


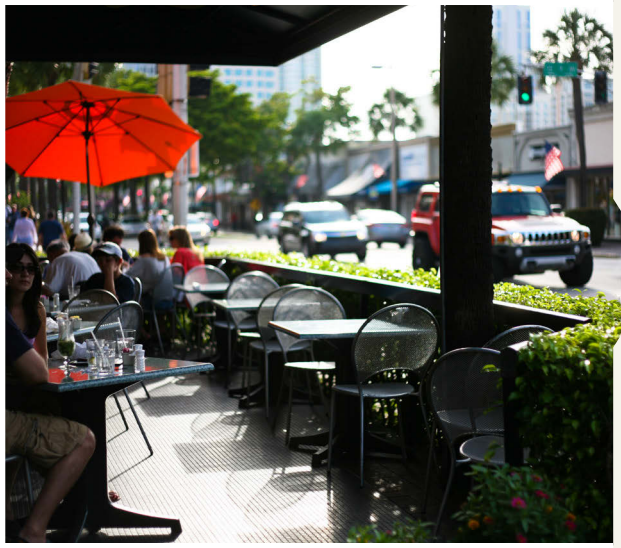

STATEWIDE LANE ELIMINATION GUIDANCE

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE

DECEMBER 2014

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TABLE OF CONTENTS

FIGURES AND TABLES

SECTION 1
INTRODUCTION

1.0 INTRODUCTION

1.1 PURPOSE OF THIS DOCUMENT

The primary purpose of this document is developing guidance that Florida Department of Transportation (FDOT) Districts can use to create a process for reviewing requests for eliminating lanes on State roadways. Local governments (including cities and counties) and agencies such as metropolitan planning organizations (MPOs) and transportation planning organizations (TPOs) typically request the elimination of through lanes on State roads so that the recovered right-of-way can be converted to bicycle lanes, wider sidewalks, landscaping, on-street parking, or other purposes in order to promote use of non-automobile modes, contribute to more livable environments (e.g., by reducing pedestrian crossing distances and traffic speeds), and/or contribute to economic development and vitality.

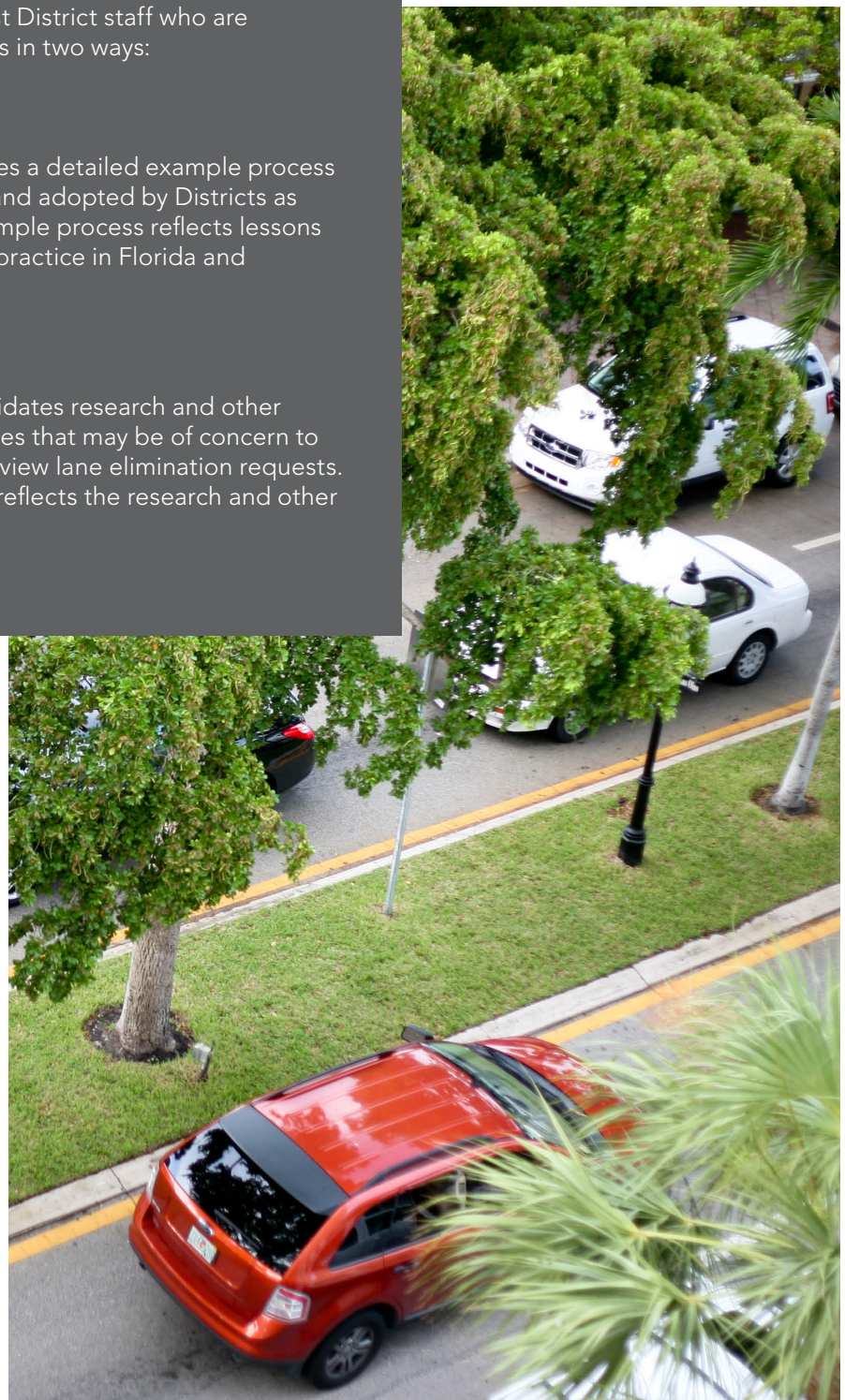
THIS DOCUMENT IS INTENDED TO ASSIST FDOT DISTRICT STAFF IN DEVELOPING PROCESSES FOR REVIEWING STATE HIGHWAY LANE ELIMINATION REQUESTS.

This document is intended to assist District staff who are reviewing lane elimination requests in two ways:

1. This document provides a detailed example process that can be modified and adopted by Districts as they choose. The example process reflects lessons learned from existing practice in Florida and nationwide.

2. This document consolidates research and other information about issues that may be of concern to District staff as they review lane elimination requests. The example process reflects the research and other information.

This secondary purpose of this document is providing a foundation for development and adoption of a statewide lane elimination policy or procedure. A potential model for such a procedure is the Community Aesthetic Features procedure in the Plans Preparation Manual (PPM). With the potential for statewide adoption in mind, the example lane elimination review process contained in this document is designed to balance consistency and flexibility. It is also intended to support FDOT's Complete Streets policy.



1.2 SCOPE OF THIS DOCUMENT

This document supports the evaluation of lane elimination projects proposed for the following purposes:

- Creation of space for dedicated bicycle facilities (e.g., bicycle lanes)
- Creation of space for new sidewalks or wider sidewalks
- Addition of landscaping buffers or landscaped medians
- Creation of space for on-street parking
- Traffic calming

Lane elimination projects intended to create space for dedicated transit facilities (e.g., bus lanes) are not explicitly addressed in this document, but many of the considerations discussed in this document are applicable to the creation of dedicated on-street transit facilities.

Lane elimination projects go by several other names, including "road diets." For simplicity, this document classifies all such projects as "lane elimination" projects.

1.3 USE OF THIS DOCUMENT

This document applies to requests to eliminate through lanes on State roadway facilities in Florida. It is organized into the following sections:

- Example Lane Elimination Review Process (Section 2.0)
- Issue Profiles (Section 3.0)

The Example Lane Elimination Review Process section describes the steps in the example review process and the roles and responsibilities of involved parties. It includes template forms, checklists, and communications documents. The example review process presented in Section 2.0 is not an adopted process. A local government or other party that seeks to implement a lane elimination project must consult with the applicable District to determine the specific analysis requirements and review process that applies to their request.

THE EXAMPLE REVIEW PROCESS PRESENTED IN SECTION 2.0 IS NOT AN ADOPTED PROCESS. A LOCAL GOVERNMENT OR OTHER PARTY THAT SEEKS TO IMPLEMENT A LANE ELIMINATION PROJECT MUST CONSULT WITH THE APPLICABLE DISTRICT TO DETERMINE THE SPECIFIC ANALYSIS REQUIREMENTS AND REVIEW PROCESS THAT APPLIES TO THEIR REQUEST.

The Issue Profiles section presents concise "profiles" of issues and concerns associated with lane elimination projects, explaining the importance of each issue and offering potential solutions to address concerns. It provides information to support Districts' adaptations of the example review process (or their development of alternative review processes) and to guide District staff toward sources of additional information about selected lane elimination topics.

The appendices comprise the following:

- Lane Elimination Projects in Florida (**Appendix A**)
- Impacts of Lane Elimination Projects (**Appendix B**)
- Existing Processes for Reviewing Lane Elimination Requests (**Appendix C**)

Appendix A provides an informational snapshot of Florida experience with lane elimination projects. **Appendix B** summarizes and reviews selected studies of the impacts of lane elimination projects. **Appendix C** provides descriptions of existing lane elimination review processes as a means of illustrating what such a process might include and how it might be organized. All three appendices supported the development of the example review process and the issue profiles.

1.4 ACKNOWLEDGMENTS

This document relies on significant input from Central Office and District staff. Additionally, Mr. Paul Hamilton of the Tri-County Regional Planning Commission in Lansing, MI, provided helpful information regarding Michigan DOT lane elimination policy and the air quality impacts of lane elimination projects.

SECTION 2
EXAMPLE LANE ELIMINATION REVIEW PROCESS

2.0 EXAMPLE LANE ELIMINATION REVIEW PROCESS

2.1 DESIRED CHARACTERISTICS

Based on input from Central Office and District staff and information from the literature review summarized in **Appendix B**, the following characteristics have been identified as desirable characteristics of an example lane elimination review process for State roadways in Florida:

- Consistent, predictable, and repeatable
- Applicable to a range of roadway types and cross sections statewide
- Extensible to the development of a statewide policy or procedure
- Multidisciplinary
- Multimodal
- Balances flexibility and consistency
- Identifies who has authority to approve a lane elimination request
- Includes coordination with FDOT Central Office
- Requires consistency with adopted plans and programs
- Includes a review checklist or review form
- Supports FDOT's Statutory mandates and Districts' priorities
- Requires public involvement
- Requires a funding assessment
- Requires the demonstrated commitment of applicant and partners
- Includes a review schedule or timeline
- Discusses appropriate analysis years
- Includes specific, detailed review criteria
- Addresses diversion and impacts on diversion routes
- Considers freight routes and accommodation of freight activity
- Considers evacuation and emergency response needs
- Suitable for different project time frames and implementation schedules
- Readily understandable by District staff, Central office staff, and applicants

The example process described hereafter is intended to embody the desired characteristics to the greatest extent possible.

2.2 ROLES

The participants in the example lane elimination review process are the following:

- Applicant: the City, county, MPO, TPO, and/or private entity proposing the lane elimination project
- District Contact: the FDOT District staff person who will coordinate the District's review activities and serve as the primary point of contact for the Applicant
- District Review Team: the FDOT District staff who will formally review information, analyses, and design concepts provided by the Applicant
- Central Office Contact: the FDOT Central Office staff person who will coordinate with the District Contact and track Central Office's participation in lane elimination request reviews

Central Office's role in the review of a given lane elimination request is concentrated on high-level identification of fatal flaws. The Districts will approve or deny lane elimination requests with the concurrence of Central Office.

2.3 PROCESS

The example review process is described in **Table 1**. Color-coded text denotes the following:

- PURPLE = information or product provided by District Contact to Applicant
- GREEN = information or product provided by Applicant to District Contact
- BLUE = timeline information

The table is divided into review stages. For each stage, actions to be taken by the participants are identified, expected outcomes are identified, and references to communications materials (e.g., forms and checklists) are provided. The communications materials are intended to ensure that review activities are organized, complete, and consistent; the content of the communications materials is outlined in Section 2.4.

The review process shown in **Table 1** is also summarized as a flowchart in **Figure 1**.

STAGE 1

TABLE 1. EXAMPLE LANE ELIMINATION REVIEW PROCESS

Initial Meeting	**Actions:** • The Applicant contacts the District Contact to set up an Initial Meeting to discuss the potential for a lane elimination project and the process by which the District will review the lane elimination request.[1] • The District Contact provides a copy of the Lane Elimination Guide (including the Initial Meeting Checklist and Application Checklist) to the Applicant, identifies the District Review Team,[2] and invites the District Review Team to attend the Initial Meeting. • The Applicant provides preliminary project information per the Initial Meeting Checklist at least two weeks in advance of the Initial Meeting to facilitate discussion at the Initial Meeting, to enable the District Review Team to appropriately tailor the review process, and to enable the District Review Team to determine any project-specific requirements for the Concept Report that will support the lane elimination request. • The District Contact shares the preliminary project information with the District Review Team before the Initial Meeting. • After the Initial Meeting, the Applicant prepares Meeting Notes and transmits them to the District Contact for acceptance.	**Outcomes:** • The District Review Team determines the analysis methodology and Concept Report requirements using the Methodology Checklist. • The District Contact approves the Meeting Notes.	**Communications Materials:** • Lane Elimination Guide • Methodology Checklist
Initial Central Office Notice	**Actions:** • The District Contact notifies the Central Office Contact[3] to indicate that a lane elimination request has been received and will be reviewed.		**Communications Materials:** • Initial Central Office Notice

STAGE 2

TABLE 1. EXAMPLE LANE ELIMINATION REVIEW PROCESS

Interim Meeting and Draft Concept Report	**Actions:** • The Applicant coordinates with the District Contact person to set up an Interim Meeting to discuss the Draft Concept Report. • The Applicant provides the Draft Concept Report no less than 30 days in advance of the Interim Meeting. • The District Contact transmits the Draft Concept Report to the District Review Team and prepares consolidated review comments to be distributed to the Applicant at least one week in advance of the Interim Meeting. • After the Interim Meeting, the Applicant prepares Meeting Notes and transmits them to the District Contact for acceptance. • Intervening and follow-up meetings might occur at the Applicant and District Review Team's discretion.	**Outcomes:** • The Applicant understands the revisions (if any) that are needed to prepare the Final Concept Report and Application Package and obtain District Review Team approval of the lane elimination request. • The District Contact approves the Meeting Notes.	**Communications Materials:** • Comments on Draft Concept Report
Interim Central Office Notice	**Actions:** • The District Contact notifies the Central Office Contact to indicate that the Draft Concept Report has been received and reviewed.		**Communications Materials:** • Interim Central Office Notice

[1] This may follow from a consultation between the Applicant and District Design staff regarding an imminent construction or maintenance project.
[2] The District Review Team is a multidisciplinary group of reviewers from multiple offices within the District (e.g., Design, Traffic Operations, Intermodal Systems Development, Permitting, and Legal).
[3] Central Office staff with an interest in lane elimination projects include the Secretary and staff from the Transportation Statistics, Design, Traffic Engineering and Operations, Safety, Policy Planning, Systems Planning, and Intermodal Systems Development offices.

STAGE 3

TABLE 1. EXAMPLE LANE ELIMINATION REVIEW PROCESS

Formal Application	**Actions:** • The Applicant transmits the Application Package (including a Final Concept Report that addresses District comments) to the District Contact. • The District Contact assesses the completeness of the Application Package and the acceptability of its content per the Application Checklist provided to the Applicant in conjunction with the Initial Meeting. The District Contact coordinates with the District Review Team as needed to assess the acceptability of the Application Package. • The District Contact might ask the District Review Team to review the Application Package.	**Outcomes:** • The District Contact coordinates with the District Review Team to internally approve or deny the lane elimination request.	
Final Central Office Notice	**Actions:** • If the lane elimination request is approved, the District Contact notifies the Central Office Contact that the Application Package has been received and found to be complete and acceptable and that the District intends to issue a Lane Elimination Request Approval Letter. • If the lane elimination request is denied, the District Contact notifies the Central Office Contact that the District intends to deny the lane elimination request and informs Central Office of the reasons for the denial.		**Communications Materials:** • Final Central Office Notice

Approval Letter or Denial Letter

Actions:

- If the Application Package is complete and acceptable, the District Contact person prepares a Lane Elimination Request Approval Letter in concert with the District Secretary. The District Secretary or other District administrator will sign this letter.
- If the Application Package is not complete and acceptable, the District Contact (a) coordinates with the Applicant to address the District Review Team's outstanding concerns or (b) prepares a Lane Elimination Request Denial Letter in concert with the District Secretary. The District Secretary or other District administrator will sign this letter.

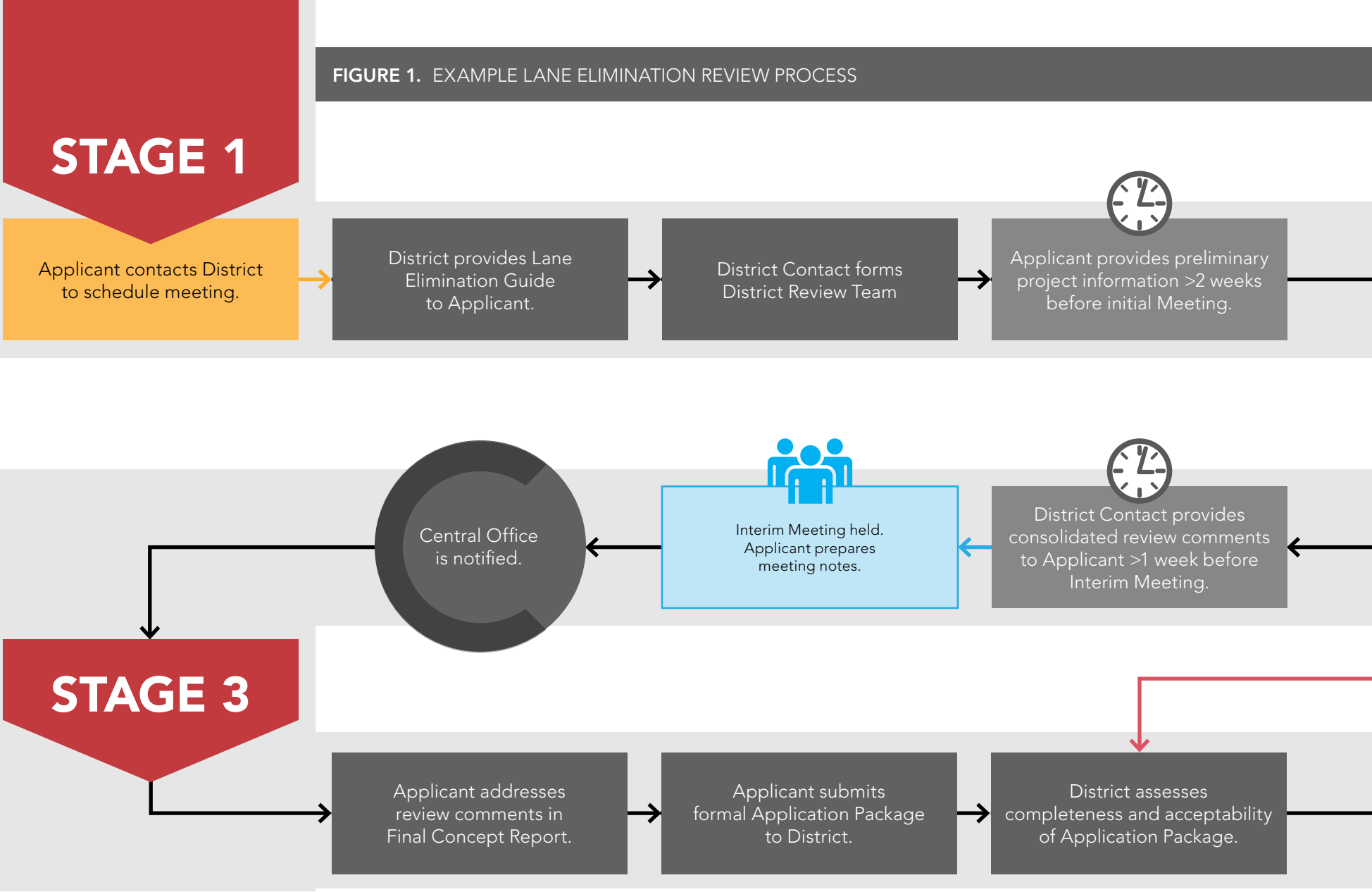
Outcomes:

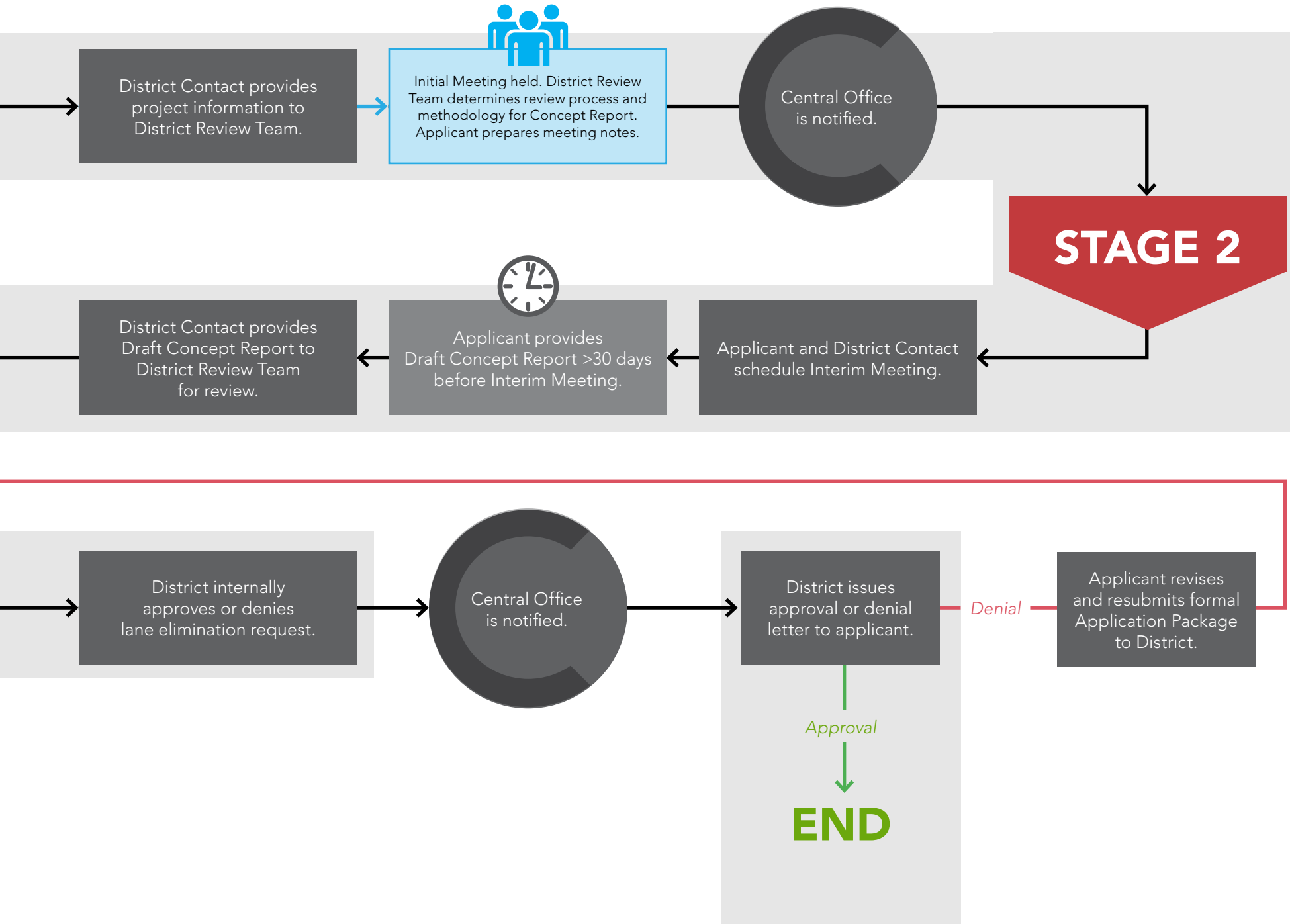
- The District Contact transmits the Lane Elimination Request Approval Letter or Lane Elimination Request Denial Letter to the Applicant and the Central Office Contact.

Communications Materials:

- Lane Elimination Request Approval Letter
- Lane Elimination Request Denial Letter

FIGURE 1. EXAMPLE LANE ELIMINATION REVIEW PROCESS




District Contact provides project information to District Review Team.
Initial Meeting held. District Review Team determines review process and methodology for Concept Report. Applicant prepares meeting notes.
Central Office is notified.
STAGE 2
Applicant and District Contact schedule Interim Meeting.
Applicant provides Draft Concept Report >30 days before Interim Meeting.
District Contact provides Draft Concept Report to District Review Team for review.
District internally approves or denies lane elimination request.
Central Office is notified.
District issues approval or denial letter to applicant.
Denial
Applicant revises and resubmits formal Application Package to District.
Approval
END

2.4 COMMUNICATIONS MATERIALS

The communications materials described in this section are checklists, notices, and letters to support the example lane elimination review process.

