Lane Repurposing Guidebook

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Before Lane Repurposing


After Lane Repurposing

FLORIDA DEPARTMENT OF TRANSPORTATION
SYSTEMS IMPLEMENTATION OFFICE

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

A1A, Fort Lauderdale, Florida

1 About this Guidebook

Previously referred to as a road diet, lane reduction, or lane elimination, a lane repurposing project is a way to reassign roadway space to achieve other purposes such as economic development, safety and mobility for all users. This guidebook serves as a resource for local, regional, and statewide transportation agency planners and engineers to analyze potential lane repurposing projects and includes the potential factors to be considered prior to design and implementation. Additionally, this guidebook summarizes documentation requirements and the Florida Department of Transportation (FDOT) review and approval process for lane repurposing requests on the State Highway System (SHS). There are several types of facilities where lane repurposing projects cannot take place. Those are Interstate Highways, the Florida Turnpike and other Limited Access facilities, as well as Designated Historic Highways. Key considerations, best practices, additional resources, and guidance analysis and implementation of lane repurposing projects are outlined within this guidebook. In addition, the guide references applicable regulations, requirements, forms, and FDOT resources/handbooks for further detailed information.

1.1 Background

To balance the needs of the statewide transportation network and local roadways, FDOT has developed a process allowing local and regional agencies to repurpose parts of the roadways in their jurisdiction that are owned by FDOT for other purposes. For example, a city may want to repurpose a four-lane roadway to slow vehicular traffic and make the area more amenable to people who walk/bicycle or at-risk populations, such as young children and the elderly. To do this, the city would develop a lane repurposing application and conceptual plan that would be sent to the appropriate FDOT District Lane Repurposing Coordinator for approval based on certain criteria (See Section 2). Additionally, an applicant may want to create an exclusive lane for transit service. For lane repurposing projects that involve facilities for transit-related services, it's advised that additional discussion and coordination with FDOT and their respective transit agencies take place as early as possible. This is because this guidebook may not cover all of the issues that could occur during the planning phase of these types of lane repurposing projects.

Previously, this process was referred to as the Lane Elimination process and the guidance was contained within the Lane Elimination Guidebook (Phases 1 and 2). This process has been renamed the Lane Repurposing process reflecting a more accurate description of what the process entails: lanes on these roadways are not being eliminated, but simply repurposed for a use that fits the needs of that specific portion of roadway. For example, if a roadway has four lanes and when it traverses through the center of a small town, it may need to be repurposed to two lanes with a center two-way-left-turn-lane (TWLTL) with bicycle lanes on both sides (See Figure 1-1 and Figure 1-2). This change could serve that community better, allowing people to walk around more easily and use other modes of transportation. It could also slow down traffic, potentially making the corridor safer.

FIGURE 1-1 Before Lane Repurposing

Source: FDOT

FIGURE 1-2 After Lane Repurposing

Source: FDOT

1.2 Resources

There are numerous resources that lane repurposing applicants may utilize while developing their applications, such as this guidebook, the FDOT Design Manual (FDM) chapters, and these resources below.

POLICY: FDOT's Systems Implementation Office (SIO) developed a new Access Management Guidebook that incorporates context classification into the discussion. FDOT's Quality/Level-of-service (Q/LOS) Handbook provides guidance on measuring LOS for vehicles, pedestrians, bicyclists, and transit users. FDOT's Complete Streets policy and website are also helpful for applicants who wish to understand how this may affect their projects. For projects where roadways are subject to a jurisdictional transfer, guidance can be found in the FDOT Transportation System Jurisdiction and Numbering Handbook and Transportation System Jurisdiction and Numbering Procedure - Topic No. 525-020-010.

DATA: There are several guidebooks and documents that can provide applicants with guidance that can be found on the FDOT Transportation Data and Analytics homepage. The FDOT Traffic Online site is a web application providing traffic counts, turning movement counts, bicycle, and pedestrian counts from field studies. The FDOT Project Traffic Forecasting Handbook offers guidelines and techniques for Corridor Traffic Forecasting studies and Project-Level Traffic Forecasting studies. The ConnectPed Online App also provides information that is useful for analysis, such as traffic counts, crash data, posted speeds, and context classification.

DESIGN POLICY: The FDM also identifies procedures for FDOT projects and establishes geometric and design criteria for SHS facilities. FDM 126 provides an overview of the general purpose, requirements, and application process for lane repurposing projects. FDM 103 includes standard forms and checklists needed when initiating and applying for a lane repurposing project.

COMPLETE STREETS: With the implementation of FDOT's Complete Streets Initiative, many statewide policy/design documents were updated to include these concepts. This lane repurposing guidebook is part of this effort and draws from these resources. The FDOT Context Classification document provides guidance for land use and roadway design purposes for local officials implementing land use and transportation policies and projects with these policies.

ENVIRONMENTAL: This guidebook also references regulatory environmental review, public involvement, planning consistency requirements, other applicable FDOT procedures, and industry best practices or lessons learned that should be reviewed when identifying, evaluating, and documenting a candidate lane repurposing project. The FDOT Project Development and Environment (PD&E) Manual outlines the environmental review process for compliance with the federal National Environmental Policy Act (NEPA) and associated federal and state laws and regulations for all SHS facilities. NEPA compliance is for Federal projects, the PD&E manual also covers state projects. Planning consistency requirements between the environmental documentation, the proposed improvements, and statewide and local transportation plans are documented in FDOT's MPO Program Management Handbook. Public involvement requirements and considerations are documented in FDOT's Public Involvement Handbook, and F.S. 335.199. Additionally, applicants can find guidance on public involvement in Section 4 of this guidebook.

NEPA compliance is for Federal projects, the PD&E manual also covers state projects.

FEDERAL: In addition to FDOT resources, this guidebook references industry standards, best practices, and lessons learned from the national transportation industry such as the Federal Highway Administration (FHWA) Road Diet Informational Guide, additional FHWA resources, and applicable American Association of Highway and Transportation Officials (AASHTO) design standards and guidelines.

2 Lane Repurposing Application Process

The focus of this section is to provide additional guidance regarding the FDOT Lane Repurposing Application Process and what applicants should expect throughout the process, as well as the roles of FDOT staff at the individual districts and the Central Office. The FDOT lane repurposing application process is a three-step process (see Figure 2-1) involving the lane repurposing applicant, District staff, and Central Office staff. The roles and responsibilities for each of these three groups will be discussed within this section.

FIGURE 2-1 FDOT Lane Repurposing Project Application Flowchart

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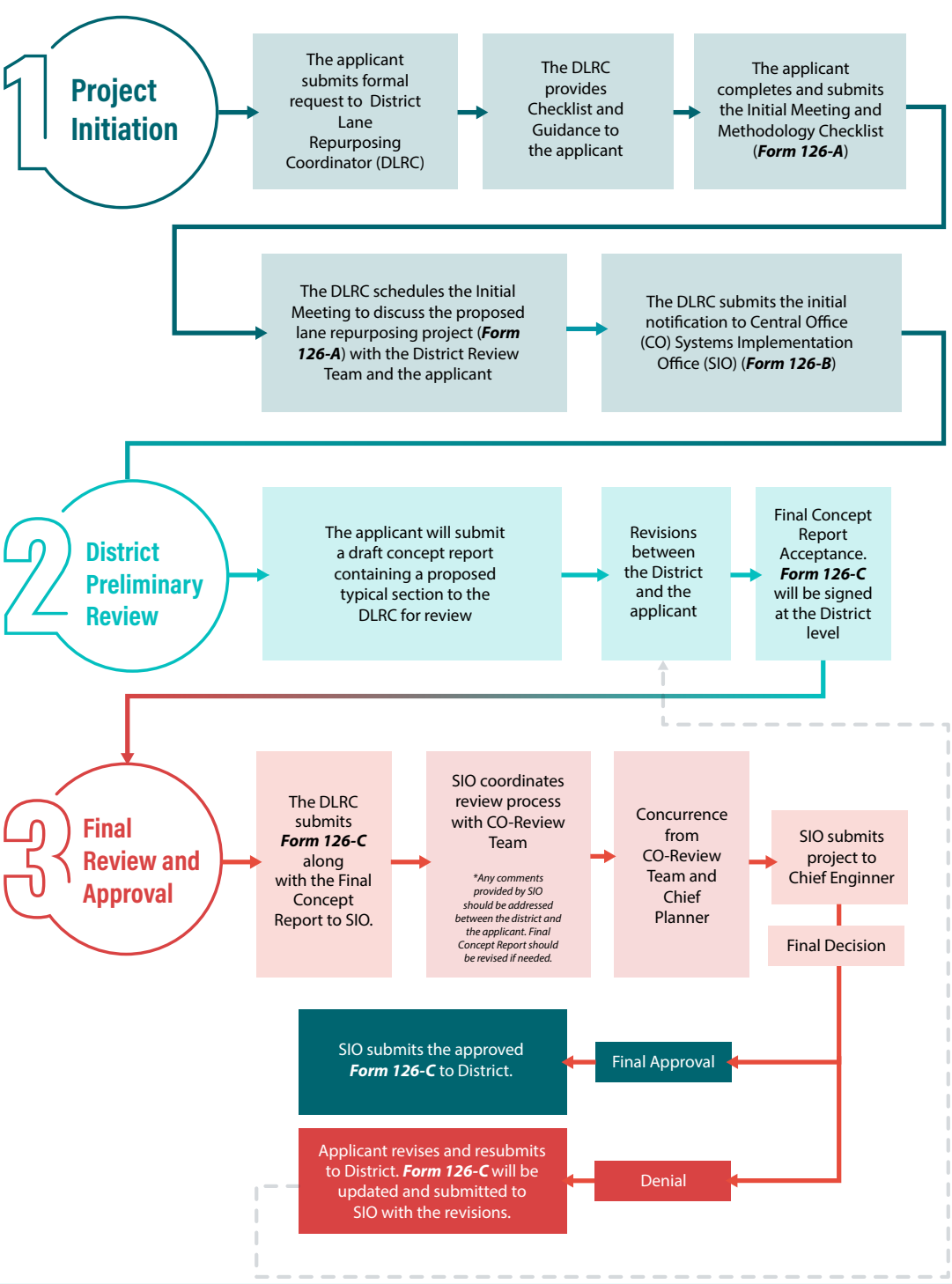

2.1 Potential Data Needs

As applicants proceed through the lane repurposing application process, there will be a need for significant amounts of data, depending on the nature of the project. A lane repurposing project that has low AADT and simply requires restriping to implement, will be less data intensive than a project which requires construction of curbs, gutters and medians. Lane repurposing projects are reviewed thoroughly by FDOT staff at both the District and Central Office.

2.2 Applicant

The applicant for a lane repurposing project on the SHS can be a local government entity (e.g., municipality, county, Metropolitan Planning Organization (MPO), Transportation Planning Organization (TPO), Transportation Planning Agency (TPA), or the Department can submit a request for the repurposing of travel lanes on the SHS. This is handled through their applicable FDOT District Lane Repurposing Coordinator (DLRC). A private entity may only submit a request through a local government entity.

Lane repurposing projects typically are most successful when the applicant is the champion of the project in the community. An applicant who has strong political support for the project can assemble the needed stakeholders and develop a common purpose to guide the project. It is a best practice for the applicant to provide documentation of project support from the elected bodies of jurisdictions where the project is located, and adjacent jurisdictions that will potentially be impacted by the project.

It is the responsibility of the applicant to ensure all parts of the application are completed based upon FDOT standards and procedures. FDOT's role is primarily one of review and will not advocate on behalf of the applicant, nor will they lead any necessary public involvement.

2.2.1 Step One – Project Initiation

There are three main steps that are part of the lane repurposing project application process. The first step is where the applicant contacts the appropriate FDOT DLRC and submits a formal request for a lane repurposing project. Once this takes place, the lane repurposing process is considered to have been formally started. The DLRC provides an Initial Meeting and Methodology Checklist (Form 126-A) and the FDOT Lane Repurposing Guidebook to the applicant. The applicant should review this guidebook and submit the required information in Form 126-A prior to the Initial Meeting with the District Review Team. After this meeting, the applicant will complete and submit the final checklist information including meeting minutes to the DLRC.

2.2.1.1 Initial Meeting and Methodology Checklist (Form 126-A)

Form 126-A (Figure 2-2) must be completed by the applicant as part of Step One of the Lane Repurposing Application Process and provides information to applicants about what is needed to complete the concept report, which is required for Step Two and Step Three. The completion of Form 126-A does not substitute for the concept report but it provides guidance about the detailed information that will be needed in the concept report and the topics to be discussed at the Initial Meeting. Before the Initial Meeting, applicants should complete Form 126-A as thoroughly as possible, and develop a series of questions/comments to discuss during the Initial Meeting with the DLRC. If there are boxes on the form that are not checked because they are not applicable to the application, it is appropriate for the applicant to write "N/A" within the designated sections on Form 126-A. The applicant should be ready to discuss their reasoning at the Initial Meeting.

FIGURE 2-2 Form 126-A

Form 126-A

INITIAL MEETING AND METHODOLOGY CHECKLIST

This is a list of items that the Applicant should prepare to discuss at the initial meeting and the District Review Team may require the Applicant to address these items in the Concept Report, as needed.

Project Information

- ☐ Project Location
- ☐ Project Limits
- ☐ Project Length
- ☐ Project Purpose
- ☐ Jurisdiction(s) in which the Project is Located
- ☐ Proposed Change in Lane Configuration
- ☐ Project Schedule
- ☐ Context Classification

- ☐ Conceptual plan (including transitions to and from the lane repurposing section) that meet FDOT Design Standards for all modes
- ☐ Existing and long-range future AADT (the latter based on historical growth and the regional travel demand model)
- ☐ Consistency of the proposed project with the applicable Long-Range Transportation Plan (LRTP), Transportation Improvement Program (TIP), Transit Development Plan (TDP), comprehensive plan, master plans, visions, and Complete Streets initiatives
- ☐ Status of the roadway as an Evacuation Route, freight route, and part of the Strategic Intermodal System (SIS)
- ☐ Status of the roadway as a major transit corridor per the LRTP or TDP
- ☐ Proposed use(s) for the right-of-way after lanes are eliminated (e.g., widened sidewalks, bicycle lanes, landscaping, on-street parking, transit lanes)
- ☐ Impact on bicycle/pedestrian infrastructure and connectivity
- ☐ Impact on parking
- ☐ Impact on transit routes, stop locations (including appropriateness of turn radii and lane widths), include total number of stops and routes in the area.
- ☐ Existing right-of-way width and any proposed changes to the right-of-way width
- ☐ Anticipated changes in jurisdictional responsibility for ownership or maintenance of the roadway
- ☐ Anticipated changes in functional classification, context classification, and/or access management classification
- ☐ Public Involvement, agency outreach and endorsement.
- ☐ Existing design and posted speeds
- ☐ Existing and future typical section
- ☐ Target speed with anticipated changes in posted speed limits and design speeds
- ☐ Need for design variations or design exceptions
- ☐ Plan for obtaining input and review from businesses, residents, and other stakeholders
- ☐ Plan for receiving endorsement from elected officials
- ☐ Funding source and cost estimates
- ☐ Size of impact area-parallel and cross streets
- ☐ Potential implementation strategy and partner commitments
- ☐ Impact on School crossing locations and midblock crossing
- ☐ Need to add, remove, or modify traffic signals
- ☐ Near and long range multimodal level of service (LOS) and queuing analysis for intersections and segments in the impact area under build and no-build scenario.
- ☐ Mitigation to address the significant adverse impact on state roads and regional transportation system
- ☐ Crash data summary and analysis for the segment and intersections in the project limit
- ☐ Case-specific special considerations to be determined (e.g., railroad crossing improvements)

Source: FDM 103 – Form 126-A

As part of this Initial Meeting and Methodology Checklist review by the applicant, there may be design variations and design exceptions noted. If the lane repurposing project is within the planning phase and not the design phase, then it is acceptable to simply list these within the concept report for FDOT to review.

