provided to address common issues within the BPP that are based on current best practices, observations, and gained knowledge from the local advisory committee, which includes complex intersections, lighting, and excessive auto-orientation. Example recommendations from the Rapides Area Planning Commission within the BPP include:

- **Along the Road**
 - Maintain sidewalks to prevent vegetation erosion or blockage
- **Intersections**
 - Modify designs to include curb extensions, clear pedestrian crossings, planted buffers, ADA ramps, and pedestrian countdown signals
- **Bicycle Network**
 - Consider appropriate facilities and/or bike lanes to emphasize appropriate biking activities, rather than bicyclists utilizing the sidewalk that was intended for pedestrian mobility

Adoption, Implementation, and Funding

Implementation is incremental once the goals and strategies are adopted which include general approaches set by the Rapides Area Planning Commission and provisions set by DOTD. General approaches for implementation include coordinating recommendations to avoid conflict and take opportunities on dual improvements, improve on pedestrian and bicycle networks when opportunities arise, collaborate with parallel programs, and pursue additional funding, all of which are detailed in the BPP. Provisions set by DOTD for implementation include planning, funding, and designing pedestrian facilities on all new and reconstruction projects in addition to providing bicycle and transit accommodations appropriate to the context of the roadway.

The BPP identifies potential funding sources that assist in prioritizing projects, which includes:

- Local funding
 - Municipality dedicates a portion of the general funds
 - Local government issues general obligation bonds
 - Local governments allow for funding from property taxes, dedicated sales, impact fees, financing, and/or special assessment districts
- State funding
 - Federally funded DOTD program by the capital outlay budget
- Federal funding
 - 80% federal and 20% non-federal match dedication
 - Funding opportunities that include TIGER, TIFIA, FTA, ATI, CMA, HSIP, NHPP, STBG, PLAN, NHTSA 402, NHTSA 405, and FLTTP (all of which are detailed in the BPP for clarification)

2 - 10 Local Plans in Project Development

The plan offered by the Rapides Area Planning Commission is an example of the Complete Streets considerations already put into place by local agencies that fosters the vision set by the State of Louisiana's Complete Streets Policy. Other example local plans that aim to implement the Complete Streets policy and vision include the Bossier City Comprehensive Plan, St. Charles Parish Pedestrian and Bicycle Master Plan, and Jefferson Parish Bicycle Master Plan, which are included in the resources portion of this manual. During the project development process, the Local Public Agency should always be contacted to determine if a local plan or policy exists as these plans are updated on a regular basis.

CURRENT/FUTURE CONTEXT

In addition to coordination with local public agencies and consideration of the local plan, a conversation with the locals regarding context for the facility under consideration for new construction or reconstruction should take place.

The State Smart Transportation Initiative provides resources that assist in identifying key elements that indicate land use context. Most of the material provided here within was adopted from their resources. A context area is a land area comprising a unique combination of different land uses, architectural types, urban form, building density, roadways, topography and other natural features. The existing and planned land use context should be defined on every project. The roadway design should be compatible with the existing land use context, or a planned land use context that reflects the community vision.

2 - 11 Why Context Matters

Understanding the land use context provides guidance on who will need to use the road and how. This understanding influences the geometric design of the roadway and the types of amenities required in the right-of-way, such as transit stops, sidewalks, or bike lanes.

- **Desired Operating Speed**-This is the speed at which it is intended that vehicles travel. The roadway context should play a large role in determining the desired operating speed. For example, pedestrian travel and the presence of civic uses and retail close to the street all suggest the need to use the lower range of the desired operating speed.

- **Roadway**-The design team should select roadway elements and geometry with a clear understanding of surrounding land uses. For example, in urban areas the design team should always seek to provide sidewalks and bike lanes in accordance with the design guidelines. Travel lanes are often narrower than in suburban areas, particularly if this enables the installation of bike lanes.
- **Roadside**-The roadside primarily serves the pedestrian and the transit rider and provides a transition between public and private space. The design of roadside elements should support the land use context. Civic uses such as schools and parks, and high density neighborhoods which generate higher pedestrian activity may require wider sidewalks.

2 - 12 Defining Land Use Context

Seven context areas are described in the following section, from the least to the most developed:

- Rural
- Suburban Neighborhood
- Suburban Corridor
- Suburban Center
- Town/Village Neighborhood
- Town Center
- Urban Core

Examples from Louisiana are provided with the description of each context area, but in practice, land uses do not always fit neatly into the defined context areas, or the boundaries between context areas may be fluid. The designer should use their best judgment in selecting the context that most closely matches the existing and proposed land uses.



	RURAL	SUBURBAN			URBAN		
Density Units	1 DU/20 ac	1 DU/ac - 8DU/ac	2 - 30 DU/ac	3 - 20 DU/ac	4 - 30 DU/ac	8 - 50 DU/ac	16 - 75 DU/ac
Building Coverage	NA	< 20%	20% - 35%	35% - 45%	35% - 50%	50% - 70%	70% - 100%
Lot Size/Area	20 acres	5,000 - 80,000 sf	20,000 - 200,000 sf	25,000 - 100,000 sf	2,000 - 12,000 sf	2,000 - 20,000 sf	25,000 - 100,000 sf
Lot Frontage	NA	50 to 200 feet	100 to 500 feet	100 to 300 feet	18 to 50 feet	25 to 200 feet	100 to 300 feet
Block Dimensions	NA	400 wide x varies	200 wide x varies	300 wide by varies	200 by 400 ft	200 by 400 ft	200 by 400 ft
Max. Height	1 to 3 stories	1.5 to 3 stories	retail -1 story; office 3-5 stories	2 to 5 stories	2 to 5 stories	1 to 3 stories	3 to 60 stories
Min./Max. Setback	Varies	20 to 80 feet	20 to 80 ft	20 to 80 ft	10 to 20 ft	0 to 20 ft	0 to 20 ft

1. **Rural**-This context area consists of a few houses and structures dotting a farm or forest landscape. The areas are predominantly natural wetlands, woodlands, meadow, or cultivated land. Small markets, gas stations, diners, farm supplies, convenience grocers, etc. are often seen at the intersections of arterial or collector roads.