INITIAL MEETING CHECKLIST

This is a list of items that the Applicant should be prepared to discuss at the Initial Meeting:

BASIC INFORMATION ABOUT THE PROPOSED PROJECT

- ○ Project Location
- ○ Project Limits
- ○ Project Length
- ○ Project Purpose
- ○ Jurisdiction(s) in Which the Project is Located
- ○ Proposed Change in Lane Configuration
- ○ Project Schedule

- ○ Conceptual plan (including transitions to and from the lane elimination section)
- ○ Existing and long-range future AADT (the latter based on historical growth and/or 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, and any applicable master plans, visions, and Complete Streets initiatives
- ○ Status of the roadway as an Evacuation Route, freight route, and/or 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, and/or transit lanes)
- ○ Existing right-of-way width and any proposed changes to the right-of-way width
- ○ Anticipated change (if any) in jurisdictional responsibility for ownership or maintenance of the roadway
- ○ Anticipated changes (if any) in functional classification and access management classification
- ○ Anticipated changes (if any) in posted speed limits
- ○ Need for design variations or design exceptions to support the lane elimination project
- ○ Plan for obtaining input and review from businesses, residents, and other stakeholders
- ○ Plan for receiving endorsement from elected officials
- ○ Ideas for funding sources
- ○ Potential implementation strategy and partner commitments

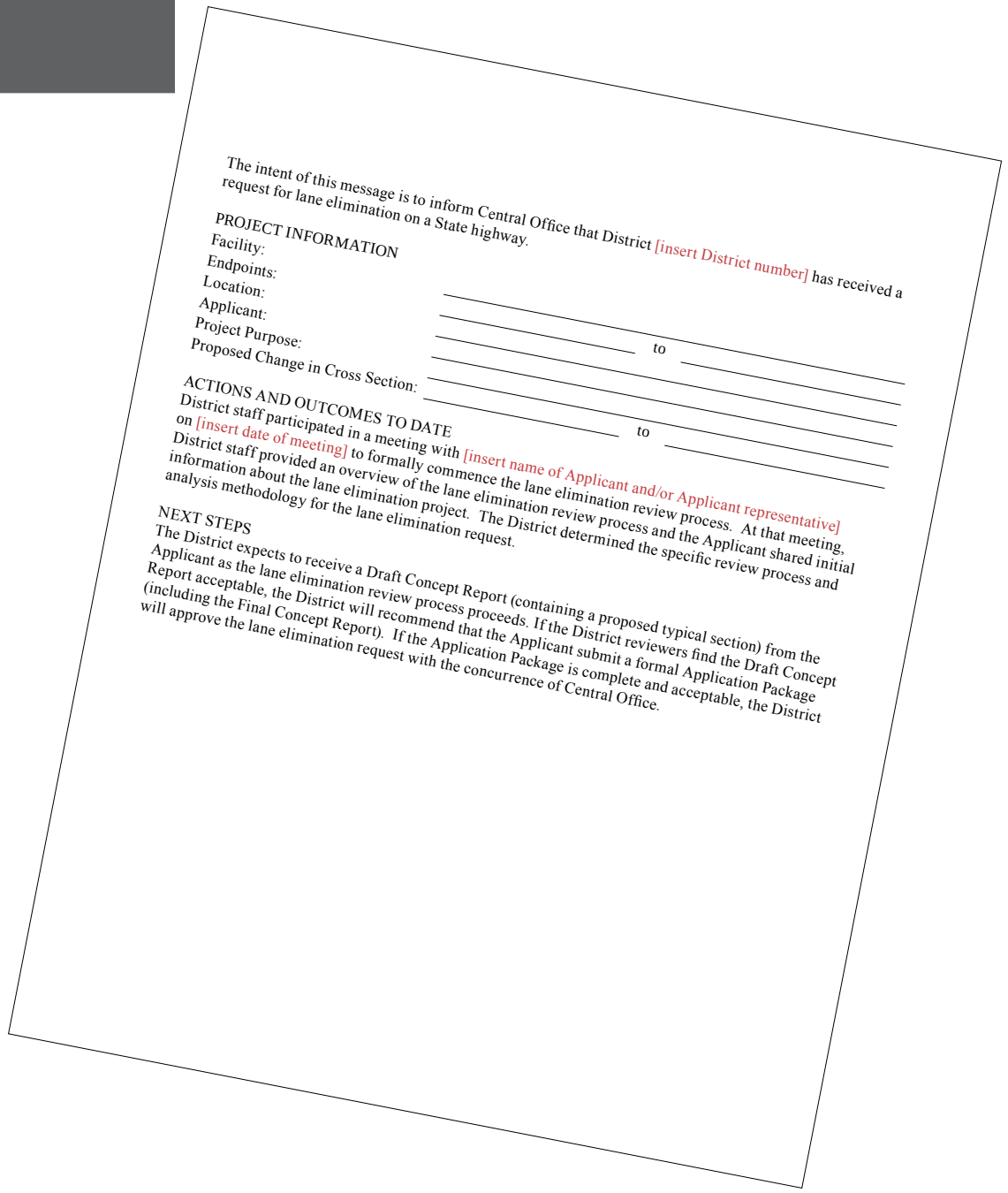
METHODOLOGY CHECKLIST

This is an illustrative list of items that the District Review Team might require the Applicant to address in a Concept Report:

- ○ Conceptual design plans (including proposed typical sections) that meet FDOT design standards for all transportation modes
- ○ Need for any design variations or exceptions
- ○ Size of impact area
- ○ Near- and long-range traffic forecasts with and without the proposed project (with changes in travel patterns clearly shown)
- ○ Near- and long-range level of service (LOS) and queuing analyses for intersections and segments in the impact area under the build and no-build scenarios
  - LOS analyses may be daily or peak hour analyses at the District Review Team's discretion.
  - The District Review Team and the Applicant should agree on an analysis methodology.
- ○ Mitigation to address significant and adverse LOS impacts on State roads and the regional transportation system resulting from the lane elimination
- ○ Crash data summary and analysis, which may include identification of high-crash locations (by crash type) and locations on FDOT's 5% lists (i.e., the lists of the 5% of segments and intersections with the highest number of crashes) and/or estimation of the potential increase or decrease in crashes using Crash Modification Factors (CMFs) from the Highway Safety Manual, CMFs from the Federal Highway Administration CMF website, or other appropriate methodologies
- ○ Impact on pedestrian and bicycle infrastructure (e.g., sidewalks, bicycle lanes, and multi-use paths) and connectivity
- ○ Impact on transit routes and/or transit stop locations (including appropriateness of turn radii and lane widths)
- ○ Impact on trucks and designated truck routes (including appropriateness of turn radii and lane widths and possible relocation of designated truck routes)
- ○ Impact on evacuation routes and emergency response
- ○ Conceptual funding plan (including cost estimates and funding sources)
- ○ Conceptual implementation plan (including an implementation schedule and a list of the commitments that the applicant will make in support of the lane elimination project)
- ○ Existing posted speed and desired posted speed after the lane elimination
- ○ The need to add, remove, or modify traffic signals
- ○ Impacts on school crossing locations and/or midblock pedestrian crossing locations
- ○ Impact on parking supply
- ○ Case-specific special considerations to be determined (e.g., railroad crossing improvements)

INITIAL CENTRAL OFFICE NOTICE

This is an example of the content of an initial notice that may be provided to Central Office:



The intent of this message is to inform Central Office that District [insert District number] has received a request for lane elimination on a State highway.

PROJECT INFORMATION

Facility:
Endpoints:
Location:
Applicant:
Project Purpose:
Proposed Change in Cross Section:

to

to

ACTIONS AND OUTCOMES TO DATE

District staff participated in a meeting with [insert name of Applicant and/or Applicant representative] on [insert date of meeting] to formally commence the lane elimination review process. At that meeting, District staff provided an overview of the lane elimination review process and the Applicant shared initial information about the lane elimination project. The District determined the specific review process and analysis methodology for the lane elimination request.

NEXT STEPS

The District expects to receive a Draft Concept Report (containing a proposed typical section) from the Applicant as the lane elimination review process proceeds. If the District reviewers find the Draft Concept Report acceptable, the District will recommend that the Applicant submit a formal Application Package (including the Final Concept Report). If the Application Package is complete and acceptable, the District will approve the lane elimination request with the concurrence of Central Office.

COMMENTS ON DRAFT CONCEPT REPORT

The District Review Team's comments on the Draft Concept Report are to be provided to the Applicant via a signed letter from the District Contact or other District administrator. The letter should clearly identify what revisions are needed to obtain District approval of the lane elimination request. It might contain the following content:

District [insert District number] has coordinated a multi-disciplined review of the Draft Concept Report dated [insert date] for the [insert request description] lane elimination proposal. The Concept Report was prepared to evaluate the impacts of reducing the number of through lanes on [insert road name] between [insert road name] and [insert road name] from [insert existing number of lanes] lanes to [insert proposed number of lanes]. The lane reduction project is intended to [insert intention clarification].

The District offers the following comments on the Draft Concept Report:

1.

2.

3.

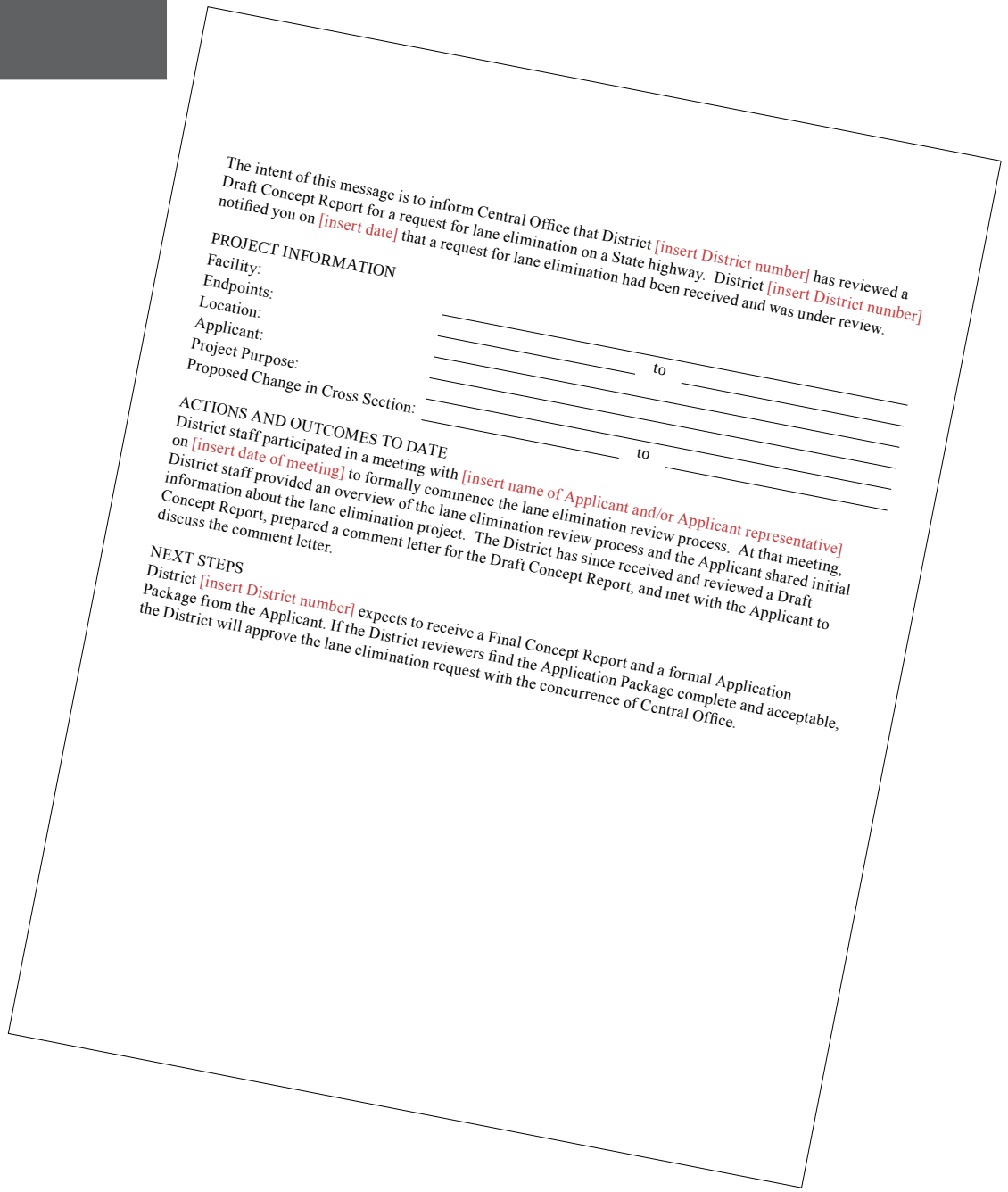
No additional technical analysis is needed to support the District's concurrence with the lane elimination proposal, but additional coordination regarding the design of the lane elimination project is needed. Also needed are resolutions of support from [insert name(s) of entity] and submittal of a formal lane elimination Application Package containing the final version of the Concept Report and other supporting materials. Please feel free to contact [insert contact name] at [insert contact phone number] should you have any questions.

An additional example of the content of the comment letter is this:

Additional analysis and explanation are needed to obtain the District's concurrence with the lane elimination proposal. Please feel free to contact [insert contact name] at [insert contact phone number] should you have any questions.

INTERIM CENTRAL OFFICE NOTICE

This is an example of the content of an interim notice that may be provided to Central Office:



The intent of this message is to inform Central Office that District [insert District number] has reviewed a Draft Concept Report for a request for lane elimination on a State highway. District [insert District number] notified you on [insert date] that a request for lane elimination had been received and was under review.

PROJECT INFORMATION

Facility:
Endpoints:
Location:
Applicant:
Project Purpose:
Proposed Change in Cross Section:

to

to

ACTIONS AND OUTCOMES TO DATE

District staff participated in a meeting with [insert name of Applicant and/or Applicant representative] on [insert date of meeting] to formally commence the lane elimination review process and the Applicant shared initial information about the lane elimination project. The District has since received and reviewed a Draft Concept Report, prepared a comment letter for the Draft Concept Report, and met with the Applicant to discuss the comment letter.

NEXT STEPS

District [insert District number] expects to receive a Final Concept Report and a formal Application Package from the Applicant. If the District reviewers find the Application Package complete and acceptable, the District will approve the lane elimination request with the concurrence of Central Office.

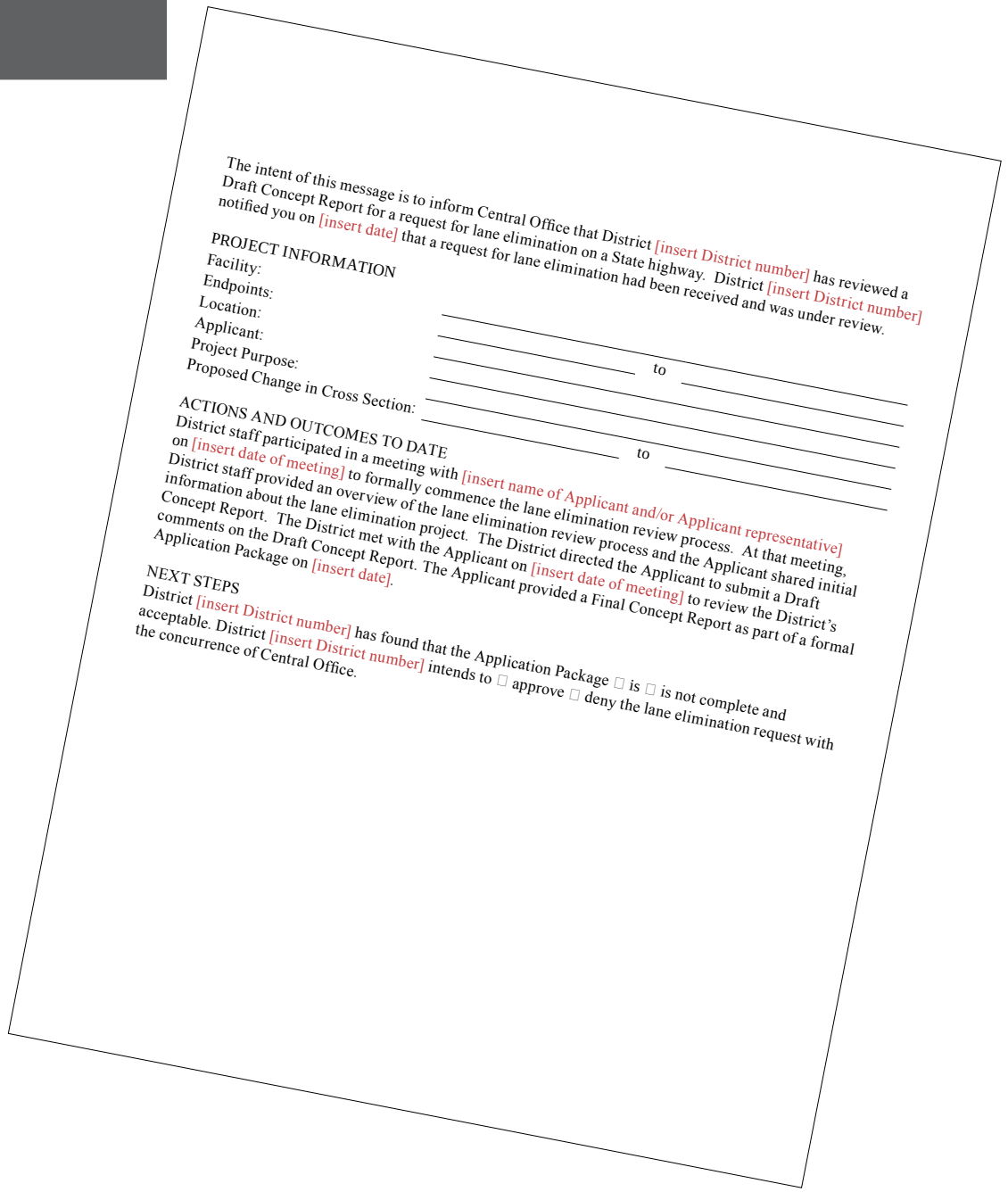
APPLICATION CHECKLIST

This is a list of items that the Applicant should include in the Application Package:

- ○ Formal letter describing the lane elimination request and requesting approval of the lane elimination request
- ○ Documentation of project approval by the appropriate city, county, and/or regional bodies (e.g., a commission or board resolution)
- ○ Documentation that public involvement activities were noticed and occurred
- ○ Summary of concerns and supportive comments that were voiced at public meeting(s) or provided through written communication to the Applicant, along with discussion of how any concerns were addressed
- ○ Final Concept Report
- ○ Final funding plan (as applicable)
- ○ Final implementation plan (as applicable)
- ○ Documentation of Access Management Committee approval (as applicable)

FINAL CENTRAL OFFICE NOTICE

This is an example of the content of a final notice that may be provided to Central Office:



The intent of this message is to inform Central Office that District [insert District number] has reviewed a Draft Concept Report for a request for lane elimination on a State highway. District [insert District number] notified you on [insert date] that a request for lane elimination had been received and was under review.

PROJECT INFORMATION

Facility:
Endpoints:
Location:
Applicant:
Project Purpose:
Proposed Change in Cross Section:

to

to

ACTIONS AND OUTCOMES TO DATE

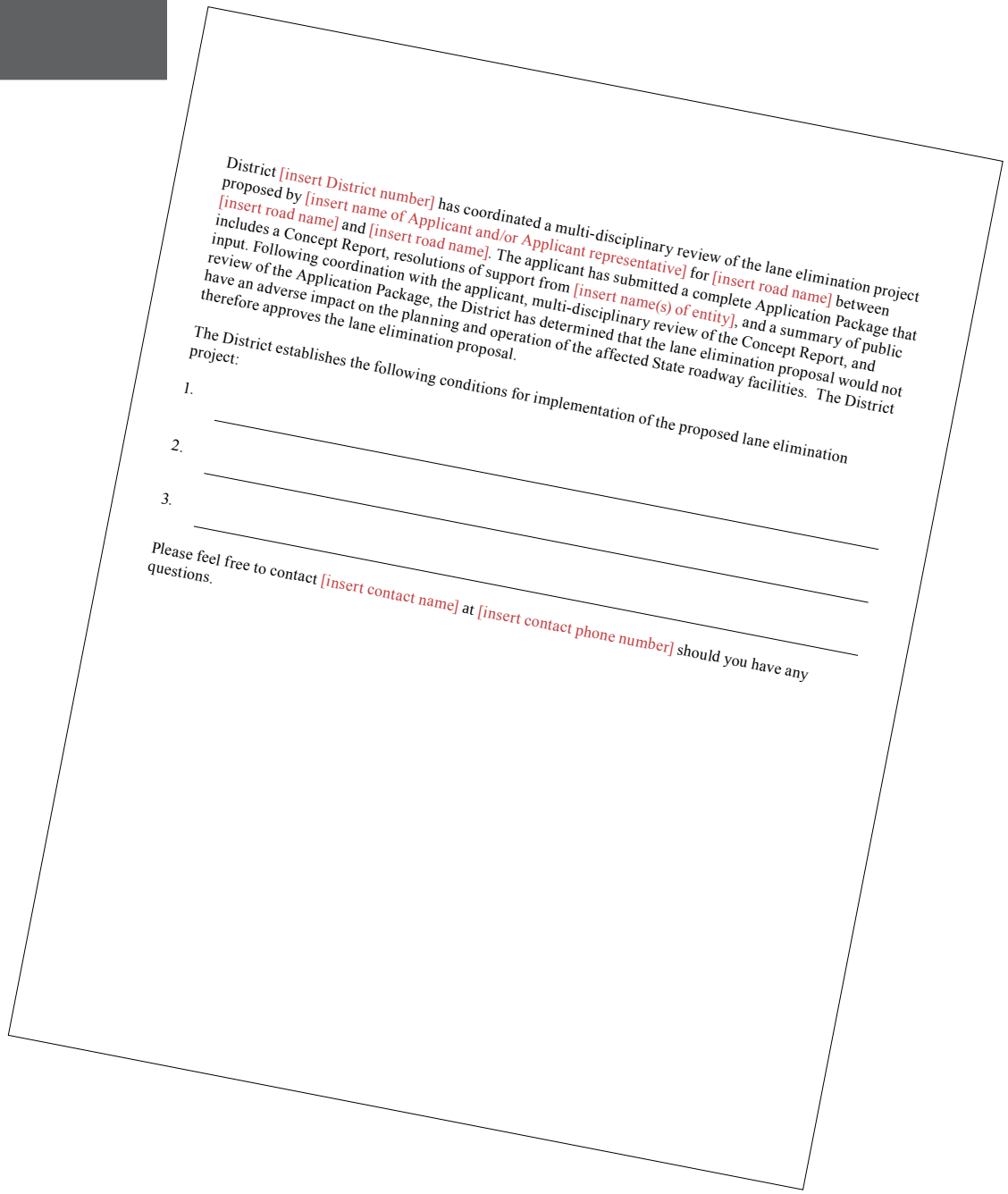
District staff participated in a meeting with [insert name of Applicant and/or Applicant representative] on [insert date of meeting] to formally commence the lane elimination review process. At that meeting, District staff provided an overview of the lane elimination review process and the Applicant shared initial information about the lane elimination project. The District directed the Applicant to submit a Draft Concept Report. The District met with the Applicant on [insert date of meeting] to review the District's comments on the Draft Concept Report. The Applicant provided a Final Concept Report as part of a formal Application Package on [insert date].

NEXT STEPS

District [insert District number] has found that the Application Package ☐ is ☐ is not complete and acceptable. District [insert District number] intends to ☐ approve ☐ deny the lane elimination request with the concurrence of Central Office.

LANE ELIMINATION REQUEST APPROVAL LETTER

The District's approval of the lane elimination request is to be conveyed to the Applicant via a signed letter from the District Secretary or other District administrator. This letter might contain the following content:



District [insert District number] has coordinated a multi-disciplinary review of the lane elimination project proposed by [insert name of Applicant and/or Applicant representative] for [insert road name] between [insert road name] and [insert road name]. The applicant has submitted a complete Application Package that includes a Concept Report, resolutions of support from [insert name(s) of entity], and a summary of public input. Following coordination with the applicant, multi-disciplinary review of the Concept Report, and review of the Application Package, the District has determined that the lane elimination proposal would not have an adverse impact on the planning and operation of the affected State roadway facilities. The District therefore approves the lane elimination proposal.

The District establishes the following conditions for implementation of the proposed lane elimination project:

1. _____
2. _____
3. _____

Please feel free to contact [insert contact name] at [insert contact phone number] should you have any questions.

LANE ELIMINATION REQUEST DENIAL LETTER

The District's denial of the lane elimination request is to be conveyed to the Applicant via a signed letter from the District Secretary or other District administrator. This letter might contain the following content:

District [insert District number] has coordinated a multi-disciplinary review of the lane elimination project proposed by [insert name of Applicant and/or Applicant representative] for [insert road name] between [insert road name] and [insert road name]. The applicant has submitted an Application Package that includes [insert list of included items]. Following coordination with the applicant, multi-disciplinary review of the Concept Report, and review of the Application Package, the District has determined that the Application Package is insufficient to allow the District to approve the lane elimination proposal.

The District is amenable to continued coordination with the applicant to develop an acceptable project proposal. Please feel free to contact [insert contact name] at [insert contact phone number] should you have any questions.

An additional example of the content of the denial letter is this:

District [insert District number] has coordinated a multi-disciplinary review of the lane elimination project proposed by [insert name of Applicant and/or Applicant representative] for [insert road name] between [insert road name] and [insert road name]. The applicant has submitted an Application Package that includes [insert list of included items]. Following coordination with the applicant, multi-disciplinary review of the Concept Report, and review of the Application Package, the District has determined that the Application Package is insufficient to allow the District to approve the lane elimination proposal.

The District is amenable to continued coordination with the applicant to develop an acceptable project proposal. Please feel free to contact [insert contact name] at [insert contact phone number] should you have any questions.