Once Form 126-A has been completed and submitted by the applicant to the DLRC, the DLRC schedules an Initial Meeting with the designated District Review Team and the applicant. The Applicant attends the Initial Meeting to discuss the project and gain a full understanding of the process and requirements. The DLRC and Review Team review the Methodology Checklist (Form 126-A) with the applicant to assess potential project needs and determine concept report requirements. Once all of the methodology is discussed and agreed upon, the DLRC submits an initial notification to the Central Office Systems Implementation office, including the following forms:

- Completed Form 126-A Checklist;
- Meeting minutes from the Initial Meeting discussion;
- Initial notice to Central Office with Form 126-B and documentation of concurrence from District Planning and Environmental Administrator, District Design Engineer, and District Traffic Operations Engineer.

2.3 District Review Team

The Review Team consists of the FDOT DLRC for the respective District, as well as supporting staff from other offices that may need to be involved. The Team generally includes Planning, Environmental Management, Modal Development, Design, and Traffic Operations. For example, it may be necessary to have staff from Roadway Design to review the geometric portions of the application and be involved in the process. This section lays out the responsibilities of the District Review Team and what applicants should expect throughout the application process.

The District Lane Repurposing Review Team generally includes staff from the following offices:

- ☐ ***Planning***
- ☐ ***Environmental Management***
- ☐ ***Modal Development***
- ☐ ***Roadway Design***
- ☐ ***Traffic Operations***

2.3.1 Step Two – District Preliminary Review

The DLRC and District Review Team will review a draft concept report, including the proposed typical section(s). If accepted, Form 126-C will be signed at the District level and the process moves forward to submission for review by the Central Office. If revisions are required, coordination takes place between the applicant and the DLRC.

After the District reviewer's acceptance, a Final Concept Report must be submitted along with Form 126-C and signed at the District level to Central Office for review. The DLRC will work closely with Central Office staff during this review phase.

2.4 Central Office Review Team

There are two main staff members who manage the lane repurposing process in Central Office; the Systems Management Administrator and the designated Statewide Lane Repurposing Coordinator. The DLRC works with these staff members to help applicants move the process through to the third step of the lane repurposing application process. For more information on this application process, please review Figure 2-1.

2.4.1 Step Three - Final Review and Approval

The DLRC submits a Final Review and Approval of Final Concept Report notification to Central Office Systems Implementation Office (Form 126-C), requiring concurrence by the District Planning and Environmental Administrator, District Design Engineer, and District Traffic Operations Engineer.

The Central Office Systems Implementation Office coordinates the review of the lane repurposing application with all members of the Central Office Review Team. The Systems Implementation Office must also obtain concurrence from the Chief Planner.

The Systems Implementation Office submits the lane repurposing project and Design Concept for Final Approval or Denial to the Central Office Chief Engineer who has the final authority for approval or denial of the request.

Form 126-C must then be signed by both the Chief Planner and Chief Engineer. The DLRC is notified of the Chief Engineer's decision.

2.4.1.1 Approval/Rejection

Upon approval, the project will move forward to the FDOT project development process. Lane repurposing requests may be denied by the Chief Engineer based on FDOT review of applicable criteria and requirements. If denied, the applicant may be required to make modifications and resubmit the application. The applicant will then be required to address the comments and resubmit the request to the respective DLRC to meet specific requirements on a case-by-case basis. The resubmittal must include an updated and signed Form 126-C.

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3 Lane Repurposing Concept Reports

The focus of this section is to review the various parts of the concept report which are required by the applicants for a lane repurposing application, specifically the project description, proposed modifications, traffic analysis, safety analysis, and supporting documentation.

Lane repurposing projects involve changes to the roadway cross section and restriping of existing travel lanes for either a roadway segment or an entire corridor. The changes may include design modifications such as reduced lane widths, median changes, access management modifications, bicycle lanes, new or wider sidewalks, shared-use paths, on-street parking or transit only lanes, or loading/transportation network company (TNC) zones.

Traffic operation improvements and design enhancements such as turn lanes and improved turning radii must be evaluated for all lane repurposing projects. Additionally, these projects should consider the incorporation of additional features to improve the mobility or aesthetics of an area, as well as address community needs such as transit accommodations, pedestrian enhancements, on-street parking, and landscaping.

Lane repurposing projects are a subset of transportation right-sizing projects. These types of projects are often initiated because a roadway may not serve its original purpose. The recently published NCHRP Report 917, "Right-Sizing Transportation Investments" states: "Right-sizing offers repurposing, re-using, or fundamentally re-sizing (either larger or smaller) an existing asset (or in some cases, plans for a future asset) for a newly understood economic function or purpose to better serve the residents in an area." Right-sizing is a process where transportation agencies and partners systematically assess the best use of infrastructure to adapt to changing conditions. The process looks at infrastructure through an economic lens identifying who the users of a facility are, who is paying for it, and who is reaping the benefits of the infrastructure.

The NCHRP report identifies opportunities in processes such as functional classification review, access management, maintenance, and short- and long-range transportation planning to perform a rightsizing review. It also identifies nonrecurring agency-initiated processes which are typically where lane repurposing projects are identified.

3.1 Project Description

A project description is critical in informing FDOT on the current conditions of the roadway and the proposed changes to be made. A project description also includes information as to why a roadway should undergo lane repurposing. A critical component of the overall project description is the purpose of the project, which is discussed in further detail below.

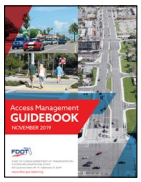
3.1.1 Purpose

It is important to clearly state the purpose and goals of the proposed lane repurposing project because this will guide the evaluation criteria before and after the project is completed. Section 5 provides four examples of differing project purposes. Typically, the purpose of these projects is to reconfigure the existing cross section to enhance other uses and travel modes. Lane repurposing projects often contribute to the economic development, livability, and vitality of a community. The recovered travel way can be used to accommodate other uses such as separated or buffered bicycle lanes, wider sidewalks, landscaping, on-street parking, bulb-outs, traffic calming, transit lanes, and pedestrian refuge islands.

Lane repurposing projects typically differ from one another, even if the overall goals are similar. For example, a project may involve the conversion of an existing undivided four-lane roadway to a three-lane roadway that includes two through lanes and TWLTL. Another project may involve converting a five-lane roadway (four travel lanes, TWLTL) to a three-lane roadway with on-street bicycle lanes and/or parking. Section 5 profiles

these and other types of lane repurposing projects. The purposes of these projects are similar, but the way they were implemented and the degree to which construction was required differed.

Lane repurposing projects are proposed for a wide variety of reasons based on factors such as traffic operations, safety, complete streets, bicycle and pedestrian accommodations, exclusive transit lanes, and community needs. In general, there are key evaluation factors that must be analyzed when considering the need for lane repurposing projects. The following list provides an overview of critical characteristics to be considered when providing justification that a candidate project should be advanced for future consideration.

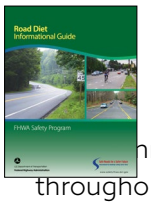


ACCESS MANAGEMENT: Lane repurposing requires an analysis of the access management of the roadway to assess potential conflict points, medians, median openings, and driveways. A variety of considerations may need to be given to access management issues such as the operations of intersections; driveway alignments; access to private property and businesses; accessibility for pedestrians, bicycles and bus stop locations; curb ramps; and the location of new medians or refuge islands (if applicable) among others. FDOT's Access Management Guidebook and FDM 214 should be referenced for further guidance and standards.

DESIGN CRITERIA: The FDM 126 outlines requirements and key expectations for lane repurposing projects and compliance with FDOT and the AASHTO design criteria. Chapter 126 references the lane repurposing checklist and forms in FDM 103 and information on FDOT Design Exceptions and Design Variations (FDM 122).

FUNCTIONAL CLASSIFICATION: A lane repurposing project may potentially impact the Functional Classification of a roadway, which could have many implications, such as federal funding eligibility (NHS - National Highway System), state and federal reporting requirements, project prioritization, and traffic analysis. Federal functional classification is the roadway classification recognized by FDOT and must be referenced when a lane repurposing project is being considered.

RIGHT-OF-WAY: Lane repurposing infers the re-use of roadway right-of-way for other applications, especially related to serving pedestrians, bicyclists, and transit users. Typically, there is not a need for right-of-way acquisition. The goal should be to analyze how all existing right-of-way can be maximized to support the new uses. However, the need for additional right-of-way requirements to accommodate turning lanes, medians, and landscaping enhancements should be analyzed. If there are any impacts to the sites around the project corridor, the FDOT Transportation Site Impact Handbook is a potential resource that should be referenced.



SAFETY: Lane repurposing projects, in general, have been demonstrated to reduce crashes, including fatalities, by all users while slowing average speeds and traffic exposure. Studies summarized in the FHWA Road Diet Informational Guide show a 19 to 47 percent reduction in overall crashes when a lane repurposing is installed on a previously four-lane undivided facility as well as a decrease in crashes involving drivers under 35 years of age and over 65 years of age.

mmon justification for a lane repurposing project is to increase the safety for vulnerable road users throughout the project limits because the reallocation of space for all users and slowing traffic improves safety and quality of travel. Projects should include an analysis of several key safety-related elements such as lane width, turn lanes, crossing distances for pedestrians, bicycle lanes, accessibility to transit stops/stations, ADA accommodations, sidewalk location and width, intersection design, and on-street parking. It is also important for applicants to collect crash history (typically five years) including the number of incidents, type, severity (including pedestrians and bicyclists) and contributing causes, patterns, and locations.

This information can be collected online through the Florida Traffic Safety Portal, FDOT Crash Analysis Reporting System (CARS), or Signal Four Analytics a web-based crash mapping system used for analysis by law enforcement, traffic engineering, transportation planning agencies, developed by the GeoPlan Center at the University of Florida. Additional crash information is available from the Florida Department of Highway Safety and Motor Vehicles (DHSMV).

Applicants should indicate clearly within the concept report the purpose of their lane repurposing project and application, why it is important and the potential benefits that would occur after it is completed.

3.1.2 Project Location

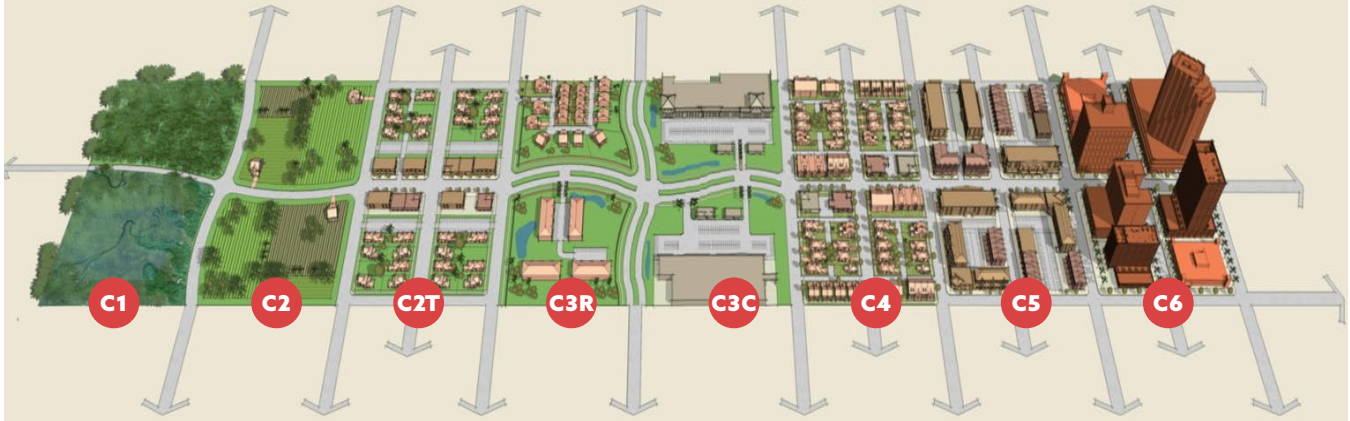
Four-lane undivided roadways with AADT of ≤ 20,000 are typically good candidates for a lane repurposing (e.g. converting to a two-lane, two-way road with a TWLTL, and bicycle facilities). However, projects are evaluated for lane repurposing feasibility on a case-by-case basis. Lane repurposing projects typically function well in areas with a robust local roadway network which can absorb some of the diverted traffic from the repurposing project. In cases where additional diverted traffic is not wanted on individual roadways, it may be necessary to utilize traffic calming techniques and/or median modifications to direct traffic. The concept report should include a map series showing the location of the project and nearby roads, land uses and other relevant information to aid reviewers in understanding the context of the proposed project.

Regional connectivity needs for traffic circulation are important to consider. Roadways which serve as evacuation and/or freight routes typically are not the best candidates for lane reductions without plans to reroute the evacuation and freight traffic. Other freight impacts that affect the success of a candidate project include a project located along an existing truck route, a roadway with over 10 percent truck traffic, and connection to a local freight corridor and/or the Strategic Intermodal System (SIS). Freight considerations are discussed in Section 3.3.4.3 - Freight Routes.

The land use context of the proposed project is another important consideration. In implementing the Complete Streets Policy, FDOT developed the Context Classifications (CCs) to ensure that "FDOT will routinely plan, design, construct, reconstruct and operate a context-sensitive system of Complete Streets." A series of eight different classifications shown in Figure 3-1 were developed, ranging from natural areas to downtown urban spaces. Using these contexts together with transportation characteristics, transportation staff can provide and plan for an area's transportation needs in a more context sensitive manner.

Suburban context classifications that are likely to have roadways transitioning from more suburban development to a more walkable urban context are good candidates for lane repurposing projects. CCs in more urban areas may have lane repurposing projects with additional purposes. For example, a transit agency may wish to develop bus-only lanes and work with their local municipality to repurpose several lanes, or a downtown development authority may want to repurpose on-street parking spots for loading zones or TNC zones through their local government.

FIGURE 3-1 FDOT Context Classifications



C1 NATURAL: Lands preserved in a natural or wilderness condition, including lands unsuitable for settlement due to natural conditions.

C2 RURAL: Sparsely settled lands; may include agricultural land, grassland, woodland, and wetlands.

C2T RURAL TOWN: Small concentrations of developed areas immediately surrounded by rural and natural areas; includes many historic towns.

C3R SUBURBAN RESIDENTIAL: Mostly residential uses within large blocks and a disconnected or sparse roadway network.

C3C SUBURBAN COMMERCIAL: Mostly non-residential uses with large building footprints and large parking lots within large blocks and a disconnected or sparse roadway network.

C4 URBAN GENERAL: Mix of uses set within small blocks with a well-connected roadway network. May extend long distances. The roadway network usually connects to residential neighborhoods immediately along the corridor or behind the uses fronting the roadway.

C5 URBAN CENTER: Mix of uses set within small blocks with a well-connected roadway network. Typically concentrated around a few blocks and identified as part of a civic or economic center of a community, town, or city.

C6 URBAN CORE: Areas with the highest densities and building heights, and within FDOT classified Large Urbanized Areas (population >1,000,000). Many are regional centers and destinations. Buildings have mixed uses, are built up to the roadway, and are within a well- connected roadway network.

Source: FDOT Context Classifications

3.1.3 Area of Influence

Once the location of a lane repurposing project has been selected, the area of influence needs to be determined. The area of influence defines how the lane repurposing project may impact surrounding roadways and features during and after its construction. The overall impact on the transportation network that the lane repurposing project may have must also be determined. For example, repurposing a lane from four to two lanes may reduce vehicle speeds which could impact roadways in the network. Mitigation to address the significant adverse impact on roads in this area of influence may be needed. The area of influence or the method to determine it, should be agreed upon at the Initial Meeting.