- 2. Suburban Neighborhood**-Predominantly low-density residential communities. House lots are typically arranged along a curvilinear internal system of streets with limited connections to regional road network or surrounding streets. Lot sizes are usually two acres to one-quarter acre, but in older suburbs, it is common to find one-eighth acre lots. Garden apartments are also included in this type. Neighborhoods can include community facilities such as schools, churches, recreational facilities, and some stores and offices.



- 3. Suburban Corridor**-This area is characterized by big box stores, commercial strip centers, restaurants, auto dealerships, office parks, and gas stations. These uses are sometimes interspersed with natural areas and the occasional cluster of homes. Buildings are usually set back from the roadway behind surface parking. Office buildings are usually set back a bit more than adjacent retail frontage to establish garden separation from ground windows.



4. **Suburban Center**-Often a mixed-use, cohesive collection of land uses that may include residential, office, retail, and restaurant uses where commercial uses serve surrounding neighborhoods. These areas are typically designed to be accessible by car, and may include large parking areas and garages. They are less accommodating to pedestrians than town centers, and opportunities to cross the primary roadway can be limited.



5. Town/Village Neighborhood-Predominantly residential neighborhoods, sometimes mixed with retail, restaurants and offices. In urban places, residential buildings tend to be close to the street. Rowhouses fronting the sidewalk, and houses back 30 feet behind a front lawn are both common types. Small retail establishments sometimes occupy principal corners. Block sizes are regular and often small in comparison to suburban neighborhood blocks. Even where streets are narrow, on-street parking is common and typically well used. The large majority of neighborhoods have sidewalks.



- 6. Town/Village Center-**A mixed use, high density area with buildings adjacent to the sidewalk, typically two to four stories tall with commercial operations on the ground floor and offices or residences above. Parallel parking usually occupies both sides of the street with parking lots behind the buildings. Important public buildings, such as the town hall or library, are provided special prominence.



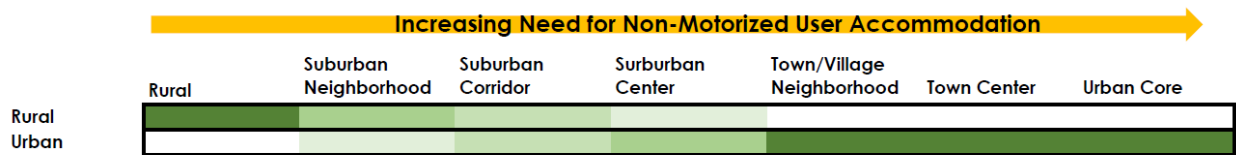
- 7. Urban Core**-Downtown areas consisting of blocks of higher density, mixed use buildings. Buildings vary in height from three to sixty stories.



2 - 13 Selecting Typical Section in Accordance with Land Use Context

The non-motorized user facility type should be decided in concert with land use context. Although not a simple and clear-cut task, the project owner/designer should use engineering judgment and consult with local stakeholders, such as the local public agency's planning and zoning commission or metropolitan planning organization, to determine facility type.

DOTD’s Complete Streets Design Guide in the Minimum Design Guidelines provides minimum accommodations for pedestrians and bicycles, specific to urban and rural areas. It is recommended to consider the land use contexts described above in conjunction with the minimum design guidelines to determine the most appropriate cross section. For general guidance, a translation chart is provided below to assist in determining rural/urban designation in the DOTD Complete Streets Design Guide. The darker green indicates a stronger relationship with land use and appropriate design guidance.



NOTE: Bolder green indicates strong relationship to Rural/Urban Element as referenced in the LADOTD Complete Streets Design Guide

DESIGN ELEMENTS

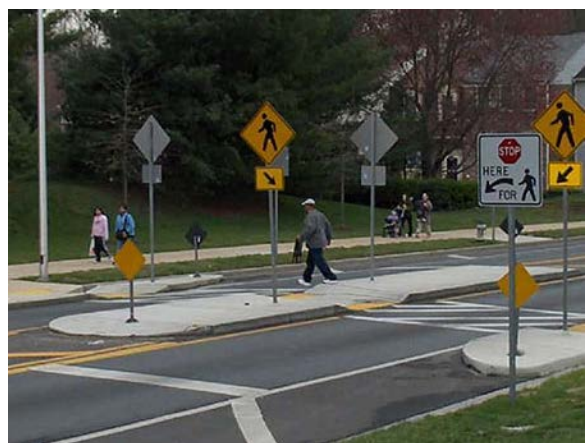
2 - 14 Planning to Designing

Planning involves much effort and consideration before action is taken to the final design and construction of the roadway and/or facility. In the planning phases, land use context, types of pedestrian/bicyclist/transit facilities are taken into account and the possibility of reallocating space during a pavement preservation project due to land use context changes over time. The overall concept is to determine the most appropriate cross section to include facilities for all road users prior to design. Once in design, refined cost estimates and minor modifications to the cross section may be necessary. The following strategies may prove useful especially during pavement preservation projects.

- 1. Road Diets** - A **road diet** is a technique whereby the cross section of an existing roadway is reduced to achieve systematic improvements. Typical measures applied in the road diet include a reduction in the number of travel lanes, travel lane width or introduction of spaced shared with, or reserved for other non-vehicular uses. Intended goals may include a reduction in rear end collisions, a reduction in speeding, or the creation of space for additional uses, such as parking, bicycle lanes, wider sidewalks, etc. A classic example of a road diet is taking four-lane undivided road and reconfiguring the road to two travel lanes a done turn lane for motorists, and reallocating the leftover space for bike lanes. A **bicycle lane** is part of the roadway, adjacent to the travel lane, designated by striping, signing, and pavement markings of the preferential or exclusive use of bicycles, and usually electric mobility aid users. A **bicycle path** is a public way, separated by grade or other physical barrier from motor traffic, which is designated by official signs or markings for use by persons riding bicycles.