2.5 OPTIONS FOR STREAMLINING THE EXAMPLE REVIEW PROCESS

The District Review Team has the option to adjust the review process on a case-by-case basis. One manner in which the District Review Team may choose to adjust the review process is by streamlining it for lane elimination proposals that are particularly straightforward. Circumstances under which the District Review Team might choose to (but is not obligated to) streamline the review process could include one or more of the following:

- Existing or long-range future traffic volume or LOS does not exceed thresholds established by the District. Example thresholds based on FDOT's Generalized Tables are these:
  - Existing four-lane roadway: 15,000 AADT
  - Existing six-lane roadway: 25,000 AADT
  - Existing eight-lane roadway: 35,000 AADT
- Jurisdictional transfer is not proposed
- Speed limit change is not proposed
- Functional classification change is not proposed
- Access management classification change is not proposed
- Design variation or design exception is not needed
- Project is consistent with the applicable LRTP, TIP, TDP, and regional freight plan
- Project is consistent with local land use plans, visions, master plans, and Complete Streets initiatives
- Project does not reduce connectivity
- Lane elimination is not proposed on:
  - SIS facility (including SIS Connectors and Emerging SIS facilities)
  - US highway
  - Designated evacuation route
  - Major transit corridor (existing or future, per the LRTP or TDP)
  - Major freight corridor (existing or future, per the LRTP or regional freight plan)
  - Roadway spanning multiple jurisdictions
  - Roadway that acts as a major reliever to an Interstate or toll facility

A given lane elimination request may feature unique characteristics that are not included in the above list. The applicant is expected to provide enough information in Stage 1 of the example review process to allow the District to determine the appropriate review process.

SECTION 3
ISSUE PROFILES

3.0 ISSUE PROFILES

This section contains profiles of issues and concerns that may be associated with lane elimination projects. It provides background information about topics relevant to lane elimination reviews. Districts may use the information in this section to find more information about selected topics, to adapt the example review process to their own needs, or to create an alternative review process.

Three cautions should be kept in mind when considering these issue profiles:

- There are trade-offs in addressing all of these issues.
- Some issues are interrelated.
- Successfully addressing some of these issues will require a lot of lead time, so early coordination with the applicant and relevant stakeholders is critical.

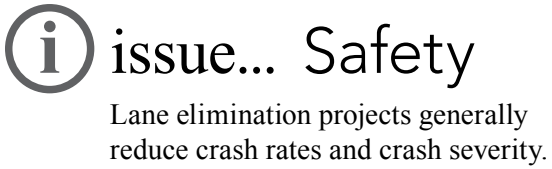
THERE ARE TRADE-OFFS IN ADDRESSING THE MYRIAD ISSUES ASSOCIATED WITH LANE ELIMINATION PROJECTS. SOME OF THE ISSUES ARE INTERRELATED, AND ADDRESSING ONE ISSUE WILL REQUIRE ADDITIONAL ACTIONS TO ADDRESS RELATED ISSUES. ADDRESSING SOME ISSUES WILL REQUIRE A SIGNIFICANT AMOUNT OF LEAD TIME.

3.1 SAFETY IMPACTS

PROFILE

Generally, lane elimination results in a net improvement to safety. The Project for Public Spaces [1] cites the before-and-after study results summarized in **Table 2**. Other studies show that the speeds of vehicles are reduced in the through lane or lanes after a lane elimination. The studies point to a speed reduction of 1 to 7 mph, depending on conditions. One study cited an 18% decrease in speeds (i.e., an 8 mph reduction from 45 mph).

One of the most obvious advantages of a lane elimination project is that pedestrian exposure to oncoming traffic is reduced, often by half (e.g., a two-lane road versus a four-lane road). As such, decreases in pedestrian crashes as high as 80% have been observed after lane elimination projects have been implemented.



Impacts:

- Lane elimination projects generally reduce crash rates. It has been observed in some cases that the total number of pedestrian and bicycle crashes increases after a lane elimination project is implemented, but this generally reflects an increase in pedestrian and bicyclist volumes rather than an increase in crash rates.
- Lane elimination projects generally reduce the severity of crashes.

Many studies indicate that the number of crashes as well as the crash rates decrease significantly after a lane elimination project. Studies show reductions in the number of crashes ranging from 14% to 60% and decreases in crash rates ranging from 34% to 68%. The number of injury crashes is reduced similarly (e.g., 33% to 68%).

With slower speeds and fewer conflicting movements, studies of such lane elimination projects have shown reductions in rear-end crashes, as well as a 56% reduction in angle crashes.

Factors to consider:

- Pedestrian and bicycle riders – It should be kept in mind that, when implemented in conjunction with a Complete Streets strategy, it is likely that the total number of pedestrians and bicyclists may increase after lane elimination project implementation. Providing safe accommodations for non-motorized modes of travel is important in lane elimination projects.
- Travel patterns – Crash experience on cross streets and alternative routes might be issues for investigation.
- Minimum design standards – Lane elimination projects should meet or exceed minimum design standards for all modes.
- User expectancy – Modifying the cross section of an existing roadway will require actions to ensure that users of the facility are prepared for the change.

3.2 TRAFFIC OPERATIONS IMPACTS

PROFILE

According to studies by FHWA, under most ADT conditions, lane elimination (of one through lane per direction) seems to have minimal effects on vehicle capacity because left-turning vehicles are moved into a common two-way left-turn lane (TWLTL). Four-lane roadways with ADT of up to 20,000 (or up to 1,750 vehicles per peak hour) have been shown to be good candidates for lane elimination. Four-lane roads with ADTs higher than 20,000 should be evaluated for lane elimination feasibility on a case-by-case basis. [2] Similarly, of the before-and-after studies documented by FHWA, little to no changes in vehicle LOS were seen for roadway segments and intersections, while achieving the desired effects of slower vehicle speed and fewer accidents. 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.

The Project for Public Spaces [1] cites the before-and-after study results summarized in **Table 2**.

issue... Traffic Operations

Lane elimination projects are reported to work best when ADT is less than 20,000 (on a four-lane roadway) and left-turning vehicles are removed from the through traffic flow, and traffic diversion resulting from a lane elimination project can be significantly lower than project opponents anticipate. However, projects should be evaluated on a case-by-case basis.

TABLE 2. BEFORE-AND-AFTER CRASH AND OPERATIONS DATA

Project	Context	Features of Completed Project	
Stone Way North in Seattle, WA	• Formerly four lanes • Posted speed = 30 mph • 1.2 miles long	• Two lanes with two-way left turn lane	• Bike lanes
Raymond Avenue in Poughkeepsie, NY	• Minor arterial • Formerly four lanes • 1.5 miles long	• Two lanes • Three new roundabouts • New midblock crossing	• Landscaping • Curb extensions • Landscaped median
Prospect Park West in Brooklyn, NY	• Formerly three one-way lanes • On-street parking	• Two lanes • Two-way bikeway • On-street parking	• Signal timing modifications • Pedestrian refuges
Edgewater Drive in Orlando, FL	• Arterial • Formerly four lanes • On-street parking • Posted speed = 35 mph • 1.5 miles long	• Two lanes with two-way left turn lane	• Bike lanes • On-street parking
East Boulevard in Charlotte, NC	• Arterial • Formerly four to five lanes • 16,000 to 24,400 ADT • Posted speed = 35 mph • 1.5 miles long	• Two lanes with two-way left turn lane • Bike lanes	• Pedestrian refuges • Curb extensions • Tree canopy
Nebraska Avenue in Tampa, FL	• Arterial • Formerly four lanes • 3.2 miles long	• Two lanes with median or two-way left turn lane • Widened lanes • Bike lanes	• Bus pullouts • Upgraded signals • ADA improvements

Source: Project for Public Spaces [1]

Impacts	
• Bicycle traffic increased 35% (15% of peak hour traffic volume) • No diversion of autos to other routes • 85th percentile speed reduced from 37 mph to 34-36 mph • Vehicles traveling > 40 mph reduced from 4% of traffic to 1% of traffic	• Total crashes reduced by 14% • Injury crashes reduced by 33% • Angle collisions reduced by 56% • Bicycle crash rate reduced
• Crashes decreased from 35 to 17 over two six-month periods • Speeds decreased 24% (about 9 mph) • Travel time increased 7% • Delays decreased 56% at roundabouts	• ADT decreased 8.8% at Vassar College • ADT increased on some parallel streets, partly due to external factors
• Vehicle plus bicycle traffic increased 13% in the a.m. peak period and 9% in the p.m. peak period • Peak volumes and travel times "stable" • Weekday bicycle traffic volume nearly tripled • Weekend bicycle traffic more than doubled • Speeding vehicles reduced from 74% to 20%	• Average speed reduced from 33.8 to 26.6 mph • Crashes reduced by 16% • Injuries reduced by 21% • Bicycle traffic on sidewalks decreased from 46% to 3%
• Speeding vehicles reduced from 15.7% to 7.5% at north end of segment, 9.8% to 8.9% in the middle of segment, and 29.5% to 19.6% at south end of segment • Crashes per mile decreased 34% • Crash frequency decreased from 1 crash per 2.5 days to 1 crash per 4.2 days • Injury frequency decreased from 1 injury per 8.9 days to 1 injury per 30.4 days • Pedestrian traffic increased 23% • Bicycle traffic increased 30%	• ADT decreased 12% immediately after implementation but increased to slightly above the "before" ADT over time • Travel time increased 50 seconds on average during the a.m. peak period • Northbound travel time increased 10 seconds during the p.m. peak period • Southbound travel time decreased 10 seconds during the p.m. peak period • No noticeable effect on buses
• Travel time remained constant in Phases 1 and 2 • 85th percentile speed decreased from 43 mph to 40 mph in early phases • ADT decreased from 20,500 to 17,500 in Phase 1 and increased from 18,600 to 19,700 in Phase 2	
• Crash rate decreased from 8.5 to 3.3 crashes per million vehicle miles traveled (MVMT) • Fatal/incapacitating crashes reduced by 45% per year (33% per MVMT) • Sideswipe crashes reduced from 0.78 per MVMT to 0.08 per MVMT	• Bike crashes reduced from 5.0 per year to 2.7 per year • Pedestrian crashes reduced from 7.0 per year to 2.7 per year • ADT decreased from 17,900 to 14,600 (not diverted to side streets but possibly diverted to an improved I-275)

Impacts:

- Capacity – According to FHWA, it is only for road diets on four-lane roadways with ADTs above approximately 20,000 that there is an increased chance that traffic congestion will increase to the point of diverting traffic to alternative routes. In the cases of lane elimination projects that FHWA examined throughout North America, lane eliminations have not resulted in reductions in ADT, meaning such projects have not caused inconveniences to motorists to the point of them diverting to alternative routes.

- Speed – According to FHWA, before-and-after studies suggest a traffic calming effect that results in a 4-5 mph reduction in the 85th percentile free-flow speed, a 25% reduction in travel speed, and a 30 percent reduction in the percentage of vehicles traveling more than 5 mph over the speed limit. This calming effect seems to be more evident when lane elimination occurs on US or State routes with moderate ADTs in small urban areas. This calming effect would be less likely in the central areas of larger cities, where the speed limits (and traffic speeds) may have been lower to begin with.

- Travel time – According to a before-and-after study of US 75 in Iowa, a conversion of four to three lanes (with a two-way-left-turn lane included) resulted in a 18-second (or 36%) increase in peak hour travel time.

- Delay – For roadways without many signalized intersections, lane elimination may result in a slight increase in delay. For roadways with many signalized intersections, a reduction in delay should be expected if dedicated left turn lanes are added and the traffic signals are modified to improve progression and reduce cycle lengths (while providing appropriate pedestrian phases). In another study of going from five travel lanes to three in Kentucky, simulation showed a minimum increase in delay of up to 7 seconds/trip under the existing level of traffic.

- Queuing – Of the cases examined, queuing has not been an issue. If a two-way-left-turn lane or left turn pockets are installed as part of lane elimination projects, queuing that would otherwise occur from left-turning vehicles' delays may be eliminated or reduced.

- Cross streets – Bike lanes, if they were to be installed curbside or between parking lanes and travel lanes as part of a lane elimination project, could increase sight distance and turning radii at intersections and driveways.

Factors to consider:

- Larger operational impacts (such as significantly more queuing and delay) may occur with lane elimination in a busy downtown setting due to heavy side street volumes and loss of left-turn capacity caused by the short block lengths

- Reduction in the number of receiving lanes for dual turn lanes from side streets

- Signal timing and coordination on the segment from which through lanes are being eliminated and the cross streets

- Achieving preferred design standards vs. minimum design standards (e.g., for center turn lane width), which may have an impact on the operations of the segment from which through lanes are being eliminated

- Signal spacing

- Peaking and directional characteristics of traffic (i.e., distribution of daily traffic by hour and direction)

- Posted speed

- Long-term (forecast) volumes

- Truck and bus volumes

- Turning volumes (left and right turns)

- Driveway density/access management

- Pedestrian crossing volumes

3.3 PEDESTRIAN AND BICYCLIST ACTIVITY

PROFILE

In general, lane elimination projects create a more attractive and safer environment for pedestrians and bicyclists in many ways. Reallocated space can be used to expand or create sidewalks and/or bicycle lanes. Space reallocated to on-street parking or landscaping creates a buffer between vehicle traffic and pedestrians, generating an environment that feels more pedestrian-friendly and safer.

The Project for Public Spaces [1] cites the before-and-after study results summarized previously in **Table 2**. Other studies show increases in pedestrian and bicycle activity of 23 and 30 percent, respectively.

issue... Pedestrian & Bicyclist Activity

Lane elimination projects are reported to create safer, more comfortable environments for pedestrians and bicyclists.

Impacts:

- Facilities – The reallocation of existing right-of-way to designated space for pedestrian and/or bicycle travel provides a more inviting and comfortable setting for pedestrians and bicyclists. Streetscape improvements that may accompany lane elimination projects also improve the quality of travel for pedestrian and bicyclists.
- Safety – Reduced vehicle speeds and reduced exposure to oncoming traffic at crossings are added safety effects of lane elimination projects. Studies point to a speed reduction of 1 to 7 mph, and lower speeds reduce the severity of crashes. Shorter crossing distances limit pedestrian and bicyclist exposure to oncoming traffic and eliminate multiple-threat crashes. Decreases in pedestrian crashes as high as 80% have been observed after lane elimination projects have been implemented. [2] Bicycle crash rates have been shown to decrease as well, even if the total number of crashes did not decrease; the increase in bicycling volumes combined with the same number of crashes resulted in a lower crash rate. The number of crashes may also decrease because of increased motorists' attentiveness to higher levels of street activity

Factors to consider:

- Depending on the scope of the project, upgrades to meet ADA standards may be required for pedestrian facilities.
- Trade-offs exist between providing dedicated pedestrian and bicycle facilities and using the available right-of-way for other purposes (e.g., medians, landscaping, and transit facilities).
- Alternative means of improving pedestrian and bicyclist safety may exist. For example, an alternative means of reducing pedestrian crossing distances is construction of curb extensions or bulb-outs.
- Additional improvements may be needed if the corridor has a relatively high number of access points, offset minor streets, and heavy congestion. For example, a lane elimination project in a corridor with a relatively high number of access points might be more successful if access points are consolidated as part of the lane elimination project and traffic is able to flow more smoothly as a result. [3]

3.4 IMPACTS TO TRANSIT ROUTING/STOPS AND RIDERSHIP

PROFILE

Lane elimination projects could affect the routing of transit services and the location and design of transit stops. Existing and proposed lane elimination projects identified to date are not located in existing rail corridors, so impacts to bus services are the most likely type of transit impact. However, implementation of rail transit and/or dedicated transit running ways may be planned for the corridor, and the lane elimination project must take such plans into consideration.

Lane elimination projects should ensure that at least one resulting through lane in each direction is wide enough to accommodate buses (i.e., at least 11 feet wide according to [5]).

Information relevant to the design of transit facilities in Florida can be found in FDOT's Accessing Transit: Design Handbook for Florida Bus Passenger Facilities [6] and FDOT's Typical Sections for Exclusive Transit Running Ways. [7]

Only a limited number of studies to date have documented the impacts that lane elimination projects have on transit services. Specific impacts described in these studies include the following: [1]

- The East Boulevard road diet in Charlotte, NC, was a corridor project that "improved pedestrian and bicycle infrastructure connections to bus routes and light rail."
- The Edgewater Drive road diet in Orlando, FL, "had no measured impact on bus loading times or operations."

issue... Impacts to Transit

A lane elimination project may or may not have a significant impact on transit service. Access to transit, delays to buses caused by increased congestion, delays caused by buses stopping in through lanes, and stop relocation are topics for consideration, as is the potential for a corridor to support a dedicated transit facility in the future.

Impacts:

- Lane elimination may negatively affect the speed and reliability of bus services, especially if just one travel lane per direction remains. Constructing bus bulbs can mitigate these effects, although use of bus bulbs may result in delays for other vehicles when there is just one through lane in each direction and the bus stops in that through lane to serve passengers.

Factors to consider:

- Marking of transit zones and stop locations
- Provision of adequate, accessible pedestrian access to transit
- Bus volumes and headways
- Number and type of bus routes operating in the corridor (which is significant because express buses in the corridor will require a passing lane or other means of passing stopped local buses)
- Number of bus stops and/or need to relocate bus stops
- Need to re-route transit services
- Need for bus pull-outs due to automobile speeds vs. re-entry delay experienced by buses attempting to leave bus pull-outs
- Use of transit preferential treatments in the corridor (e.g., transit signal priority and signals timed for bus progression)
- Coordination with the LRTP and TDP regarding future transit services planned in the corridor

3.5 IMPACTS ON PARKING SUPPLY AND ACTIVITY

PROFILE

The effect of lane elimination on parking supply and parking activity is highly dependent on the roadway cross sections before and after the lane elimination project. In most instances, the lane elimination project does not reduce the supply of parking on the roadway. In fact, underutilized travel lanes are often eliminated in favor of additional on-street parking, effectively increasing the parking supply.

It is well known that the public does not like removal of parking spaces. An example of this occurred in the City of Santa Barbara (CA), which proposed a road diet that would remove on-street parking. Residents pressured the City to keep on-street parking and remove a traffic lane instead. [8]

issue... Parking

Removal of on-street parking can be a controversial issue, but lane elimination projects do not typically reduce the supply of on-street parking.

Impacts:

- The HCM 2010 multimodal LOS methodology uses on-street parking percentage as an analysis parameter. For pedestrians, higher on-street parking utilization results in improved LOS, as these parked cars act as buffers. For bicyclists, LOS is adversely impacted by on-street parking, as "dooring" becomes a greater concern. [9] Generally, a five- or six-foot wide bicycle lane next to an eight-foot wide parking lane does not have dooring issues.
- In Ashland, OR, a before-and-after study of a lane elimination project found that parking utilization increased from 29 percent to 41 percent after the lane elimination project was implemented. [10]
- On-street parking acts as a traffic calming device, creating a "tunnel effect" that naturally slows motorists' speeds. [3]
- The provision of on-street parking allows for the construction of curb extensions at crosswalks, which reduce crossing distance for pedestrians.

Factors to consider:

- Parallel vs. angled parking
  - According to the Manual on Uniform Traffic Control Devices (MUTCD), parallel parking stalls may be 8 feet wide by 22 to 26 feet long. [11] Angled parking uses less linear curb length per parking space than traditional parallel parking, so more spaces can be provided on the same block. However, angled parking takes up more distance perpendicular to the curb (20 feet next to a 13 feet travel lane). [12]
  - Angled parking may be considered on low-speed and low-volume commercial collectors and main streets. [13]
  - Back-in angled parking—as opposed to head-in angled parking—is considered beneficial to bicyclists, as it is easier to make eye contact with drivers as they pull out of their parking spots. On the other hand, drivers may be confused by this configuration.
- Induced effects
  - The increased non-motorized LOS typically provided by lane elimination projects may turn drivers into pedestrians or bicyclists, potentially reducing parking demand in the study roadway.
  - If free on-street parking is provided, it will reduce the market price of parking of all types (including off-street parking). Because providing this parking has an associated cost, it is in essence a subsidy that incentivizes automobile travel and inflates parking demand. [14]
- Roadway design characteristics
  - High-speed street types are not suitable for on-street parking. [12]
  - On-street parking should not impede visibility for pedestrians, bicyclists, and other vehicles. This means that on-street parking spaces should be located carefully relative to intersections and crosswalks. [12]
- Twenty-four-hour vs. peak period parking
  - On-street parking can be allowed at some times of the day and disallowed at peak traffic times. This can allow more efficient use of lane capacity when it is needed. [12]
- Metering of on-street parking
  - If on-street parking is created by a lane elimination project, the distribution of meter revenue might become a topic of discussion between the jurisdiction that maintains the roadway and the jurisdiction in which the roadway is located. This issue is considered in Section 10.6.11 of the FDOT Right of Way Procedures Manual [15] with respect to State roadways.

3.6 SALES TAX REVENUE AND PROPERTY VALUE IMPACTS

PROFILE

The impacts of lane elimination projects on sales tax revenues and property values are mixed, although most studies point to either no overall economic impacts or some positive impact. Typical concerns related to sales tax revenue include the belief that eliminating lanes will reduce the volume of business for establishments along the roadway where the lane will be removed. Additionally, concerns have been expressed that lane elimination projects will increase congestion on the roadway, which will result in lower property values along the route. [16]

issue... Sales Tax Revenue & Property Value

Lane elimination projects generally have no impact or a positive impact on sales tax revenues and property values.

Example projects:

- East Main Street in El Cajon, CA: On East Main Street, two through lanes were removed from a four-lane roadway, resulting in a two-lane roadway with angle parking. Since the lane elimination project was implemented, property values have increased 181% (more than double than the citywide average), and taxable sales have increased by 66% compared to 45% for the entire city. Lease rates have increased by 56 percent. [17]

- Fourth Plain Boulevard in Vancouver, WA: Fourth Plain Boulevard was restriped from a four-lane facility to a three-lane facility with a two-way left turn lane. ADA ramps, bicycle lanes, and underground utility work were undertaken as part of this effort. Gross sales receipts in the corridor increased by 3.1% after implementation of the road diet. Two comparable commercial zones elsewhere in the city saw declines of 9.8% and 25%, respectively. [13]

- York Boulevard in Los Angeles, CA: Prior to the road diet, York Boulevard was a four-lane roadway with on-street parking. The reconfigured roadway consisted of one through lane in each direction, a center turn lane, and on-street parking, with bicycle lanes added later. A study of this project found no significant change in property values as a result of the road diet. While sales tax revenues are higher in the affected portion of York Boulevard, the study was not able to conclude that the road diet caused in the increase in sales tax revenues. [16]

Despite the findings of the above studies, anecdotal reports indicate that lane elimination projects in Florida have resulted in substantial positive economic development impacts. Cited examples of such projects include Atlantic Avenue in Delray Beach and Las Olas Boulevard in Fort Lauderdale.

Impacts:

- Business activity – Studies have shown that lane elimination projects can (but do not always) increase economic activity. Studies have shown a wide variation in lane elimination project impacts on business activity, from little to no increase in economic activity relative to neighborhood growth to a 174% increase in business activity (implying the possibility of positive impacts).

- Property values – No significant impacts on property values have been established in quantitative studies of lane elimination projects. Property values may be positively impacted by potential streetscape improvements implemented in conjunction with lane elimination projects.

Factors to consider:

- Merchants' perceptions – Research into surveys of merchants' perceptions on both the possible business impacts resulting from a lane elimination and their perceptions of customer travel patterns are often inaccurate. Efforts to educate local merchants on these issues may be beneficial in gaining support for a lane elimination project.

- On-street parking – On-street parking is an important and potentially contentious asset to local merchants and customers. Removal of a parking lane as part of a lane elimination project may make the lane elimination project controversial.

3.7 ENVIRONMENTAL ISSUES

PROFILE

Lane elimination projects generally have a net positive impact on the environment. If there is a reduction in traffic volumes through a shift to non-auto modes resulting from the lane elimination project, air quality will improve and noise will be reduced. Additionally, lane elimination projects provide an opportunity to add landscaping and green projects to streets. There are several benefits associated with "greening" a corridor related to runoff reduction, detention, retention, conveyance, water quality mitigation, and carbon absorption by plants. However, the pollution generated by increased congestion and the reconstruction of the existing road should be taken into account.

issue... Environmental Impacts

Lane elimination projects generally have a net positive impact on the environment.

Impacts:

- Traffic volume reductions (through mode shift) can positively impact air quality.
- Increases in delay can adversely impact air quality.
- Lane elimination projects create space for low-emission travel. If trees and landscaping are added to the corridor, air quality can improve still further due to carbon absorption by the plants.
- If the road surface is replaced by more permeable materials, stormwater management is improved. Landscaping elements like bioswales, planters, rain gardens, and street trees help curb stormwater runoff and are beneficial for ecology. Optimal stormwater management is more than simply removing rainfall as quickly as possible, as simply removing rainfall quickly risks negative environmental impacts associated with both stormwater quality and quantity (e.g., polluted runoff, sedimentation, and bank erosion). Instead, optimal stormwater management focuses on efforts to retain and treat—or even eliminate—runoff at the source through cost-effective green infrastructure. [18]
- Reductions in auto traffic caused by travelers shifting to non-auto modes can lead to reduced traffic noise in the corridor.

Factors to consider:

- The city or county may require specific environmental permits.
- If the project uses federal funding, the National Environmental Policy Act (NEPA) process has to be followed. However, a lane elimination project typically occurs within existing pavement, so it is possible that the project can obtain a Categorical Exclusion. [19]
- Green landscaping is a means of enhancing environmental sustainability.
- Reconstructing an existing roadway can have an environmental cost. Additionally, traffic studies must consider future capacity needs to avoid the situation in which it is necessary to reconstruct the road again in a short span.
- If the road needs a new surface, paving materials should be chosen to minimize noise and to maximize reflectivity in order to reduce the urban heat island effect, improve air quality, and increase pavement durability.
- If the lane reduction project diverts traffic to other corridors, environmental impacts (e.g., emissions and noise) may increase in those corridors.