3.1.4 Existing Conditions

Applicants must conduct an existing conditions analysis on the location chosen for the lane repurposing. For this analysis the following factors need to be considered: roadway functional classification, FDOT context classification, evacuation route, SIS designation, posted speed limits and average speeds, traffic data collection, signalized intersections, and existing levels of service (LOS). There are several documents which applicants can utilize for guidance on how to collect and review this data (See Table 3-1).

TABLE 3-1 Existing Conditions and Relevant FDOT Guidance

Existing Conditions Component	FDOT Guidance
Roadway Functional Classification	FDOT Transportation Data and Analytics Office
FDOT Context Classification	FDOT Transportation Data and Analytics Office – Roadway Characteristics Inventory Connect Ped Web Application
Evacuation Route	FDOT Emergency Management
SIS Designation	FDOT SIS Office
Posted Speed Limits/ Average Speeds	FDOT Transportation Data and Analytics Office
Multimodal Traffic Data Collection	FDOT Transportation Data and Analytics Office
Signalized Intersections	FDOT Traffic Engineering and Operations Office
Existing Level-of-Service	District Q/LOS Coordinators

There are several methods to collect data in addition to the resources mentioned in Section 1.2 Resources and Table 3-1. Field visits are recommended as they can provide vital information on the project that may not be captured with online methods. For example, there may be a section of the roadway that becomes congested due to a specific driveway, or there may be a higher than average pedestrian volumes due to a transit stop or a business. Applicants should also plan on reviewing access management plans, transit development plans, parks and recreation plans, and local agency parking/downtown circulation plans for critical information on their project.

3.1.4.1 Typical Section

For lane repurposing projects, it is important to document the various characteristics of a roadway and to diagram them appropriately. One way of doing this is looking at a typical section of a roadway. Per FDM 306, "Typical Section sheets provide detailed cross section depictions of the principal roadway elements that are standard between certain station or milepost limits." Elements such as traffic data, roadway design, and any relevant notes are required principal roadway elements. For more information on these elements though, please refer to FDM 306. Other features that applicants must collect are signage, pavement markings, on-street parking and signals within their project limits. This is to identify and catalog the existing conditions when considering replacement or enhancements. The best methods for collecting this data are to review as-built plans, design documents, and field investigations.

It is highly recommended that local agencies share the preliminary concepts with FDOT for review before presenting to the public. This is to verify the implementation feasibility and consistency with FDOT design criteria.

3.1.4.2 Roadway Functional Classification

Repurposing of a lane on a roadway can impact the functional classification of that road. A change in functional classification can be very significant because it could result in a gap in the continuity and connectivity of the system and affect planning, funding, traffic analyses, project prioritization, and state and federal reporting requirements. As such, potential changes to functional classification are key considerations in reviewing lane repurposing projects.

The primary guide for managing functional classifications for federal reporting purposes is FHWA's Highway Functional Classification: Concepts, Criteria and Procedures document, which was updated in 2013. There are key differences between the 2013 document, the original 1989 document, and the 2008 interim guidance document that may continue to impact functional classifications in Florida (e.g., the ongoing designation of Urban Minor Collectors). The 2013 document notes that federal functional classifications should reflect existing conditions, not future conditions. That is, a federal functional classification change should occur after the associated roadway project concludes. The federal functional classification system is the only functional classification recognized by FDOT. Other agencies in Florida, as well as local governments, may have their own functional classification systems.

The FHWA document is supplemented by a document prepared by FDOT's Transportation Data and Analytic Office (TDA), FDOT's FHWA Urban Boundary and Federal Functional Classification Handbook. The FDOT Handbook describes the process for assigning and revising functional classifications (a process wherein ADT, access, and system continuity are criteria) and provides sample forms. It notes that the reclassification of U.S. highways requires coordination with AASHTO, and it states that functional classification changes should occur before system designation changes occur. FDOT also publishes the Functional Classification and Urban Boundary Maps which provide detailed roadway classification information. The urban boundaries designate if a roadway segment is located in a rural or urban area and whether or not it is within a municipality.

Changes in functional classification of a roadway can affect the funding eligibility of the roadway. Under the FAST Act, Surface Transportation Block Grant (STBG) funds can be used on any "Federal-aid highway, bridge, and tunnel projects on any public road" as well as "pedestrian and bicycle infrastructure and transit capital projects, including intercity bus terminals." In general, the only roads upon which STBG funds cannot be used are Local streets and Rural Minor Collectors. However, downgrading the functional classification of the affected roadway as part of the lane repurposing project will likely not impact the potential to receive future STBG funding for the roadway. The FHWA Division Office should be consulted if there is a question about this, particularly if FDOT intends to transfer jurisdiction of the roadway to a local government (in which case the local government would be responsible for future improvements).

Changes to federal functional classifications related to lane repurposing projects may originate with FDOT District staff, an MPO/TPO, or a local government. Local government requests for federal functional classification changes typically occur through an MPO/TPO. The changes must be reviewed and approved by FDOT and then by FHWA.

3.1.4.3 Access Management

Lane repurposing projects may need to include access management plans that eliminate, consolidate, and/or relocate driveways to reduce conflict points. Reducing conflict points tends to improve traffic operations by helping vehicle traffic flow more smoothly and improve safety for all modes. Shared/joint accesses minimize the number of driveways and curb cuts, particularly in a downtown setting, which is important in maintaining a pedestrian/bicycle-oriented environment while managing vehicular traffic and safety. Another benefit to reducing the number of access points is that landscaped medians could replace a TWLTL; this might visually narrow the road, add green elements to the corridor, and enhance the aesthetics of the roadway.

Chapter 14-97, F.A.C. describes the access management classification system for the SHS, associated standards, and the process for modifying a roadway's access management classification. Where access spacing is increased due to driveway consolidation, however, there might not be a need to modify access management classifications. FDOT's Systems Implementation Office has developed a new Access Management Guidebook and maintains the FDOT Access Management Classification KMZ file which provides current access management classifications for roadways on the SHS.

3.1.4.4 Regional Connectivity

Throughout the state, there are regional networks that utilize the state highway system. For example, emergency evacuation routes or freight routes/SIS connections could potentially interact with roadways that are within the project limits. Other regional networks could be passenger rail, premium transit routes, Bus Rapid Transit (BRT), Shared-Use Nonmotorized Trail (SUN Trail), or regional trail networks. It is important that applicants accurately note these networks within their concept reports as any omission could potentially omit a critical stakeholder. The best methods for collecting this data are to review FDOT and local transportation plans.

3.1.4.5 Evacuation Route

Careful consideration must be given to the decision to eliminate a travel lane in potential evacuation areas. Evacuation is a special transportation circumstance that can be planned for in areas especially prone to disasters, such as coastal areas during hurricanes and locations with specific security threats (institutional areas, heavily- visited tourist attractions, and other buildings/areas designed to hold large crowds during special events). FHWA's Manual on Uniform Traffic Control Devices (MUTCD) calls for a state or locally developed contingency plan that considers "the use of all applicable roadways" in the event of an emergency evacuation. It also calls for "a controlled operation of certain designated highways" and "the establishment of traffic operations for the expediting of essential traffic."

Potential negative impacts on evacuation resulting from lane repurposing can be mitigated by leaving the full required paved roadway width anticipated by the emergency evacuation plan. Lane width changes, striping of bicycle lanes, and striping of painted buffer areas are types of improvements that generally do not physically reduce the paved width of the roadway and, thus, are the optimal type of lane repurposing strategy if located within an evacuation area.

While evacuation events are not everyday occurrences and the effects of a lane repurposing on their success have not been comprehensively examined, the consequences for evacuating and emergency vehicles have been raised during several studies of actual lane repurposing projects. Some types of lane repurposing (specifically four-to-three conversions and bicycle lane addition/conversion from parking) are preferred by emergency responders because they enable emergency vehicles to use an intuitive path (i.e., the TWLTL) and mitigate confusion by other drivers.

3.1.4.6 SIS Designation

The SIS is a high priority network of facilities which are allocated a significant portion of FDOT resources. These facilities contribute to the economic growth and mobility of the State of Florida. If a roadway falls under SIS designation, special considerations may need to be taken. The FDOT SIS Atlas can be used as a reference to determine if a roadway that will be repurposed is part of the SIS, or is planned to be added or dropped.

3.1.4.7 Posted Speed Limits and Average Speeds

Data on posted speed limits and average speeds need to be reviewed and collected as part of the existing conditions review. Due to the nature of lane repurposing projects, it is possible that the speed limit and average speeds will likely decrease. This information will impact traffic and safety analyses, which are critical components of the concept report.

For example, if the average speeds on the roadway are significantly higher than others, there may need to be a discussion on the appropriate roadway elements (i.e., a physically separated bicycle lane may be more appropriate than a painted bicycle lane). Also, this information will be required for any potential LOS analyses that are conducted. Finally, if there are to be any before/after studies of the corridor, it would be critical to know whether or not speeds greatly changed over time.

3.1.4.8 Traffic Data Collection

In order to understand the impacts of lane repurposing projects, traffic data needs to be obtained to better understand the roadways within the project limits. Traffic data collection can help to understand the current and future impacts that a lane repurposing project may have on a specific roadway and the overall network. For more information on this concept, please refer to Section 3.3 of this guidebook. Much of the data and information collected will be used for the traffic analysis portion of the concept report.

A critical piece of data for a lane repurposing project is existing and projected/forecasted traffic volumes for the roadways within the project limits. Four-lane undivided roadways with AADT ≤ 20,000 are typically good candidates for a lane reduction (e.g., converting to a two-lane, two-way road with a TWLTL). However, projects are evaluated for lane repurposing feasibility on a case-by-case basis. The best method for applicants to collect this data is through the FDOT Traffic Online, traffic count studies, and turning movement count studies. For bicycle and pedestrian count data, applicants can conduct field studies or utilize the FDOT Non-Motorized Traffic Monitoring Program resources. It is also important for applicants to review the Project Traffic Forecasting Handbook (See Table 3-1 for more information).

3.1.4.9 Signalized Intersections

Another factor that needs to be reviewed are the locations of signalized intersections within the project limits. These roadway elements have a significant impact on the safety and traffic analyses to be conducted as part of the concept report. For example, to fully understand potential impacts of the proposed modifications within the concept report, and as part of the safety analysis, operational impacts are reviewed. Impacts which increase the delay of traffic moving through a signalized intersection affect the safety of roadway users and how it operates. It is important that applicants collect relevant information for signalized intersections for their projects.

3.1.4.10 Existing Level Of Service (LOS)

LOS is one way to represent how well transportation facilities are operating for all users and is expressed through a scale of the letter A-F with A representing free-flow conditions and F representing operation at or above the roadway's capacity. The Department has adopted Level of Service targets for the State Highway System during peak travel hours. Policy 000-525-006 Level of Service Targets for the SHS sets these targets. FDOT's Quality/Level of Service (Q/LOS) Handbook is provides guidance for roadway capacity and quality/level of service for planning-level analysis. It is important to understand the existing LOS because by repurposing a lane the vehicular LOS can worsen, leading to possible congestion. It is important to have an accurate representation of existing LOS because lane repurposing can increase congestion, resulting in declining LOS values. Conversely, the LOS for other modes may improve as a result of the repurposing. In order to evaluate the effects of the project, an existing conditions LOS analysis is needed. The extent of this analysis will be discussed in the Initial Meeting.

3.1.4.11 Local Agency Maintenance Needs

Lane repurposing applicants may also have maintenance considerations within their project limits. Depending on the project and the proposed modifications by the applicant, considerations such as right-of-way for maintenance access and specifications for signal/pedestrian equipment may be required. The best method for collecting this information is to conduct field investigations and review any relevant documentation from any agencies that service this infrastructure.

3.1.4.12 Utilities

It is important that applicants collect data on any existing and planned utility infrastructure throughout their project limits where available. If a roadway were reconstructed, and a pipeline would require maintenance soon after that, it would be inefficient and potentially lead to unnecessary costs. The best methods for collecting this information is to review existing utility plans and Sunshine811.

Worth Avenue, Palm Beach, Florida

3.2 Proposed Modifications

As part of the concept report, applicants must provide a detailed review of the proposed modifications to the roadway that is being studied. A conceptual design of the roadway including a typical section and intersection designs are necessary, as well as any proposed changes to the design speed limits or posted speed limits. Also, these proposed modifications must be consistent with statewide and local planning documents. If there are any inconsistencies which require design variations or exceptions, then those must be detailed as well.

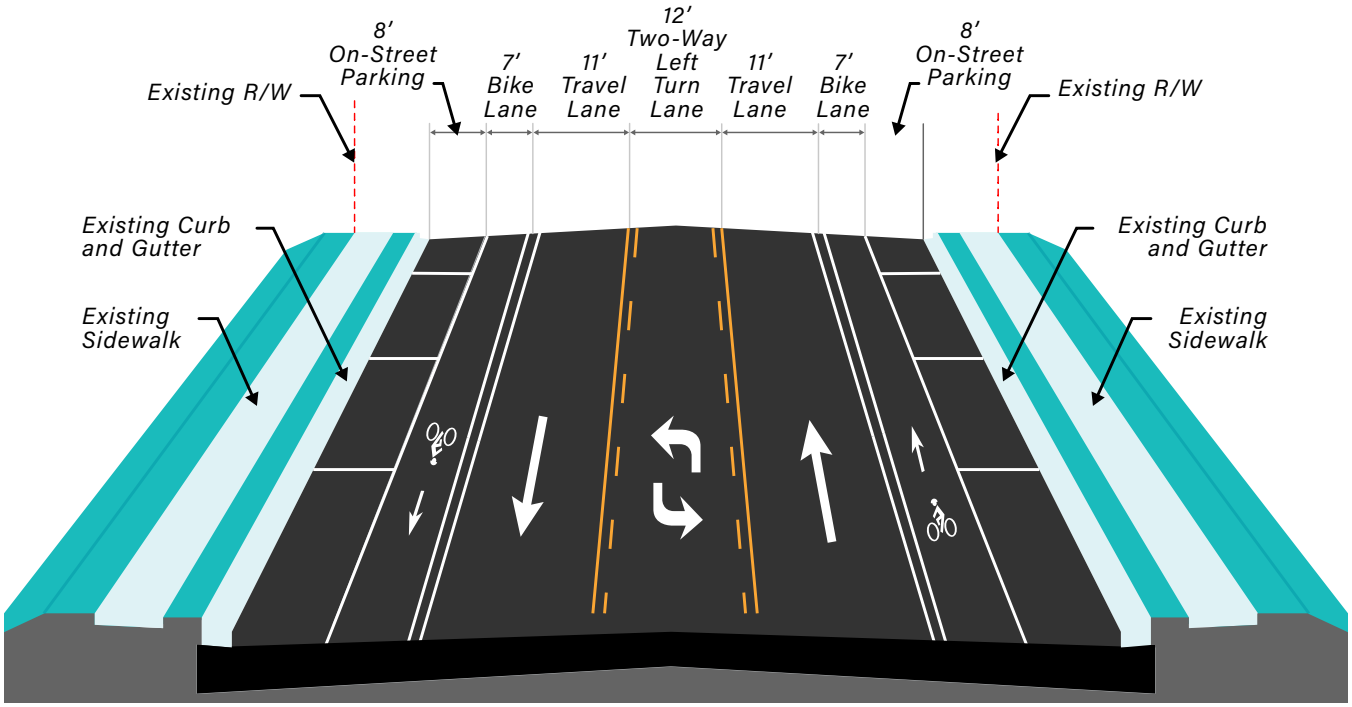
3.2.1 Conceptual Design

Within the concept report, applicants must lay out the proposed modifications to the roadway with a Conceptual Design. This includes at least two components: the typical section of the roadway and any changes that would be recommended for the intersections.