A road diet may also include a median island, which gives pedestrians and bicyclists the ability to cross one directional traffic lane at a time.



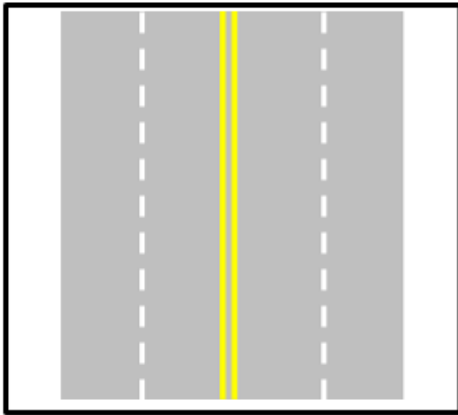
There are benefits to reconfiguring roads for motorists using the road diet design, which include three crash types that can be reduced. When a turn lane is put into the design, the following benefits become apparent:

- Rear end crashes decrease due to the turning vehicle being removed from ongoing traffic
- Side swipes are decreased when the person following the turning vehicle changes lanes suddenly
- Turning vehicles crossing over opposite travel lanes are able to see oncoming traffic better, which decreases left turn or broadside crashes

There are also benefits for pedestrians using the road diet design, which include:

- Reducing crossing distance
- Eliminating or reducing “multiple threat” crash types
- Installing crossing island to cross in two simple steps
- Reducing top and travel speeds
- Buffering sidewalk from travel lanes
- Reclaiming street space for “higher and better use” than moving peak hour traffic

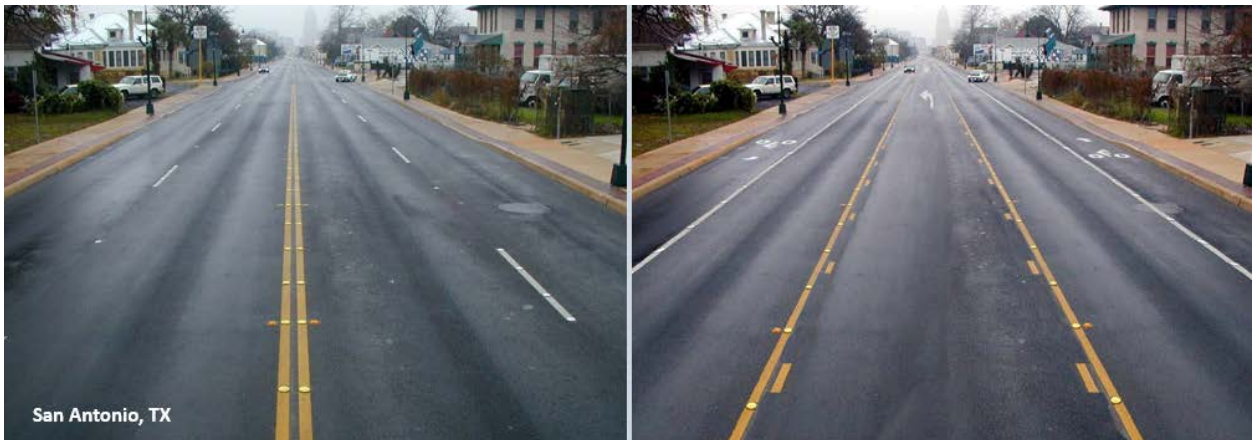
Illustrate a road diet for the four-lane roadway.



What users did you adhere to with this reconfiguration? (Pedestrians, bicyclists, motorists, etc.) _____

2 - 15 Lane Reconfiguration

The initial design of a road can hinder traffic flow in the future, and attempts to adhere to transportation needs can be made. Lane reconfiguration is a method in which the original physical appearance of the roadway is reconfigured to meet the needs of all users. For example, a four-lane roadway/highway may be reconfigured to include two lanes for motorists, two bike lanes, and a center turn lane.



The picture below shows a five-lane roadway before lane reconfiguration measures were taken.



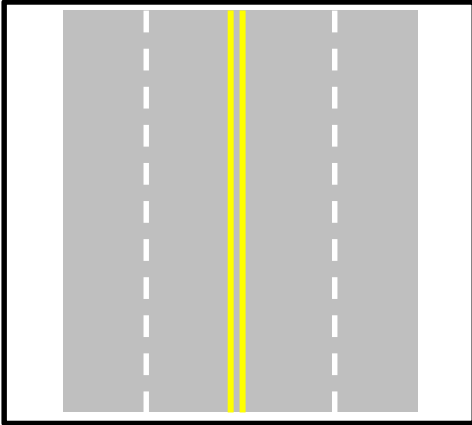
The picture below shows the same roadway after lane reconfiguration measures were taken.



What are four differences between the initial roadway and reconfigured roadway?

1. _____
2. _____
3. _____
4. _____

Illustrate a reconfiguration for the four-lane roadway.



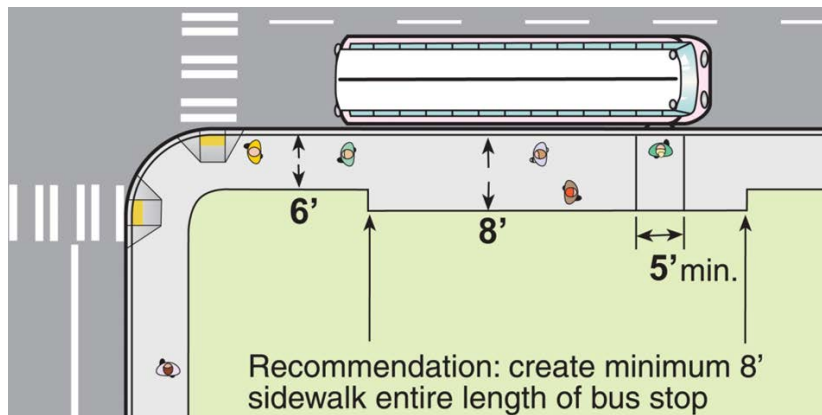
What users did you adhere to with this reconfiguration? (Pedestrians, bicyclists, motorists, etc.) _____

