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SITE IMPACT HANDBOOK

Florida Department of Transportation
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Central Office Systems Planning Office
Office of Policy Planning
District Site Impact Coordinators

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TABLE OF CONTENTS

		Page
Preface		i
UNIT I - INTRODUCTION		1
Background		1
Organization of the Handbook		4
The Department's Role in Site Impact Evaluations		4
Statutory Review Requirements		5
Coordinating Agencies for Site Impact Reviews		6
Other Department Standards and Guidelines		7
The Department Reviewer's Basic Responsibilities		8
UNIT II - REQUIRED SITE IMPACT REVIEWS		9
Introduction		9
Chapter 1	Development of Regional Impact (DRI) Reviews	12
1.1	Types of DRIs	16
1.2	Review Requirements for New DRIs	17
1.3	Review Requirements for Modification to Existing Approved DRIs	19
1.4	Florida Quality Developments (FQDs)	20
1.5	Florida Job Siting Act	20
Chapter 2	Local Government Comprehensive Plan (LGCP) Reviews	23
2.1	LGCP Amendment Reviews	23
Chapter 3	Other Type of Reviews	26
3.1	Campus Master Plans (CMPs)	26
3.2	Statewide Multipurpose Hazardous Waste Facility Siting Act	26
3.3	Military Base Reuse Plan	27
3.4	Access Management	27
3.5	Interchange Justification and Modification Reports (IJR/IMR)	28
UNIT III - STANDARD SITE IMPACT PROCEDURES		30
Introduction		30
Step 1	Methodology Development	33
1.1	Study Area Requirements	34
1.2	Analysis Years	34
1.3	Analysis Periods	34
1.4	Use of Manual Methods Versus Travel Demand Forecasting Models	36
1.5	Redevelopment Projects	37
1.6	Consideration of Other Major Committed Developments	37

TABLE OF CONTENTS
(Continued)

			Page
Step 2		Existing Conditions Analysis	38
	2.1	Data Collections	38
	2.2	Operational Analysis	40
Step 3		Background Traffic	42
	3.1	Manual Methods for Projecting Background Traffic	42
	3.2	Build-Up Method	43
	3.3	Growth Factor Using a Related Demographic Characteristics	43
	3.4	Regression Analysis Techniques	44
	3.5	ZDATA Interpolation	44
	3.6	Example Problem	45
Step 4		Trip Generation	47
	4.1	Trip Generation Data	47
	4.2	Use of Trip Generation Rates or Equations	48
	4.3	Limitations of Trip Generation Data	50
	4.4	Special Considerations When Using the ITE: *Trip Generation Manual*	50
	4.5	Selection of the Independent Variable	51
	4.6	Timing of Trips	51
	4.7	Multi-Use or Mixed-Use Developments	52
	4.8	Internal Capture Rates for Mixed Use Developments	52
	4.9	Primary, Pass-By and Diverted Trips	54
	4.10	Special or Unusual Generators	59
	4.11	Estimating Trip Generation	59
	4.12	Model Method of Analysis	59
Step 5		Trip Distribution	61
	5.1	Manual Methods	61
	5.2	Model Method	64
	5.3	Documentation	64
Step 6		Mode Split	66
Step 7		Assignment	67
	7.1	Manual Methods	67
	7.2	Model Methods	68
	7.3	Required Volumes and Traffic Factors	70
	7.4	Documentation	74

TABLE OF CONTENTS
(Continued)

			Page
Step 8		Future Conditions Analysis	76
	8.1	LOS Analysis	77
	8.2	Florida's Planning LOS Standards	77
	8.3	Analysis Approach	80
	8.4	Inputs to LOS Analysis	81
	8.5	Identification of Impacts, Needs and Deficiencies	81
	8.6	Documentation	81
	8.7	Example	82
Step 9		Mitigation Analysis	87
	9.1	Mitigation Strategies	87
	9.2	Funding of Mitigation Improvements	90
	9.3	Documentation	91
Step 10		Site Access, Circulation and Parking	92
	10.1	Access Management Issues	92
	10.2	Driveway Issues	94
	10.3	Site Circulation	102
	10.4	Parking Generation	102
	10.5	Safety	105
	10.6	Recommended Site Access, Circulation and Parking	105
Step 11		Review and Permitting	106
	11.1	Reviews of Site Impact Analysis	106
	11.2	Permitting	106
	11.3	Expedited Permitting Review	107
Step 12		Review Checklist	108
UNIT IV - INSTRUCTIONS FOR SITE IMPACT REVIEW			113
Introduction and Instructions			113
Chapter 1		Instructions for DRI Reviews	117
	1.1	Preapplication Conference Format Meeting	117
	1.2	Transportation Methodology Meeting	117
	1.3	RPC Regional Issues List and Agency Comments	118
	1.4	Sufficiency Review	118
	1.5	Application for Development Approval (ADA) Reviews	118
	1.6	Local Government Development Order Review	118
	1.7	Project Monitoring Report Review	119
	1.8	Conceptual Agency (Access) Review	119
	1.9	Notice of Proposed Change (NOPC) and Substantial Deviation Determinations	119