3.2.1.1 Typical Section

As discussed in Section 2, typical sections are meant to convey specific roadway design elements for FDOT staff. A concept report should include typical sections of the roadway that are designated within the project limits. These typical sections should include the existing conditions as well as the proposed typical sections based on the analyses that are conducted for the concept report.

FIGURE 3-2 Typical Section Example



Source: SR 10 Lane Elimination Request FPID 439729-1

3.2.1.2 Intersection Design

Any changes to intersections, such as reduced widths, shorter crossing distances, improved sight distances, parking removal, special bicycle and pedestrian phasing, corner clearance, or other roadway design elements, should be notated within this section of the concept report.

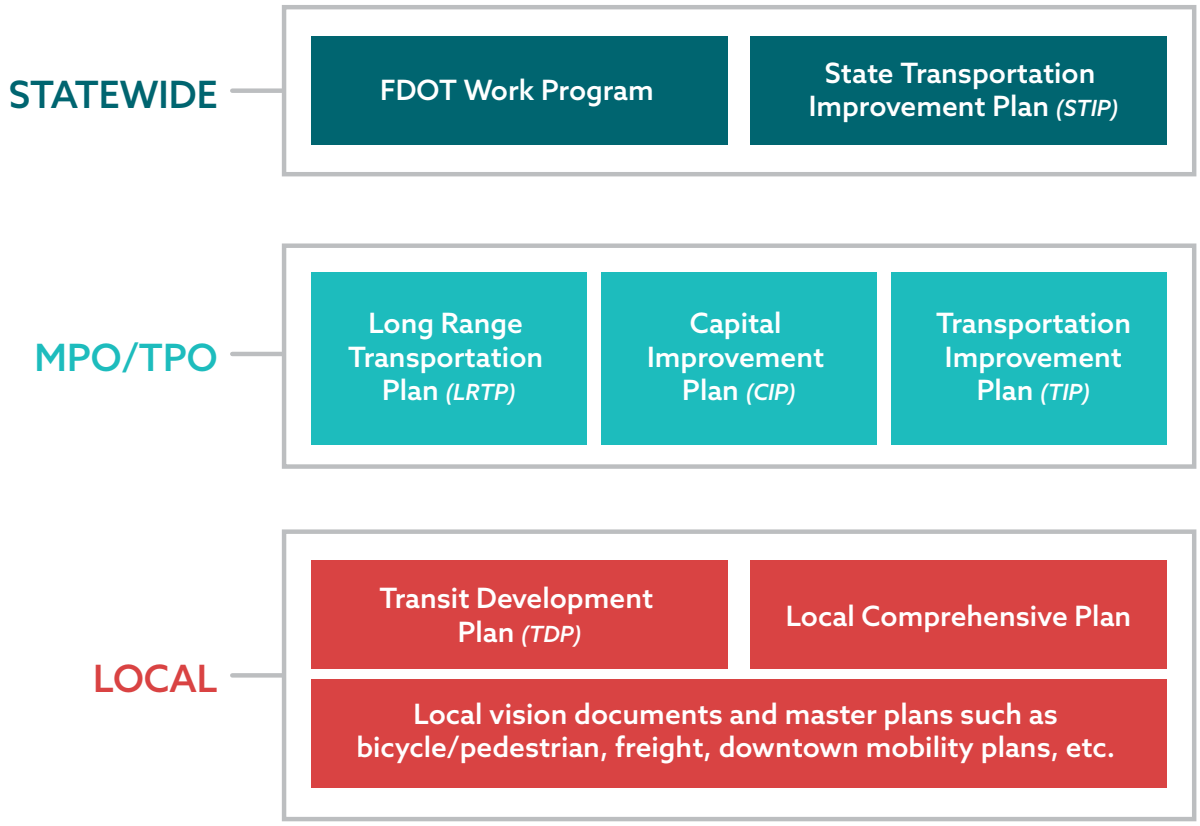
3.2.2 Changes in Design and Posted Speed Limits

Based on the traffic and safety analyses that are conducted, it may be necessary to reduce the design and/or posted speed limits of the roadways. These reductions in speed should be noted within the concept report. There is also a potential need for spot-speed studies to justify these changes because of frequent violations of the posted speed.

3.2.3 Consistency with Local Plans

Consistency with the FDOT planning process is crucial to project implementation. Lane repurposing projects typically begin with the identification of a need or issue to be addressed, such as improving safety and pedestrian/bicyclist access or promoting community redevelopment. Proposed lane repurposing projects should be consistent with adopted plans and programs. These plans and programs vary based on the level of government, as well as scope. See Figure 3-3 for more information.

FIGURE 3-3 Relevant Programs and Plans for Lane Repurposing Projects



Source: FDOT

A proposed new cross-section for a given roadway should be consistent with: (a) the cross-section upon which the analyses that informed the above listed plans and programs are based and (b) any planned and programmed projects affecting that roadway. If the travel demand model underlying the long-range transportation plan (LRTP) assumed that a roadway for which lane repurposing is proposed would have a six-lane cross-section in the long term, reducing the cross-section to four lanes is not consistent with the LRTP.

If the Work Program shows that funding has been obtained to widen a given roadway from four lanes to six lanes, lane repurposing is not consistent with the Work Program. If the Transit Development Plan (TDP) shows that a given roadway is planned to have dedicated bus lanes in the future, eliminating through lanes may make it infeasible to implement the dedicated bus lanes, so lane repurposing is not consistent with the TDP.

Applicants may use the annual public comment for the new FDOT Tentative Five-Year Work Program as an opportunity to inform the Department of possible lane repurposing opportunities that coincide with proposed projects. If a proposed lane repurposing project is not consistent with an adopted plan or program, the lane repurposing may be infeasible or the adopted plan or program must be amended or modified. The amendment processes for the above listed plans and programs involve the following:

WORK PROGRAM – Amendments must occur in accordance with Section F.S. 339.135 of the Florida Statutes (F.S.). See Part III, Chapter 3, of the Work Program Instructions for detailed information about the process, the types of amendments that are possible, and the conditions under which amendments are allowed.

STIP – Amendments must occur in accordance with 23 CFR 450. Chapter 5 of FDOT's Metropolitan Planning Organization Program Management Handbook notes that each MPO/TPO's TIP is incorporated into the STIP and includes a section on TIP and STIP amendments. Chapter 5 describes conditions under which a STIP amendment is required and the amendment process. Additional information about STIP amendments and administrative modifications is available from the FDOT Office of Work Program and Budget.

LRTP – Amendments must occur in accordance with the Code of Federal Regulations (CFR) Title 23 Part 450 and F.S. 339.175. FDOT's Office of Policy Planning has also prepared a document that specifies thresholds at which proposed changes to LRTP projects require an amendment to the LRTP; amendments may be required based on changes in project cost, changes in the project schedule, changes in project scope, and deletion of a cost feasible project from the LRTP. Also available from the Office of Policy Planning in Chapter 4 of FDOT's Metropolitan Planning Organization Program Management Handbook, which includes a section on LRTP administrative modifications and amendments. An "administrative modification" is a change that is less significant than an amendment.

TIP – Amendments must occur in accordance with 23 CFR 450 and F.S. 339.175. Chapter 5 of FDOT's Metropolitan Planning Organization Program Management Handbook includes a section on TIP amendments. Chapter 5 describes conditions under which a TIP amendment is required and the amendment process. Administrative TIP amendments do not require the approval of the full MPO/TPO board.

TDP – TDPs undergo major updates every five years and minor updates annually. Both types of updates provide an opportunity to maintain consistency between TDP projects and proposed lane repurposing projects. TDP updates occur according to Florida Administrative Code (F.A.C.) Rule 14-73.001 and are required to be consistent with the LRTP and the local comprehensive plan.

COMPREHENSIVE PLAN – Local government comprehensive plans may be amended at any time. The timing of amendment submittals will vary by jurisdiction. The Florida Department of Economic Opportunity (DEO) provides information about amendment review processes and time frames. F.S. 163.3177, states the requirements that comprehensive plans are to meet. F.S. 163.3184, provides information about FDOT's role in reviewing comprehensive plan amendments.

VISIONS AND MASTER PLANS – Amendment processes will vary by jurisdiction.

Lane repurposing projects may have to go through an environmental analysis depending on the improvements made to the corridor. During the Initial Meeting, the District and applicant will determine if the NEPA process needs to be followed. If a project is required to follow the NEPA process, the FDOT PD&E Manual should be referenced as a key resource. This document includes an understanding, determination and project development process from planning to design to construction. A proposed lane repurposing project may be determined to be infeasible if it is not consistent with one or more plans and programs. There are several other key items that should be considered by the stakeholders:

- The amendment processes may require public involvement, participation and approval of multiple agencies, revised fiscal analyses, and revised environmental analyses (in non-attainment and maintenance areas).
- Amending one of the above-listed plans and programs may require amending others (e.g., local comprehensive plans should be consistent with the applicable LRTP).
- A project that utilizes federal funding must be included in the TIP and STIP. Amendments to the TIP and STIP associated with such projects must be transmitted to FHWA.
- Environmental document approvals require consistency with the LRTP, TIP, and STIP.
- The amendment process can take several months.

3.2.3.1 Funding Types

There are several funding opportunities that are available to applicants for planning, designing, and constructing lane repurposing projects. Federal, state, local and private funds may be available. Applicants should document all forms of anticipated funding in their Concept Reports. Applicants should review any related adopted budgets, work programs, funding commitments, and right-of-way maps to ensure this information is collected and incorporated into their documentation.

Below are several examples of funding sources and how they are applicable.

- Programmed funds
  - Five Year Work Program, Capital Improvement Program (CIP), Transportation Improvement Program (TIP)
  - Funding commitments – any established funding priorities
- Lane repurposing projects can be incorporated into other programmed project types to achieve cost and time savings such as:
  - Resurfacing, Restoration, and Rehabilitation (RRR)
  - Reconstruction
  - Restriping (signage and pavement markings)
  - New or widened sidewalk
  - Addition of transit accommodations
- Other potential funding sources for lane repurposing projects include Federal Transit Administration (FTA), other transit funding sources, grants, local option sales tax revenue, tax increment funding, etc.

3.2.4 Design Variations and Exceptions

Potential design exceptions and design variations will be required for cross-section elements that do not meet design criteria to ensure the safety of proposed improvements. There may also be a need to request a design variation or exception along the roadway(s) due to changes in standards over the years or roadway limitations. If the lane repurposing project is within the planning phase and not the design phase, then list the anticipated design variation or exception within the concept report.

3.3 Traffic Analysis

Lane repurposing projects will affect traffic by altering the capacity of the roadway via removal of one or more lanes. This effect may impact the study corridor only or it may ripple to adjacent roadways. The purpose of the project will influence how traffic impacts are prioritized when evaluating performance. Since traffic analysis can require a substantial amount of time and resources, it is important to develop an analysis approach. This section describes attributes of traffic analysis for lane repurposing projects in order to help streamline the analysis.

3.3.1 Traffic Forecasting Methodology

In order to determine the impacts of repurposing lanes it is important to first understand the traffic patterns and potential growth of traffic in the study area. Preparing a traffic forecast allows for a comparison between the Build and No-Build scenarios for existing and future conditions. FDOT's Project Traffic Forecasting Handbook is a useful tool in this process. It provides a guide to forecasting traffic with and without a travel demand model; different methods for collecting, estimating, and adjusting traffic data; and, methods for estimating turning movements. Applicants should account for background traffic growth from planned development if this is not captured in the long-range travel demand model.

Two important considerations are the size of the area under study and the level of accuracy needed. These two elements will determine the intensity of the data collection and processing. The area size will be somewhat apparent based on the limits of the proposed alternative, but consideration should also be made to potential impacts to traffic patterns by determining alternative travel routes that may also need to be analyzed. The level of accuracy needed will be determined by how the impact to traffic is prioritized. For example, if the traffic impact is a critical component in decision-making, then traffic forecasting may need to be to the level of turning movements at intersections, which affords greater opportunity for the evaluation of traffic operations and safety, requiring more data and effort to perform the analysis. If traffic impact is less critical, then simple capacity estimates at the AADT level may suffice. Vehicle-miles-traveled (VMT) is another metric by which the traffic can be analyzed by an applicant. It is recommended that if an applicant wishes to focus on VMT reduction in lieu of, or to supplement a LOS analysis, that they discuss this with their DLRC in the beginning stages of the project to determine its feasibility.

3.3.2 LOS Analysis of Build Alternative vs. No-Build Alternative

The Project Traffic Forecasting Handbook states that: "The Level-of-service (LOS) analysis should be performed in accordance with the most recent versions of the FDOT Quality/Level-of-Service (QLOS) Handbook and Highway Capacity Manual (HCM) methodology."

LOS analysis is a common measure of system performance that prioritizes the user experience as a metric for how well a roadway is performing, sometimes penalizing bicycles, pedestrians, and transit as impediments to automobiles. The latest editions of the HCM and QLOS Handbooks provide methods for measuring the performance of these modes as well. Lane repurposing projects that include an impact to public transit should incorporate person throughput as a performance measure because it places a more direct relationship

between the capacity of the roadway and the mode best capable of getting people from origin to destination. This is particularly important for new Bus Rapid Transit (BRT) and other premium transit corridors because premium transit service provides opportunities to more people than automobiles or traditional bus service and improving BRT service can substantially increase corridor capacity, improve transit time reliability, and reduce the average per-person trip time. Evaluating person throughput requires a different set of data than other methods, but this data should be possible to collect from travel demand models and other ridership and forecasting sources. When person throughput cannot be fully evaluated based upon data, comparative data demonstrating differences between travel times for different modes, such as automobile and transit travel times, may also provide beneficial information to support lane repurposing applications. FDOT's Traffic Methodologies for Bus Rapid Transit Corridors: Recommended Guidance contains more information related to the application of BRT to lane repurposing projects.

In developing LOS analyses, both existing base year data and future year volumes are both important in decision-making processes. Initial coordination efforts on lane repurposing between agencies and FDOT District staff should determine the appropriate base and future year, or years, to utilize. These determinations should be made based not only on the Build Year of the project but may also consider long-range planning goals and objectives depending on the project. An additional or alternate analysis could examine the impacts of the project on VMT reduction rather than just LOS. The regional models that calculate LOS will also calculate VMT, in many or most cases. VMT reduction can capture the transition to different modes as well as the use of shorter trips (such as those that take place off the SHS.)

Traditionally LOS analysis has focused on maintaining vehicular LOS targets alone. Projects that improve overall person throughput and capacity of a corridor, and serve regional and local long-range planning goals, should be considered for congested corridors where further roadway widening is not possible to address continued LOS target degradation. In these cases, comparative analysis of LOS results as well as person throughput, overall transportation capacity, and travel time changes between modes should be considered rather than strict adherence to maintaining established LOS thresholds. For instance, while LOS D may be an established threshold for performance, in congested corridors where there is little ability to improve LOS targets in the future, allowing for some further degradation of LOS targets may be appropriate to provide overall corridor system capacity and performance. These congested corridors are also where benefits from offering alternative transportation options are often most successful. District staff reviewing LOS, and other person throughput and comparative modal analysis, should consider these factors in evaluating the feasibility of proposed lane repurposing projects. In these cases, other factors such as maintaining multimodal operations and safety become more important in evaluating lane repurposing than simply maintaining established LOS thresholds.

3.3.3 Delays, Volumes, Queues Analysis

The process of developing the LOS analysis will require the estimation of traffic volumes and result in calculations of delay and vehicle queuing at intersections. Methods for collecting traffic volumes and estimating delay and queuing are discussed in FDOT's Traffic Analysis Handbook and can be done manually or through automated processes depending on the scope of the project.