Some benefits of using lane reconfiguration include:

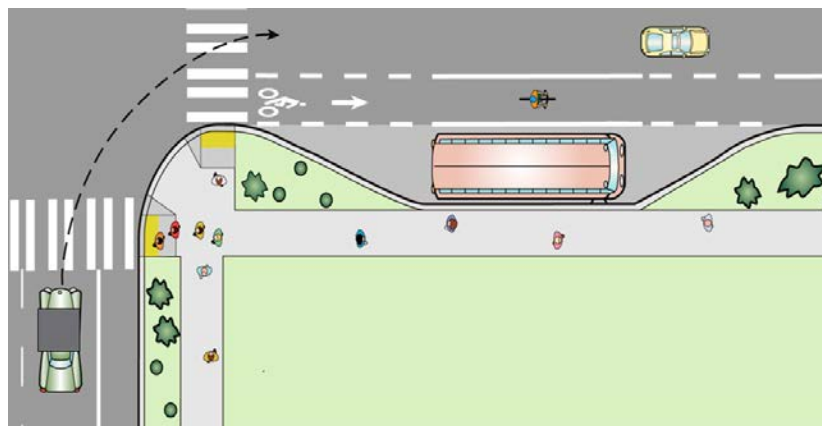
- Reducing crossing distance
- Reducing motorist crash possibilities
- Ability to easily install median islands
- Reduce motorists' speed

2 - 16 Transit

Transit is a common method of transportation for many users, which primarily consists of bus transportation. Considerations for transit users includes safety and accessibility. Common safety concerns include pedestrian crossings, bus stop locations, and bus pullouts. The location of the bus stop includes many design considerations, which include making the sidewalk wide enough to adhere to pedestrians and transit users without conflict of mobility, providing shelter for transit users waiting for the transportation system to arrive, and visibility of the transit users for both the motorists and the transit system operator. The illustration below shows the recommended transit stop guidelines.



Another example of how to effectively allow transit users to board safely is to design a designated side lane as shown in the illustration below. Notice how the bus is able to pull out of traffic safely and bicyclists are still mobile throughout the boarding process.



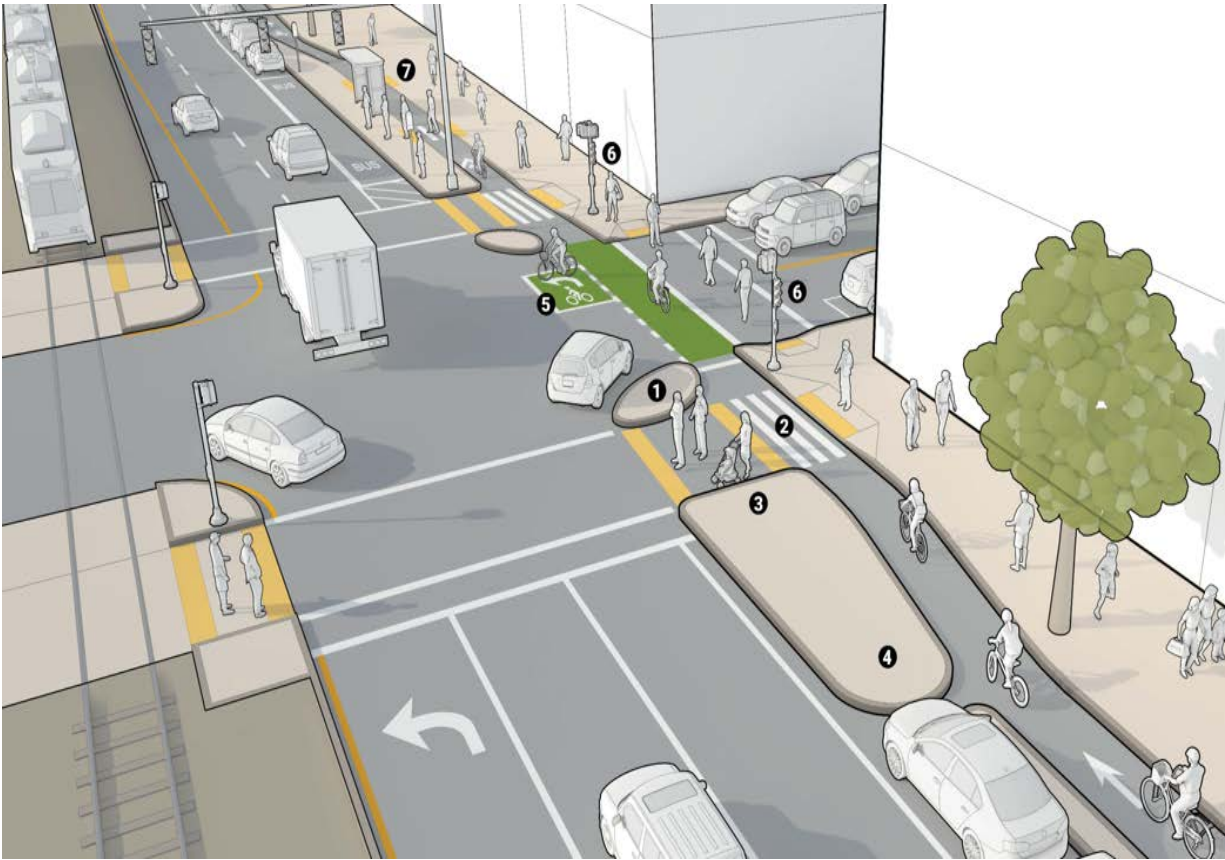
The illustration below shows an example of shelter located at a transit stop. Notice that the shelter includes a bench and space for users with mobility aids, along with designated signs for the actual transit stop.