TABLE OF CONTENTS
(Continued)

		Page
1.10	Florida Quality Developments (FQDs) and Florida Job Siting Act Certification Reviews	119
1.11	Conclusion	120
Chapter 2	Instructions for Local Government Comprehensive Plan (LGCP) Amendment Reviews	147
2.1	Local Government Comprehensive Plan (LGCP) FLUM Based Amendments	147
2.2	Other LGCP Amendments	147
Chapter 3	Instructions for Other Types Of Reviews	150
3.1	Campus Master Plans	150
3.2	Statewide Multipurpose Hazardous Waste Facility Sitings	151
3.3	Military Base Reuse Plans Site Impact Analysis Review	151
3.4	Interchange Justification and Modification Reports (IJR/IMR)	151
3.5	Expedited Permit Process	151

APPENDICES

Title		Page
Appendix A - Definitions and Abbreviations		A-1
Appendix B - Department Planning Reviews		B-1
Background		B-1
Chapter 1	Local Government Comprehensive Plan (LGCP) Reviews	B-2
1.1	Introduction	B-2
1.2	LGCP Adoption and Amendment Review Subject Elements	B-2
1.3	Initial LGCP Objections, Recommendations and Comments (ORC) Report	B-3
1.4	Evaluation and Appraisal Report (EAR) of Comprehensive Plans	B-3
1.5	EAR-Based LGCP Amendments	B-3
1.6	Regional Activity Centers (RAC)	B-4
1.7	LOS Standards for Transportation Facilities	B-4
Chapter 2	Local Government Concurrency Reviews	B-5
2.1	Introduction	B-5
2.2	DeMinimis Impact	B-5
2.3	Transportation Concurrency Management Areas (TCMAs)	B-5
2.4	Long-Term Transportation Concurrency Management System	B-5
2.5	Transportation Concurrency Exception Areas (TCEAs)	B-5
2.6	Transportation Concurrency Exceptions	B-6
Chapter 3	Other Local Government Reviews	B-7
3.1	Introduction	B-7
3.2	Community Redevelopment Plan	B-7
3.3	Land Development Regulations (LDRs)	B-7
3.4	Corridor Designation and Corridor Management Ordinances	B-7
Chapter 4	Other Types of Reviews	B-8
4.1	Introduction	B-8
4.2	Strategic Regional Policy Plan (SRPP)	B-8
4.3	Intergovernmental Coordination Assistance and Reviews (ICARs)	B-8
4.4	Siting Acts	B-8
4.5	Enterprise Zone Development Plan	B-9
4.6	Economic Development Transportation Fund (EDTF)	B-9

APPENDICES

(Continued)

Tab	Title	Page
Appendix C - Federal Acts and Policy Planning Overviews		C-1
	Introduction	C-1
	The Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991	C-1
	Clean Air Act Amendments of 1990	C-1
	National Environmental Policy Act of 1969 (NEPA)	C-1
	Americans with Disabilities Act	C-2
	Environmental Justice Act (EJA)	C-2
Appendix D - FSUTMS Example		D-1

LIST OF TABLES

Number	Title	Page
1	Examples of Land Use Thresholds Based on Trip Generation Characteristics	3
2	DRI Thresholds as Defined by Chapter 28-24, FAC	13
3	DRI Type Review Reference Chart, Primarily Chapter 380, FS and Rule 9J-2, FAC	22
4	Local Government Type Review Reference Chart, Primarily Chapter 163, FS and Rule 9J-5, FAC	25
5	Other Type Review Reference Chart, Reviews with Unique Statutory Review Requirements	29
6	Suggested Study Horizons	36
7	Historical Volumes	45
8	Comparison of Regression Analysis	46
9	Statewide Average K_{100}s	71
10	Minimum Acceptable K_{100}s	71
11	Acceptable Traffic Volume Factors for Design Traffic	73
12	Statewide Minimum LOS Standards for the SHS	78
13	Status of Department Approval for Computation Tools	82
14	Example Conditions Analysis Worksheet	83
15	Potential of Travel Demand Management Techniques to Reduce Site Traffic	89
16	Department Driveway Separation Standards and Median Opening	96
17	Unsignalized Queues	97
18	Typical Departure Side Functional Area for Urban/Suburban Areas	98
19	Operational Characteristics of Corner Radii	99
20	Driveway Grades	100
21	Connection Throat Lengths	100
22	Right- and Left-Turn Sight Distance Minimums	101

LIST OF TABLES
(Continued)