Delays, volumes, and queues are methods of evaluating traffic impact from different perspectives or for different priorities: volumes are used to measure congestion and estimate traffic flow; delay is the criteria used to categorize LOS and is oriented to the driver experience; queuing is the result of the interaction of traffic delay and volume and is another way to express the impact to the traffic system while also highlighting the secondary impact to connectivity, i.e. blocking driveway and median openings. The extent to which these factors are a priority should be agreed upon at the beginning of the project in order to determine the appropriate means of data collection and analysis.

3.3.4 Transportation Network/Corridor Impacts

Lane repurposing projects may alter the capacity of a corridor by reducing the number of lanes, which can reduce the number of vehicles that can traverse the corridor. While the intent of the project may be non-traffic related and the corridor may not be experiencing congestion prior to repurposing, reduction in capacity reduces the LOS thresholds, meaning a smaller volume of traffic is now required to cross the threshold. This is why traffic forecasting is important as it helps gain an idea about the potential for future traffic to meet these reduced thresholds.

In some corridors, the impact of lane repurposing may have a minimal impact to adjacent roadways and alternative parallel routes may not exist. In these cases, limited or more simplified methods of estimating transportation network impacts may be deemed appropriate. These analyses and desired methodologies should be discussed in the Initial Meeting and based on the specific conditions of the proposed lane repurposing project and context of the transportation network.

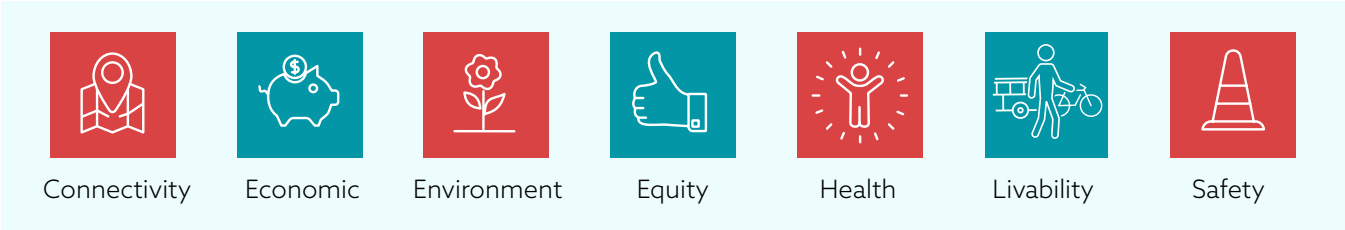
In some cases, the effects of lane repurposing may also have an effect on the transportation network by rerouting traffic to parallel corridors where similar destinations are served. For example, lanes on congested corridors may be repurposed for transit projects due to their higher person throughput. While the intent may be to capture more ridership on the corridor, traffic volumes will not immediately be replaced by transit vehicles and drivers will find new routes to their destination if they perceive the LOS on the existing route to be intolerable. This can mean an increase in congestion on parallel corridors and highlights why it is important to have a good understanding of existing conditions and traffic patterns on potential alternative routes in the network. It's critical to understand the network itself and the available capacity to all modes. For example, if a lane repurposing is implemented and intersections are made smaller throughout the corridor, there may not be an overall capacity reduction if walking and bicycling increases due to the shortened crossing distances, bicycle lanes or other infrastructure. Verifying this change in capacity would likely be a key component of any before/after studies that are conducted by the applicant.

Estimating the corridor impact can be a simple process of evaluating corridor capacity using methods outlined in the HCM or QLOS Handbook, or it can be a more complicated process of reassigning traffic across the network or developing microsimulation models to evaluate complex congestion conditions. Refer to FDOT's Traffic Analysis Handbook for a more thorough discussion of the effort required for HCM and microsimulation methods to better assess the potential needs of the project's traffic analysis. The level of microsimulation needed, whether corridor wide or at specific areas and intersections within a corridor under evaluation, should be determined as part of project initiation meetings and based on specific project concerns and conditions. While corridor-wide microsimulation can be a valuable and more in-depth tool to evaluate an entire corridor, it is also a more costly level of analysis and should be based on the needs for assessment of the project under evaluation.

3.3.4.1 Pedestrians/Bicyclists – Bike Lanes, Sidewalks and Multimodal Connectivity

While previous discussion has centered on the effect of lane repurposing on existing and future vehicular traffic, it is necessary to measure and evaluate the effect of the lane repurposing on pedestrians and bicyclists. In most cases the purpose of a proposed project includes reallocating roadway space for improvements to bicycle, pedestrian, and transit modes. The analysis should consider existing and proposed pedestrian circulation, mid-block and signalized intersection crossings, transit connectivity and crash data. The need for dedicated bicycle facilities and/or shared use paths should be determined based on bicycle volumes and circulation data, network connectivity, and crash data. Data on existing, nearby and future on-street parking should be included in this analysis as warranted. The multimodal network analysis should consider mobility service providers such as e-scooter, dockless bicycles and other modes that lend themselves to first/last mile service. Successful public involvement efforts should lead toward community accepted proposed treatments for these modes. The traffic analysis in the concept report should demonstrate that these treatments will achieve the desired purpose of the project. For example, if there are trip generation points for non-motorists (beaches, park, boardwalks, plazas), then those should be included within the analysis as well.

As with the vehicular traffic analysis, the level of detail, precision, and complexity of the analysis should be scaled to the scope of the project. FHWA has recently published the Guidebook for Developing Pedestrian and Bicycle Performance Measures which includes a matrix of 30 measures which are tied to many potential projects goals such as:



FDOT also provides multimodal quality/level of service measurement tools and the Statewide Non-Motorized Traffic Monitoring Program. In addition, many local governments have pedestrian and bicycle plans which establish milestones for measuring progress. Lane repurposing projects should be consistent with these plans.

Though proposed projects should meet the design standards in FDM 222 Pedestrian Facilities and FDM 223 Bicycle Facilities, these are minimum standards. If the goal of project is to create a vibrant walkable environment to encourage economic development and exercise, minimum standards may not be optimum standards.

The details of the multimodal analysis and evaluation criteria for existing and future conditions will be decided at the Initial Meeting with the District Review Team.

In the rare case that no bicycle facilities can be accommodated on the proposed corridor, evaluation of bicycle facilities on alternate routes should be investigated and a design exception must be proposed. Additional coordination with stakeholders is essential.

3.3.4.2 Transit Routes and Bus Rapid Transit

Transit is often a key component of a lane repurposing project. The focus can range from improving pedestrian safety while accessing a bus stop to dedicating a lane for bus rapid transit use exclusively. If transit is present or proposed on a lane repurposing project, it is important to have the transit agency represented in the project planning process. If the lane repurposing is being championed by a transit agency to accommodate BRT or other premium transit service, then it is important for the lane repurposing process and the transit planning process to be connected. FDOT has produced Traffic Methodologies for Bus Rapid Transit Corridors: Recommended Guidance which should be referred to when developing traffic analysis procedures for BRT-driven lane repurposing projects. Any transit related projects will also receive CO Public Transportation Office review. It is essential that District Modal Development or Public Transportation staff be part of the DLRC for these projects.

BRT is a cost-effective transit solution which improves transit travel times and reliability while utilizing existing roadway infrastructure. It also provides design flexibility to adapt to specific roadway conditions and user needs. It provides an array of transit running way solutions – from exclusive busways to dedicated lanes to mixed flow bus with general traffic operations. Other major elements of BRT corridors may include traffic signal priority, off-board fare collection, elevated platforms, and enhanced stations. Implementation of these features can provide a faster and more reliable transit service that allows buses to avoid typical causes of delay for regular bus services, such as delays due to general traffic congestion and long dwelling times at stops as passengers wait to pay for their trip on board.

Since BRT projects propose to operate on existing roadways, a key area of analysis in the planning and environmental processes for these projects is an assessment of transportation and other corridor-level issues and impacts, including an analysis of traffic impacts.

Current FDOT Transit Concept and Alternatives Review processes and NEPA (for FTA funded projects) and the FDOT Project Development & Evaluation (PD&E) Manual (for state and locally funded projects) provide guidance on these planning processes from early planning and Transit Concept and Alternatives Review (TCAR) to environmental review under NEPA and/or PD&E planning phases.

FDOT'S Traffic Methodologies for Bus Rapid Transit Corridors: Recommended Guidance provides traffic analysis methods and agency coordination processes for planning-level analyses of BRT projects on arterial roadways in Florida. Its intent is to facilitate streamlined and consistent approaches for traffic analysis methods and coordination. The FDOT Accessing Transit Handbook provides applicants guidance on locating, designing and accessing transit stops and infrastructure facilities, in addition to the guidance within this guidebook.

Traffic analysis methods can become disjointed with lane repurposing projects due to differences in funding sources and methods. This can result in unintended consequences, duplicative analyses, increased cost, and delay. By following FDOT's recommended guidance it is possible to align the two planning processes.

3.3.4.3 Freight Routes

The Florida Statutes task FDOT with several different responsibilities regarding freight movement. FDOT must conduct studies and provide coordination to assess needs associated with landside ingress and egress to port facilities. FDOT must also assist with local governmental entity coordination to ensure port facility access routes are properly integrated with other transportation facilities. Finally, FDOT must emphasize freight issues and needs in all appropriate transportation plans, including the FTP and the SIS Plan.

Freight activity is a critical consideration with regards to lane repurposing projects because these projects impact roadway geometry and access to intermodal centers and businesses. Freight organizations and carriers may be concerned about increased congestion leading to increased truck delay and decreased truck reliability associated with lane repurposing projects on truck routes. While the effect of lane repurposing on freight delay should be closely considered before lanes are eliminated, additional coordination should be undertaken with the freight community even if the lane repurposing project is not expected to increase the delay.

In Florida and other states, truck routes can be officially designated by local authorities, with routes being identified using a combination of engineering and community input. The simplest way to avoid a conflict between truck routes and a lane repurposing project is to design for the design vehicle, but this may not always be possible given the goals of the lane repurposing project. If trucks can no longer be accommodated safely or efficiently on a truck route after a lane repurposing project is implemented, then any truck route designation should be moved to an alternative route and the section where lanes have been eliminated be signed with truck prohibitions or restrictions.

Improvements may be needed to accommodate trucks on alternate routes. Delivery zones and loading areas may need to be modified or relocated. The ITE Curbside Management Practitioners Guide provides current guidance and best practice examples. Future land use plans may include projects that will generate a high level of truck traffic. All of these potential changes and affects must be reviewed when proposing lane repurposing projects.

3.3.4.4 Nearby Jurisdictions and Local Roadways

The impacts of a lane repurposing project can manifest outside of the corridor in which the lane repurposing project is located. These impacts may also extend into adjacent communities and jurisdictions. These include impact on traffic operations in adjacent jurisdictions such as increased congestion due to diverted traffic and transportation safety of all modes.

It is necessary to establish a methodology to measure these impacts in the Initial Meeting and document these factors in the concept report. The scale of the project will dictate the level of detail for this analysis. Experience has shown that successful lane repurposing projects which impact adjacent jurisdictions include these jurisdictions in the planning and public outreach efforts.

The analysis typically will be to measure the effect of lane repurposing on planned and programmed transportation projects in an adjacent jurisdiction and, conversely, the effects of adjacent jurisdictions planned and programmed transportation projects on the segment where through lanes are to be repurposed. The analysis should include both near and long-term assessments, adjacent jurisdictions' LOS standards and associated comprehensive plan amendments which require extra-jurisdictional coordination. The results of this analysis could determine if mitigation may be needed in the future to address the significant adverse impact on roads in this area of influence.

Experience has shown that successful lane repurposing projects which impact adjacent jurisdictions include these jurisdictions in the planning and public outreach efforts.

The first step of the analysis is to agree on the impact area. After this, agreement on the methodology for predicting changes in traffic patterns needs to be set.

If using a validated regional travel demand model, the purpose of the analysis should be stated. Typical uses of the analysis would be to identify existing and future regional and corridor-level travel patterns and volumes, identify key congestion points system-wide that need to be considered in further corridor-level analysis, and to understand existing and anticipated modal shift and travel growth given existing and anticipated land use assumptions.

Though the model should have been validated in the most recent LRTP, there will likely be a need for consensus on whether the model be further calibrated to match corridor or local area conditions. More information on this calibration can be found in FDOT's Model Calibration and Validation Standards Report and Project Forecasting Handbook. This can relate to assumptions regarding the use of model outputs, variations in growth patterns based on local knowledge, or planned projects not incorporated into the area wide model. Note that the scenario evaluations should be fully related to the proposed lane repurposing project, not general evaluations of traffic improvements for more efficient operation.

Scenario evaluations should be fully related to the proposed lane repurposing project, not general evaluations of traffic improvements for more efficient operation.

Where a detailed assessment of the proposed project on adjacent roadways and local streets is needed, it could be necessary to perform a diversion analysis with a regional or sub-area travel demand model, through agency knowledge of travel patterns, additional in-field data assumptions, and often a combination of these methods. Anticipating changes based upon agency experience can be an effective method where the roadways have been built within a strong grid system, making it easier to identify alternative routes. Because methods employed may vary from project to project and rely, at least in part, on local knowledge for inputs, the assumptions to be used for this type of analysis should be agreed on in advance between FDOT, jurisdictional agency (the applicant), the transit agency, and consultant teams.

3.4 Safety Analysis

Lane repurposing projects, in general, have been demonstrated to reduce crashes, including fatalities by all users, while slowing average speeds and reducing traffic exposure. Projects are typically proposed on corridors which demonstrate some of the following characteristics related to safety:

- High crash numbers and rates;
- High crash locations by type;
- Rear-end crashes from left-turning vehicles;
- Left-turning vehicles stopped in the inside travel lane;
- Sideswipe and angle crashes due to lane changes;
- Pedestrian and bicycle crashes;
- Wide crossing distances for pedestrians and bicyclists; and
- High differential in speeds in travel lanes.

3.4.1 Safety and Operational Impacts

Safety and operational considerations and evaluation metrics will be agreed upon between the district Review Team and the applicant in the Initial Meeting. These may be key considerations in identifying the goals for a lane repurposing project.

According to studies by FHWA, under most AADT conditions, lane repurposing (of one through lane per direction) seems to have minimal effects on vehicle capacity because left-turning vehicles were moved into a common two-way left-turn lane (TWLTL). Four-lane roadways with AADT of up to 20,000 (or up to 1,750 vehicles per peak hour) have been shown to be good candidates for a road diet (lane repurposing). Four-lane roads with AADTs higher than 20,000 should be evaluated for feasibility on a case-by-case basis.[1] Similarly, of the before-and-after studies conducted, little to no changes in vehicle LOS were seen for roadway segments and intersections, while achieving the desired effects of slower vehicle speeds and fewer crashes. When a street is converted to two lanes, this helps to calm traffic, in part by eliminating the opportunity for passing and in part because the slower drivers set the speed.

3.4.2 Crash Data Analysis

Applicants should conduct a 5-year crash analysis of the corridor to determine the specific types of crashes. This due diligence is performed to minimize the potential for significant issues with the proposed modification. The district will want the applicant to identify the high crash segment/intersection locations by crash type and check to see if the project is on or close to an identified high crash location. These are the segments and locations on the SHS with the highest number of crashes by district. Part of the Initial Meeting and Methodology Checklist is for the applicant to estimate the anticipated safety benefits/impacts, using the Highway Safety Manual (HSM) and Crash Modification Factors Clearing House to determine the safety benefits of lane re-purposing projects. If needed, the district can provide assistance with the analysis methodology.

3.5 Concept Report Appendix

The applicant should include any relevant documentation to support the analysis of the lane repurposing project such as traffic counts, traffic analysis information including transit analysis, crash data, software traffic analysis, proposed conceptual plans and typical sections, Initial Meeting minutes and methodology checklist, public workshop information, and any other related information.