2 - 17 Intersections

At intersections, it is important to consider the corner radii of the intersections, determine possible safety issues, and consider innovative solutions to pedestrian and bicycle safety at intersections. The turning radii can help determine the motorists' speed as they make the turn. Large turning radii typically lead to higher speeds by motorists. When the radius is tight, drivers tend to use more caution and take the turn at lower speeds, and the pedestrian is more visible to the driver and has a shorter distance to cross.

The



Other considerations to make for intersections (as illustrated in the above image) includes the following:

1. The deflection island reduces motorists turning speeds and improves visibility between drivers, bicyclists, and pedestrians.
2. Bicyclists yield to pedestrians crossing the bike lane.
3. Islands reduce the overall crossing distance for pedestrians and create additional space for people to wait before crossing the street.
4. Parking is restricted at the intersection to increase visibility between all users.
5. Bicyclists wait at a queue box to make left turns.
6. Bicycle traffic signals tell bicyclists when it is safe to proceed through the intersection.
7. Bicyclists are routed behind the bus stop and yield to the bus passengers accessing the stop.

2 - 18 Crossing Countermeasures

A **crosswalk** is any portion of a roadway that an intersection or elsewhere that is distinctly indicated for pedestrian crossing lines or other pavement markings applied to a roadway surface. Crosswalks may vary based on context and potential designs include the ladder-style, traditional, diagonal, staggered continental styles. Crosswalk markings are provided to indicate to pedestrians where to cross, to indicate to drivers where pedestrians cross, and legally establish the walkway. A **walkway** is a formal surface, which supports the act of walking, which includes sidewalks, trails, paths, stairs, ramps, and passageways.

Some locations may not provide adequate crossing opportunities, which include roadways with:

- No consistent place for crossing
- Poor sight distance
- High vehicular speeds
- High traffic volumes

The Manual on Uniform Traffic Control Devices and the DOTD Traffic Engineering Manual provides guidance on the installation of crosswalks.

2 - 19 Bicycle Facilities

A **bicycle facility** is a physical facility provided for the exclusive or semi-exclusive use of bicycles. Examples of bicycle facilities include shared roadways (no bikeway designation), marked shared roadways, bikeways (bicycle lanes, bicycle paths, shared use paths), and end of trip facilities (bicycle parking and storage facilities).

A **bicycle parking facility** is any facility for the storage of bicycles to protect against theft and damage. Short-term bicycle parking facilities allows the frame and both wheels of the bicycle to be locked, but do not provide accessory and component security or weather protection. Long-term bicycle parking facilities provide a high degree of security and protection from weather and are intended for situations where the bicycle is left unattended for longer periods, such as transit stops, places of employment, schools, apartments, and condominium complexes.

Bicycle facilities should include the ability to use locks for security and secure the bicycle without damage. The facility should not be in the way of other road users. Ideal long-term bicycle facilities encourage the 4Ss, which include security, shelter, sites at work, and shopping.

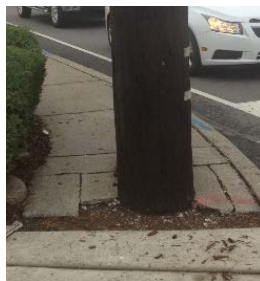


2 - 20 Walking Along the Road

Walking along the road can be dangerous, but accommodations can be made in response to pedestrian and motorist safety. Shoulders are included in designs for many reasons, but can also help pedestrians walking along the road. Shoulders help motorists avoid crashes, provide pedestrians with a place to walk, and bicyclists a place to ride. As another consideration to accommodate those walking along the road, sidewalks are included in the design of roads. A sidewalk may be accompanied by a furniture zone, which is an area between the road and the sidewalk that keeps the sidewalk clear. Weather is a consideration when designing the sidewalks so that the ability to walk on the sidewalk is not interfered by rain or snow. Ideally, drainage attempts will clear the sidewalk of excess water and snow. In addition, obstructions should not be present in the sidewalk. If an obstruction is present, the recommendation is to mitigate around the obstacles. To meet minimum ADA guidelines, the DOTD Complete Streets Design Guide requires a minimum five-foot sidewalk. Some examples of obstructions may include:



Fire Hydrants



Utility Poles



Trees



Landscape

Additionally, driveways can hinder the ability to travel along the road and/or on the sidewalk. The angle in which the driveway or intersection presents itself may allow for high speed turns, which can put pedestrians at risk. It is important to consider the driver's speed of turning and the safety of pedestrians crossing the intersection/driveway in the design.

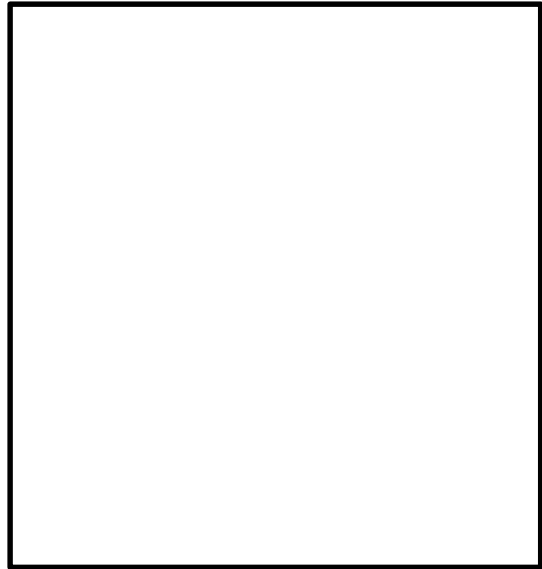
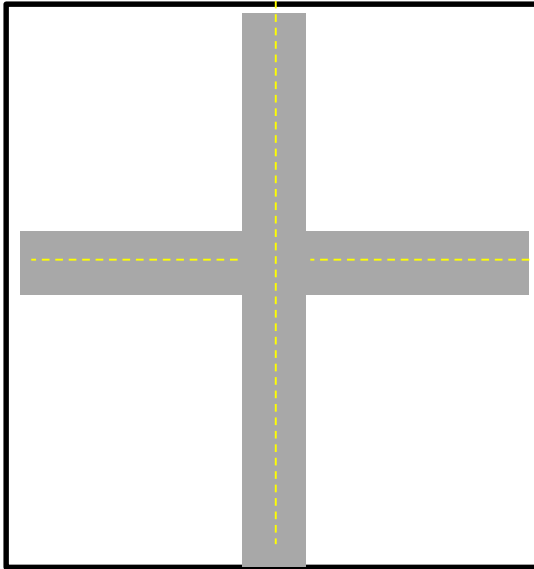
2 - 21 Roundabouts