Number	Title	Page
23	Summary of Observed Queue Distances at Drive-Thru Facilities	102
24	Parking Requirements	104
25	Summary of Site Impact Analysis Process	108
26	Information Provided to or Available to Applicant Checklist	115
27	DRI Review Procedures Flow Chart	121
28	Question 21 - Transportation	122
29	Question 22- Air	124
DRI Checklist 1	Transportation Methodology Meeting Information Submittal Checklist	125
DRI Checklist 2	DRI-ADA Sufficiency Review Checklist	131
DRI Checklist 3	DRI-ADA Review Checklist	133
DRI Checklist 4	Local Government Development Order Review Checklist	139
DRI Checklist 5	Project Monitoring Report Review Checklist	141
DRI Checklist 6	Conceptual Agency (Access) Review Checklist	143
DRI Checklist 7	Notice of Proposed Changes/Substantial Deviation Determination Notification Checklist	145
LGCP Amendment Checklist 1	FLUM-Based Amendments Review Checklist	148

LIST OF FIGURES

Number	Title	Page
1	Land Use Transportation Cycle	1
2	Required Site Impact Reviews	10
3	Other Department Planning Reviews (Appendix C)	11
4	DRI Process	12
5	Site Impact Process	30
6	Site Impact Process	33
7	Example Study Area	35
8	Site Impact Process	38
9	Existing Conditions Analysis	39
10	Existing Conditions	41
11	Site Impact Process	42
12	Background Traffic	43
13	Comparison of Regression Analysis Results	45
14	Site Impact Process	47
15	Manual Trip Generation	48
16	ITE Trip Generation Manual Page Example	49
17	Daily Distribution of Trips	52
18	Comparison of Peak Hour and Daily Trip Generation	53
19	Primary Trip	55
20	Pass-By Trip	56
21	Diverted Trip	58
22	Site Impact Process	61

LIST OF FIGURES
(Continued)

Number	Title	Page
23	Direction Distribution Factor	62
24	Trip Distribution Using Analogy, Market Based or O/D Studies	62
25	Manual Gravity Model Method	63
26	Trip Distribution Desire Lines	65
27	Site Impact Process	66
28	Site Impact Process	67
29	Manual Assignment	68
30	Assigned Volumes	75
31	Site Impact Process	76
32	Tiered LOS Approach	80
33	Relationship of LOS Analysis	81
34	1995 Conditions	84
35	2005 Conditions	85
36	2010 Conditions	86
37	Site Impact Process	87
38	Site Impact Process	92
39	Road Hierarchy	93
40	Site Access Issues	93
41	Functional Hierarchy	94
42	Driveway Issues	95
43	Functional Intersection Area	97
44	Functional Length of Turn Lanes	97
45	Throat Depth	100

LIST OF FIGURES

(Continued)

Number	Title	Page
46	Intersection Site Distance	101
47	Daily Variation in Parking Demand	103
48	Site Impact Process	106
49	Proposed Process Flow Chart	152
C-1	Statewide and Metropolitan Planning Factors	C-4

UNIT I - INTRODUCTION

BACKGROUND

Land use and development regulation is a well-established public interest. The responsibility for administrating these regulations is normally vested in local governments through various land development and approval ordinances. Nevertheless, there is a significant state interest, recognized through the many state laws and regulations affecting land development. One of the most important public interests pertains to a proposed development's transportation impact.

The Florida Department of Transportation (referred to as FDOT or the Department in this Handbook) plays a vital role in the analysis and review of many types of development proposals and their respective impacts on the surrounding transportation network. This Handbook was prepared (1) to address **mandatory** analysis and review requirements, (2) to offer guidance to all agencies on **when** the Department will be conducting these reviews, and (3) to identify **how** these reviews will be conducted, including which special practices (i.e., instructions) are applicable for each type of analysis or review.

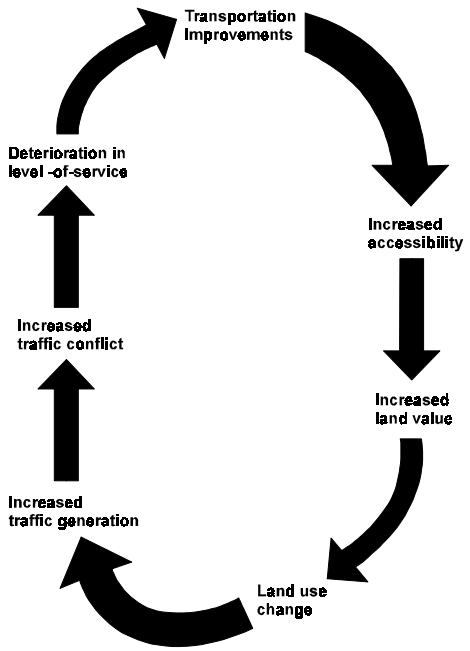
Site impact is defined as follows:

> **Site Impact** *represents any effort by the Department to prepare an analysis of or conduct review of an analysis prepared by another party to estimate and quantify the specific transportation-related impacts of a development proposal, regardless of who initiates the development proposal, on the surrounding transportation network. The Department's impact assessment may be limited to the State Highway System (SHS) or, as will be defined later, on any affected roadway system as determined by the procedures established in this Handbook and the specific type of review being conducted.*

The types of site impact analysis and reviews described throughout this Handbook refer to the Department's need to evaluate the impacts of proposed development on the State Transportation System resulting from the development process. These reviews/analyses vary in scope and complexity based on the governing regulations, unique characteristics of the proposed development type and the proximity of the development to the SHS. The purpose of a site impact analysis and review is to assess potential traffic impacts, identify acceptable mitigation strategies, plan for the transportation requirements of future development, and maintain a balance between land use and the quality of transportation services.