3.8 DESIGN VARIANCES AND EXCEPTIONS

PROFILE

FDOT's design standards are available through the Roadway Design Office. [20] According to the PPM [21], design exceptions are required when proposed design elements are below both FDOT's governing criteria and AASHTO's new construction criteria for the 13 Controlling Design Elements. The 13 Controlling Design Elements are:

1. Design Speed
2. Lane Widths
3. Shoulder Widths
4. Bridge Widths
5. Structural Capacity
6. Vertical Clearance
7. Grades
8. Cross Slope
9. Superelevation
10. Horizontal Alignment
11. Vertical Alignment
12. Stopping Sight Distance
13. Horizontal Clearance

Design variations are required when proposed design elements do not require a design exception but are below FDOT's governing criteria. Lane elimination projects generally will not affect many of the 13 Controlling Design Elements. The Controlling Design Elements most likely to need a variance or exception for these types of projects include but are not limited to design speed and lane width.

Approval from multiple individuals may be required for certain issues. The guidelines for approval authorities are outlined in Volume 1, Section 23.3, of the PPM. [21]

issue... Design Variances and Exceptions

Lane elimination projects can be feasible without design variances and exceptions. Where a variance or exception is needed, it is most likely to be related to median and lane widths.

Impacts:

- May delay project schedule if exceptions and variances are not submitted and approved in advance.

Factors to consider:

- Lane elimination project components such as landscaping may require a sight distance evaluation.
- If automobile and/or bicycle lane widths are narrowed as part of a lane elimination project, a design exception or variance may be required.
- Lane elimination projects may be funded with safety funds if the lane elimination project is intended to address a safety issue. When projects using safety funds are developed to improve specific safety problems, only the elements identified under the scope of work for the safety improvement project are subject to the variance/exception approval processes. Existing features within the safety improvement project limits not meeting design criteria do not require approval to remain as long as the project does not create a nonconforming condition. The safety study should identify all the applicable variations and/or exceptions (design or utility) required based on the proposed scope.
- Lane elimination projects can go hand-in-hand with maintenance, resurfacing, ride rehabilitation, and skid hazard projects or may even be considered as one. These projects do not require design exceptions or design variations other than for addressing ADA curb ramp requirements. If compliance with ADA curb ramp requirements is determined to be technically infeasible, documentation as a design variation is required. Maintenance and resurfacing projects can only be programmed on routes that meet the requirements identified in Chapter 28 of the Work Program Instructions. [22]

3.9 CONSISTENCY WITH PLANS AND PROGRAMS

PROFILE

Proposed lane elimination projects should be consistent with adopted plans and programs. These plans and programs include the following:

- FDOT Work Program
- MPO/TPO Long-Range Transportation Plan (LRTP)
- MPO/TPO Transportation Improvement Program (TIP)
- State Transportation Improvement Program (STIP)
- Transit agency Transit Development Plan (TDP)
- Local comprehensive plan
- Local vision documents and master plans

Specifically, the 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 modeling underlying the LRTP assumed that a roadway for which lane elimination 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 elimination is not consistent with the Work Program. If the 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 elimination is not consistent with the TDP.

issue... Consistency with Plans and Programs

It is essential to ensure that a proposed lane elimination project is consistent with adopted plans and programs. If there is an inconsistency, the project must be modified and/or one or more adopted plans and programs must be amended.

If a proposed lane elimination project is not consistent with an adopted plan or program, the lane elimination (a) may be infeasible or (b) 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 339.135 of the Florida Statutes (F.S.). [23] See Part III, Chapter 3, of the Work Program Instructions [22] for detailed information about the process, the types of amendments that are possible, and the conditions under which amendments are allowed.

- LRTP – Amendments must occur in accordance with the Code of Federal Regulations (CFR) Title 23 Part 450 [24] and 339.175, F.S. [25] FDOT's Office of Policy Planning has also prepared a document [26] 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 project schedule, changes in project scope, and deletion of a cost-feasible project from the LRTP. Also available from the Office of Policy Planning is Chapter 4 of FDOT's Metropolitan Planning Organization Program Management Handbook, which includes a section on LRTP administrative modifications and amendments. [27] An "administrative modification" is a change that is less significant than an "amendment."

- TIP – Amendments must occur in accordance with 23 CFR 450 [24] and 339.175, F.S. [25] Chapter 5 of FDOT's Metropolitan Planning Organization Program Management Handbook includes a section on TIP amendments. [8] 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.

- STIP – Amendments must occur in accordance with 23 CFR 450. [24] 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. [28] 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. [29]

- TDP – TDPs undergo major updates every five years and minor updates annually. Both types of update provide an opportunity to maintain consistency between TDP projects and proposed lane elimination projects. TDP updates occur according to Florida Administrative Code (F.A.C.) Rule 14-73.001 [30]. TDPs 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. [31] 163.3177, F.S., states the requirements that comprehensive plans are to meet. [32] 163.3184, F.S., provides information about FDOT's role in reviewing comprehensive plan amendments. [33]
- Visions and master plans – Amendment processes will vary by jurisdiction.

Impacts:

- A proposed lane elimination project may be determined to be infeasible if it is not consistent with one or more plans and programs.

Factors to consider:

- The amendment processes may require public involvement, the 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. [28]
- Environmental document approvals require consistency with the LRTP, TIP, and STIP. [28] The forthcoming FHWA/FDOT document Final Guidance for Meeting Planning Requirements for NEPA Approval [34] may be helpful.
- The amendment process can take several months. [28]

3.10 FUNCTIONAL CLASSIFICATION

PROFILE
Elimination 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, effectively, in a gap in the continuity and connectivity of the system and it could 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 elimination projects.

issue... Functional Classification

A lane elimination project can affect the degree to which a roadway serves a mobility or access function.

A change in federal functional classification might also affect federal funding eligibility.

The primary guide for managing functional classifications for federal reporting purposes is FHWA's Highway Functional Classification: Concepts, Criteria and Procedures [35] document, which was updated in 2013. There are key differences between the 2013 document, the original 1989 document, and the 2008 interim guidance document [36] that may continue to impact functional classifications in Florida (e.g., 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. [37] 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 Statistics Office (TranStat): FDOT's FHWA Urban Boundary and Federal Functional Classification Handbook. [37] The FDOT Handbook was completed in 2003, so it does not reflect the 2013 version of the FHWA document in some respects, but it 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 reclassification of US highways requires coordination with AASHTO, and it states that functional classification changes should occur before system designation changes occur.

TABLE 3. FUNCTIONAL CLASSIFICATION AND FEDERAL SYSTEM

Functional Classification(s)	Federal System/ Funding Eligibility
Local, Rural Minor Collector	Eligible for Federal-Aid only with special considerations
Rural Major Collector, Urban Collector, Minor Arterial, Principal Arterial	Eligible for Surface Transportation Program (STP)
Local, Rural Minor Collector, Rural Major Collector, Urban Collector, Minor Arterial, Principal Arterial	Eligible for National Highway System (NHS) as determined by Congress and revised by FHWA, based on FDOT or FHWA Division Office request

The FDOT Handbook links federal functional classification to federal system classification as shown in **Table 3**.

Under MAP-21, STP 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." [38] **Table 3** indicates that, in general, the only roads upon which STP funds cannot be used are Local streets and Rural Minor Collectors. In all likelihood, lane elimination projects in Florida will be proposed only on non-Local streets in urban areas. As such, downgrading the functional classification of the affected roadway as part of the lane elimination project will likely not impact the potential to receive future STP 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 classification related to lane elimination 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. [35,37]

Impacts:

- Ability of the road to maintain its current and/or planned function (e.g., as a route for long-distance, regional trips)
- Multimodal capacity and connectivity [37, 39]

Factors to consider:

- Complete Streets initiatives and the needs of multiple transportation modes
- Functional classification systems used by affected local governments
- Design standards and criteria specific to the proposed functional classification
- Coordination with TranStat with respect to data collection and reporting
- Coordination with MPOs, TPOs, other planning agencies, and federal agencies
- Coordination with AASHTO if reclassification is proposed for a US highway in concert with a lane elimination project
- Changes to urban and transitioning area boundaries (which can be adjusted by FDOT) if necessary to support a proposed change in functional classification
- Extent to which the affected road serves a mobility function or an access function
- Extent to which the affected road serves long-distance trips (including regional trips) and short-distance trips
- Extent to which the affected road serves a national defense function
- Extent to which the affected road serves airports, seaports, intermodal facilities, and other public facilities
- Role of functional classification in crash analysis
- Role of functional classification in bridge capacity
- Role of functional classification in maintenance cycles and emergency response activities

3.11 SYSTEM DESIGNATION

PROFILE

Elimination of a lane on a roadway can impact its state and federal system designations. System designations include the National Highway System (NHS), the State Highway System (SHS), and the Strategic Intermodal System (SIS). Roadways on these systems may also be Federal-Aid roadways. A change in system designation (or a change in roadway function that results in incompatibility with an existing system designation) can be very significant because it could result in a gap in the continuity and connectivity of a given system and it could affect funding, state and federal reporting requirements, economic development, national defense, emergency response, and other aspects of statewide and regional transportation networks. As such, consistency with and/or potential changes to system designations are important considerations in reviewing lane elimination projects.

issue... System Designation

A change in system designation might affect funding eligibility and system continuity. The latter may have implications for national defense and freight transportation, among other concerns.

The NHS includes "roadways important to the nation's economy, defense, and mobility." [38] There are five sub-systems within the NHS:

- Interstates
- Other Principal Arterials
- Strategic Highway Network
- Major Strategic Highway Network Connectors
- Intermodal Connectors

Given the strategic importance of these sub-systems, it is unlikely that a lane elimination project would be proposed for many of the roadways on the NHS. [37] If such a proposal occurs, CFR Title 23 Part 470 [24] contains information about modifications to the NHS. Such modifications require coordination between FDOT, local officials, and FHWA. [37] A project on the NHS must also be included in the local MPO/TPO's Transportation Improvement Program (TIP) and the State Transportation Improvement Program (STIP) [22]. Additionally, FDOT's FHWA Urban Boundary and Federal Functional Classification Handbook [37] indicates that a re-designation of a US highway would require coordination with AASHTO. The Handbook recommends that functional classification changes should occur before system designation changes occur.

The SHS consists of roadways under the jurisdiction of and maintained by FDOT, qualifying expressway authorities, and other state agencies. [37,40] FDOT's authority to designate facilities as part of the SHS and to construct, regulate, and maintain them comes from Sections 334.044 and 335.02 of the Florida Statutes (F.S.) [41,42]. FDOT is allowed to establish standards for access management and the number of lanes in SHS roadway segments, with the goal of achieving "the highest degree of efficient mobility for corridor users," and may also regulate vehicles allowed to use the SHS. FDOT has authority to number and re-number SHS facilities. [42] FDOT has established design standards for SHS facilities [20], and policy and procedure documents have been prepared on topics such as Context Sensitive Solutions [43] and major urban corridor studies [44]. Constructing and maintaining the SHS is funded by the State Transportation Trust Fund [22].

Multiple lane elimination projects exist on SHS (or former SHS) facilities in Florida, and it is anticipated that requests to eliminate through lanes on SHS facilities will continue to arise. Several of the existing lane elimination projects were accompanied by jurisdictional transfers. If a lane elimination proposal includes transferring a road off the SHS, the road's eligibility for continuing Trust Fund dollars must be assessed. (FDOT's Work Program Instructions describes a variety of purposes for which Trust Fund dollars can be used. [22]) Transferring a road off the SHS requires a formal deletion of SHS mileage. Forms are available to request and authorize such mileage deletions; examples can be found in FDOT's Road Jurisdiction and Numbering Handbook. [45]

The SIS is a network of transportation facilities (including roads, railroads, ports, and multimodal facilities) that "meet a strategic and essential state interest." [22] FDOT's authority to develop and manage the SIS is established in Section 339.63, F.S. [46] There are two primary SIS designations: SIS and Emerging SIS, and criteria for identifying the roadways that are eligible for these designations include the following: [47]

- Interstate, NHS, or SHS facility
- Provides connection between Economic Regions as defined by Enterprise Florida
- Provides connection to Rural Area of Critical Economic Concern
- Provides connection to other states
- Limited-access facility
- Percent trucks
- Annual average daily truck traffic
- Provides connection to other SIS or Emerging SIS facilities

The above criteria (and others) are available through FDOT's Enterprise Strategic Intermodal System (eSIS) tool. [47] The eSIS tool also provides a map of SIS facilities, information about and documentation for current SIS designation change requests, and the 2007 SIS Data and Designation Review. The eSIS tool is also a means to track requests to change SIS designations. A document about the formal SIS designation change process is available through eSIS; this document includes example forms. FDOT's Office of Policy Planning undertakes periodic systemwide reviews to determine if SIS criteria and/or designations need to be updated. Districtwide Coordinators review SIS designations as needed. [47]

Requests to change a SIS designation may be submitted to Districts by the owner of the transportation facility, an MPO/TPO, a local government, other stakeholders, or District staff. All criteria associated with the proposed SIS designation must be met before the District will process the request. The District can use the SIS Environmental Screening Tool to evaluate the community and environmental impacts of a proposed SIS designation change request. After Districts submit SIS designation change requests to Central Office, Central Office conducts an analysis of statewide implications of the change in designation. [47]

If a lane elimination proposal includes changing a SIS designation, the road's eligibility for SIS funding (which is a statewide set-aside from the Trust Fund) must be assessed. SIS funds can be used for capacity, ITS, preservation, safety, and interchange projects. [22]

Federal-Aid funds are distributed to states for construction, reconstruction, and improvement of highways and bridges on eligible routes and for special projects. [24] Given the flexibility provided under MAP-21, states have a great deal of discretion regarding where Federal-Aid funds can be used. That is, Federal-Aid funds are not used only on the official Federal-Aid systems (i.e., the Interstate system and the NHS). However, Federal-Aid funds are generally not used on Rural Minor Collectors and Local streets. [22] Funding programs under the Federal-Aid umbrella include the STP, the Bicycle Transportation and Pedestrian Walkways program, the Congestion Mitigation and Air Quality Improvement Program, the Safe Routes to School program, and the Transportation Alternatives Program. [48] The STP is the most flexible of all the funds provided under MAP-21, and it can be used for Federal-Aid highway, bridge, and tunnel projects on any public road as well as pedestrian/bicycle infrastructure and transit capital projects. [38,48] According to FDOT's FHWA Urban Boundary and Federal Functional Classification Handbook [37], the only roads upon which STP funds generally cannot be used are Local streets and Rural Minor Collectors. In all likelihood, lane elimination projects in Florida will not occur on Local roads or Rural Minor Collectors or result in the affected road being reclassified as a Local road or Rural Minor Collector. Thus, roadways from which lanes are proposed to be eliminated should continue to be eligible for STP funding. The FHWA Division Office should be contacted if there are questions about this.

Federal-Aid funds might be available for the landscaping components of a lane elimination project if the lane elimination project is a Federal-Aid construction project, but this is generally not the case if the lane elimination project consists only of resurfacing. [22]

Impacts:

- Future funding of transportation improvements in the corridor

Factors to consider:

- Consistency with adopted plans and programs (e.g., the TIP and the SIS Cost-Feasible Plan)
- Coordination with TranStat regarding data collection and reporting
- Coordination with the FDOT Office of Policy Planning regarding management of the SIS
- Coordination with MPO/TPOs, other planning agencies, and federal agencies regarding system designation changes (which might affect the prioritization of planned projects)
- Jurisdictional transfer
- Route numbering changes
- SHS and SIS designation criteria
- Design standards and criteria
- Support from affected agencies and other affected local governments (e.g., letters and resolutions)

3.12 ACCESS MANAGEMENT

PROFILE

Lane elimination projects may include access management plans that modify medians and median openings and/or 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; it also tends to improve safety for all modes. [3,4] Shared/joint accesses minimize the number of driveways and curb cuts, particularly in a downtown setting, which is important in maintaining a pedestrian-oriented environment and managing vehicular traffic and safety. Another benefit of eliminating lanes and reducing the number of accesses is that landscaped medians could be added to the corridor; this might visually narrow the road, add green elements to the corridor, and enhance the aesthetics of the roadway.

F.A.C. Chapter 14-97 [49] describes the access management classification system for the SHS, associated standards, and the process for modifying a roadway's access management classification. FDOT's Systems Planning Office has developed several resources related to access management.

issue... Access Management

Consolidation of access points in conjunction with a lane elimination project could promote smoother traffic flow, reduce conflict points, and provide opportunities to install landscaped medians.

Impacts:

- If turn lanes do not exist and a lane elimination project results in a facility with only one through lane in each direction, the impacts of turning movements on through traffic might increase.
- If turning movements are to occur at a reduced number of driveways, traffic control at the higher-volume driveways may need to be reviewed.

Factors to consider:

- Access management classification
- Functional classification
- Need for exclusive left and right turn lanes
- Accommodation of U-turns in a narrowed cross section (especially U-turns that might be made by large trucks)
- Maintaining property access
- Enforcement of access restrictions (e.g., through use of medians and islands)
- Need for public hearings

3.13 EMERGENCY EVACUATION AND RESPONSE

PROFILE

Careful consideration must be given to the decision to eliminate a travel lane in potential evacuation areas. Evacuation is an unusual transportation circumstance that can be planned for in areas that are especially prone to disaster, such as coastal areas (during hurricanes) and locations with specific security threats (e.g., institutional areas, heavily-visited tourist attractions, and other buildings/areas designed to hold large crowds during special events). The MUTCD [11] 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."

Negative consequences resulting from lane elimination with regard to evacuation 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 do generally not physically reduce the paved width of the roadway and, thus, are the optimal type of lane elimination strategy if the study area is located within an evacuation area.

issue... Emergency Evacuation and Response

Lane elimination projects can impact evacuation capacity and might impact emergency response.

While evacuation events are so rare that the effects of lane reduction on their success have not been comprehensively examined, the consequences for evacuations and emergency vehicle access have been raised during several studies of lane elimination projects. Some types of lane elimination projects (specifically four-to-three conversions and bicycle lane addition/conversion from parking) are actually preferred by emergency responders because they enable emergency vehicles to use an intuitive path (i.e., the center left turn lane) and mitigate the confusion of other drivers. [50]

Impacts:

- Evacuation time requirements may preclude reducing the vehicular capacity of a designated evacuation route.
- To accommodate evacuating traffic, evacuation routes may be required to maintain a minimum width of obstruction-free paved roadway. That is, the evacuation plan might require parking lanes to be used as a travel lane during an evacuation and/or the direction of flow in existing through lanes might be reversed.

Factors to consider:

- Curb extensions and widened medians are types of geometric changes that have been associated with lane elimination projects and which might obstruct for evacuating vehicles as well as emergency responders.
- Evacuating vehicles may create their own lanes or be instructed to do so by officials during an evacuation.
- Different areas (e.g., different coastal zones) may have different evacuation requirements.

3.14 JURISDICTIONAL TRANSFERS

PROFILE

Jurisdictional transfers of roadways involve conveying the ownership of and operations/maintenance responsibility for a given roadway (including sidewalks, bridges, bicycle lanes, railroad crossings, and drainage elements) from one level of government or agency to another. **Table 1** indicates that jurisdictional transfers have frequently accompanied lane elimination projects in Florida. Where these lane elimination–related jurisdictional transfers have occurred, FDOT has transferred jurisdiction of the affected roadway to a local government. The transfers reflect the interest of local governments in being fully engaged in the planning, design, and implementation of the lane elimination project and the willingness of local governments to take responsibility for the impacts of the lane elimination project (including liability).

issue... Jurisdictional Transfers

Transferring jurisdiction of a roadway to a local government as part of a lane elimination project is not uncommon. Future maintenance of the roadway is a concern.

TranStat has prepared a document that describes the jurisdictional transfer process in detail [45] and supplements a relevant FDOT procedural document [51] and relevant Statutory language [42]. This document, the Road Jurisdiction and Numbering Handbook, was written for FDOT staff representing multiple disciplines and covers the following types of jurisdictional transfers:

1. Jurisdictional changes involving only FDOT (i.e., new State road construction, realigned State roads, and vacated State roadway right-of-way)
2. Jurisdictional changes involving FDOT and a local government
3. Jurisdictional changes involving FDOT and another state agency (e.g., an expressway authority)

The Handbook includes sample transfer forms and agreements. It states that the Districts are responsible for determining which office within each District is responsible for handling jurisdictional transfers; the Handbook assumes that this responsibility defaults to the office that tracks SHS mileage.

The transfer process may involve multiple rounds of negotiations, and a local government resolution is required for the second type of above-listed transfer. The approvals of the District Secretary and the Department Secretary are also required. Jurisdictional transfer requests may be initiated by FDOT, by a local government, or by another state agency.

If the affected roadway previously received Federal-Aid funds, the local government to which the roadway is being transferred is required to enter into a Project Maintenance Agreement with FDOT. More information about this is available in the FDOT procedural document entitled Inspection of Federal-Aid Projects Under Local Jurisdiction. [52]

Impacts:

- N/A

Factors to consider:

- Coordination with the local government
- Liability (including liability for contaminated soils and hazardous pavement conditions)
- National defense
- Travel to and through urban areas
- Disaster preparedness and emergency evacuation
- Access to intermodal facilities and regional public facilities
- Existing agreements and obligations
- Location of the affected roadway in tribal lands
- Continued operation of existing traffic monitoring sites in the affected roadway section
- Impact on and maintenance of cultural, historical, architectural, and archaeological resources
- Coordination with TranStat
- Coordination with AASHTO regarding requests for US route number changes (which may take several months and must occur prior to the jurisdictional transfer)
- Previous use of Federal-Aid funds to construct/improve/maintain the affected roadway
- Need for public hearings

3.15 FREIGHT ROUTES/ACCESS

PROFILE

The Florida Statutes task FDOT with the following duties: [41]

- Conducting studies and providing coordination to assess needs associated with landside ingress and egress to port facilities
- Coordinating with local governmental entities to ensure that port facility access routes are properly integrated with other transportation facilities
- Emphasizing freight issues and needs in all appropriate transportation plans, including the Florida Transportation Plan and the Strategic Intermodal System Plan

Thus, FDOT has an interest in accommodating freight activity on the SHS. Freight activity is a critical consideration with regards to lane elimination projects because lane elimination projects impact roadway geometry and access to intermodal centers and businesses.

It is common for freight organizations to discourage lane elimination projects along truck routes, mainly due to concerns about increased congestion leading to increased truck delay and decreased truck reliability. [53,54] While the effect of lane elimination on delay should be closely considered before lanes are eliminated, additional coordination should be undertaken with the freight community even if the lane elimination project is not expected to increase delay.

issue... Freight Routes and Access

Lane elimination projects may impact the viability of truck routes as well as business access and local deliveries.

Impacts:

- Any increases in congestion may result in increases in delay and decreases in travel time reliability.
- Decreased curb radii may limit truck movements and/or cause trailer off-tracking that can put pedestrians at risk.
- Removal of delivery zones may impact truck access to businesses.
- Where there is only one through lane per direction after a lane elimination project, trucks that stop for deliveries are likely to block auto traffic.

Factors to consider:

- Lane elimination elements that can positively affect freight
  - Lane widening – Lane elimination might result in the widening of existing through lanes. Wider lanes better accommodate trucks (and buses) and provide a buffer between trucks, autos, and bicyclists in bicycle lanes.
  - Increased commercial development – The livability benefits associated with lane elimination projects (including the addition of multimodal facilities and a general improvement of roadway aesthetics) can lead to increased economic activity along the roadway corridor. New commercial development could lead to increased opportunities for freight carriers and other freight-supported activity.

- Lane elimination elements that can negatively affect freight
  - Increased delay – The most common concern voiced by freight organizations related to lane elimination is the perception that the removal of through lanes will decrease roadway capacity and, consequently, increase delay to trucks. While lane elimination projects are usually performed on roadways that operate under capacity, a change in travel time reliability could significantly affect the on-time performance of freight movements.
  - Decreased turning radii and decreased space for U-turns – Careful consideration must be undertaken regarding the design vehicle and its geometric requirements when lane elimination projects are implemented. Curb extensions or other permanent, non-traversable areas that are added as part of a lane elimination project can be problematic for large vehicles if these treatments are not designed according to the proper design vehicle.
  - Lane narrowing – If lane widths are decreased during a lane elimination project as a means of adding bicycle lanes or other features, large trucks may be at increased risk of involvement in sideswipe and mirror crashes, depending on the resulting width of the lane and the curvature of the road. Additionally, narrower lanes mean that there is less space between trucks and other road users, which can create a sense of discomfort in all users.
- 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. [54] Most authorities tend to sign truck restrictions and prohibited routes rather than defined routes. The simplest way to avoid a conflict between truck routes and a lane elimination project is to design the lane elimination project around the design truck, but this may not always be possible given the goals of the lane elimination project. If trucks can no longer be accommodated safely or efficiently on a truck route after a lane elimination project is implemented, then any truck route designation may need to be moved to an alternative route and the section where lanes have been eliminated should 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.
- Future land use plans may include projects that will generate a high level of truck traffic.

3.16 EXTRA-JURISDICTIONAL IMPACTS

PROFILE
The impacts of a lane elimination project can manifest outside of the corridor in which the lane elimination project is located. These impacts may extend into adjacent communities and jurisdictions.

issue... Extra-Jurisdictional Impacts

The impacts of a lane elimination project may extend into adjacent jurisdictions.