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1 Tan, C.H. Going on a Road Diet. FHWA-HRT-11-006. FHWA, Washington, D.C., September-October 2011

4 Public Involvement

Support by the local community is crucial to the long-term success of a lane repurposing project. The process to build consensus for the reconfiguration of a roadway in a community can involve some misperceptions. For example, lane repurposing projects can initially be perceived as increasing delay, but at the same time improve safety and accessibility for multiple users. Therefore, community engagement requires a commitment to a strong partnership and public involvement process between the local government, FDOT, and the community throughout the process. To assist with understanding the public involvement and decision-making process for FDOT projects on the SHS, the FDOT Public Involvement Handbook should be referenced throughout the project process.

4.1 Public Involvement, Applicants & FDOT

Ensuring public acceptance for lane repurposing projects as early as possible is important but can also be challenging. A study by Vergis and Niemeier[3] reports that public support for a lane repurposing project is linked to perceived safety, perceived comfort, volume of bicyclists, and expected cross-street congestion. Public participation is often coordinated with outreach to elected officials.

One important aspect of the public involvement for these lane repurposing projects is that they have been conducted properly and thoroughly. This is so all potential stakeholders understand the potential changes and impacts of these projects. FDOT DLRC have noted that public involvement is a key component of a successful lane repurposing project. It is important to balance the needs of the local residents of the project corridor, as well as those who utilize it for commuting or other purposes. It is not enough for applicants to get buy-in from those who live there; they must also conduct public involvement to provide opportunities for all users to get input.

Documenting public involvement for lane repurposing projects is not only a best practice but is required in the concept report. Getting the traveling public and the neighborhood in the project vicinity included in public involvement early can help prevent problems later. Some of the public may be supportive of a project because it will make their area nicer in the long-term, but the public who may travel through the project area on the roadway corridor may not feel the same way. Working together with all stakeholders early in the process may make it possible to find solutions which satisfy both groups.

It is the responsibility of the applicant to ensure that all parts of the application are completed based on FDOT standards and procedures. When FDOT is the applicant and the proposed project will divide a state highway, erect median barriers modifying currently available turning movements, or have the effect of closing or modifying an existing access to an abutting property owner, then the requirements of F.S.335.199 should be followed.

Resurfacing, restoration and rehabilitation (RRR) projects that include the Lane Repurposing with FDOT funding that will divide a state highway, erect median barriers modifying currently available turning movements, or have the effect of closing or modifying an existing access to an abutting property owner, then the requirements of F.S.335.199 should be followed. If the local government is proposing with FDOT funding, they should follow section F.S.335.199.

If FDOT participates financially in the funding of any Lane Repurposing project on a State Highway requested by the local Government, that will divide a state highway, erect median barriers modifying currently available turning movements, or have the effect of closing or modifying an existing access to an abutting property owner, then the requirements of F.S.335.199 should be followed.

Any Lane Repurposing project on a State Highway funded solely by the local government, that does not: divide a state highway, erect median barriers modifying currently available turning movements, or have the effect of closing or modifying an existing access to an abutting property owner, the Department recommends that the local government provide notice and an opportunity for public meeting and public comment. Applicants must lead all public involvement during the planning phases of a lane repurposing projects. Once a project involves design or construction, then FDOT will become involved.

In addition to the resources here and listed above are those within FDM 104, Public Involvement as well as the FDOT Access Management Guidebook.

4.2 Public Involvement Methods and Tools

There are multiple tools available to assess and/or build community support for a lane repurposing project. These include the following:

POLL – A citizens' poll or vote is another tool for assessing public support. Combined with a trial period (e.g., conducting the poll or vote before and after the trial) it is even more effective. In general, poll and votes should be conducted in a manner that results in a statistically sound representation of all community members. In addition, the structure and context of poll questions should be considered carefully so the public feels their input will be taken into consideration, rather than used to justify the project, which can impact overall consensus.

MEDIA – Creating a web page for the project is a way to reach the public. Interactive blogs enable public participation. Social media can be used to keep the community up to date on the project. Webinars are a means of providing access to information. Educating the public about the potential impacts of the lane repurposing project is essential.

WORKSHOP – Workshops are a more engaged form of public participation and educational outreach. These can be presented both in-person and virtually, in person workshops should be held throughout the community and at times of the day to allow all community members to attend.

FIGURE 4-1 Virtual Public Meetings

Source: CDM Smith

5 Florida Lane Repurposing Projects Examples

This section is meant as a review of several Florida lane repurposing projects that are at various stages of their project lifecycle, as well as summarizing several funding options for applicants for constructing these projects. Finally, a list of best practices is given to help ensure applicants that their projects succeed.

5.1 Project Examples

The concept of lane repurposing is not a new one, especially in Florida. There have been numerous efforts at all levels of government to repurpose elements of their transportation network to be more efficient and meet the needs of its populace. Several examples of lane repurposing projects will be discussed within this section.

While there have been numerous lane repurposing projects over the years, they seem to fall within two main categories: those that are completed within a resurfacing, restoration and rehabilitation (RRR) project and those that are part of an overall larger corridor redesign effort. The lane repurposing projects that are part of an RRR project are typically simpler from a planning perspective, as well as considerably less expensive. A RRR project can be described as a project that consists of "the placement of additional surface materials and other work necessary to return an existing roadway to a condition of structural and functional adequacy" per FDM 114.

The projects discussed in this document provide an overview of common lane repurposing projects submitted to FDOT. Table 5-1 below shows the five projects that were reviewed and the aspects each project contained.

TABLE 5-1 Florida Lane Repurposing Project Examples

Project No.	Road Segment	Bike Lanes	Sidewalk Enhancements	Mid-Block Crosswalks	Street Lighting	On-Street Parking	Landscaping	Median Enhancement	Access Management	Bus Rapid Transit
1	SR 810 (Hillsboro Boulevard) from NE/SE 2 Avenue to SR 5 (US 1)	X	X		X		X	X	X	
2	SR 693 (Pasadena Avenue)	X								X
3	SR A1A (North Fort Lauderdale Beach Boulevard) from SR 838 to NE 18 Street	X	X	X	X		X	X		
4	SR 10 (US 90)	X				X				
5	SR 430 (Oakridge Boulevard)	X								

Source: FDOT

5.1.1 Project 1 – SR 810 (Hillsboro Boulevard)

SR 810 (Hillsboro Boulevard), located in Deerfield Beach, Broward County is a major thoroughfare in the City used by visitors and locals to access the beach. The SR 810 (Hillsboro Boulevard) corridor for the repurposing project is 0.7 miles long and the limits of the project extend between NE/SE 2nd Avenue to SR 5 (US 1). This project has undergone construction and was completed in 2017.

The typical section of the corridor before the lane repurposing consisted of six lanes (three in each direction) with a TWLTL as shown in Figure 5-1. The new typical section is four lanes (two in each direction) with exclusive right and left turn lanes as shown in Figure 5-2. The goal of the project as demonstrated through the public involvement process was to improve safety and improve access for all modes of travel by reducing potential conflicts. As shown in Table 5-1, the project included buffered bike lanes, sidewalks on both sides, median enhancements with landscaping, improved lighting and access management solutions.

To date, there has not been an after study performed on the corridor limits; however, there is a portion of the corridor that is west of I-95 that is experiencing higher crash rates than the improved eastern portion. As this project has been constructed, updated costs are available for the lane repurposing process. Local ($758,822) and state funds ($8,780,846) were used to build the project.

FIGURE 5-1 SR 810 (Hillsboro Boulevard) Before Lane Repurposing

Source: SR 810 (Hillsboro Boulevard) Lane Elimination Report

FIGURE 5-2 SR 810 (Hillsboro Boulevard) After Lane Repurposing

Source: SR 810 (Hillsboro Boulevard) Lane Elimination Report

5.1.2 Project 2 – SR 693 (Pasadena Avenue)[2]

This lane repurposing project evaluated SR 693 (Pasadena Avenue) for implementing Business Access and Transit (BAT) lanes. BAT lanes are designated lanes that help move bus riders and others more efficiently and improve access to businesses and residences along the route by reserving outside curb lanes for right-turning vehicles and buses. The project corridor is 1.4 miles long and extends from Matthews Road/Shore Drive to Central Avenue. It is a part of a larger BRT Design Project that extends from Downtown St. Petersburg to St. Pete Beach. Transit projects can also be included in the lane repurposing procedures as demonstrated from this review. This project has not started construction but is scheduled for completion in 2021.

"The existing typical section for SR 693 (Pasadena Avenue) from Matthews Road/Shore Drive to Central Avenue is a six-lane divided corridor with 10 to 12-foot lanes, a 12 to 18-foot median, curb and gutter, 7-foot sidewalks, 100-feet of right of way, and "sharrows" south of Park Street. The proposed typical section repurposes the outside travel lanes in the northbound and southbound directions into BAT lanes, with the shared lane or "sharrow" designation from Matthews Road/Shore Drive to Central Avenue."[3] These typical sections are shown in Figures 5-3 and 5-4. The purpose of adding the BAT lanes is to allow transit priority treatments for buses using the corridor. This is part of a larger BRT project, which will use transit signal prioritization if the buses fall behind in schedule over 5 minutes and other transit related priority strategies.

Implementing the BAT lanes will have minimal effect of traffic operations within the corridor. To evaluate the existing conditions and operations of the corridor, Synchro was used. It was determined that all the intersections in the study area were operating at Level of Service D or better, except for Gulfport Boulevard/Sunset Drive. The future operational impacts, 2040 design year, were determined using a combination of Synchro and VISSIM.

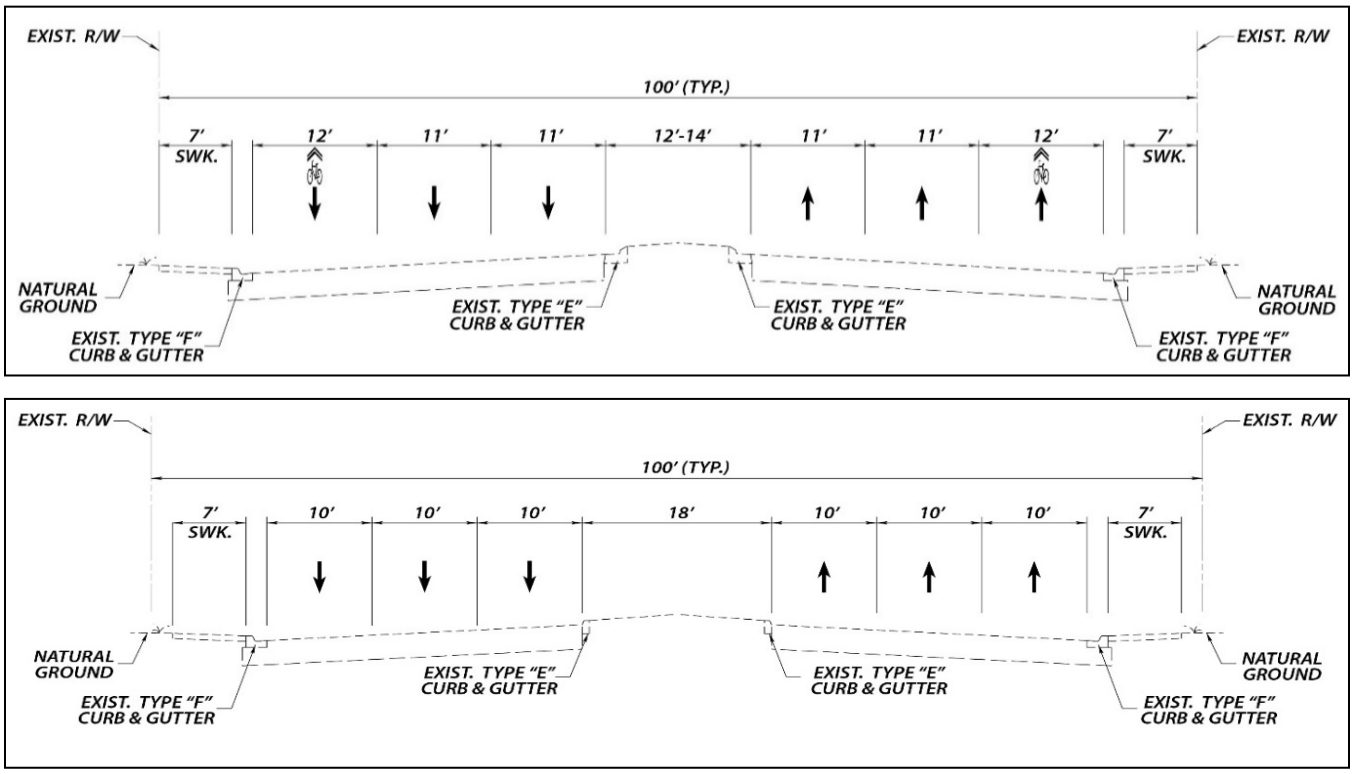
2 *While this project involves BAT lanes, these are not a typical justification for lane repurposing projects and thus are not built often. Due to this, it is recommended that any applicant that is seeking to repurpose a vehicular lane for BRT or BAT should discuss this in greater detail with their FDOT DLRC.*

3 *Lane Elimination Report for the Central Ave Bus Rapid Transit Project, Pinellas Suncoast Transit Authority*

While the overall intersection delays did increase, the intersections maintained a LOS D operation, except for Gulfport Boulevard/Sunset Drive. "According to the VISSIM analysis, all arterial segments of the corridor are expected to operate at an acceptable LOS D in the design year (2040) under the Build condition."

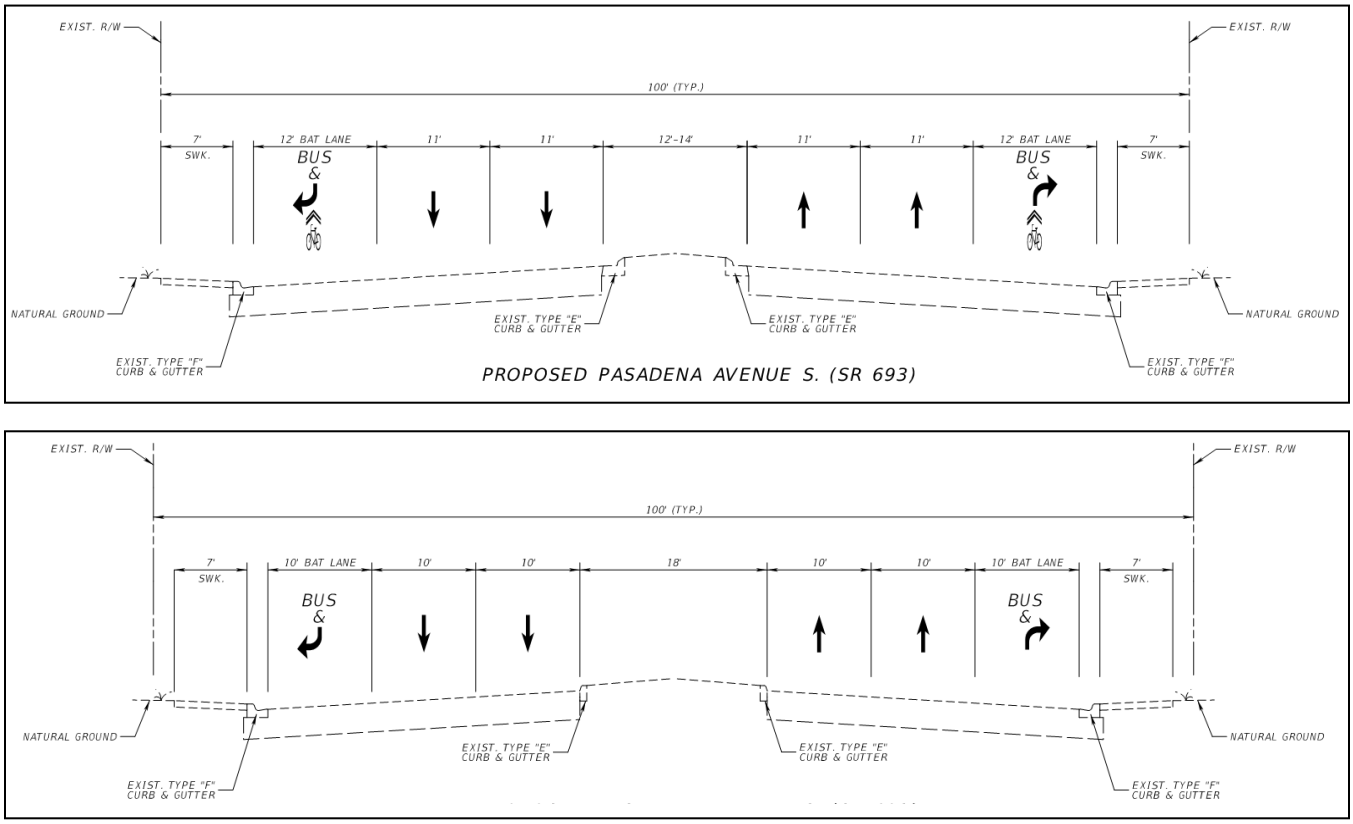
The repurposing project also evaluated the multimodal connectivity throughout the corridor. The existing condition for the corridor includes seven-foot continuous sidewalks on each side and will not change with the proposed improvements. To address the bicyclists infrastructure concerns, the outermost lanes will be used to allow bicyclist to share the roadway with buses and right turning vehicles only.