Land use and transportation are strongly interdependent. Transportation facilities and services are essential for development to occur. High levels of mobility and accessibility are needed to attract the economic development necessary to maintain a high quality of life. Development often impacts the transportation system's performance. This causes a need to improve nearby transportation facilities. Transportation improvements increase capacity in large increments while traffic demand increases slowly, mostly through small changes in land development patterns. The nature of these patterns results in two systems that are rarely balanced. Failure to address the management of land development and the subsequent need for improved transportation planning and facilities will result in premature degradation of the transportation system. The relationship between land use and transportation is illustrated in Figure 1.

Figure 1. Land Use Transportation Cycle



This Handbook provides a framework for the analysis and review of the impacts of development on the state's transportation system (Unit III) and the special requirements necessary to conduct specific types of analysis/review (Unit IV). The types of site impact review that the Department will perform are documented in Unit II. The Reviewer is encouraged to familiarize him or herself with the entire Handbook. The technical analysis principles and guidelines in Unit III and the special instructional guidance outlined in Unit IV are of primary importance and should be utilized jointly. They are designed to be flexible enough for application to the broad range of review types conducted by the Department that are outlined in Unit II.

Why is Site Impact Analysis Needed?

The Department is primarily concerned with protecting the integrity of the transportation system for the general public and to avoid degradation of both the regional and local transportation networks. There are a number of additional reasons for the Department to perform site impact analysis and reviews.

- Provide public agencies with a mechanism for managing traffic and land use development within the context of metropolitan transportation planning, local government comprehensive planning and concurrency requirements.
- Provide public agencies with a consistent system for managing mobility, congestion and air quality as required in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA).
- Provide applicants with recommendations for effective site transportation planning.
- Provide public agencies with a method for analyzing the effects of development on transportation in conjunction with access management, zoning, permitting or other requirements.
- Establish a framework for the negotiation of mitigation measures for the impacts created by development.
- Ensure that proposed developments impacting a state facility are operating at an acceptable level of service (LOS), particularly if the facility is on the Florida Intrastate Highway System (FIHS).
- Ensure consistency between the proposed development and the Department's access management requirements including driveway and/or median standards.
- Ensure that the proposed development is consistent with local government comprehensive plan (LGCP) goals, objectives and policies and the adopted future land use map (FLUM).
- Ensure that the proposed development is consistent with local zoning and development regulations.

When Should Site Impact Analysis Be Performed?

The need to perform a site impact analysis or review is dependent upon the magnitude and intensity of the proposed development and its proximity to the State Transportation System. The Department's primary goal in site impact reviews is to protect the integrity of the SHS, particularly the FIHS, and to ensure technical accuracy with regard to the analysis performed. When there is little potential for the proposed development to directly or indirectly affect these systems, a detailed site impact analysis may not be required by the Department. Local governments, however, may require a site impact analysis as a result of impacts on other facilities and request the Department's assistance in the review of the analysis. The Department is not precluded from requesting a site impact analysis based on other transportation impact concerns.

In general, the Department Reviewer can use the following guidelines to determine when a site impact analysis may be needed.

- If the proposed development is projected to generate 100 or more peak-hour trips, a site impact study should be considered. Developments that generate less than 100 peak-hour trips generally should not require a site impact study, but should be reviewed for consistency with driveway and access management standards. Table 1 provides some guidance on the land use type and intensities that generate at least 100 peak-hour trips.
- If a development generates at least 100 but less than 500 peak-hour trips, an abbreviated analysis procedure may be proposed. This is generally consistent with both American Planning Association (APA) and Institute of Transportation Engineers (ITE) suggested practices. Developments in this category are usually evaluated using concurrency management system requirements. Driveway volumes and consistency with driveway and access management standards should be reviewed at a minimum. Examples of developments that may generate this amount of traffic are small subdivisions, small hotels and small commercial developments. Table 1 provides some guidance on the land use types and intensities that generate more than 100 peak-hour trips and less than 500 peak-hour trips.

Table 1. Examples of Land Use Thresholds Based on Trip Generation Characteristics[1,2,3]

Land Use	100 Peak-Hour Trips	500 Peak-Hour Trips
Residential:		
Single-Family	92 units	547 units
Apartments	163 units	920 units
Condominiums/Townhouses	178 units	1,272 units
Mobile Home Park	179 units	1,073 units
Shopping Center (GLA)[4,5]	5,250 SF	65,350 SF
Fast Food Restaurant with Drive-In (GFA)	2,750 SF[6]	13,700 SF
Convenience Store with Gas (GFA)[4,7]	1,375 SF or 4 pumps	6,850 SF or 24 pumps
Banks with Drive-In (GFA)	2,300 SF and 1 drive-in	11,450 SF and 9 drive-ins
Hotel/Motel	133/178 rooms	711/944 rooms
General Office	43,400 SF[5]	383,450 SF
Medical/Dental Office	26,000 SF	126,500 SF
Research and Development	70,250 SF	497,150 SF
Light Industrial	N/A	463,000 SF
Manufacturing	134,000 SF	668,900 SF

Notes:

[1]Rates/equations used to calculate the above thresholds are from ITE: *Trip Generation*, 5th Edition, 1991 as supplemented in 1994. This table will need updating as future editions provide additional information.