Impacts:

- Impact on traffic operations in adjacent jurisdictions (e.g., increased congestion due to diverted traffic)
- Impact on transportation safety in adjacent jurisdictions

Factors to consider:

- Determination of impact area
- Methodology for predicting changes in traffic patterns (e.g., extents of the local travel demand model)
- Effect of lane elimination on planned and programmed transportation projects in adjacent jurisdictions
- Effects of adjacent jurisdictions' planned and programmed transportation projects on the segment where through lanes are to be eliminated
- Near- and long-term LOS assessments
- Adjacent jurisdictions' LOS standards
- Incorporation of adjacent communities into public outreach efforts
- Degree of support from adjacent jurisdictions
- Associated comprehensive plan amendments, which require extra-jurisdictional coordination [33]

3.17 STRUCTURE/UTILITY IMPACTS

PROFILE
Lane elimination projects occur within existing right-of-way, so impacts to structures and utilities are generally limited. Structural and utilities impacts are most likely to occur when the lane elimination project is more complex than simply restriping existing pavement (e.g., if the lane elimination project involves widening sidewalks or adding landscaping).

issue... Structure/ Utility Impacts

Lane elimination projects may impact structures and utilities, even though lane elimination projects typically occur within existing right-of-way.

Impacts:

- Relocation of traffic signal hardware (e.g., traffic signal poles, controller cabinets, pedestrian push-buttons, and pedestrian signals)
- Relocation of signs and sign structures
- Relocation of street lighting
- Relocation of guardrails and separators on bridges
- Relocation/reconstruction of drainage system elements (e.g., gutters and storm drains)
- Access to utilities (e.g., access to fire hydrants and access to underground utilities if a raised median is added to the cross section in place of existing through lanes)
- Installation/modification of irrigation systems (e.g., if landscaping is added to the corridor)

Factors to consider:

- Relocation of traffic signal hardware, signs, sign structures, and street lighting may be needed to maintain obstruction-free sidewalks.
- Relocation of structures may be needed to meet design standards and local ordinances (e.g., for street lighting uniformity and for sign placement).
- Structure and utility relocations may impact a lane elimination project's maintenance of traffic (MOT) plan.
- Lane elimination projects can be coordinated with utility projects as well as pavement maintenance projects.
- Local governments might propose relocating overhead utilities underground as part of a lane elimination project.
- Conventional traffic signal and street lighting infrastructure might be replaced with ornamental infrastructure if a proposed lane elimination project includes corridor beautification elements.

3.18 COSTS AND FUNDING SOURCES

PROFILE

While a lane elimination project can result in significant changes to roadway design, lane elimination projects are typically relatively low-cost projects. [55] If a repaving or reconstruction project is ongoing or programmed, elements of the lane elimination project (e.g., restriping) can be implemented as part of that repaving or reconstruction project so as to save costs. [56]

Although lane elimination 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). [55] In addition, if the lane elimination project leads to 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. [55]

issue... Costs and Funding

Lane elimination projects are often relatively low in cost, particularly when coordinated with other improvement projects.

Example lane elimination project costs are provided in **Table 4**. Minnesota DOT's publication entitled Minnesota's Best Practices for Pedestrian/Bicyclist Safety [57] provides the following illustrative costs for lane elimination projects on four-lane undivided roadways:

- $16,000 per mile for restriping
- $500,000 per mile for overlay
- $5 million per mile for reconstruction

Although lane reduction projects have real construction/implementation costs, they can be viewed as long-term investments in the community rather that short-term projects. [59] A cost-benefit ratio calculated in 2004 for a lane elimination project in Evansville, IN, indicated that the project's benefits would exceed its costs by a factor of 5.24 after 20 years. [60]

Including facilities for multimodal users in a corridor can create opportunities to access new funding sources. [59] Potential funding sources for lane elimination projects include the 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 local sources. [55]

TABLE 4. EXAMPLE LANE ELIMINATION PROJECT COSTS

Project	Context	Features of Completed Project	Cost*	Data Source
Fourth Plain Boulevard in Vancouver, WA	• Principal arterial • 12,000 ADT • Posted speed = 30 mph • Residential with commercial land uses • 1.0 mile in length	• Two lanes with two-way center turn lane • Bike lanes • ADA ramps • Underground utility work	**$1,260,000**	**[3]**
Baxter Street in Athens-Clarke County, GA	• Arterial • 20,000 ADT • Posted speed = 35 mph • Commercial with residential land uses • 1.9 miles in length	• Two lanes with two-way center turn lane • Bike lanes • Signal modifications	**$190,000**	**[3]**
US 18 in Clear Lake, IA	• State highway • 12,000 ADT • Posted speed = 45 mph • Commercial with residential land uses • 1.1 miles in length	• Two lanes with two-way center turn lane • Bike lanes • ADA ramps • Underground utility work	**$105,000**	**[3]**
St. George Street in Toronto, ON	• Principal arterial • 16,000 ADT • Formerly four lanes • 1.1 miles in length	• Two lanes with turn lanes at intersections • Total reconstruction • Improved intersections • Bike lanes • Full tree canopy	**$3,760,000**	**[8]**
South Orange Avenue in South Orange, NJ	• Urban arterial • Main street • Formerly four lanes with on-street parking	• Two 11-17' lanes with two-way center turn lane • Curb extensions and on-street parking • Landscaped median • New midblock crosswalks (brick-paved) • Benches, planters, and planting beds • Pedestrian-scale lighting	**$1,600,000**	**[58]**

*year of expenditure, in U.S. dollars

Impacts:

- The desire to coordinate a lane elimination project with a programmed project might impact the schedule of one or both of the projects.

Factors to consider:

- If the lane elimination project leads to implementation of a Complete Street, the needs of multiple users can be integrated into the project early, minimizing calls for future retrofits.
- The potential outcomes of lane elimination projects are beneficial to the health of communities and the environment. The short-term cost of a lane elimination project could be perceived as a long-term investment in sustainability and active transportation.
- Lane elimination projects that reduce crashes can save funding later. [59]
- Costs will vary by location and year. [55]
- There may be opportunities to share the costs of studies, design, and implementation among multiple stakeholders.

3.19 COMMUNITY SUPPORT

PROFILE
Gaining public acceptance for lane elimination projects is important but can be challenging. A study by Vergis and Niemeier [61] reports that public support for a lane elimination 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.

issue... Community Support

Community support for a lane elimination project is essential but can be challenging to obtain.

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

- Trial period – Trial periods help gauge the level of support for a lane elimination project through a simulation of the project. Pilot implementations are a powerful tool because they provide an opportunity to validate an approach for deployment and show the community how the project will operate. Executing a pilot implementation can also uncover operability issues and provide an opportunity to address these issues before roll-out. To effectively prepare for a pilot implementation, a detailed approach and an effective means of monitoring should be developed.
- Poll – A citizens' poll or vote is another tool for assessing public support. Combined with a trial period (e.g., conducting the polls or vote before and after the trial), it is even more effective. In general, polls and votes should be conducted in a manner that results in a statistically sound representation of all community members.
- 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 elimination project is essential.
- Workshop – Workshops are a more engaged form of public participation and educational outreach.

Impacts:

- It is not uncommon for a lane elimination proposal to generate controversy. The strongest objections from the community typically come from the stakeholders who are afraid of a reduction in the motorized capacity of the road. Commuters, businesses, transit operators, and freight operators usually belong to this group.
- Bicyclists and walkers tend to be supportive of lane elimination projects, particularly when the projects create or enhance bicycle and pedestrian facilities. Environmental groups and

health advocates tend to favor lane elimination projects as well.

Factors to consider:

- Timing the public outreach effort with project development
- Ease with which the community can obtain information about the project and provide input
- Obtaining feedback from an adequately representative sample of the community
- Funding community outreach activities

3.20 OTHER ISSUES

Other issues that might be considered in developing a process for reviewing lane elimination requests include the following:

- Assessment of person capacity in the corridor instead of vehicle capacity
- Analysis of alternatives to lane elimination
- Assessment of railroad crossing impacts
- Feasibility of the project schedule
- FDOT Central Office coordination requirements

SECTION 4
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4.0 REFERENCES

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24.

APPENDIX A
LANE ELIMINATION PROJECTS IN FLORIDA

APPENDIX A: LANE ELIMINATION PROJECTS IN FLORIDA

PROJECT INFORMATION

This section identifies and describes existing and proposed lane elimination projects in Florida for the purpose of providing a snapshot of statewide experience. The following characteristics of each identified project are summarized in **Table A-1**:

- Status of the project
- Location of the project
- Purpose of the project
- Project features and extent
- Reported project successes and/or shortcomings
- Level of District involvement in the project

Table A-1 is not intended to be a complete inventory of lane elimination projects in Florida.

Figures A-1, A-2, A-7, A-8, A-10, A-11, A-13, A-14, A-16, A-18, A-19, A-21, and **A-22** depict the location of each project in **Table A-1** for which project endpoints are known. **Figures A-3** through **A-6, A-9, A-12, A-15, A-17**, and **A-20** contain photographs of most of the existing projects included in **Table A-1**.

THEMES AND TRENDS

The information used to create **Table A-1** suggests the following themes and trends regarding lane elimination projects in Florida:

- Many Florida lane elimination projects are conversions of four-lane streets to two-lane streets with center turn lanes and/or landscaped medians.
- Nearly all Florida lane elimination projects are intended to improve pedestrian and bicycle travel. Many projects also have placemaking, livability, and/or economic development goals.
- Post-implementation studies of the existing Florida projects identify few shortcomings.
- FDOT has been directly involved in lane elimination projects on State roadways through review of studies and designs, jurisdictional transfers, and funding.
- Many of the Florida projects on State roadways involved jurisdictional transfers from the State to the local government.
- Some of the Florida projects on State roadways used FDOT resurfacing funds to implement the lane elimination projects. FDOT turned the funds over to the local government as part of a jurisdictional transfer of the roadway.
- Some of the existing projects were first implemented as pilot/temporary projects and later became permanent implementations.

THE GOALS OF MOST EXISTING LANE ELIMINATION PROJECTS IN FLORIDA INCLUDED IMPROVING PEDESTRIAN AND BICYCLE TRANSPORTATION.

TABLE A-1. LAKELAND LANE ELIMINATION PROJECTS

Location	District	Roadway	Extents	Owner/ Applicant	Status	Purpose	
Bradenton	1	Manatee Ave and 6th Ave (SR 64 couplet)	15th St W to 9th St W	City of Bradenton	Ongoing	Improve pedestrian accessibility and remove barrier between downtown and adjacent neighborhoods	
Lakeland	1	Martin Luther King, Jr. Ave (SR 563)	W Memorial Blvd to W 10th St	City of Lakeland and Polk TPO	Existing	Promote walking, bicycling, and use of transit	
Lakeland	1	E Parker St	Massachusetts Ave to Lake Parker Ave	City of Lakeland	Existing	Promote walking, bicycling, and use of transit	
Lakeland	1	Lake Wire Dr	W Oak St to Sikes Blvd	City of Lakeland	Existing	Promote walking, bicycling, and use of transit	

	Description	Reported Successes and Shortcomings	Level of District Involvement	Data Source*
	Convert 3-lane streets in couplet to 2-lane streets with on-street parking, curb extensions, and wide sidewalks; add multi-use path	Westbound lane elimination has been implemented; forthcoming monitoring study to include turning movement counts and assess delay, travel time, queuing, pedestrian volumes, transit ridership, ridesharing activity, and land development activity	District is a partner in Downtown Mobility Study	A
	Convert 4-lane undivided street to 2-lane street with center turn lane, landscaped median, pedestrian refuges, enhanced crosswalks, and bike lanes	Crashes reduced from 19 in 2004-2005 to 4 in 2006-2007 and 2 in 2011; daily volume reduced from 11,900 to 10,278 in 2006-2007 and 7,100 in 2012; 85th percentile speed increased from 41 mph to 45 mph in same period	Coordinated with FDOT maintenance project; project used FDOT resurfacing funds; jurisdictional transfer	B,C
	Convert 4-lane undivided street to 2-lane street with center turn lane, landscaped median and bike lanes; add transit shelters	Crashes reduced from 8 in 2009 to 5 in 2011; average speeds reduced from 39-42 mph in 2009 to 35-37 mph in 2011	District staff expedited programming in Work Program; project used FDOT TE funds	B,C
	Convert 4-lane street to 2-lane street with bike lanes and on-street parking; add multi-use path	No crashes reported between project completion in 2009 and July 30, 2012	None	B,C

TABLE A-1. LAKELAND LANE ELIMINATION PROJECTS

Lakeland	1	Ingraham Ave	E Memorial Blvd to Bartow Rd	City of Lakeland	Existing	Promote walking, bicycling, and use of transit	
Lakeland	1	Parkview Pl	Martin Luther King, Jr. Ave to Florida Ave	City of Lakeland	Existing	Promote walking, bicycling, and use of transit	
Lakeland	1	E Main St (SR 600)	Ingraham Ave to Lake Bonny Dr W	City of Lakeland	To be deter-mined	Promote walking, bicycling, and use of transit	
Gainesville	2	N Main St (SR 331)	NW 8th Ave to Depot Ave	City of Gainesville	Existing	Improve multimodal travel and livability	
Gainesville	2	NW 8th Ave	NW 23rd St to NW 31st Dr	City of Gainesville	Proposed	Provide better facilities for pedestrians and bicyclists	
Tallahassee	3	Franklin Blvd	E Tennessee St to Apalachee Pkwy	City of Tallahassee	Existing	Creation of multi-use stormwater and recreation facility	
Tallahassee	3	Gaines St	Monroe St to Woodward Ave	City of Tallahassee	Existing	Creation of pedestrian-friendly "destination district" with mixed uses	
Boynton Beach	4	Boynton Beach Blvd	US 1 to Seacrest Blvd	City of Boynton Beach	Proposed	Creation of pedestrian-friendly downtown core	

	Convert 4-lane undivided street to 2-lane street with bike lanes (2005); add landscaped medians (2011)	Crashes reduced from 29 in 2003 to 28 in 2010 to 13 in 2011	None	B,C
	Convert 4-lane undivided street to 2 lanes with bike lanes and an enhanced pedestrian crossing	N/A	None	C
	Convert 4-lane undivided street to 2-lane street with bike lanes, refuge islands, and ADA improvements; add multi-use path; remove traffic signal	N/A	Jurisdictional transfer	B,C
	Convert 4-lane undivided street to 2-lane street with bike lanes, center turn lane, on-street parking, and pedestrian refuges	Average travel time increased 29 seconds; average travel speed decreased 2.1 mph; rush hour delay increased 105 seconds in the northbound direction at midday; crashes reduced from 59 (January 2008 to June 2009) to 18 (January 2012 to June 2013)	Jurisdictional transfer	A,D,E,F
	Convert 4-lane undivided street to 2-lane street with bike lanes	N/A	None	G
	Convert 4-lane divided street to 2-lane street with bike lanes and east-side sidewalk as part of stormwater project; add west-side multi-use path	N/A	None	H,I,J
	Convert 4-lane undivided street to 2-lane street with landscaped median and limited on-street parking	N/A	Coordinated with District maintenance project; jurisdictional transfer	K
	Convert 4-lane street with center turn lane to 2-lane street with center turn lane, bike lanes, and wider sidewalks	N/A	District reviewed initial study, revised study, and conceptual design	L

TABLE A-1. LAKELAND LANE ELIMINATION PROJECTS

Delray Beach	4	Atlantic Ave (SR 806)	Swinton Ave to US 1	City of Delray Beach	Existing	Create pedestrian-scale avenue and beautify the corridor	
Vero Beach	4	SR 60	20th Ave to FEC railroad	Indian River MPO and City of Vero Beach	Proposed	Improve pedestrian environment and promote downtown Vero Beach as a destination	
Orlando	5	Edgewater Dr (SR 424)	Par St to Lakeview Dr	City of Orlando	Existing	Creation of pedestrian-friendly commercial area	
Clearwater	7	Fort Harrison Ave (US 19A)	Belleview Blvd to Belleair Rd	City of Clearwater	Existing	Improve safety	
Indian Rocks Beach	7	Gulf Blvd (SR 699)	1st St N/1st Ave to SR 688/Walsingham Rd/5th Ave N	City of Indian Rocks Beach	Proposed	Promote growth and development in city's downtown area and increase safety for pedestrians crossing to get to the beaches	
St. Petersburg	7	1st Avenue S	Dr. Martin Luther King Jr., St S to Demens Landing	Pinellas County and City of St. Petersburg	Existing	Extend Pinellas Trail to downtown St. Petersburg	

	Convert 4-lane street to 2-lane undivided street with on-street parking, wider sidewalks, and landscaping	N/A	Jurisdictional transfer; District accepted widening of two parallel streets to maintain hurricane evacuation capacity	M,N
	Convert 3- and 4-lane streets with bike lanes in couplet to 2-lane streets with bike lanes and on-street parking	N/A	District reviewed initial study and conceptual design	O
	Convert 4-lane undivided street to 2-lane street with center turn lane, bike lanes, and wider sidewalks	Crash rate reduced by 34%; injury rate reduced by 68%; speeds reduced up to 10%; daily volume decreased initially (20,500 to 18,100) but returned to 21,000 over time; 23% overall increase in pedestrian traffic; 30% overall increase in bicycle traffic	District required jurisdictional transfer, community approval, and before-and-after study; coordinated with District maintenance project	P
	Convert 4-lane street to 2-lane street with center turn lane	Reduction in number of crashes; increase in congestion	Jurisdictional transfer; Alt US 19 designation transferred to other roads; coordinated with maintenance project	Q
	Create a one-way couplet on Gulf Blvd (southbound traffic) and 1st St N (northbound traffic) in the long term; modify Gulf Blvd/Walsingham Rd intersection in short term	N/A	Preliminary discussions	R
	Convert vehicle lane to two-way bicycle path	N/A	Party to LAP agreements to fund design, landscaping, maintenance, traffic control, etc. over several years	S,T

TABLE A-1. LAKELAND LANE ELIMINATION PROJECTS

St. Petersburg Beach	7	Gulf Blvd (SR 699)	73rd Ave to Blind Pass Road	City of St. Petersburg Beach	Proposed	Promote quality economic development, enhance alternative transportation modes and pedestrian safety, improve traffic flow and function, and beautify the downtown area	
Tampa	7	Nebraska Ave (SR 45)	Hillsborough Ave to Kennedy Blvd	FDOT	Existing	Address pedestrian and bicycle crash frequency	

Note: TPO = Transportation Planning Organization, MPO = metropolitan planning organization, CRA = Community Redevelopment Agency, TE = Transportation Enhancement, ADA = Americans with Disabilities Act, and LAP = Local Agency Program
*Data sources:

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	Create one-way couplet on 75th Ave from Blind Pass Rd to Gulf Blvd (westbound traffic) and Gulf Blvd from 75th Ave to 73rd Ave (southbound traffic); northbound traffic will turn right on 73rd Ave and left on to Blind Pass Rd	Mixed response from citizens/businesses to date	Review preliminary traffic analysis; observe town hall meeting	R
	Convert 4-lane mostly undivided street to 2-lane street with center turn lane, bike lanes, transit bays, and pedestrian refuges; maintain 4-lane divided approaches at two traffic signals	Pedestrian crashes reduced from 21 in 2004-2006 to 8 in 2009-2011; bicycle crashes reduced from 15 in 2004-2006 to 8 in 2009-2011; AADT before 2007 was 17,900 and in 2008-2009 was 14,600	Re-striped by District	U,V

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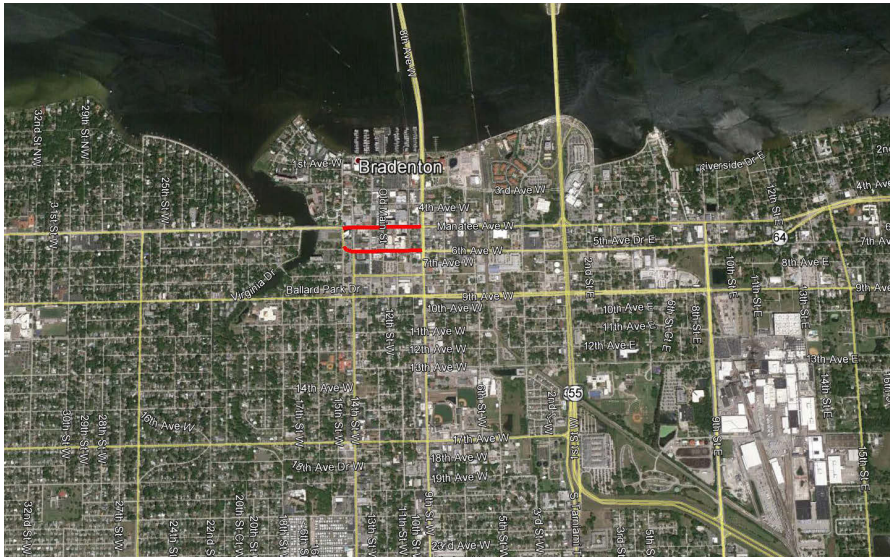
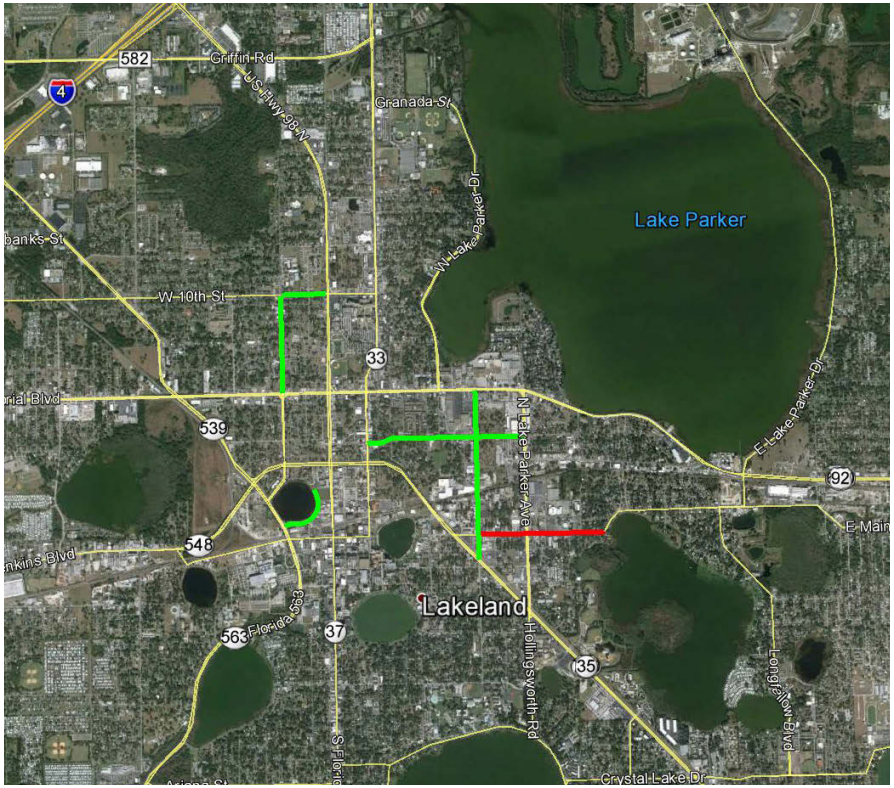
FIGURE A-1. BRADENTON LANE **ELIMINATION** PROJECT



Aerial source: Google Earth

FIGURE A-2. LAKELAND LANE ELIMINATION PROJECTS



Aerial source: Google Earth

FIGURE A-3. MARTIN LUTHER KING, JR. AVE (LAKELAND)

Source: City of Lakeland

FIGURE A-4. INGRAHAM AVE (LAKELAND)

Source: maps.google.com

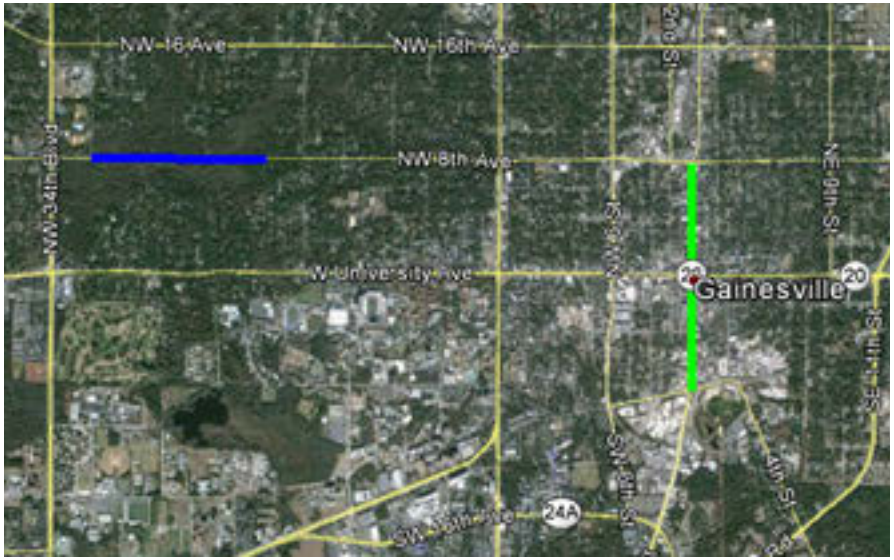
FIGURE A-5. LAKE WIRE DR (LAKELAND)

Source: maps.google.com

FIGURE A-6. E PARKER ST (LAKELAND)