Roundabouts are great alternatives to mainstream traffic designs and offer many benefits for drivers, pedestrians, and bicyclists. Roundabouts should not be confused with rotaries, which are larger and can create safety hazards for all. Safety benefits for roundabouts includes reduced speeds, no left-turn conflicts, shorter crossing distances, and crossing only one direction of travel at a time.

The advantages of a roundabout for pedestrians include:

1. Reduced vehicle speeds
2. Reduced number of conflict points
3. Shorter crossing distances
4. Splitter island provides a refuge-pedestrian crosses one direction
5. Crosswalk is placed one car length back

Illustrate a roundabout based on the scenario in the first box. Sketch the roundabout in the second box.



Describe what road users benefit from this design and why.

APPENDIX A-1: CHAPTER REVIEW ANSWER KEYS

Chapter-Module 1 Review

1. What is the definition of a Complete Street?

A complete street is a roadway that is designed and operated to enable safe access and travel for all users, including pedestrians, bicyclists, motorists, and transit users of all ages and abilities, within the transportation facility

2. List three examples of what a Complete Street may include:

Any three of: sidewalks, bike lanes (or wide paved shoulders), special bus lanes, comfortable and accessible transit stops, frequent and well-maintained crossing opportunities, median islands, accessible pedestrian signals, and curb extensions

3. The **Complete Streets Policy** provides performance measures to meet the multimodal needs that are relevant to the individuals using them.

4. What are two of the ten elements of the Louisiana Complete Streets policy?

Any two of:

- **Sets a vision**
- **Includes all users**
- **Applies to new and retrofit projects**
- **Makes exceptions specific and clear**
- **Encourages connectivity**
- **Covers all roads**
- **Directs the use of design criteria while recognizing the need for flexibility**
- **Recognizes that solutions must complement the context of the area**
- **Establishes performance measures**
- **Includes specific next steps for the implementation of the policy**

5. In what stages of the project delivery process does the Complete Streets policy get considered? **all**
6. What are the three goals for the State of Louisiana's Complete Streets policy?
- **Safely and efficiently accommodate all road users (motorists and non-motorists such as but not limited to pedestrians, transit users, bicyclists of all ages and abilities).**
 - **Create a network that balances integration, context sensitivity, access and mobility for all road users.**
 - **Provide leadership and establish exceptional partnerships with local public agencies on implementation of Louisiana's Complete Streets policy.**
7. What is the purpose for the Complete Streets policy? **To better address the needs of non-motorized users and to create a comprehensive, integrated, connected transportation network that balances access, mobility, and safety needs of motorists, transit users, bicyclists, and pedestrians of all ages and abilities**
8. Give two significant benefits of the Complete Streets policy.
Any two:
- **Improve Safety**
 - **Increase Mobility and Safety for Children**
 - **Increase Mobility for Disabled Individuals**
 - **Increase Mobility for Seniors**
 - **Promote Active Living**
 - **Support Environmental Policies Aimed at Reducing Emissions**
 - **Support Economic Development**
 - **Lower Household Transportation Costs**

9. Why were these two benefits chosen over the rest? **Answer is correct if respondent provided justification on why the two benefits were chosen.**

10. Give an accommodation for each road user.

- **Pedestrian-Respondent chose one of the following:**
 - **Dedicated pedestrian facilities, such as sidewalks and crosswalks**
 - **Facilities for the semi-exclusive use of pedestrians, such as a shoulder**
 - **Other design features to increase the safety of a facility for a pedestrian including signage, pedestrian signals (automatic or demand actuated), and other actions, such as retiming signals or reducing crossing width with curb extensions or median islands.**
- **Bicyclist- Respondent chose one of the following:**
 - **Facilities for the exclusive or semi exclusive use of bicycles, such as bicycle lanes, bicycle paths, shared use paths, marked shared lanes (sharrows)**
 - **Other interventions to make a transportation network or facility safer or friendlier for bicycle users, such as wider outside travel lanes, signage, or bike boxes**
 - **Installing drainage grates in a bicycle friendly direction or avoiding chip-sealed surfaces**
- **Transit User- Respondent chose one of the following:**
 - **Designated areas placed in locations, such as the side of a roadway, where transit users gather to board or exit**
 - **Identified routes to board and exit the source, such as walkways to the designated area**
 - **Accessible transit stops with signs, benches, shelters, and safe and convenient crossing opportunities.**
 - **Crossings near transit stops, benches at bus stops, and shade**

APPENDIX A-2: RESOURCES

Complete Streets Advisory Council	http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Highway_Safety/Complete_Streets/Pages/default.aspx
Legislative Session R.S. 48:22.1	http://legis.la.gov/legis/Laws_Toc.aspx?folder=122&title=48
Complete Streets Final Report (2010)	http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Highway_Safety/Complete_Streets/Misc%20Documents/Complete%20Streets%20Final%20Report%2007292010.pdf
EDSMs	http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/EDSM/Pages/default.aspx
Americans with Disabilities Act of 1990	https://www.ada.gov/ada_intro.htm
Americans with Disabilities Act Accessibility Guidelines (ADAAG)	https://www.access-board.gov/guidelines-and-standards/buildings-and-sites/about-the-ada-standards/background/adaag
LADOTD Guidelines and Manuals	LADOTD intranet
American Association of State Highway and Transportation Officials (AASHTO)	https://www.transportation.org/
The Manual on Uniform Traffic Control Devices (MUTCD)	https://mutcd.fhwa.dot.gov/
The Public Rights-of-Way Guidelines (PROWAG)	https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way
The National Association of City Transportation Officials (NACTO)	https://nacto.org/