[2]For example, a traffic impact study should be completed (100 peak-hour trips generated) if 92 <u>or more</u> single-family units are proposed for a site.

[3]For further trip generation characteristics of the above land uses, or of other uses not illustrated above, refer to the latest version of ITE: *Trip Generation*.

[4]GLA = Gross Leasable Area; GFA = Gross Floor Area.

[5]Several communities require a Traffic Impact Assessment for shopping centers of 20,000 to 40,000 SF (GLA) and a standard traffic impact study for larger centers.

[6]Using <u>AM</u> peak-hour rates/equations would produce a lower threshold. However, adjacent roadway volumes are usually higher during the PM peak hour.

[7]Uses both "Service Station with Market" and "Convenience Market with Pumps" data.

- A detailed site impact analysis should be considered if the development generates 500 or more peak-hour trips or meets the following criteria or criteria in Unit II.

  - If the development contributes 75 or more vehicles per hour per through lane (VPHPL) during the peak period at the approach of an intersection, a detailed site impact analysis is required. Turning movements less than 75 VPHPL may still require analysis based on local conditions, experience and engineering judgement.
  - If the development contributes 200 VPHPL or more during the peak period on a freeway (Interstate, Turnpike or other facility with full control of access), a detailed site impact analysis is required. The criteria also applies to ramp intersections and ramp segments with more than 200 VPHPL.
  - A detailed site impact analysis study should be performed if (1) the proposed development will generate a "significant change in traffic flow on the SHS," meaning a change in traffic volumes of 25 percent or more or a change in the anticipated LOS, or (2) a change in trip generation exceeding 25 percent (either peak or daily) of the existing land use's trip generation and total trip generation for the site of greater than 100 peak-hour trips (adapted from FS 14-97.002(29)). Developments that typically require a detailed site impact study include residential developments of 300 homes or more, convenience markets with fueling stations and general office buildings.

Changes in land uses from previously approved projects should also be considered carefully since they may have the effect of changing trip patterns, including trip distribution and internal capture.

ORGANIZATION OF THE HANDBOOK

This Handbook consists of four Units and three Appendices as follows:

- Unit I - Introduction
- Unit II - Required Site Impact Reviews
- Unit III - Standard Site Impact Review Procedures
- Unit IV - Special Instructions for Site Impact Reviews

- Appendix A - Definitions and Abbreviations
- Appendix B - Department Planning Reviews
- Appendix C - Federal Acts and Policy Planning Overviews
- Appendix D - FSUTMS Example

The Handbook has been organized in this manner to facilitate practical use. This Unit describes the site impact analysis and review processes and clarifies the need for Department involvement. Unit II refers to the specific types of site impact reviews required by Florida Statute. Unit III provides the Reviewer with a uniform recommended approach for site impact analysis and review. Unit III should be utilized in conjunction with Unit IV which describes the supplemental instructions applicable to each type of Department review.

The Appendices are intended to be used as references. Appendix A provides definitions and explanations of terms and abbreviations. Appendix B and C provide limited guidance for other types of planning reviews which have not been addressed by this Handbook. Appendix D provides an example of FSUTMS model procedures.

THE DEPARTMENT'S ROLE IN SITE IMPACT EVALUATIONS

The Department is responsible for administration of the State Transportation System, as set forth in the Florida Transportation Code (FTC) (s.334.01, et seq, FS). FTC establishes duties which guide the Department to:

> (1) *"Assume responsibility for coordinating the planning of a safe, viable and balanced State Transportation System serving all regions of the state, and to assure the compatibility of all components, including multimodal facilities . . . ."*
>
> (14) *"Establish, control, and prohibit points of ingress to, and egress from the SHS, the turnpike, and other transportation facilities under the Department's jurisdiction as necessary to ensure the safe, efficient and effective maintenance and operation of such facilities."*

Other FTC sections cover the Department's responsibility for access management, system LOS and similar issues. While the focus of this material is predominantly on the SHS and FIHS, the Department is concerned with all systems and modes of transportation and the impacts of development on all facilities under its jurisdiction.

The Department does not act independently in its transportation decisions. Cooperation with federal, state and local agencies has been an essential element of developing and managing the State Transportation System for many years. Federal regulations can also affect the procedures followed by the Department and need to be considered. These issues form the basis for determining the Department's responsibility with regard to site impact analysis and review, including when it is to be carried out. The responsibility for site impact analysis or review is spread throughout the Department. Although there is overlap, the following briefly describes how it is divided.