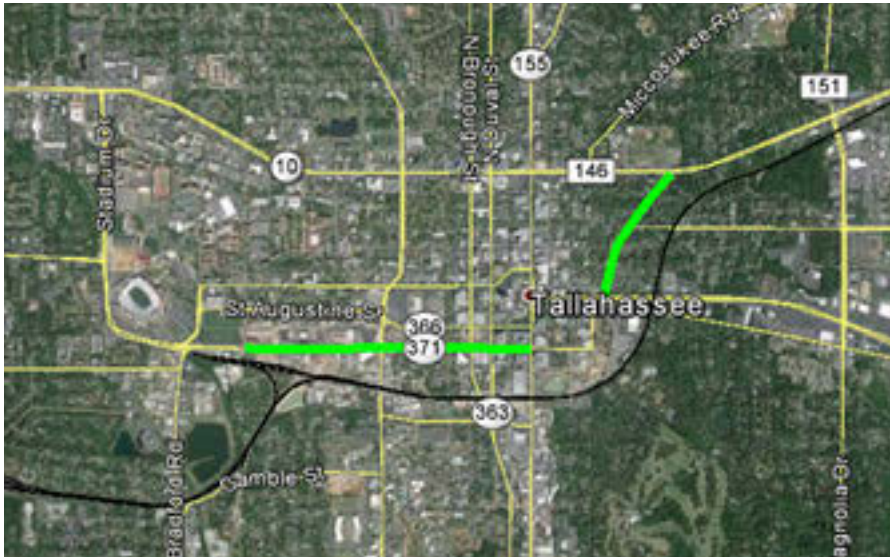
Source: maps.google.com

FIGURE A-7. GAINESVILLE LANE ELIMINATION PROJECTS



Aerial source: Google Earth

FIGURE A-8. TALLAHASSEE LANE ELIMINATION PROJECTS

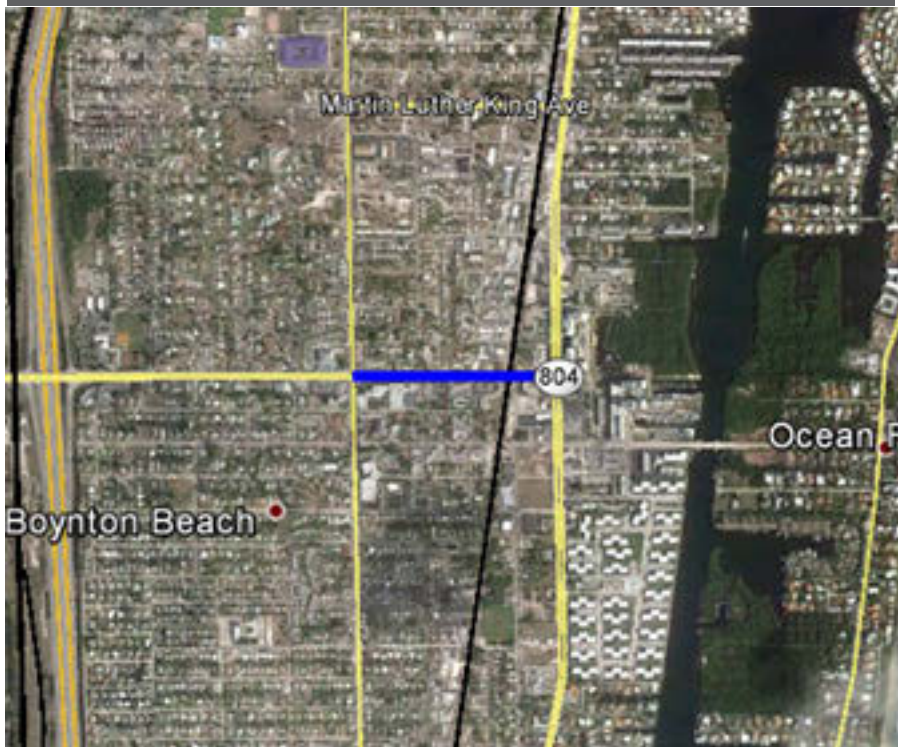


Aerial source: Google Earth

FIGURE A-9. FRANKLIN BLVD (TALLAHASSEE)

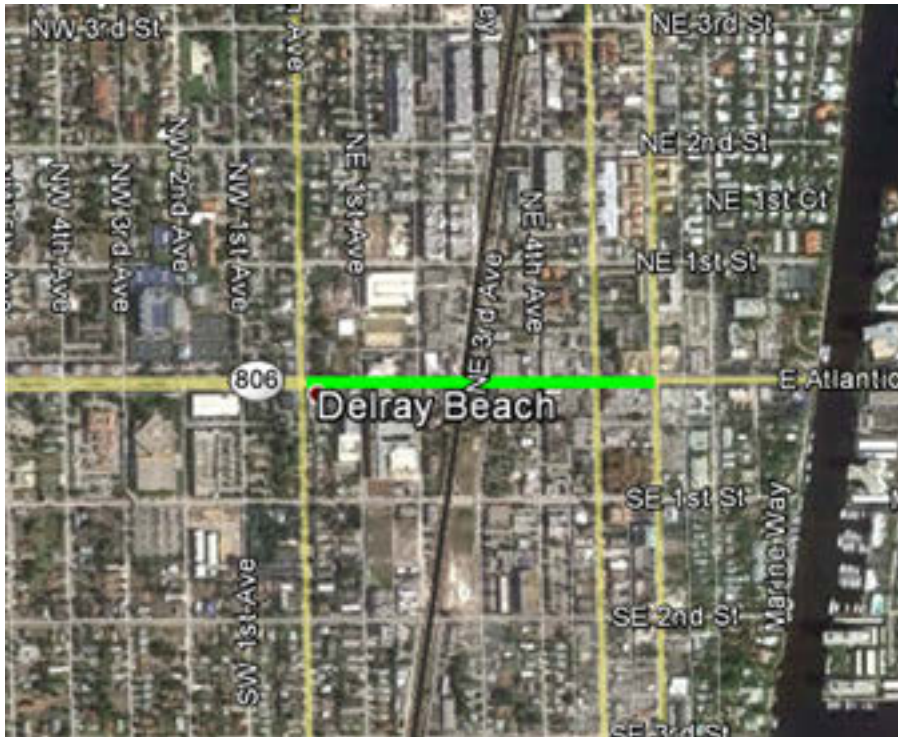
Source: maps.google.com

FIGURE A-10. BOYNTON BEACH LANE ELIMINATION PROJECT



Aerial source: Google Earth

FIGURE A-11. DELRAY BEACH LANE ELIMINATION PROJECT

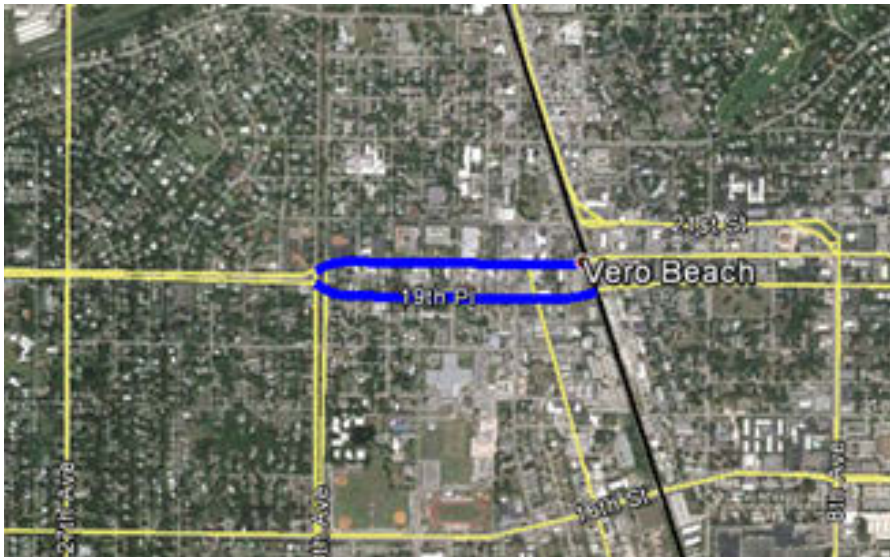


Aerial source: Google Earth

FIGURE A-12. ATLANTIC AVENUE (DELRAY BEACH)

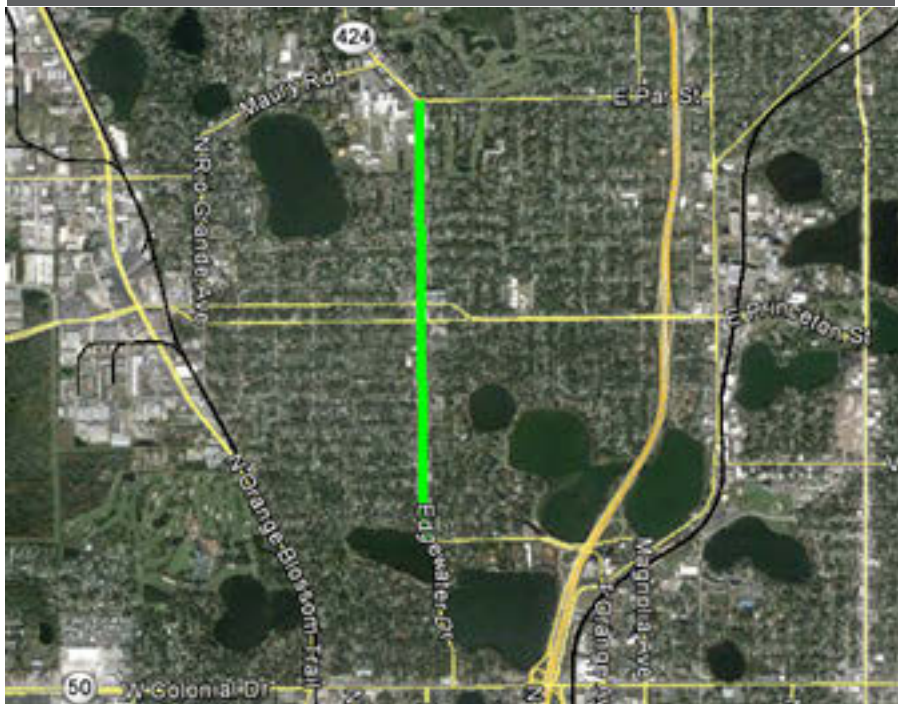
Source: KAI

FIGURE A-13. VERO BEACH LANE ELIMINATION PROJECT



Aerial source: Google Earth

FIGURE A-14. ORLANDO LANE ELIMINATION PROJECT

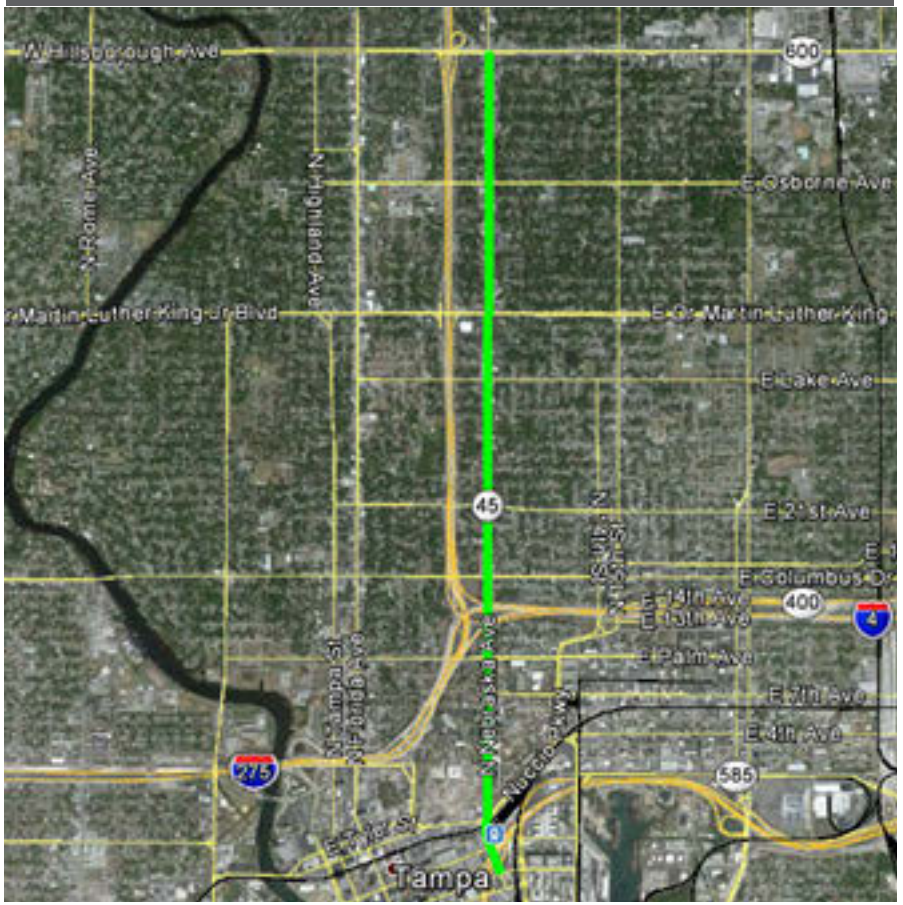


Aerial source: Google Earth

FIGURE A-15. EDGEWATER DRIVE (ORLANDO)

Source: nctcog.org

FIGURE A-16. TAMPA LANE ELIMINATION PROJECT

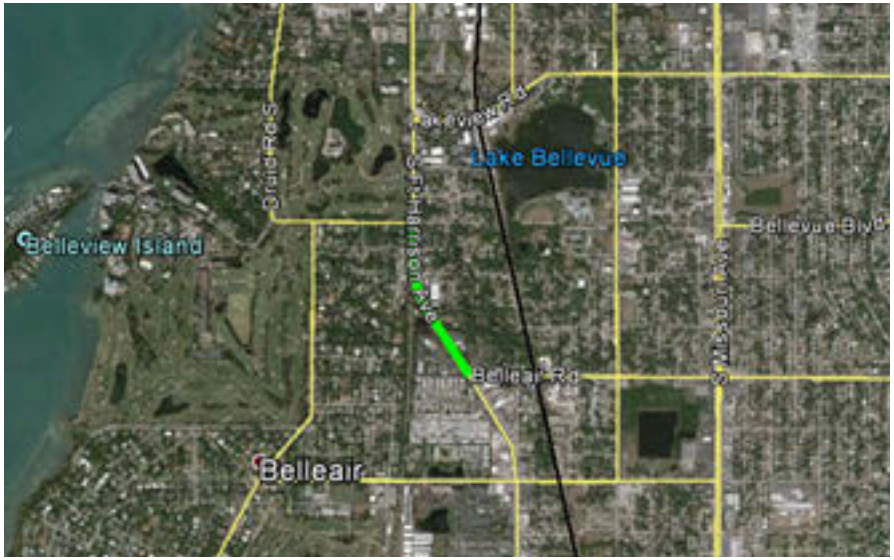


Aerial source: Google Earth

FIGURE A-17. NEBRASKA AVE IN TAMPA

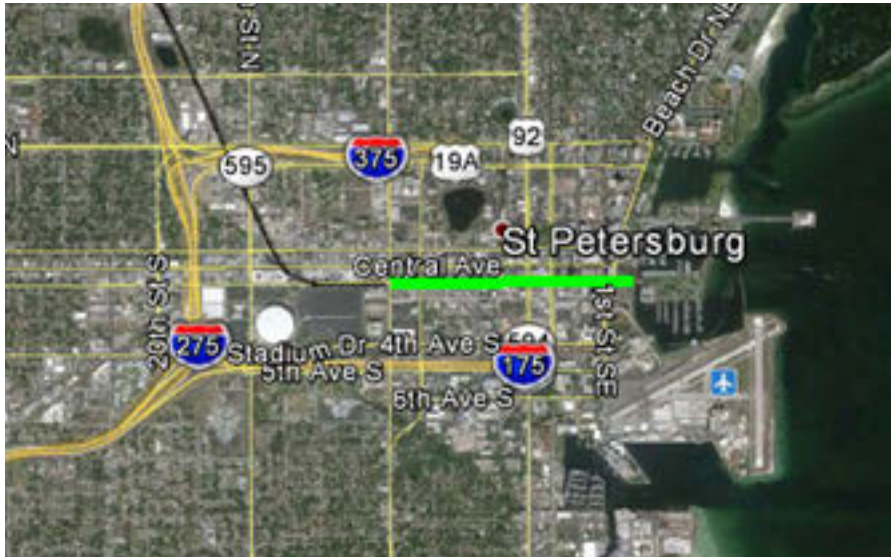
Source: maps.google.com

FIGURE A-18. CLEARWATER LANE ELIMINATION PROJECT



Aerial source: Google Earth

FIGURE A-19. ST. PETERSBURG LANE ELIMINATION PROJECT

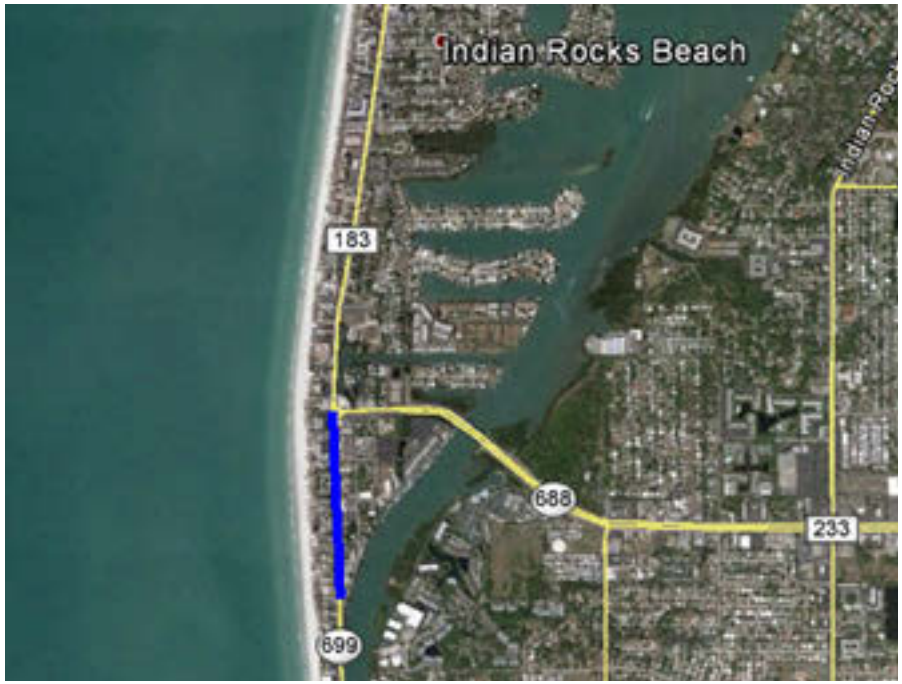


Aerial source: Google Earth

FIGURE A-20. 1ST AVE SOUTH AND PINELLAS TRAIL (ST. PETERSBURG)

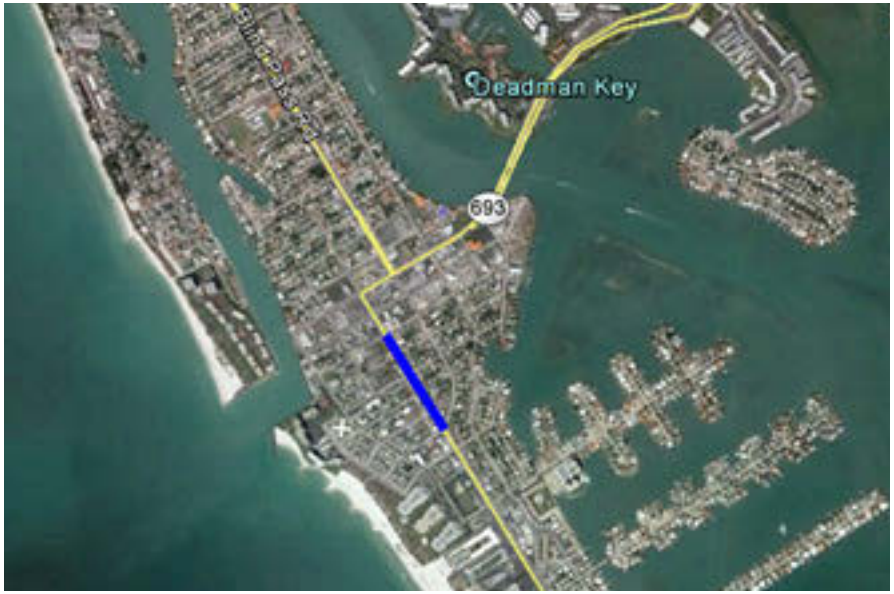
Source: maps.google.com

FIGURE A-21. INDIAN ROCKS BEACH LANE ELIMINATION PROJECT



Aerial source: Google Earth

FIGURE A-22. ST. PETERSBURG BEACH LANE ELIMINATION PROJECT



Aerial source: Google Earth

APPENDIX B
IMPACTS OF LANE ELIMINATION PROJECTS

APPENDIX B: IMPACTS OF LANE ELIMINATION PROJECTS

This section summarizes studies of lane elimination project impacts and provides brief critiques of the studies where warranted.

SAFETY AND OPERATIONAL ANALYSIS OF 4-LANE TO 3-LANE CONVERSIONS

REFERENCE

Lyles, R.W., M.A. Siddiqui, W.C. Taylor, B.Z. Malik, G. Siviy, and T. Haan. Safety and Operational Analysis of 4-lane to 3-lane Conversions (Road Diets) in Michigan: Final Report. Michigan DOT Report RC-1555. Department of Civil and Environmental Engineering, Michigan State University, East Lansing, MI, January 2012.

SYNOPSIS

This study was commissioned by the Michigan DOT to quantify the safety and delay impacts of reducing a cross section from four lanes to three lanes and develop guidelines for identifying candidate sites for road diets. The study looked at 24 existing road diet sites in different environments throughout Michigan, some of which were visited by the authors to qualitatively assess pedestrian and bicyclist operations. Key findings of the authors are the following:

- Based on Synchro analyses of nine signalized intersections, four-to-three conversions tend to create "significant [intersection approach] delay" when average daily traffic (ADT) is greater than 10,000 and peak hour volumes are greater than 1,000. The authors conclude that the 20,000 ADT threshold that has been used by others is too high.
- The authors calculated an average crash modification factor (CMF) of 0.91 for four-to-three conversions but determined that it is not statistically different from 1.0. The authors conclude that simply comparing before and after crash statistics may overestimate the benefits of a four-to-three conversion.
- The authors did not find changes in crash severity resulting from four-to-three conversions to be significant.
- Qualitative assessment led to the conclusion that "well-functioning" road diets from the perspective of pedestrians and bicyclists require supportive land uses, successful traffic calming, and clearly marked pedestrian and bicycle infrastructure.
- Findings varied considerably across the 24 study sites. The authors recommend conducting detailed corridor operational analyses (after initial screening) to support proposed road diets.

COMMENTS

This study is not a before-and-after study but an operational modeling study. The delay assessment determines the threshold at which signalized intersection approaches along the three-lane segment do not meet an LOS D standard. It does not appear that the authors accounted for potential diversion of traffic to other corridors after the four-to-three conversion in their delay assessment or in forming their recommendation for a 10,000 ADT threshold. The study does not appear to have included any travel demand modeling. The authors disregarded crashes that occurred on side streets. Crash frequency on side streets is arguably sensitive to the routing and magnitude of diverted traffic volumes as well as changes made to signal timing as a result of a lane elimination project. Disregarding side-street crashes may not be appropriate. The appendices of the study were not available for review. The authors' crash data are not broken out by crash type in the body of the report but may be more detailed in an appendix.

US 1 CORRIDOR MODIFICATION EVALUATION

REFERENCE

Kimley-Horn and Associates, Inc. US 1 Corridor Modification Evaluation. Executive Summary. FDOT, Delray Beach, FL, May 2009.

SYNOPSIS

This study was commissioned by FDOT to evaluate potential changes to lane configuration (i.e., a reduction from three through lanes to two through lanes) along one-way couplet segments of US 1 in Delray Beach, Florida. The study looked at speed, volume, and crash data collected in the peak season prior to implementation of the corridor modification (April 2007) and in the peak season after implementation of the lane reduction (February 2009). Key findings of the authors are the following:

- Evaluation of the link LOS for the study corridor after the implementation of the lane reduction revealed that overall time-of-day patterns did not significantly change and the corridor continued to operate at an acceptable LOS. Traffic volumes were noted to be lower in 2009 than 2007 but this was not attributed to the lane reduction.
- Based on SYNCHRO analysis of the study area intersections during the a.m. and p.m. peak hours, the most significant increase in delay for an intersection was 5.3 seconds and for a US 1 approach was 5.7 seconds. Some intersections and approaches saw a decrease in delay in the 2009 scenario due to the decrease in volumes. Signal timings were not modified between 2007 and 2009; therefore, the changes in delay are most likely attributable to the decrease in volumes (which, as noted above, was not the result of the lane reduction).
- Speeds along the corridor were observed to be on average 6 miles per hour (mph) slower after the corridor modification. Prior to the corridor modification, the observed operating speeds were 5 to 10 mph over the posted speed limit; however, with the lane reduction, the 85th percentile speed was observed to be generally equivalent to the posted speed limit of 35 mph. The lane reduction resulted in lower operating speeds throughout the corridor.
- Crashes decreased along the corridor after the lane reduction. There was a reduction in rear-end collisions, the most common crash type in the study area, and the intersections that experienced the highest number of crashes before the lane reduction had a dramatic 75% reduction in the number of crashes.

COMMENTS

The above summary is based on an executive summary of the full report and, thus, appendices were not available for review.

GOING ON A ROAD DIET

REFERENCE

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

SYNOPSIS

This report discussed what road diets are, their benefits, the public's view of road diets, other considerations, and example road diet projects including Edgewater Drive in Orlando, FL, and Stone Way North in Seattle, WA. Key findings are listed by topic or project as follows.