FIGURE 5-3 SR 693 (Pasadena Avenue) Existing Typical Sections



Source: SR 693 (Pasadena Avenue) Lane Elimination Report

FIGURE 5-4 SR 693 (Pasadena Avenue) Proposed Typical Sections



Source: SR 693 (Pasadena Avenue) Lane Elimination Report

5.1.3 Project 3 – SR A1A (North Fort Lauderdale Beach Boulevard)

This project is located in Fort Lauderdale, Broward County and is on SR A1A (North Fort Lauderdale Beach Boulevard). This corridor is extremely popular with beach visitors with on-street parking and access points to the beach. The SR A1A corridor for the repurposing project is 1.0 mile long and the limits of the project extend between East Sunrise Boulevard and NE 18 Street. This project has undergone construction and was completed in 2015.

SR A1A is an example of a four-lane facility being reduced to two lanes. Due to Hurricane Sandy, this corridor needed to be repaired and in order to increase the safety and resilience of the road they transitioned it to two lanes. The purpose of the project was to create a safer environment for pedestrians and bicyclist by reducing the vehicular speeds and improving the roadway features. In order to do this, wider sidewalks were created, bike lanes were added, the median was landscaped, pedestrian lighting was installed, and two signalized mid-block pedestrian crossings were added. Figures 5-5 and 5-6 show this project before and after lane repurposing.

As this project is already constructed, updated costs are available for the lane repurposing process. The construction was funded with state funds and cost $13,838,479.

FIGURE 5-5 SR A1A (North Fort Lauderdale Beach Boulevard) Before Lane Repurposing

Source: SR A1A (North Fort Lauderdale Beach Boulevard) Lane Elimination Report

FIGURE 5-6 SR A1A (North Fort Lauderdale Beach Boulevard) After Lane Repurposing

Source: SR A1A (North Fort Lauderdale Beach Boulevard) Lane Elimination Report

5.1.4 Project 4 – SR 10 (US 90)

This project example is in Monticello, Jefferson County and is on SR 10 (US 90). When US 90 was being submitted for resurfacing from Willow St to the Madison County Line through the RRR process, the lane repurposing application started for part of the corridor. The lane repurposing project is 0.65 miles long and extends from just West of Martin Luther King Jr Ave to West of St. Margaret's Church Road. The project is in the process of construction and should be completed by 2021.

SR 10 is an example of a project that occurs within the existing asphalt footprint. Therefore, the only costs associated with the lane repurposing are signing and striping and will be paid for through the resurfacing project. The city requested that the on-street parking be maintained through the corridor and mobility options be added heading toward downtown. The purpose of the project is to increase safety by providing a refuge for vehicles making left turns, as well as separating bicyclists from vehicular traffic. The existing typical section is a four-lane corridor with sidewalks on each side with curb and gutter. The proposed typical section will be three lanes with one travel lane in each direction and a two-way center left turn lane and include bicycle lanes and on street parking in both directions. These typical sections are shown in Figures 5-7 and 5-8.

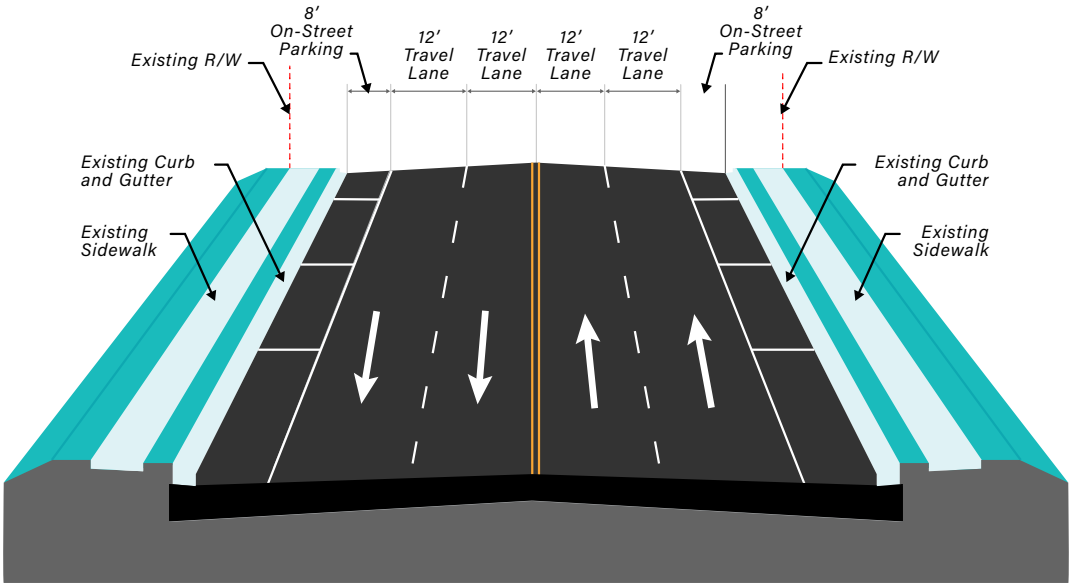
The project study area was classified as urban transitioning area due to the corridor characteristics and how the corridor functioned. It was concluded that "while the elimination of lanes in this area will slightly reduce level of service for the roadway segment, this reduction is still within an acceptable range for this sort of facility."[4] The results of the Level of Service analysis using Highway Capacity Software (HCS) determined US 90 is experiencing LOS A with the existing typical section and would experience LOS B after the lane repurposing is implemented.

The greatest number of crashes that occurred through this corridor were rear end collisions. These crashes should be reduced by providing a lane reduction to enhance safety for bicyclists and left-turning vehicles. This is accomplished by providing dedicated bike lanes and staging areas for left-turners to separate them from through-moving traffic.

A1A, Oakland Park, Florida

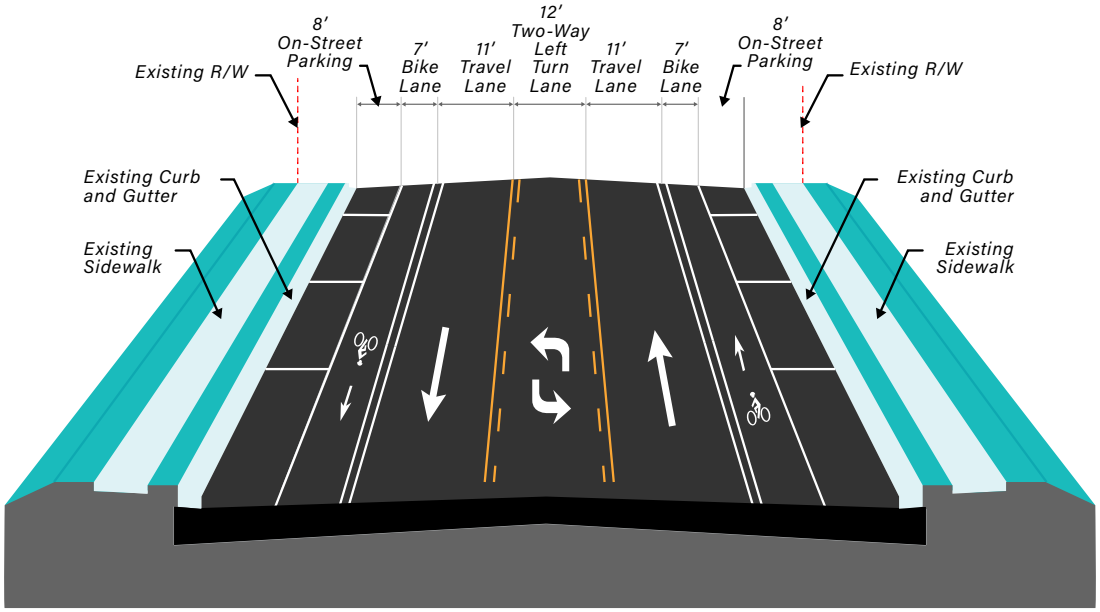
4 *Lane Elimination Request FPID 439729-1 SR 10 (US90) From Willow Street to the Madison County Line*

FIGURE 5-7 SR 10 (US 90) Existing Typical Section



Source: SR 10 (US 90) Lane Elimination Request FPID 439729-1

FIGURE 5-8 SR 10 (US 90) Proposed Typical Section



Source: SR 10 (US 90) Lane Elimination Request FPID 439729-1

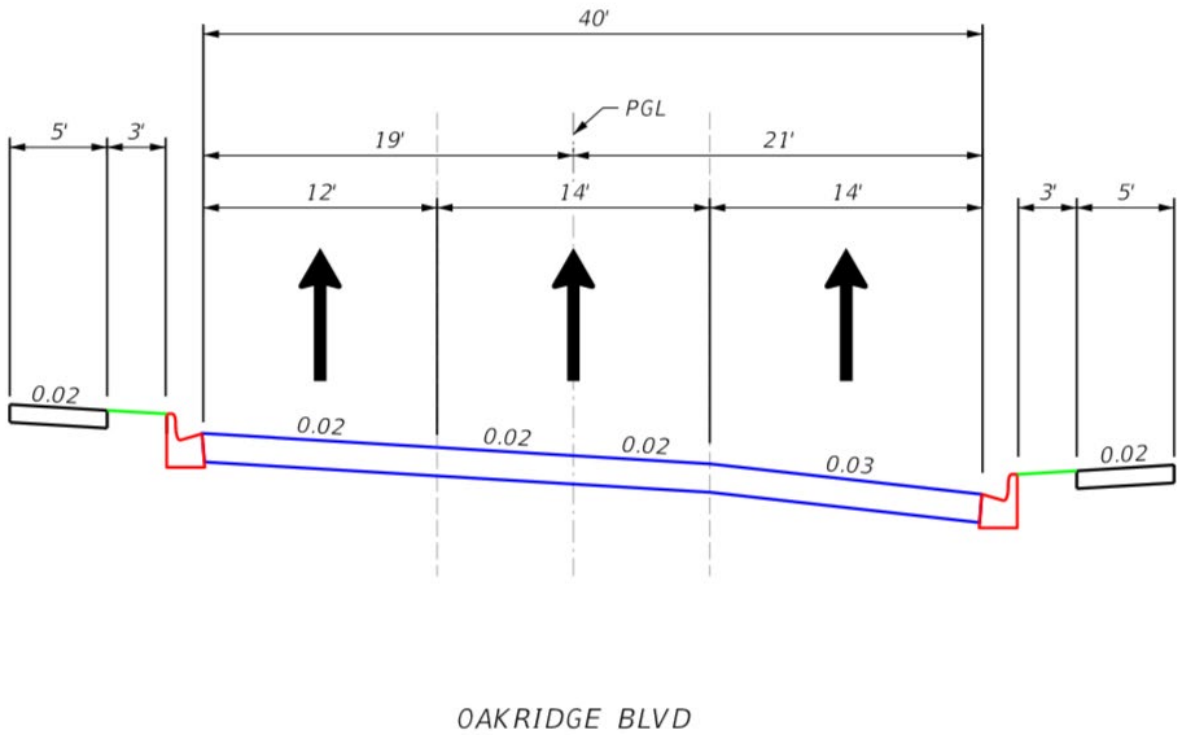
5.1.5 Project 5 – SR 430 (Oakridge Boulevard)

The final project evaluated in this guidebook is SR 430 (Oakridge Boulevard) in Daytona Beach, Volusia County. This project also went through the RRR process and proceeded with submitting a lane repurposing application. No variations or design exceptions are anticipated for this project at this time. The lane repurposing project is 0.43 miles and extends from North Halifax Avenue to State Road A1A. The project is in the process of construction and scheduled for completion in 2021.

The purpose of the project was to convert the existing typical section of three eastbound lanes to a two-lane urban roadway with designated bicycle lanes. These typical sections are shown in Figures 5-9 and 5-10. The goal of the project is to reduce the travel speed, decrease crossing distances and enhance mobility through the corridor. The bicycle lane will be seven-foot-wide which will help enhance mobility in the area since there are currently no bicycle facilities along the corridor. From 2012-2016, there were a total of 87 crashes that occurred within the project limits and by removing the third lane there is a potential to provide improved traffic operations to help improve the safety on this segment. The speed limit will be reduced from 40 mph to 35 mph. The project would also increase safety throughout the corridor by reducing the exposure for pedestrians and bicyclists to oncoming traffic by reducing the crossing distances.

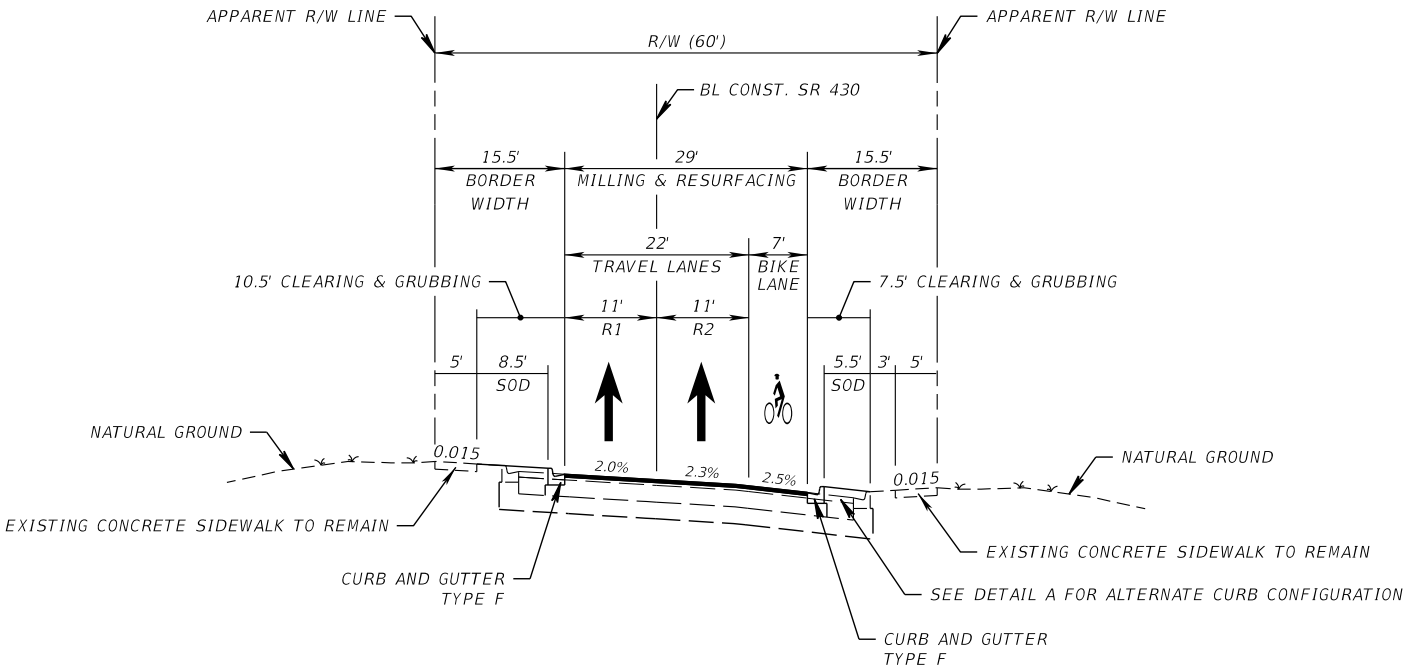
Evaluating the segment and intersection LOS for the corridor being converted to two-eastbound lanes resulted in the roadway maintaining a LOS C, even when using the projected 2035 traffic volumes into the analysis. Due to these results, implementing the lane repurposing will have minimal effect of traffic operations within the corridor.