The Department's Districts

The FDOT is divided into eight districts. Each District is responsible for site impact reviews within its boundaries. Since the Department is decentralized, each District is allowed to provide localized technical and administrative assistance on development issues. District responsibility involves planning, permitting, design, maintenance and operations.

The Central Office--Systems Planning Office

The Systems Planning Office provides guidance and technical support for the implementation of Departmental policies and procedures relating to the FIHS, Interstate System, interchange justification and modification, lane standards, access management, LOS, urban modeling and other transportation system planning activities.

The Central Office--Office of Policy Planning

The Office of Policy Planning shares responsibility with the Systems Planning Office to provide guidance on the reviews of Developments of Regional Impact (DRIs), Florida Quality Developments, Job Siting Certification Applications, Campus Master Plans (CMPs), Strategic Regional Policy Plans of the Regional Planning Councils (RPCs), LGCPs and LGCP Amendments.

STATUTORY REVIEW REQUIREMENTS

Overview

Chapter 380, FS, and Chapter 163, FS, primarily regulate the types of reviews described in this Handbook. In addition, several of the less common, but equally important reviews are guided by other Statutes that are described in Unit II. The following briefly describes the general types of site review and their corresponding Statute reference. Detailed explanations for each specific type of site impact review addressed in this Handbook are described in Unit II. Tables depicting FS and FAC references for all types of reviews, including those described in Appendix B, can be found in Unit II, Tables 3, 4 and 5.

Chapter 380, FS Developments of Regional Impact (DRI)

Chapter 380.06, FS, addresses general requirements for the application and approval of DRIs. Specific review requirements for DRIs are established by Rule 9J-2, FAC of the Florida Department of Community Affairs (DCA). DRIs are developments identified based on specified land-use thresholds established within that same administrative rule. DRI reviews generally constitute the most formal and complex analysis review requirements imposed upon the Department.

Chapter 380.061, FS, also addresses general requirements of FQDs, a type of expedited DRI. Rule 9J-28 establishes additional criteria to be followed when preparing an application for approval of an FQD.

Florida Job Siting Act review requirements are also addressed within this Handbook. These requirements, imposed by Chapter 403.950, FS, are very similar to the DRI rule since their application is also guided by Rule 9J-2, FAC, specifically Rule 9J-2.045.

Chapter 163, FS Local Government Comprehensive Plans (LGCPs)

A variety of Department Reviewer requirements originate from Chapter 163, FS. This Statute addresses the primary land planning requirements for all of Florida's local governments (county and municipal). The most common Department reviews are LGCP amendments, particularly those initiated by prospective developments in the form of FLUM change request and/or DRI amendments. The review and adoption of a LGCP (containing Transportation and Capital Improvement Elements) should also be understood but does not constitute a required site impact review as defined herein. Local government comprehensive planning requirements are outlined in Rule 9J-5, FAC.

Chapter 240, FS Campus Master Plans (CMPs)

Chapter 240.155, FS, addresses land planning requirements for Florida's ten state universities. These planning requirements, in the form of a CMP, require review by the Department prior to adoption. Once adopted, the university and the affected local government will enter into a Campus Development Agreement (CDA). The CDA should reflect and mitigate for the impacts created, including those on the

surrounding transportation network. Local governments are encouraged to work with the Department on the review of both CMPs and CDAs given the potential impacts of campus development on the transportation network. CMPs and their requirements are specifically addressed by Rule 6C-21, FAC.

Other Types of Reviews

Several other types of site impact reviews may be required. Specific site reviews within this category are typically limited to:

1. Hazardous Waste Facilities (Chapter 403.78, FS)
2. Military Base Reuse Plans (Chapter 288.975, FS)
3. Access Management/Permitting
4. Interchange Justification/Interchange Modification Reviews (IJR/IMR) (Rules 14-96 and 14-97, FAC)

COORDINATING AGENCIES FOR SITE IMPACT REVIEWS

As described above, there are many types of site impact reviews that the Department engages in. On some occasions, federal, state and local agencies may be involved simultaneously. Each agency involved focusses on specific issues. The Department Reviewer must understand the overlap of responsibility and need for coordination between these agencies.

Local Governments

Local governments have direct involvement with all aspects of site development and impact assessment in their jurisdiction. This includes the development of the LGCP, LGCP amendments (particularly FLUM changes), participation in DRI and FQD reviews and approvals, zoning, including reviews of Planned Unit Developments (PUDs), subdivision ordinances and related land activities and CMPs including subsequent CDAs.

Metropolitan Planning Organizations (MPOs)

MPOs are established pursuant to s. 339.175, FS, which closely follows federal regulations (23 USC 134). The MPO's primary areas of responsibility include the preparation of a long-range transportation plan and transportation improvement program in accordance with the requirements of ISTEA and the Clean Air Act Amendments of 1990. As a result, MPOs are responsible for maintaining transportation-related databases for socioeconomic data, transportation modeling processes, descriptions of the area's transportation network and programmed improvements.