EDGEWATER DRIVE – ORLANDO, FL

The FHWA report documents a before-and-after analysis for a 1.5-mile section of Edgewater Drive that was reduced from 4 lanes to 3 lanes, one lane in each direction plus a center turn lane. The study used an average of three years of "before" data and four months of "after" data (annualized to one year). Crash rates, vehicle speeds, and traffic volumes were examined. Findings of the evaluation include the following:

- The road diet reduced crash rates by 34 percent and injury rates by 68 percent, where crash rate and injury rate are defined as crashes or injuries per million vehicle miles driven on the study segment. Before the road diet, the study section experienced a crash every 2.5 days (146 crashes per year). After the road diet was implemented, the study section experienced a crash every 4.2 days (87 crashes per year).
- Traffic speeds were reduced throughout the whole study corridor with the road diet treatment in place.
- Traffic volumes for all modes increased. Initially, the motor vehicle volume decreased by about 2,000 vehicles per day, but it eventually increased to about 500 vehicles per

day more than before the treatment. Total pedestrian volumes increased in the corridor by 23 percent. The largest increase of pedestrians was observed in the volumes crossing Edgewater Drive, indicating that pedestrians may have found crossing three lanes easier than crossing the previous configuration. Total bicycle volumes increased by 30 percent, with the largest increase associated with bicycles crossing Edgewater Drive, similar to the pedestrian volume case.

STONE WAY NORTH – SEATTLE, WA

The FHWA report documents a before-and-after study for a 1.2-mile section of Stone Way North that was reduced from a four-lane roadway with parking on both sides to a three-lane roadway with one through lane in each direction, a center turn lane, bicycle lanes, and parking on both sides. Vehicle speeds, traffic volumes, and crash data were reviewed. Findings of the evaluation include the following:

- Speeds along the study corridor decreased after the road diet was implemented. The 85th percentile speeds dropped by 1 and 3 miles per hour for the northbound and southbound directions, respectively, after the road diet implementation.
- The average daily traffic volumes dropped 6 percent, which was consistent with a citywide trend between 2006 and 2008. Peak hour volumes dropped by approximately 5 percent, and off-peak volumes actually increased for parts of the study corridor. Bicycle volumes increased by 35 percent. Traffic did not divert after the road diet, as indicated by the fact that volume did not increase on the four non-arterial streets commonly perceived as alternatives to Stone Way North.
- Total crashes decreased by 14 percent, injury crashes went down by 33 percent, and angle crashes dropped by 56 percent. There was no change in bicycle crashes, but the bicycle crash rate decreased because the number of cyclists increased. Pedestrian crashes declined by 80 percent.

OTHER CASE STUDIES

The FHWA report states that a number of other case studies on road diets confirm the results from Edgewater Drive and Stone Way North as typical.

- A road diet in Vancouver, Washington, reduced crashes by 52 percent on an arterial with an average daily traffic volume of 17,000 vehicles and decreased speeds by 18 percent. Traffic diversion did not occur, and an overwhelming majority (67 percent) of users surveyed felt safer with the road diet in place.
- A road diet project in Athens, Georgia, on an arterial with an average daily traffic volume of 20,000, resulted in crashes going down by 53 percent in general and 60 percent at unsignalized locations. Traffic diversion was less than 4 percent.
- A road diet in Clear Lake, Iowa, on a downtown segment of US 18 with an average daily traffic volume of 12,000, significantly reduced crashes and decreased aggressive speeding by 52 percent.

CONSIDERATIONS

The FHWA report cites Lagerwey and Burden's paper Road Diets: Fixing the Big Roads, which describes a number of additional case studies and suggests criteria for road diet candidate roadways. These criteria include the following:

- Moderate volumes (8,000-15,000 ADT)
- Roads with safety issues
- Transit corridors
- Popular or essential bicycle routes and links
- Commercial reinvestment areas
- Economic enterprise zones
- Historic streets
- Scenic roads
- Entertainment districts
- Main streets

Lagerwey offered a rule of thumb: If the prospective road is in an urbanized situation with a number of left turns, short blocks, and a signal at every corner, then a road diet could be appropriate in some situations with a daily traffic volume as high as 25,000. On the other hand, if a road has virtually no left turns and few signals, a road diet might be inappropriate if the average daily traffic is over 18,000.

4-LANE TO 3-LANE CONVERSIONS

REFERENCE

Welch, Tom. "4-Lane to 3-Lane Conversions." PowerPoint. Office of Traffic and Safety, Highway Division, Iowa Department of Transportation, Ames, Iowa, 2005.

SYNOPSIS

The Iowa DOT conducted a study of eight four-lane to three-lane conversion projects and highlighted the US 75 Sioux Center project specifically. Key findings are listed by topic or project as follows.

US 75 SIOUX CENTER

A before-and-after study of a four-lane roadway with on-street parking was reduced to a three-lane roadway with bike lanes and a center two-way left-turn lane. Findings of this study include the following:

- The corridor saw an average travel speed decrease of 7 mph (25%).
- The corridor saw an average free flow speed decrease of 3 mph (10%).
- The corridor saw total crashes decrease 57% and personal injury crashes decrease 100%.

OTHER IOWA CASES

Eight other four-lane to three-lane lane reduction studies were evaluated. Related findings include the following:

- Annual average crashes went down for all studies in a range of 27-67%.
- Crash rates went down for all studies in a range of 39-68%.

COMMENTS

The information was presented in a PowerPoint presentation, so appendices and additional information are not available.

MICHIGAN'S OPERATIONS MANUAL: 4-TO-3 LANE CONVERSIONS

REFERENCE

"4-to-3 Lane Conversions." Michigan's Operations Manual. Policy Guide. Michigan DOT, Lansing, MI, November 13, 2009.

SYNOPSIS

This document is a policy guide for four-lane to three-lane conversions to be used to provide policy and guidance for projects of this type in Michigan. The policy focuses on project design life, safety and capacity, pedestrian and bicyclist accommodation, and community support. Key points of information in the document are the following:

- FHWA generally requires improvement projects using Federal-Aid funds to be designed to accommodate the traffic demands that will be experienced throughout the design life of the improvement. Design life can vary with each application of a four-to-three lane conversion. If signing and markings are the major items of work, a project design life of 3-5 years would justify the costs. If the safety benefits are great enough for the project to be considered a safety project, project design life is as calculated according to MDOT time-of-return safety analysis procedures. If the project requires significant pavement construction or reconstruction, project design life will have to increase as the project costs increase and may range from 10 to 20 years.
- Four-to-three lane conversions across the country have been successfully implemented on corridors with an ADT of 15,000 or less, where "success" means improvements in safety (e.g., crash rate reductions of 10-50%) and little adverse impact to traffic flow. In Michigan, a study of lane conversions reported an average 26% reduction in injury crashes, an average 37% injury crash reduction for older drivers, and an average 37% pedestrian crash reduction.
- Michigan DOT and Iowa DOT set guidance limits of about 15,000 to 17,500 ADT as being realistic volumes for four-to-three lane conversions. Depending on conditions, a three-lane cross section can be investigated at higher levels of ADT.
- Four-to-three lane conversions create space for bicycle lanes. The document states that bicycle lanes improve the visibility of bicyclists to motorists and reduce turning conflicts between bicyclists and motorists.
- Business owners worry about loss of customer access following a lane conversion, while motorists worry about a reduction in capacity and an increase in congestion. As a result, the community may be reluctant to support a four-to-three lane conversion. Trial periods of 1-3 years can be used to build community support, if a promise is made to revert back to four lanes if the community does not want to keep the three-lane lane section after the trial period ends. This can be a particularly good approach if the conversion only involves signing and marking.

COMMENTS

The document states that three-lane sections are safer than

four-lane sections at intersections and driveways because it is easier for drivers to find gaps in traffic flow. While this is reasonable as a general statement, it is desirable to have supporting data.
The document states that three-lane sections are better equipped than four-lane sections to handle left-turning traffic without causing a large reduction in capacity and safety. This statement assumes that no exclusive left turn lanes are provided throughout the four-lane section (i.e., the section is a four-lane undivided section). While this is reasonable as a general statement, it would be desirable to have supporting data, as well as data for four-lane sections with exclusive left turn lanes (i.e., for four-lane divided sections). Data relating the percentage of left turns in the traffic stream to the capacity of the section would be particularly informative.

TRAFFIC PRACTICES: A GUIDEBOOK FOR CITY & COUNTY AGENCIES

REFERENCE

Missouri DOT, Missouri LTAP, and Missouri Coalition for Roadway Safety. Traffic Practices: A Guidebook for City & County Agencies. Missouri Coalition for Roadway Safety, published after 2009.

SYNOPSIS

The Missouri Coalition for Roadway Safety (MCRS) is a partnership that includes Missouri DOT. MCRS created a guidebook to provide local transportation agencies with a reference guide for finding information related to traffic control devices. Within this guidebook, there is a section on road diets. Key information provided in the guidebook includes the following:

- Road diets provide multiple safety and operational benefits for all modes of transportation, including:
  - Reducing crossing distances for pedestrians
  - Providing space for pedestrian refuges
  - Improving bicyclist safety when bicycle lanes are added
  - Providing space for on-street parking
  - Reducing rear-end and side-swipe crashes
  - Improving speed limit compliance (i.e., reducing vehicle speeds)
  - Decreasing the number of crashes and crash severity (e.g., a 29% reduction in number of crashes for converting a four-lane roadway to three-lane roadway)
- Roadways with an ADT of 20,000 or less may be good candidates for road diets. Roads with an ADT of 15,000 or less have been shown to positively affect safety, operations, and livability.
- Factors to be considered in evaluating potential road diets include driveway density, transit routes, number of intersections in the corridor, design of intersections in the corridor, and operational characteristics of the corridor.
- Road diets may impact intersection turn lanes, signing, pavement markings, traffic control devices, transit stops, pedestrian facilities, and bicycle facilities.
- The four-lane to three-lane road diet is compatible with single-lane roundabouts.
- Community input should be obtained when proposing a road diet.

COMMENTS

The road diet material in this guidebook is a small section of a larger report but it supplies a list of key resources used to develop the material.

The statement in the guidebook about the compatibility of four-lane to three-lane road diets with single-lane roundabouts would benefit from more discussion.

"MOVING BEYOND THE AUTOMOBILE: ROAD DIET" TRANSCRIPT

REFERENCE

C. Dickerson, Jr. "Moving Beyond the Automobile: Road Diet." Transcript. Streetfilms, April 12, 2011.

SYNOPSIS

This article is a transcript of the video "Road Diets" from the Streetfilms video series "Moving Beyond the Automobile" (MBA). Dan Burden, Mike Sallaberry, and Charles Gandy discuss the benefits of a road diet. Key benefits they describe are:

- Efficient reallocation of space – In a road diet, space is reallocated so the street functions more efficiently. Space can be reallocated to bicycle/pedestrian infrastructure and/or parking. The reallocated space benefits those who live, work, and shop in the corridor instead of the drivers who just drive through the area.
- Positive impact on property values and sales – Generally, property values go up after a road diet, and businesses typically do better after a road diet. After a road diet, motorists drive more prudently, people can shop for parking spaces, and the retail life of the street improves.
- Increased livability – A road diet can result in a quieter street and a street with more social interactions.
- Cost-effectiveness – A road diet is one of the most cost-effective ways to improve a roadway. One of the participants in the video states that a roadway can be converted for about $50,000 per mile.
- Multimodal accommodation
  - Pedestrians – Road diets reduce speeding, make vehicle movements more predictable, and shorten crossing distances.
  - Bicyclists – Many road diets shift space from car lanes to create bike lanes.
  - Drivers – Road diets reduce speeding, which improves safety. Road diets can provide left-turn pockets, which allows through traffic to proceed without shifting lanes or waiting behind turning vehicles.

One of the participants in the video notes that a road diet on Valencia Street in San Francisco in the 1990s resulted in a 140% increase in bicyclist volume. The road diet converted a four-lane street into a three-lane street with bicycle lanes.

COMMENTS

Although the speakers are recognized as having a large base of knowledge on this topic, no references were cited.

REVITALIZING THE URBAN CORE: ROAD DIETS

REFERENCE

Davis, Ennis. "Revitalizing the Urban Core: Road Diets." Metro Jacksonville. August 2, 2010.

SYNOPSIS

This article discusses what a road diet is, its popularity, and example road diet projects. Key points of the article are as follows:

- Road diets are typically successful where the road carries less than 19,000 vehicles per day. They can be successful at up to 23,000 vehicles per day but more extensive changes to the roadway might be required (e.g., traffic calming treatments on parallel roads)
- Popularity is gaining. San Francisco leads the country in number of road diets, with 30 as of 2010, and Hartford, CT, has the greatest number of road diets per capita, with 12 road diets (as of 2010).
- Retail merchants in Seattle are reported to be strong proponents of road diets. This is because reduced vehicle speeds allow for easier and safer parking, improved store access, and increased quality of overall walking conditions and livability—conditions that support improved economic activity.

ROAD DIETS: FIXING THE BIG ROADS

REFERENCE

D. Burden and P. Lagerway. Road Diets: Fixing the Big Roads. Walkable Communities, Inc., March 1999.

SYNOPSIS

The authors explore the history and benefits of road diets. They also discuss processes for implementation, considerations, and typical roadways selected. Key points of the paper are the following:

- Best Model Project – To build community support, the first projects in an area should include roadways with some of the following characteristics:
  - Moderate volumes (ADT of 8,000-15,000)
  - Roads with safety concerns
  - Transit corridors
  - Popular or essential bicycle routes and links

  - Commercial reinvestment areas
  - Economic enterprise zones
  - Historic streets
  - Scenic roads
  - Entertainment districts
  - Main streets
- Communities proposing a road diet have conducted three- to six-day charrettes to gain input and support from a variety of people. Involving the public is essential because road diets can be controversial.
- The "ideal" roadway for a road diet is a four-lane road carrying 12,000-18,000 auto trips per day. Road diets may also be feasible where the roadway carries 19,000-25,000 cars per day.
- The City of Santa Monica is reportedly "most comfortable" with road diets where auto trips do not exceed 20,000 per day.
- Road diets can create more space between automobiles and fixed objects on the roadside.

The paper contains summaries of several road diet before-and-after studies.

COMMENTS

The paper states, "Often [road diets] set the stage for millions or megamillions of dollars in new commercial and residential development. The change can increase the value of existing properties." No supporting data for these statements are provided. Supporting data are not provided for several of the studies described in the paper.

The paper states, "Four-lane roadways significantly discourage mobility and access of transit users (cannot cross these streets), pedestrians, and bicyclists." This statement seems to be an exaggeration, as there are many examples of four-lane roadways that support non-auto uses. It is not uncommon, for example, to find four-lane roads with signalized crossings and/or pedestrian refuge islands. A more informative statement might have focused on fundamental factors (e.g., auto speeds and volumes) and reiterated that site-specific assessment is essential.

The paper describes the ADT of 30,000 carried by Lake Washington Boulevard in Kirkland, WA, as an ADT that "may be beyond the comfort range of many." The paper states that an ADT of 20,000-23,000 is more likely to be acceptable to the community.

COAST HIGHWAY LANE REDUCTION TO GO FORWARD

REFERENCE

B. Henry. "Coast Highway Lane Reduction to Go Forward." The San Diego Union-Tribune, February 1, 2013.

SYNOPSIS

This article is about the plan to eliminate one northbound lane of Coast Highway 101 in Encinitas, CA, which was approved by the City despite concerns expressed by the state Coastal Commission. A public hearing was held, with much voiced support from bicyclists encouraging the project, which is anticipated to create a safer environment for bicyclists.

The Coastal Commission's concern related to the need for the City of obtain a coastal development permit because the lane reduction project "changes the intensity of use of the road." A City civil engineer countered that (1) state officials typically exempt cities from coastal permit requirements for small-scale projects like repaving and (2) this lane reduction project does not change the amount of traffic on the road or add lanes to the road. The City intends to move forward with the project.

COMMENTS

This article provides an example of how multiple agencies and local governments may get involved in a lane elimination project.

COSTS OF COMPLETE STREETS

REFERENCE

"Costs of Complete Streets: What We Are Learning from State and Local Governments." National Complete Streets Coalition, Washington, D.C., 2011.

SYNOPSIS

Taken from the National Complete Streets Coalition website, the fact sheet entitled "Costs of Complete Streets" discusses the cost-effectiveness of converting streets into Complete Streets. This is relevant to lane elimination projects because reallocating street space to non-auto modes is a common goal of lane elimination projects. Key findings from the fact sheet that pertain to lane elimination projects are:

- Complete Streets can be achieved within existing budgets.
  - Projects can be achieved within existing transportation budgets and can sometimes save money that might otherwise have been expended on widening projects.

  - Complete Street policies do not necessarily trigger any additional spending but they do require more careful planning of existing transportation projects. Safety improvements can be incorporated into existing projects instead of seeking separate funding sources.
  - Many projects are modest in size and low cost.
- Citizens support Complete Streets.
- Complete Streets are safer streets.
  - Complete Street policies are a cost-effective way to address pedestrian safety hazards.
  - Examples

    Orlando, FL:
    A four-to-three lane elimination project on Edgewater Drive reduced the frequency of injury crashes from one every nine days to one every 30 days, and the number of people walking and bicycling rose 23% and 30%, respectively.

    Vancouver, WA:
    A four-to-three lane elimination project on Fourth Plain Boulevard reduced vehicle crashes by 52%, and the number of pedestrian crashes dropped from two per year to zero.

    Lee County, FL:
    County staff decided that five roads shown to be four-laned in the Long-Range Transportation Plan (LRTP) should instead be improved as two-lane roads with medians and turn lanes. The total cost for all five projects was reduced by $58.5 million.

    Colorado Springs, CO:
    The City has created miles of bikeways through lane elimination projects. Speeding has been reduced by the projects, and community satisfaction has increased.

PROVEN SAFETY COUNTERMEASURES: ROAD DIET

REFERENCE

"Proven Safety Countermeasures: Road Diet (Roadway Reconfiguration)." FHWA, Washington, D.C., 2012.

SYNOPSIS

This fact sheet discusses the benefits of a road diet and provides background information and guidance on when to implement a road diet. Key facts in the document are:

- Four-to-three lane elimination projects have resulted in a 29% reduction in all roadway crashes. Reductions in rear-end and side-swipe crashes are most common.
- Reduced crossing distances benefit pedestrians.
- Reallocated space can provide room for pedestrian crossing islands as well as bike lanes (which increase safety for bicyclists) and on-street parking. The latter two options create buffer space between pedestrians and vehicles, increasing the safety and quality of travel of pedestrians.
- If there is only one through lane in each direction, multiple-threat crashes (i.e., when the driver in one lane stops for a pedestrian but the driver in the adjacent lane does not) are reduced.
- Reduced vehicle speeds are associated with improved speed limit compliance and decreased crash severity.
- Roadways with ADTs of 20,000 or less may be good candidates for a road diet. Roads with ADTs of 15,000 or less have been reported to have very good results in the areas of safety, operations, and livability. Other considerations are driveway density, transit routes, and the number and design of intersections along the corridor.

COMMENTS

The article has many key resources cited at the end.

ROAD DIETS – WHITE PAPER

REFERENCE

Kittelson & Associates, Inc., "Road Diets – White Paper." Portland, OR, January 11, 2011.

SYNOPSIS

This white paper is one in a set of five developed for the City of Ashland's Transportation System Plan update to present information on tools, opportunities, and potential strategies to help develop a green transportation community. It presents general information on road diets including example projects and their effects. A table in the report summarizes before-and-after data for three road diet projects. An additional project is presented in more detail as a case study.

According to the white paper, road diets provide the following benefits:

- Improved traffic flow – The reduced number of vehicle

travel lanes in the same direction reduces lane changes and weaving, which improves vehicle flow along the corridor.

- Vehicle speeds reduced closer to desired operating speed – The narrowed roadway and features such as on-street parking and bike lanes create a "tunnel effect" that naturally slows motorists.

- Reduced conflicts and reduced number of crashes – The reduced number of automobile travel lanes reduces the number of conflict points along the roadway segment. The number of crashes decrease due to the reduced number of conflict points, the slower operating speeds, and the increase in motorists' attentiveness resulting from higher levels of street activity. National research indicates that converting a four-lane undivided road to a three-lane road with two through lanes and a center turn lane reduces crashes by approximately 29%.

- A more attractive environment for pedestrians and bicyclists – Reallocating existing right-of-way to designate space exclusively for pedestrian and/or bicycle travel provides a more inviting and comfortable setting for pedestrians and bicyclists. Reduced vehicle speeds and the streetscape improvements that often accompany road diets also improve the quality of travel for pedestrian and bicyclists.

The white paper identifies the following situations where extra care needs to be taken to make a road diet successful:

- Relatively high access density – Accesses and driveways should be consolidated to help reduce conflict points in the corridor.

- Offset minor streets at intersections – Offset minor street approaches at intersections should be realigned and/or consideration should be given to restricting access to/from those minor streets to right-in/right-out only.

- Heavy existing traffic congestion – Efforts should be made to mitigate existing traffic congestion along a corridor with intersections currently operating at or near capacity before attempting to implement a road diet on the corridor.

NICKERSON STREET RECHANNELIZATION BEFORE-AND-AFTER REPORT

REFERENCE

"Nickerson Street Rechannelization: Before and After Report." City of Seattle, WA, March 1, 2012.

SYNOPSIS

This study by the Seattle DOT describes the effects of reconfiguring the travel lanes on Nickerson Street from 13th Avenue West to Florentia Street. The goal of the project was to improve pedestrian safety by reducing pedestrians' exposure to traffic and reducing vehicle speeds. Prior to rechannelization, there were two travel lanes in each direction. The street was reconfigured to one lane in each direction with a two-way left turn lane in the center and bicycle lanes in each direction. Two new marked crosswalks were installed. Key findings of the study were as follows:

- Speed – The percent of drivers traveling over the speed limit was reduced by more than 60% in both directions. The percent of "top-end" speeders (those traveling more than 10 mph over the posted speed) was reduced by more than 90% in each direction. The 85th percentile speed was reduced by 18% in the westbound direction and 24% in the eastbound direction.

- Safety – The rechannelization and installation of marked crosswalks reduced collisions by 23% one year after project completion.

- Volume – Daily and p.m. peak traffic volumes changed very little with the implementation of the project. A.M. peak volumes decreased 10% after the implementation of the project.

- Diverted traffic – The project does not appear to have diverted traffic to other corridors. In fact, according to the study, traffic volumes on potential diversion routes decreased after implementation of the Nickerson Street project.

- Freight use – The number of freight vehicles on Nickerson street rose "slightly" after project implementation; freight vehicles are approximately 5% of the vehicles using the corridor. Large trucks (such as semi-trailers) make up approximately 2% of total traffic, and such trucks continue to use the corridor as a through route and as a means of accessing the surrounding neighborhood.

APPENDIX C
EXISTING PROCESSES FOR REVIEWING LANE ELIMINATION REQUESTS

APPENDIX C: EXISTING PROCESSES FOR REVIEWING LANE ELIMINATION REQUESTS

INTRODUCTION

The purpose of this appendix is to identify and describe existing processes for reviewing lane elimination requests. This information will provide District staff with examples of guidelines and processes for reviewing lane elimination requests.

The processes described in this chapter include the existing District Four and District Seven processes. Also included are Michigan DOT's process and the process used in the City of Sunnyvale, California. The remaining process described in this guide is a conceptual process outlined by District Five; the District Five process is transit-focused but contains elements applicable to other types of lane elimination projects.

FEW FORMAL PROCESSES FOR REVIEWING LANE ELIMINATION REQUESTS EXIST.

Overall, efforts to identify existing processes for reviewing lane elimination requests revealed that few such processes have been formalized. While many agencies and governments make use of information about the impacts of lane elimination when proposing or reviewing lane elimination projects, most do not have formal processes or guidelines to assist them in their efforts.

FDOT DISTRICT FOUR DRAFT PROCESS

OVERVIEW

District Four's process was developed to create consistency in the District's handling of an increasing number of lane elimination requests from local governments and other agencies. The process is currently in draft form. The process is intended to give applicants as much information as early as possible to help them decide whether or not the lane elimination request is feasible.

DESCRIPTION

Table C-1 summarizes the characteristics of the draft District Four review process. The draft District Four process has been circulated among other Districts and Central Office. Comments on the process received to date suggest the following improvements:

- Add a definition of lane elimination to the process document.
- Note that towns, TPOs, counties, and developers may also be applicants.
- Consider that local governments without the technical resources and/or funding might ask FDOT to conduct lane elimination studies on their behalf. This may occur through the identification of MPO/TPO priorities and Work Program development.
- Note that State roads might also be part of the National Highway System (NHS) or Strategic Highway Network (STRAHNET).
- Include access management classification as an issue of concern and a data need.
- Another issue to address is whether or not federal funding was used to widen a given roadway to its current cross section.
- Consider separating the process from the required technical documentation. There may not be a need to include representatives of each office in all stages.
- The District Coordinator could conduct a preliminary review of submitted documentation and analyses to ensure that the documentation and analyses are complete before they are transmitted to all of the offices.
- Clarify the text by replacing "challenges" with "fatal flaws." The process should only be stopped for fatal flaws.
- Add the following to the list of topics to be addressed at the initial meeting:
  - Consistency with previous Project Development and Environment (PD&E) commitments
  - Potential impacts to active construction projects in the area
  - Alternatives to the proposed lane elimination
  - Potential design variances or exceptions
  - Benefits to non-automobile modes, including Americans with Disabilities Act (ADA) and transit access improvements
  - Utility impact assessment and utility coordination plan

  - Proposed modifications to bridges
  - Proposed modifications to traffic signal and sign structures

- Consider including a discussion of potential commitments in the initial meeting. This would provide the applicant with more guidance for developing the conceptual implementation plan in the concept report.
- Consider eliminating the Central Office notice requirement in Stage 1, as the applicant may choose to withdraw the lane elimination request after the initial meeting.
- Add the following to the concept report requirements:
  - Volumes and analyses for existing and future no-build and build scenarios (not just near- and long-term volumes and analyses)
  - Possible relocation of delivery zones and truck staging areas
  - Coordination with the county emergency management department and the regional planning council regarding hurricane evacuation routes
  - Public involvement documentation (in Stage 2 instead of Stage 3)
  - Conceptual access management plan
  - Assessment of modifications to medians and median openings
  - Impact on drainage, wetlands, surface waters, and habitats, including how impacts will be mitigated and what level of permitting is required (if any)
  - Impacts to existing utilities and utility easements and discussion of utility relocations
  - Impacts to existing bridges and traffic signal and sign structures
  - Before-and-after evaluation of multimodal level of service (MMLOS) consistent with the latest edition of the FDOT Quality/Level of Service Handbook
  - Consider clarifying that the concept report should present conceptual designs that do not degrade existing substandard roadway elements.
  - Consider including an application document.
  - Consider requiring the District Secretary to sign off on the District staff recommendation.