Federal Highway Administration's 2000 Policy	https://www.fhwa.dot.gov/policy/2015cpr/chap11.cfm
FHWA	https://www.fhwa.dot.gov/environment/bicycle_pedestrian/
LADOTD Bicycle and Pedestrian Plan	http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Multimodal/Highway_Safety/Bicycle_Ped/Pages/default.aspx
SCR 110	http://www.legis.la.gov/legis/ViewDocument.aspx?d=666601
LADOTD Project Delivery Manual	http://wwwsp.dotd.la.gov/Inside_LaDOTD/Divisions/Engineering/Pages/Engineering_Docs.aspx
Bicycle Planning Tool	http://www.arcgis.com/home/webmap/viewer.html?url=http%3A%2F%2Fgiswebnew%2Fdotd%2Frest%2Fservices%2FStatic_Data%2FStateBikeMap_RecommendedBikeFacility%2FMapServer&source=sd
Alexandria/Pineville Bicycle & Pedestrian Plan	http://www.rapc.info/Transportation/Bike_Ped/Bike_Ped.aspx
Bossier City Comprehensive Plan	http://www.bossiercity.org/files/ApplicationsForms/mpc/agen_mins/BossierCityCompPlan%20FINAL.pdf
St. Charles Parish Pedestrian & Bicycle Master Plan	https://www.walkbikescp.com/
Jefferson Parish Bicycle Master Plan	http://www.jeffparish.net/modules/showdocument.aspx?documentid=11505
ArcGIS	http://www.arcgis.com/home/webmap/viewer.html?url=http%3A%2F%2Fgiswebnew%2Fdotd%2Frest%2Fservices%2FStatic_Data%2FStateBikeMap_RecommendedBikeFacility%2FMapServer&source=sd

APPENDIX A-3: EDSM II.2.1.14

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT OFFICE OF ENGINEERING			EDSM No: II.2.1.14
ENGINEERING DIRECTIVES AND STANDARDS			
VOLUME	II	Revision Date:	04/19/2016
CHAPTER	2	Effective Date:	01/04/2000
SECTION	1	Subject:	Complete Streets
DIRECTIVE	14		

1. PURPOSE

The purpose of this directive is to implement the complete street policy.

2. SCOPE

This policy applies to the State highway system and to local roads where state or federal funds will be used, as well as to any improvements to the State highway system funded by a private entity, Parish or local government that are constructed by permit.

3. STATE LAWS

- Louisiana Revised Statute RS 32:1 Definitions
- Louisiana Revised Statute RS 48:22.1 Complete Streets, findings, requirements, exceptions
- Louisiana Revised Statute RS 48:163.1 Use of highway funds for bicycle facilities

4. DEFINITIONS

- **Bicycle facility** - any physical facility provided for the exclusive or semi-exclusive use of bicycles. This includes but is not limited to unmarked shared roadways, marked shared roadways, bicycle lanes, shared use paths, and end of trip facilities.
- **Bicycle lane** - the part of the roadway adjacent to the travel lane, designated by official signs or markings for the preferential or exclusive use by bicycles and electric mobility aid users. It is for one-way travel, in the same direction as the adjacent traffic lane.
- **Complete street** – Roadways that are designed and operated to enable safe access and travel for all users, including pedestrians, bicyclists, motorists and transit users of all ages and abilities.
- **Complete street plan** or **Bicycle plan** or **Pedestrian plan** or **Transit Plan** or **Plan** - an adopted plan by local government by formal resolution or signature by Mayor, Parish President or Police Jury that addresses the local community’s bicycle, pedestrian and/or transit facilities. At a minimum this plan shall include: 1) a map with the labeled roadways within the local area with the different types of bicycle, pedestrian and transit infrastructure labeled such as a) transportation or recreation, b) bicycle lane, cycle track, sidewalk, on street facility, shelter, shared use path, side path, etc.; 2) a description of the facility types and how they provide a transportation network for non-motorized traffic; 3) a list of the state and local routes with the proposed infrastructure improvements identified. This plan shall be used to assist the DOTD

in determining the appropriate infrastructure for each construction project within the local community.

- **Crosswalk** - (a) That part of a roadway at an intersection included within the connections of the lateral lines of the sidewalks, shoulders, or a combination thereof on opposite sides of the highway measured from the curbs or, in absence of curbs, from the edges of the traversable roadway or if there is neither a sidewalk nor shoulder, a crosswalk is the portion of the roadway at an intersection that would be included within the prolongation of the lateral lines of the sidewalk, shoulder, or both on the opposite side of the street if there were a sidewalk or shoulder. (b) Any portion of a roadway at an intersection or elsewhere distinctly indicated for pedestrian crossing by lines or other markings on the surface.
- **Cycle track** - the part of the roadway separated from the adjacent travel lane by a painted buffer, designated by official signs or markings for the exclusive use by bicycles. It is typically for one-way travel, in the same direction as the adjacent traffic lane.
- **Independent right-of-way** - general term denoting right-of-way outside the boundaries of a conventional highway.
- **Mobility aid** - a device used by individuals to ambulate independently and that is human or electric powered and used in- or outdoors.
- **Pedestrian** - any person afoot or utilizing a mobility aid.
- **Pedestrian and Bicycle Transportation Network** – consists of a series of interconnected facilities that allow non-motorized road users of all ages and abilities to safely and conveniently get where they need to go.
- **Separated Bicycle Lane** – an exclusive facility for bicyclists that is located adjacent to the roadway and that is physically separated from the motor vehicle traffic with a vertical element. A separated bicycle lane will have to be justified for each location since the MUTCD does not recommend vertical elements. Justification will have to consider at a minimum the type of vertical element, the turning movements and number and frequency of right turn lanes. Since there is a vertical element separating the bicycle lane from the roadway a maintenance agreement with a local municipality shall be required.
- **Shared use path or Shared use trail or Multi use path** - a public way separated by open space, or grade from motor traffic, either within the highway right-of-way or within an independent right-of-way that is designated for use by pedestrians, mobility aid users, and persons riding bicycles. May be either one way or two way.
- **Shared Lane** – a lane of a traveled way that is open to both bicycle and motor vehicle travel. This lane may or may not have markings or signs.
- **Shoulder** - the portion of the highway contiguous with the roadway for accommodation of stopped vehicles, for emergency use, pedestrian use, mobility aid use, bicycle use, and for lateral support of base and surface.
- **Sidewalk** - that portion of a highway between the curb lines, or the lateral lines of a highway, and the adjacent property lines, intended for the use of pedestrians. Typically, concrete or asphalt. May be placed on independent right of way.
- **Sidepath** - a shared use path located immediately adjacent and parallel to a roadway. Allowed on roadways with low driveway density. One way facilities are preferred.
- **Transit facilities** – improvements to roadways and access that help create safe and comfortable transit stops and smooth predictable transit trips.