Regional Planning Councils (RPCs)

Florida's RPCs are quasi-statutory agencies created by s. 186.504, FS, funded by the legislature. They are responsible for the coordination of land and transportation policies for regional transportation systems through development of Strategic Regional Policy Plans (SRPPs-regional goals and policies). RPCs also coordinate the DRI review process and determine the sufficiency of ADAs. In addition, RPCs provide technical assistance to many local governments upon request and review all LGCPs prior to adoption.

Florida Department of Community Affairs (DCA)

The DCA is the state's lead agency for coordination, review and monitoring of local, regional and statewide planning activities. The DCA assists local governments in the preparation and review of LGCPs and LGCP amendments and plays an important role in the review of DRIs and FQDs, including the review of subsequent development orders. The Department is considered a review agent for DCA, providing transportation expertise relating to these areas. DCA also routinely assists the RPCs in the preparation of regional plans to ensure coordination between affected jurisdictions. It is very likely that DCA will play some sort of role in the site impact analysis and review process for everything from DRIs and local government planning activities to CMPs and Military Base Reuse Plans. DCA is also one of the few agencies with appeal authority on these types of reviews in the event dispute resolution must be taken to administrative hearing or circuit court.

Florida Department of Transportation (FDOT)

The Department is responsible for reviewing and assessing the impacts of proposed developments that impact upon the SHS and any other element of the State's Transportation System. Its primary function is to plan, regulate access and ensure that design standards for safe and effective transportation operation are met.

The Department's primary responsibility is the FIHS. The FIHS was created in 1990 by the Florida legislature to provide for high-speed and high-volume traffic flow. The FIHS consists of limited- and controlled-access facilities including Interstate highways, Florida's Turnpike, expressways and other facilities of regional significance. The FIHS is a 4,150-mile (3,751 existing miles and 399 proposed miles) component of the 11,921-mile SHS. Access from abutting lands is secondary to the movement of through traffic and is highly regulated (see s. 38.001, FS). The

Department is responsible for the entire SHS and also administers FIHS design and LOS standards.

The Department regulates the SHS through numerous programs, including its Work Program Administration, Access Management, Access permitting, LOS standards, the Interchange Justification or Modification Process, and other activities which are covered throughout this Handbook.

OTHER DEPARTMENT STANDARDS AND GUIDELINES

In addition to statutory and regulatory review requirements, the Department is guided by standards and guidelines related to the SHS.

The Department Reviewer must have a thorough understanding of these requirements and should have them available as reference prior to conducting any site impact analysis or review.

These standards are referenced throughout the remaining sections of the Handbook and include, but are not limited to the following items.

FIHS. Matters relating to the FIHS standards are contained in *Process, Criteria and Standards for the Florida Intrastate Highway System Plan*, Topic No.: 525-030-250-c.

Access Management/Median Opening. Technical details are presented in Rule 14-96 and 14-97 FAC in addition to several working documents prepared by the Department's Systems Planning Office.

Access Permitting. Permitting procedures are presented in Rule 14-96.

LOS. The Department's *LOS Manual* (1995 edition) implements the procedures required by s. 334.044(2), FS, and Rule 14-94 FAC.

IJR/IMR. Technical and administrative procedures for interchange justification/modification, *Approval of New or Modified Access to Limited Access Facilities*, Topic No.: 525-030-160-d and described in the *Interchange Request Development and Review Manual* and associated training materials (1995).

Standard Modeling Procedure. The Department has developed and distributed the Florida Standard Urban Transportation Model Structure (FSUTMS). This is currently the only model used statewide for development of urban area long-range transportation plans. Efforts are being made to update the model software to incorporate LOS and Highway Capacity Manual (HCM) land-use analysis techniques.

Design Traffic Handbook. This document offers guidelines, techniques and references on the Design Traffic Forecasting process.

Manual on Uniform Traffic Studies. This manual contains acceptable procedures for several types of traffic engineering studies.

District Procedures. Some Districts have developed their own procedures for various types of reviews. One example is the Development Issues Consensus Process established by District 2 to ensure coordination throughout the District with regard to the review of proposed developments that may impact the SHS.

Other FDOT Policies and Procedures. Examples of other Departmental policies and procedures such as the *Median Opening Decision Process*, Topic No.: 625-010-020-a, the *Interstate Highway System Program Development Procedure*, Topic No.: 000-525-020-c, or the *Maximum Number of Lanes on the State Highway System to be Provided by Department Funds*, Topic No.: 000-525-040-a, may affect specific reviews. These are noted throughout the Handbook, as appropriate.

In addition, the Reviewer should refer to the *Minimum Standards for Review of Local Government Comprehensive Plans*, Topic No.: 525-010-101-b.