FIGURE 5-9 SR 430 (Oakridge Boulevard) Existing Typical Section



Source: SR 430 (Oakridge Boulevard) Lane Elimination Request

FIGURE 5-10 SR 430 (Oakridge Boulevard) Proposed Typical Section



Source: SR 430 (Oakridge Boulevard) Lane Elimination Request

5.2 Project Funding (Federal, State, Local) and Costs

While a lane repurposing project can result in significant changes to roadway design, lane repurposing projects are typically relatively low-cost projects. If a repaving or reconstruction project is ongoing or programmed, elements of the lane repurposing project (e.g., restriping) can be implemented as part of that repaving or reconstruction project to save costs.

Although lane repurposing projects may be perceived as adding "expensive" multimodal features to an existing corridor, the incremental cost of features such as bicycle lanes and sidewalks is relatively low in comparison to other project cost elements (e.g., variable costs of labor and materials). Also, if the lane repurposing project leads to the implementation of a complete street, the needs of multiple users can be integrated into the project early, minimizing calls for future retrofits in the corridor.

Although lane reduction projects have real construction/implementation costs, they can be viewed as long-term investments in the community rather than short-term projects. A cost-benefit ratio calculated in 2004 for a lane repurposing project in Evansville, IN, indicated that that project's benefits would exceed its costs by a factor of 5.24 after 20 years.

Facilities for multimodal users in a corridor can create opportunities to access new funding sources. Potential funding sources for lane repurposing projects include the Federal Transit Administration Capital Investment Grant program, Federal Transportation Alternatives Program (into which the Safe Routes to School Program was absorbed), the Transportation Investment Generating Economic Recovery (TIGER) program, the Sustainable Communities Challenge grants program, Main Street programs, Community Development Block Grants, and various competitive grant opportunities and local sources.

5.3 Best Practices

While every lane repurposing project is different, either due to the underlying existing conditions or other factors, there are several important steps that applicants should take to be sure that their lane repurposing project can be approved and built successfully in their area. Some of these best practices focus on public involvement while others focus on the application process itself, but they are based upon input from the FDOT staff both in the Central Office, as well as District staff.

5.3.1 Local Project Champion and Support

An important best practice for lane repurposing projects is for there to be a local project champion, as well as support from elected officials. In the most successful projects, both levels of support are present and can help to efficiently implement desired corridor improvements. There are several reasons why having a local project champion and support from local elected officials is important.

Having a local champion is important because lane repurposing projects have the potential to become contentious due to the removal of vehicular travel lanes for another transportation mode. Some may not see all the potential benefits that could occur from these projects and instead see it taking longer for people to get to work, which means angry and frustrated constituents.

Several more urbanized Districts expect applicants to provide detailed documentation of public support for a project in their initial application. This includes resolutions from elected bodies, records of public meetings including attendance and presentation slides along with letters of support from surrounding jurisdictions. These materials provide important information on the goals and objectives of the project and are useful in informing decision-making from both a technical and community vision perspective.

In addition, some districts and local governments hold public meetings for all projects during the planning and design phases. These types of meetings can provide important insight into the issues that the public cares about in a project and can help inform the technical focus areas of analysis for a proposed lane repurposing project.

5.3.2 Early Coordination with FDOT

It is critical that any lane repurposing projects are coordinated early with FDOT to avoid any potential pitfalls or issues. Due to potential contentiousness that may arise from lane repurposing projects as well as the ability to leverage funding sources efficiently for improvements proposed, it is recommended that applicants talk with FDOT early in the process to make them aware of the potential for a proposed lane repurposing project.

Because roadway resurfacing, restoration and rehabilitation (RRR) projects often present an opportunity to perform a repurposing project, it is helpful for the FDOT district and local governments to maintain open channels of communication. It can take time to get these projects added to their plans and go through the entire process, so it helps local governments plan better to know these local conditions and schedules in planning and implementing lane repurposing improvements. Coordinating project schedules early on can help to leverage funding to make needed improvements to the roadway and minimize overlapping or conflicting schedules during final design and implementation/construction.

Early coordination with FDOT may also provide potential cost sharing opportunities or an ability to offset or apply innovative funding to make desired improvements. On one project a developer wanted a highly walkable environment and was willing to fund the improvements. The District staff worked with the local municipality and the developer to coordinate the development project being completed.

5.3.2.1 Bus Rapid Transit Considerations

For BRT or other premium transit projects which involve transit signal priority systems, it is helpful to get FDOT Traffic Engineering and Public Transportation/Modal Development Office involved early in the process for troubleshooting, buy in, and problem solving. The entity that operates the signals, which may be a county, should also be at the table. The state of signal equipment often varies across the corridor, and a field validation of the equipment with the signal operator can identify needed upgrades early in the process. This early coordination can help to establish overall signal system needs and project goals and result in more comprehensive solutions being developed for better multimodal operations.

Developing signal system solutions that provide transit signal priority can help to improve transit travel times and reliability. Early coordination with FDOT and applicants on these types of improvements can assist in developing more comprehensive network solutions that move people, not just vehicles, more efficiently throughout a corridor. Making premium transit projects most successful requires providing not just savings in travel time or reliability, but also greater comparative travel time with automobiles. If the goals in the region or locality are to improve overall multimodal capacity and use of transit as a viable alternative mode, these comparisons in travel time between modes should be an important consideration in developing signal plans.

5.3.3 Traffic Monitoring Best Practices

Because lane repurposing projects can raise concerns about resulting traffic congestion, parking loss or the need for improved multimodal facilities and services, it is important to have good data to support decisions. The following suggestions and examples illustrate some effective and non-traditional data collection techniques which an also save time and potentially costs.

Applicants may find it helpful to use data from emerging sources such as traffic data using Bluetooth data. Bluetooth-enabled devices can gather travel times within lane elimination segments; before, during, and after the implementation. In addition to Bluetooth are other crowd-sourced data, as well as HERE and StreetLight data. All of this can be used for traffic data as part of the Lane Repurposing application. The "before" data can be used as a benchmark, the "during" data can help with identifying bottlenecks, and the "after" data can be used for effectiveness evaluation.

Another suggestion was made to locate a traffic count station within lane repurposing segments if a traffic count station currently does not exist there. This can help with monitoring traffic volumes after implementation, including to assess traffic diversions due to lane elimination.

One city used video cameras to identify bicycle usage and parking utilization to justify what level of proposed bicycle facilities improvements were needed and if on-street parking spaces could be reduced to create space for multimodal improvements. They also used the video to help determine if additional safety or other treatments would be needed with multimodal interactions. For parking, they were proposing to eliminate some on-street parking. The video helped demonstrate that the removal would still provide the level of parking needed alongside other off-corridor parking options and allay local concerns.

6 Appendix

This appendix has several resources which may prove useful for lane repurposing applicants. The forms which are required by FDOT are located here, as well as the recommended template for lane repurposing applications.

6.1 Forms

There are several forms which are required for lane repurposing project applicants, which come from FDM 103. Examples of these forms can be found in Figure 6-1, Figure 6-2, and Figure 6-3 and each of these detail Forms 126-A, 126-B and 126-C, respectively. The latest version of these forms though can be found online in the FDM.

FIGURE 6-1 Form 126-A

Form 126-A

INITIAL MEETING AND METHODOLOGY CHECKLIST

This is a list of items that the Applicant should prepare to discuss at the initial meeting and the District Review Team may require the Applicant to address these items in the Concept Report, as needed.

Project Information

- ☐ Project Location
- ☐ Project Limits
- ☐ Project Length
- ☐ Project Purpose
- ☐ Jurisdiction(s) in which the Project is Located
- ☐ Proposed Change in Lane Configuration
- ☐ Project Schedule
- ☐ Context Classification

- ☐ Conceptual plan (including transitions to and from the lane repurposing section) that meet FDOT Design Standards for all modes
- ☐ Existing and long-range future AADT (the latter based on historical growth and the regional travel demand model)
- ☐ Consistency of the proposed project with the applicable Long-Range Transportation Plan (LRTP), Transportation Improvement Program (TIP), Transit Development Plan (TDP), comprehensive plan, master plans, visions, and Complete Streets initiatives
- ☐ Status of the roadway as an Evacuation Route, freight route, and part of the Strategic Intermodal System (SIS)
- ☐ Status of the roadway as a major transit corridor per the LRTP or TDP
- ☐ Proposed use(s) for the right-of-way after lanes are eliminated (e.g., widened sidewalks, bicycle lanes, landscaping, on-street parking, transit lanes)
- ☐ Impact on bicycle/pedestrian infrastructure and connectivity
- ☐ Impact on parking
- ☐ Impact on transit routes, stop locations (including appropriateness of turn radii and lane widths), include total number of stops and routes in the area.
- ☐ Existing right-of-way width and any proposed changes to the right-of-way width
- ☐ Anticipated changes in jurisdictional responsibility for ownership or maintenance of the roadway
- ☐ Anticipated changes in functional classification, context classification, and/or access management classification
- ☐ Public Involvement, agency outreach and endorsement.
- ☐ Existing design and posted speeds
- ☐ Existing and future typical section
- ☐ Target speed with anticipated changes in posted speed limits and design speeds
- ☐ Need for design variations or design exceptions
- ☐ Plan for obtaining input and review from businesses, residents, and other stakeholders
- ☐ Plan for receiving endorsement from elected officials
- ☐ Funding source and cost estimates
- ☐ Size of impact area-parallel and cross streets
- ☐ Potential implementation strategy and partner commitments
- ☐ Impact on School crossing locations and midblock crossing
- ☐ Need to add, remove, or modify traffic signals
- ☐ Near and long range multimodal level of service (LOS) and queuing analysis for intersections and segments in the impact area under build and no-build scenario.
- ☐ Mitigation to address the significant adverse impact on state roads and regional transportation system
- ☐ Crash data summary and analysis for the segment and intersections in the project limit
- ☐ Case-specific special considerations to be determined (e.g., railroad crossing improvements)

Source: FDM 103 – Form 126-A

FIGURE 6-2 Form 126-B

Form 126-B

LANE REPURPOSING INITIAL NOTICE TO CENTRAL OFFICE

To:_____ From:_____Date: _____
Systems Management Administrator *District Lane Repurposing Coordinator*

The intent of this notice is to inform Central Office that District_____has received a request for lane repurposing on the State Highway System.

PROJECT INFORMATION

State Road and Project Location: _____

_____

Roadway ID: _____ Project Limits (MP) from _____ to _____

Roadway ID: _____ Project Limits (MP) from _____ to _____

Context Classification:_____

Applicant:_____

Project Description: _____

_____

_____

Proposed Change in Cross Section: From _____ lanes to _____ lanes

☐ SIS ☐ NHS

ACTIONS AND OUTCOMES TO DATE

District staff participated in a meeting with _____ on _____ to formally commence the lane repurposing review process. At that meeting, District staff provided an overview of the lane repurposing review process and the Applicant shared initial information about the lane repurposing project. The District determined the specific review process and analysis methodology for the lane repurposing request.

NEXT STEPS: The Applicant will submit a Draft Concept Report (containing proposed typical sections and plan views) as the lane repurposing review process proceeds. If the District reviewers find the Draft Concept Report acceptable, the Applicant submits a formal Application Package (including the Final Concept Report) to the District. If the Application Package is complete and acceptable, the lane repurposing request will be approved at District level. The final Application Package along with signed Form C will be sent to Central Office for final approval.

Concurrences:

_____ Date: _____
District Planning and Environmental Administrator

_____ Date: _____
District Design Engineer

_____ Date: _____
District Traffic Operations Engineer

Source: FDM 103 – Form 126-B

FIGURE 6-3 Form 126-C

Form 126-C

Lane Repurposing Final Review and Approval Notice to Central Office

The intent of this notice is to inform Central Office that District _____ has completed review for the following lane repurposing project on the State Highway System.

PROJECT INFORMATION

State Road and Project Location: _____

_____

Roadway ID: _____ Project Limits (MP): from _____ to _____

Roadway ID: _____ Project Limits (MP) from _____ to _____

Context Classification: _____ Access Management Classification: _____

Target Speed: _____ Design Speed: _____ Posted Speed: _____

Transit facilities (stops and routes): ☐ Yes ☐ No

Applicant: _____

Project Description: _____

_____

_____

Proposed Change in Cross Section: From _____ lanes to _____ lanes

☐ SIS ☐ NHS

Attachments: ☐ Concept Report ☐ Plan views ☐ Typical sections

District Concurrences:

_____ Date: _____
District Planning and Environmental Administrator

_____ Date: _____
District Design Engineer

_____ Date: _____
District Traffic Operations Engineer

Central Office Concurrence:

_____ Date: _____
Chief Planner

Final Approval:

_____ Date: _____
Chief Engineer

Source: FDM 103 – Form 126-C

6.2 Concept Report Template

As part of the lane repurposing application, a "Concept Report" is required to be developed by the applicant, which is then reviewed by the District Review Team and Central Office Review Team. The recommended template is shown in Figure 2-1. Detailed information related to this template can be found in Section 3 of this guidebook. It should be noted that this is the "recommended," not the required, template. Not being able to complete one aspect of this concept report will not inherently cause an application to be rejected. It is critical that applicants speak with FDOT District Staff if there is an issue with completing any portions of this recommended template.

FIGURE 6-4 Concept Report Template

I. Project Description

- A. Purpose
- B. Project Location
- C. Area of Influence
- D. Existing Conditions
  1. Typical Section
  2. Roadway Functional, Access Management, and Context Classification
  3. Evacuation Route
  4. SIS Designation
  5. Posted Speed and Average Speed
  6. Traffic Data Collection
  7. Signalized Intersections
  8. Existing Level of Service

II. Proposed Modifications

- A. Conceptual Design
  1. Typical Section
  2. Intersection Design
- B. Changes in Design and Posted Speed
- C. Consistency with Local Plans
- D. Funding Sources
- E. Design Variations and Exceptions (If Applicable)

III. Traffic Analysis

- A. Traffic Forecasting Methodology
- B. Level of Service Analysis of Build Alternative vs No-Build Alternative
- C. Include Delays, Volumes, Queues Analysis
- D. Impacts on the Corridor or Network
  1. Environmental
  2. Pedestrian and Bicyclist Activity
  3. Transit and Freight Routes

IV. Safety Analysis

- A. Crash Data Analysis
- B. Project Safety Impacts

V. Appendix

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Systems Implementation Office
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www.fdot.gov