5. POLICY

- a. DOTD will strive to accommodate pedestrians, bicyclists, and transit users by providing appropriate safe crossings, providing corridor continuity and ensuring transportation projects comply with the current accessibility guidelines. Provisions for all users will be integrated into the project development process for the entirety of all projects through design features, using Context Sensitive Solutions (CSS). All projects shall consider the impact that improvements will have on safety for all users and make reasonable efforts to mitigate negative impacts on non-motorized modes. Restricting non-motorized access should not be considered an appropriate strategy with the exception of those limited access facilities where pedestrians and bicyclists are prohibited.
- b. Facilities, such as interstates, where bicyclists and pedestrians are prohibited by law from using the roadway shall be excluded from this policy.
- c. DOTD Design Guidelines shall include guidance for complete streets facilities appropriate to the context of the roadway.
- d. On all new and reconstruction roadway projects that serve adjacent areas with existing or reasonably foreseeable future development or transit service, DOTD should plan, fund, and design pedestrian, bicycle and transit facilities. The appropriate facility type will be determined by the context of the roadway with local involvement as determined by the DOTD Design Guidelines and the complete street plan.
- e. On projects that are preservation/operations/rehabilitation/replacement only, DOTD will only consider improvements that do not require right-of-way acquisition, utility relocation, relocating or enclosing roadside drainage or major construction to provide bicycle, pedestrian or transit accommodations. These improvements may include narrowing lanes, restriping, road reconfiguration and other means of providing improved bicycle and pedestrian access according to the complete street plan.
- f. This EDSM may not apply to minor projects such as TSM projects, spot replacements, intersection improvements, turn lane projects, etc. if bicycle, pedestrian or transit facilities do not exist.
- g. In assessing the need for a particular facility, the DOTD shall give priority to the connection of pedestrian, transit and/or bicycle traffic generators (e.g., schools, shopping centers, parks and recreational areas, subdivisions). The DOTD shall utilize the Bicycle Planning Tool for bicycle facilities.
- h. Maintenance and liability for sidewalks and bicycle facilities outside the limits of the curb or barrier will be the responsibility of the local jurisdiction. This shall include separated bicycle lanes and any appurtenances in addition to the pavement. Maintenance and liability agreements will be required as a provision of the entire project or these facilities shall be excluded from the project.

- i. The addition of bicycle, pedestrian, and transit facilities should be excluded from the project if the cost of providing such facilities is excessively disproportionate (defined as exceeding 20% of the construction cost of the project) unless the local entity contributes the additional funds for those projects with complete street facilities.
- j. Consideration of complete street facilities for non-motorized access and mobility shall be included in feasibility of project development. Documentation of decisions and appropriate analysis is required in the feasibility report. If this documentation is not provided then the project shall not move forward.

6. IMPLEMENTATION

- a. All feasibility reports completed after the implementation date of this policy shall include complete streets considerations as required based on project type and scope.
- b. The Project Manager at the feasibility stage shall contact the local government to determine if a complete street plan exists as defined in this document. The Project Manager shall request a written recommendation from the affected local entity concerning the need for complete streets facilities in the project. The entity will also be required to provide a commitment for maintenance and liability for any facilities recommended which are outside the curb or shoulder of the proposed roadway. Upon receipt of the recommendation of facilities and commitment for maintenance and liability, DOTD will consider facilities for inclusion in the project. After any required analysis or alternatives have been reviewed and complete streets facilities have been determined to be feasible for inclusion in the project, the Project Manager shall request an entity agreement be executed for the maintenance and liability. The entity agreement shall be executed prior to incorporation of the complete streets facility into the design of the project. If the complete streets facilities are not feasible or cannot be included within compliance of this policy, the local entity will be notified of this decision by the Project Manager.
- c. If no plan exists or the entity chooses not to make a recommendation, the Project Manager shall request a written recommendation from the DOTD District Administrator. At a minimum the consideration shall be given to a minimum 4 foot paved shoulder, if:
 - i. funds allow, and
 - ii. appropriate for the roadway, and
 - iii. all conditions of this policy are met.
- d. For projects that are past the feasibility stage at the time of the revision date, the Project Manager at the current stage shall follow the above implementation.

7. WAIVERS

The Project Manager may request a waiver from the Chief Engineer with the proper justification.

8. APPLICATION OF STANDARDS

These standards shall apply immediately for all projects not in final plan development at the time of the revision date.

9. OTHER ISSUANCES AFFECTED

All directives, memoranda or instructions issued heretofore in conflict with this directive are hereby rescinded.

10. IMPLEMENTATION

This directive will become effective immediately upon issuance.


Chief Engineer