TABLE C-1. SUMMARY OF FDOT DISTRICT FOUR LANE ELIMINATION REVIEW PROCESS

Under what circumstances is the process used?	The process is used when an applicant approaches the District to discuss a potential or proposed lane elimination project on a State road.
To whom does the process apply?	The applicant is typically a city, county, or MPO.
What issues of concern are addressed?	Issues of concern are: • Status of the roadway as an Evacuation Route and/or part of the Strategic Intermodal System (SIS) • Consistency of the proposed project with the applicable Long-Range Transportation Plan, Transit Development Plan, Transportation Improvement Plan, and Comprehensive Plan and with any applicable subarea master plans and visions • Anticipated change (if any) in jurisdictional responsibility for ownership or maintenance of the roadway • Plan for obtaining input and review from businesses, residents, and other stakeholders • Plan for receiving endorsement from elected officials • Impacts to the regional transportation system • Community impacts (e.g., traffic pattern and circulation changes, neighborhood impacts, changes in peak period levels of congestion, consistency with redevelopment plans, site access impacts, impacts on transit service, and impacts on trucks and designated truck routes)
What departments or offices are involved and to what extent?	The Planning & Environmental Management, Design, Traffic Operations, Modal Development, Maintenance, Permitting, and Legal Offices are equally involved.
To what level of detail is the request analyzed?	Initially, District review is high-level and preliminary. Later, the project concept report is reviewed in great detail.
Who coordinates the review?	A District Lane Elimination Review Coordinator is assigned. To date, the District Coordinator has represented the Planning & Environmental Management Office.
How long does the process take? Is it phased?	The process is divided into three stages. The length of the process depends on the speed with which the applicant moves forward. Turnaround times for specific District Four staff activities are specified in the draft process document.

TABLE C-1. SUMMARY OF FDOT DISTRICT FOUR LANE ELIMINATION REVIEW PROCESS

How much flexibility does the process allow?	Stage 1 allows for a discussion of analysis requirements and methodology with the applicant. District reviewers are allowed to include or exclude analysis requirements on a case-by-case basis. District reviewers can opt to require the concept report to address existing posted speed and desired posted speed, evacuation route impacts, the need to add/remove/modify traffic signals, impacts on school crossing locations and/or midblock pedestrian crossing locations, impact on parking supply, and case-specific special considerations such as railroad crossing improvements. Follow-up meetings between the District and applicant may occur as needed.
What project components are reviewed?	The reviewed project components are: • Project location • Project limits • Project length • Proposed change in lane configuration • Project schedule • Transportation analysis • Design plans (conceptual and detailed) The District also review's the applicant's impact assessment (referred to as a concept report). This assessment must include: • Conceptual design plans (including proposed typical sections) that meet FDOT design standards for all transportation modes • Need for any design variations or exceptions • Near- and long-term traffic forecasts with and without the proposed project (with changes in travel patterns clearly shown) • Near- and long-term LOS and queuing analyses for intersections and segments in the impact area • Mitigation to address any significant and adverse LOS impacts on State roads and the regional transportation system resulting from the lane elimination • Impact on pedestrian and bicycle infrastructure (e.g., sidewalks, bicycle lanes, and multi-use paths) and connectivity • Impact on transit routes and/or transit stop locations (including appropriateness of turn radii and lane widths) • Impact on trucks and truck routes (including appropriateness of turn radii and lane widths and possible relocation of designated truck routes) • Crash analysis (including five years of crash data for pedestrian/bicycle crashes, three years of crash data for all other types of crashes, identification of high-crash locations, and a Crash Modification Factor assessment) • Conceptual funding plan (including cost estimates and funding sources) • Conceptual implementation plan (including an implementation schedule and a list of the commitments that the applicant will make in support of the lane elimination proposal) At the application stage, the District requires a resolution by the appropriate local government governing body, documentation of public involvement activities and public comment, a final concept report (as applicable), a final funding plan (as applicable), and a final implementation plan (as applicable).

TABLE C-1. SUMMARY OF FDOT DISTRICT FOUR LANE ELIMINATION REVIEW PROCESS

How are jurisdictional transfers accounted for?	Jurisdictional transfers are mentioned but not addressed in detail. The process directs District staff to discuss jurisdictional transfers with the applicant in Stage 1 of the review process.
How is functional classification accounted for?	Functional classification is accounted for with respect to a road's status as an Evacuation Route and/or part of the SIS.
Who makes the decision to approve or deny a lane elimination request?	The District makes the decision to approve or deny a lane elimination request. Central Office staff are updated in each of the three stages of the review process.

FDOT DISTRICT SEVEN DRAFT PROCESS

OVERVIEW

District Seven's process is currently in draft form. The process begins with an initial meeting with the applicant, at which time District Seven staff provide the applicant with a Lane Reduction Request Form, request the applicant to conduct public involvement activities, and request the application to coordinate with the MPO/TPO, adjacent jurisdictions, and other agencies that might be affected by the lane elimination project. District Seven staff use information from the initial meeting to develop an evaluation methodology. The evaluation is documented in a report that is submitted with the Lane Reduction Request Form to the District for review.

DESCRIPTION

Table C-2 summarizes the characteristics of the draft District Seven review process. The overall process has not been published but was described by District Seven staff for the purposes of this document.

The application form states that District Seven applies a context-sensitive solutions (CSS) approach to projects and activities. This approach recognizes to seek input from a range of stakeholders, preserve community features and resources, and balance safety and mobility. CSS also considers the needs of multiple transportation modes.

District Seven staff report that, as of September 9, 2013, two lane elimination requests were withdrawn based on public input. In three Resurfacing, Restoration, and Rehabilitation (RRR) projects, lane elimination was considered but did not move forward, based on the results of traffic analyses. A citizen-requested lane elimination was determined to be unnecessary and infeasible. Two requests in District Seven are active.

MICHIGAN DOT PROCESS

OVERVIEW

The Michigan DOT process takes the form of a 2009 policy intended to provide guidance for evaluating proposed conversions of four-lane roads to three-lane roads. The policy was created in response to an increasing statewide level of interest in such conversions.

DESCRIPTION

Table C-3 summarizes the characteristics of the Michigan DOT review process, as contained in the Michigan DOT lane elimination policy memorandum. The threshold of 15,000 vehicles per day is based on background information that accompanies the policy. The background information indicates that a volume lower than 15,000 vehicles per day have "a positive effect on crash reduction, with only minor or no effect on quality of traffic flow." If the volume exceeds 15,000 vehicles per day, the background information indicates that "conversions have been successful, but inconvenience due to congestion increases" may occur, so the project must be supported by a traffic analysis and public involvement. The background information includes crash reduction statistics.

The policy states that four- to three-lane conversion projects are eligible for Federal-Aid funding if issues related to traffic operations, consistency with the LRTP, and public involvement have been successfully addressed. Pilot projects (which should be in place for at least one year) may be eligible for Federal-Aid funding, with the agreement of FHWA.

Switching back to a four-lane section after non-pilot three-lane implementation will not include FHWA participation if Federal-Aid funds were used to create the three-lane section unless crash analysis, LOS analysis, or unanticipated issues justify it.

TABLE C-2. SUMMARY OF FDOT DISTRICT SEVEN LANE ELIMINATION REVIEW PROCESS

Under what circumstances is the process used?	The process is used when an applicant submits an application for a proposed lane elimination project on a State road.
To whom does the process apply?	Applicants include local governments and citizens.
What issues of concern are addressed?	Issues of concern are: • Consistency with LRTP • Consistency with local community vision plan(s) • Consistency with regional trail, bus, and/or rail plans • Anticipated benefits to surrounding community • Effect on local businesses and liability for any damages to businesses • Effect on adjacent communities • Anticipated benefits to regional traffic • Effect on surrounding roadway network • Effect on local transit routes • Public support
What departments or offices are involved and to what extent?	The Project Development and Analysis section coordinates the review. Comments from other sections in the District are solicited and consolidated.
To what level of detail is the request analyzed?	Requested documentation for the methodology meeting includes: • Preliminary traffic studies • Preliminary plans and typical sections (existing and proposed) • Aerial photos • Elected official, stakeholder, and public support documentation • Conceptual cost estimate

TABLE C-2. SUMMARY OF FDOT DISTRICT SEVEN LANE ELIMINATION REVIEW PROCESS

What project components are reviewed?	The application form requires the following: • US route number and/or State road number • SIS and FIHS status • NHS designation • Evacuation route status • Roadway identification number • Location of roadway in a protected area • Location of roadway in Multimodal Transportation District, Transportation Concurrency Exception Area, Community Redevelopment Area, Dense Urban Land Area, etc. • Project endpoints (including milepoints) • Functional classification • Access classification • Corridor width • Corridor preservation width • Posted speed limit • Roadway design • Unique design features • Pedestrian features • Roadway ownership and whether or not a jurisdictional transfer is being requested • Characteristics of parallel roadways (location, width, speed limit, pedestrian features, on-street parking, and roadway design) • Existing annual average daily traffic (AADT) and LOS • Future AADT and LOS • LOS standard • A.M. peak hour • P.M. peak hour • Traffic signal characteristics (type and location) • Type and frequency of existing transit service • Crash analysis • Description of existing conditions and the proposed project • Desired implementation date • Estimated cost • Funding source and implementation plan • Link to bus rapid transit or rail implementation in corridor

TABLE C-2. SUMMARY OF FDOT DISTRICT SEVEN LANE ELIMINATION REVIEW PROCESS

How are jurisdictional transfers accounted for?	The application form explicitly asks if the applicant is requesting a transfer of roadway jurisdiction.
How is functional classification accounted for?	The application form explicitly asks for roadway functional classification.
Who makes the decision to approve or deny a lane elimination request?	The District makes the decision to approve or deny a lane elimination request.
Who coordinates the review?	The Project Development and Analysis section coordinates the review. Comments from other sections in the District are solicited and consolidated. The point of contact on the application is Waddah Farah, Project Development and Analysis Administrator.
How long does the process take? Is it phased?	A proposed lane elimination request has yet to make it through the entire process. The process is informally broken into three phases: initial meeting, application, and review.
How much flexibility does the process allow?	Applicants are able to participate in an initial meeting with District Seven staff, at which time they receive the application form and develop an understanding of the required evaluations and submittals. District staff report that some applicants reconsider lane elimination projects after realizing the extent of analysis required. The application form must be fully completed before District Seven staff will process it.

TABLE C-3. SUMMARY OF MICHIGAN DOT LANE ELIMINATION REVIEW PROCESS

Under what circumstances is the process used?	The process applies to lane elimination projects on the Federal-Aid Highway System. It covers only the conversion of four-lane roadways to three-lane roadways.
To whom does the process apply?	Applicants include local agencies. The process also applies when Michigan DOT proposes a lane elimination project.
What project components are reviewed?	Lane elimination projects in which four through lanes are converted to two through lanes and one center turn lane are allowed without further study if (a) the road carries no more than 15,000 vehicles per day and (b) public involvement activities precede the lane elimination request. Michigan DOT will consider lane elimination requests on roads that carry more than 15,000 vehicles per day if public involvement has occurred and a study shows that LOS is not significantly degraded at intersections in or adjacent to the segment where lane elimination is proposed. Documentation of the following must be provided by the applicant if the design year average daily traffic (ADT) exceeds 15,000 vehicles per day: • Operational analysis showing that the three-lane section will operate at LOS C (preferred) or LOS D (if necessary to meet traffic calming and safety needs) • Consistency of the project's design year ADT with the LRTP • Project design life • Public support for the project or for a pilot project
What issues of concern are addressed?	Issues of concern are: • Involvement of the Federal Highway Administration (FHWA) • Level of public support (including driver and business community support) • Intersection LOS (i.e., how well the future section will handle traffic demand through the design year) • Environmental impacts (i.e., air quality requirements for lane elimination in an Environmental Protection Agency (EPA) non-attainment area and the appropriate type of environmental document) • How to respond to a community that wants to switch back to a four-lane section

TABLE C-3. SUMMARY OF MICHIGAN DOT LANE ELIMINATION REVIEW PROCESS

What departments or offices are involved and to what extent?	The process does not state which Michigan DOT departments or offices are involved. FHWA is involved when lane elimination is proposed for a road on the Federal-Aid Highway System. When Federal-Aid funds are to be used to implement the lane elimination project, FHWA processes the lane elimination request as it would the funding of a more typical highway project. The Michigan DOT policy elaborates on the FHWA process.
To what level of detail is the request analyzed?	Michigan DOT appears to get involved in the design phase, with the expectation that the applicant has proactively conducted public involvement activities.
Who coordinates the review?	Documentation is submitted to the FHWA Area Engineer following review and recommendation by Michigan DOT.
How long does the process take? Is it phased?	The duration and phasing of the process are unknown.
How much flexibility does the process allow?	Screening based on AADT thresholds will allow some lane elimination projects to be approved without an operational analysis. Lane elimination projects for corridors with AADTs in excess of the thresholds will require an operational analysis. The target LOS threshold can be lowered from C to D to accommodate other community goals. Concurrence of Michigan DOT staff is likely required.
How are jurisdictional transfers accounted for?	The process does not discuss jurisdictional transfers.
How is functional classification accounted for?	Functional classification does not appear to be a consideration, although limiting the process to existing interrupted-flow, four-lane roadways will eliminate most local streets, the largest interrupted-flow highways, and all limited-access facilities.
Who makes the decision to approve or deny a lane elimination request?	Documentation is submitted to the FHWA Area Engineer following review and recommendation by Michigan DOT.

CITY OF SUNNYVALE (CALIFORNIA) PROCESS

OVERVIEW

The City of Sunnyvale process is rooted in policy language in the City's General Plan. A "Policy on the Allocation of Street Space" was proposed by the City's Bicycle and Pedestrian Advisory Commission and adopted by the City Council in 2009. The Council amended the General Plan in 2011 to incorporate the policy. The purpose of the policy is "to provide direction on how to consider all modes of transportation when allocating roadway space, particularly in situations that could require the removal of travel lanes [or] on-street parking...." Application of this policy generally includes conducting a standardized set of evaluations and completing a standardized evaluation table.

DESCRIPTION

Table C-4 summarizes the characteristics of the City of Sunnyvale analysis and review process. This information was obtained from the City's "Policy on the Allocation of Street Space" and examples of how the Policy has been used.

City staff note that it is not always possible to meet all objectives within the available right-of-way. In such cases, safety takes precedence over capacity and providing for multimodal travel takes precedence over providing on-street parking.

FDOT DISTRICT FIVE CONCEPTUAL PROCESS

OVERVIEW

District Five has prepared a conceptual framework for evaluating lane elimination requests when such requests are intended to create a dedicated transit lane. This framework has not been finalized or applied. The purposes of the conceptual framework are the following:

- Assist the District in ascertaining whether or not a proposed dedicated transit lane is consistent with the goals of the community and region
- Assist the District in ascertaining whether or not a proposed dedicated transit lane is consistent with FDOT's mission
- Assist communities in implementing projects that are consistent with FDOT's mission

FDOT's mission is providing a safe transportation system "that ensures the mobility of people and goods, enhances economic prosperity, and preserves the quality of our environment and communities."

DESCRIPTION

Table C-5 summarizes the characteristics of the District Five conceptual review process, as described by District Five staff.

SUMMARY OF EXISTING LANE ELIMINATION REVIEW PROCESSES

As noted in the introduction section of this document, few lane elimination review processes have been formally documented. Given the complexity of lane elimination projects, formal documentation of a review process is likely to be beneficial to reviewers in that it provides a checklist of issues to assess. Formal documentation of a process is also likely to be beneficial to applicants because it clarifies the level of analysis that is needed for District reviewers to comprehensively review a lane elimination request.

EXISTING FORMAL PROCESSES FOR REVIEWING LANE ELIMINATION REQUESTS ARE ALL CONCERNED WITH PROJECT FUNDING, COMMUNITY SUPPORT, AND IMPACTS ON TRAFFIC OPERATIONS. MOST EXISTING FORMAL PROCESSES FOR REVIEWING LANE ELIMINATION REQUESTS ARE CONCERNED WITH ENVIRONMENTAL IMPACTS, SAFETY IMPACTS, CONSISTENCY WITH PLANNED AND PROGRAMMED PROJECTS, AND THE NEEDS OF PEDESTRIANS AND BICYCLISTS.

TABLE C-4. SUMMARY OF CITY OF SUNNYVALE LANE ELIMINATION REVIEW PROCESS

Under what circumstances is the process used?	City staff can propose a lane elimination project to support other City initiatives (e.g., maximizing the accommodation of pedestrians and bicyclists on City streets).
To whom does the process apply?	The process guides City staff and members of the City Council.
What project components are reviewed?	City staff prepare the following analyses: • Environmental review (conducted with respect to the California Environmental Quality Act; some projects may be exempt; some projects may require the completion of a checklist and identification of environmental mitigation projects) • Fiscal impact (summary of city and/or grant funds available to implement the lane elimination) • Public contact (documentation of public notices, public involvement events, publicly available project information, and comments received from the public) • Parking impact assessment (documentation of on- and off-street parking demand and occupancy, if applicable) The existing roadway configuration and multiple alternatives are assessed with respect to criteria and standards in a standardized evaluation table. These criteria and standards are: • Vehicle travel lane width (standard: 10 feet) • Parking lane width (standard: 8 feet) • Bike lane width (standard: 4-5 feet) • Buffer zones, if included (standard: N/A) • A.M. peak hour intersection LOS (standard: LOS D) • P.M. peak hour intersection LOS (standard: LOS D) • Roadway capacity (standard: 10,000 vehicles/day/lane) • Sidewalks (standard: present) • Crash reduction potential (standard: "high") • Crosswalk installation potential (standard: low travel speed/volume) • Speed compatibility and speed reduction potential (standard: 85th percentile speed > 5 mph greater than posted speed when posted speed is < 45 mph) Data are collected such that City staff can evaluate the above items. For example, City staff conduct a speed study.

TABLE C-4. SUMMARY OF CITY OF SUNNYVALE LANE ELIMINATION REVIEW PROCESS

What issues of concern are addressed?	Issues of concern are: • Environmental impacts • Fiscal impacts • Public involvement • Safety • Meeting design criteria and standards • Parking impact
What departments or offices are involved and to what extent?	City Public Works staff conduct the required analyses.
To what level of detail is the request analyzed?	City staff review proposed lane elimination projects with respect to environmental impacts, fiscal impacts, and public involvement, based on recent examples of how the policy has been applied.
Who coordinates the review?	City Public Works staff coordinate the required analyses and the presentation of results to the City Council.
How long does the process take? Is it phased?	The duration of the process is unknown. It is not phased.
How much flexibility does the process allow?	The process appears to require multiple analysis alternatives. City staff appear to have discretion in developing the alternatives and designing the analyses.
How are jurisdictional transfers accounted for?	The policy appears to apply only to City streets.

TABLE C-4. SUMMARY OF CITY OF SUNNYVALE LANE ELIMINATION REVIEW PROCESS

How is functional classification accounted for?	Functional classification does not appear to be a consideration, although it might influence roadway design criteria and standards.
Who makes the decision to approve or deny a lane elimination request?	The City Council makes the final decision based on a staff report.

TABLE C-5. SUMMARY OF FDOT DISTRICT FIVE CONCEPTUAL LANE ELIMINATION REVIEW PROCESS

Under what circumstances is the process used?	The process applies when a local government or other agency proposes converting general-purpose through lanes on a State roadway to dedicated transit lanes.
To whom does the process apply?	The process applies to communities, municipalities, and regions.
What project components are reviewed?	The framework considers three general project elements: • Community commitment (consistency with the goals, commitments, and actions of the community and region) • Technical analyses (traffic operations and impacts) • Implementation feasibility (funding and approvals) Implementation feasibility is assessed only if the District determines that there is adequate community commitment behind the proposed lane elimination project and the project is technically feasible. Technical analyses should address the following: • Existing and future roadway capacity • Existing and future delay • Short- and long-term person throughput • Short- and long-term LOS • Short- and long-term traffic impacts on adjacent roadways
What issues of concern are addressed?	Issues of concern are: • Support of community and regional leadership bodies • Existing transit ridership and ridership trends • Potential for existing and/or proposed land uses to increase transit ridership • Adoption of transit-supportive land uses in the comprehensive plan • Inclusion of the transit service that will use the dedicated lane in the LRTP, transit agency's vision, or TDP • Satisfying the community and region's adopted LOS standards • General feasibility of roadway configuration scenarios and concepts of operations (using adopted land uses) • Extra-jurisdictional impacts and willingness of adjacent jurisdictions to support inclusion of the dedicated lane project in the LRTP • Identification and securement of funding for detailed planning and engineering

TABLE C-5. SUMMARY OF FDOT DISTRICT FIVE CONCEPTUAL LANE ELIMINATION REVIEW PROCESS

What departments or offices are involved and to what extent?	The review team should consist of traffic, roadway design, transit, and community planning experts who are experienced in urban transportation and community development issues.
To what level of detail is the request analyzed?	The conceptual process focuses on traffic operations and person throughput. The conceptual process does not discuss pedestrian and bicycle issues or access to transit.
Who coordinates the review?	The process is conceptual, but it is possible that the District's Intermodal Systems Development office would coordinate a lane elimination request review.
How long does the process take? Is it phased?	The duration of the process is unknown.
How much flexibility does the process allow?	If the technical analyses do not justify the lane elimination project or show technical feasibility, District staff may provide guidance and suggest milestones to the applicant to strengthen the lane elimination request.
How are jurisdictional transfers accounted for?	The process does not discuss jurisdictional transfers.
How is functional classification accounted for?	The process does not discuss functional classification.
Who makes the decision to approve or deny a lane elimination request?	It is likely that the District makes the decision to approve or deny a lane elimination request.

Other observations about the review processes contained in this document are the following:

- All of the processes are explicitly or implicitly limited to review of lane elimination requests on specific types of roadways (e.g., state roadways, city roadways, and four-lane roadways). However, the review process principles are generally applicable to a wider range of roadway types.
- Most of the processes described in this document do not include specific criteria against which proposed lane elimination projects are to be reviewed. (The specific criteria that are provided take the form of LOS standards, AADT thresholds, and geometric design criteria.) Districts may wish to include detailed evaluation criteria (e.g., MMLOS standards) in their lane elimination review processes.
- Most of the processes do not specify the extent to which analysis requirements and review standards may be sensitive to the purpose of the lane elimination project and/or the specific features of the lane elimination project. A process may ask the applicant to provide the functional classification of the affected roadway, for example, but it does not necessarily indicate the use to which reviewers will put that information. Districts may wish to clarify how they will use the information provided in a lane elimination application (i.e., the conditions under which specific analysis requirements are applicable).
- Two of the processes acknowledge the possibility of pilot (temporary) implementations of lane elimination projects, but only one provides details about how a pilot implementation is to be accomplished and evaluated. Associated issues that the Districts may wish to consider include the following:
  - Under what conditions should a pilot implementation be required?
  - How long should a pilot implementation remain in place before it is evaluated?
  - How should a pilot implementation be evaluated, who conducts the evaluation, and who pays for the evaluation?
  - If the community does not like the pilot roadway section, who is responsible for restoring the roadway to its original cross section? Who pays for restoring the roadway to its original cross section?
- Only one process addresses the issue of precedence when right-of-way is constrained. If right-of-way in a corridor is constrained to the point where through lane elimination is a potential means of creating space for other roadway elements, which of those other roadway elements are the most important? For example, is on-street parking more important than bicycle lanes? Do District staff have a vision that defines precedence and how state roadway right-of-way is to be used?
- Only one process requires applicants to analyze multiple build alternatives.
- All of the processes are concerned with the following issues:
  - Funding proposed lane elimination projects
  - Obtaining community support for proposed lane elimination projects
  - Analyzing traffic operations impacts in the affected corridor and in a larger area of impact

  Districts may wish to include these issues in their processes.
- Most of the processes mention the following issues:
  - Analyzing environmental impacts
  - Analyzing safety impacts
  - Consistency of the lane elimination project with adopted plans and visions
  - Pedestrian and bicyclist needs

  Districts may wish to include these issues in their processes.
- Most of the processes specifically require short- and long-term analyses.
- The three FDOT Districts' processes acknowledge a degree of phasing or staging in the lane elimination review process. The District Four and District Seven draft processes include three stages, while the District Five conceptual process includes two stages.
- The District Four process includes Central Office notice requirements. The Michigan DOT process includes FHWA notice requirements.

- The Michigan DOT process allows for the approval of lane elimination projects on lower-volume roadways without preparation of an operational analysis (i.e., Districts may wish to consider establishing thresholds under which analysis requirements are simplified.

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