Professional Practice Guides. The Department Reviewer may also use other agency or professional practice guides when performing site impact analyses or reviews including:

The ITE publishes a number of materials useful in site impact analysis. These include:

- *Trip Generation* (Fifth Edition, updated periodically), includes an extensive compilation of trip generation data and enjoys widespread usage in estimating development trip generation. *Transportation and Land Development* discusses the transportation and land use for the planning and design of site development.
- *Traffic Access and Impact Studies for Site Development, A Recommended Practice* provides

a recommended practice for traffic impact studies of site development projects.

Highway Capacity Manual. Special Report Number 209, Third Edition, 1994, of the Transportation Research Board is the Department's accepted standard for the operational analysis of transportation systems including highways, pedestrians, bicycles and transit. Further guidance on its application to planning analyses is provided in the Department's *LOS Manual*. Both of these manuals are discussed in Unit III, Step 2, Existing Conditions..

A Policy on Geometric Design of Highways and Streets. *A Policy on Geometric Design of Highways and Streets*, published by the American Association of State Highway and Transportation Authorities (AASHTO) in 1994, is commonly referred to as the "Green Book." This policy is designed to provide guidance on the geometric design of transportation facilities. Geometric design is the process of determining the location, cross-section and horizontal and vertical alignment of a facility. This policy provides guidance on the planning and geometric design of roadway elements associated with site impact study such as driveways, median openings and turn lanes.

Federal Agency Guidelines. From time to time, the Federal Highway Administration (FHWA) and other federal agencies publish useful material for the site impact Reviewer. Two examples are *Development and Application of Trip Generation Rates* and *Site Impact Evaluation Handbook*. Other publications include glossaries of transportation terms, public transit practice handbooks and guides to implementation of federal regulations. In addition, the National Highway Institute offers several valuable courses on various subjects related to site impact reviews.

RPC's Guidelines. RPC's guidelines are specifically written to address regional planning and environmental issues and to assure that site reviews respond to regional needs.

Standards or Practice Guides of Other Agencies. Certain local governments or planning agencies have established standards or practice guides for site development impact studies and their review. The Department Reviewer should be aware of these and may choose to use them in their reviews. An example is *Standardization of Traffic Impact Study Methodology* (Final Draft), Southwest Florida Regional Planning Council (SWFRPC), June 14, 1996.

THE DEPARTMENT REVIEWER'S BASIC RESPONSIBILITIES

The Department Reviewer has five basic functions to consider prior to conducting any site impact review:

1. Determine whether the impacts of the development on the SHS and FIHS have been adequately assessed.
2. Minimize the impacts to the roadways, and be prepared to offer corrective solutions.
3. Protect and preserve the integrity of the state facilities.
4. See that improvements proposed for the state systems meet Department requirements and are sufficient to mitigate for the impacts created.
5. Provide consistent, fair and legally defensible reviews.

The Department also has an obligation to provide information and guidance with regard to the site impact review process including:

- Inform applicants of study and review requirements.
- Inform the applicant of requirements to obtain necessary Department permits to access the SHS.
- Inform and assist the applicant on coordination with other agencies and entities involved in the site development process.
- Provide technical assistance to other review agencies as appropriate.
- Analyze and assess the impacts from the development on the state facilities.
- Review the provided studies.
- Provide written comments and recommendations within the time established for the review.
- Utilize sound professional judgement as to the depth and detail required for review of the particular application.

These responsibilities may be established by regulation, or by a Reviewer's supervisor. The depth and extent of review varies considerably, depending on the particular application. Thus, it is not possible to specify an exact procedure for each type of review. The function of this Handbook is threefold:

1. Provide an overview of practical site impact review procedures applicable to any situation.

2. Provide guidance on how to tailor a review to the particular situation.
3 Provide reference to more specific topic procedures and standards that the Department Reviewer may wish to utilize or consult during the review process.

UNIT II - REQUIRED SITE IMPACT REVIEWS

INTRODUCTION

The purpose of this Unit is to identify the types of site impact reviews that will be required by the Department. The Department Reviewer must conduct these reviews with attention to several relating factors. These factors include the review times allowed, the depth of detail needed, and coordination requirements with the involved agencies and the development applicant.

The types of land development and land development regulations in this state are numerous. The Reviewer should thoroughly understand these regulations, particularly those that originate from Florida Statute (FS) or the Florida Administrative Code (FAC). The Reviewer must also understand the practical aspects and implications of the various land development processes described in this Unit, including the likelihood for potential impacts on the surrounding transportation network. Many of these practical matters are not referenced or explained by either FS or FAC. A basic understanding of when it is appropriate for the Reviewer to become involved in a site impact review represents the first practical step if this Handbook is to be used effectively.

Most of the Department's review responsibilities are clarified by FS or FAC. However, several are not. The Department Reviewer is encouraged to request and/or suggest the need for site impact analysis and review in cases where these requirements are not clear and where there is the potential for impacts on the State Highway System (SHS).

This Unit of the Handbook addresses three occurrences when a site impact review will be required. These three occurrences are supported by numerous scenarios which are described in each chapter. A Department Reviewer may only be responsible for conducting certain types of reviews but should nonetheless fully understand all types of site impact reviews where Department involvement is required or suggested as good practice.

CHAPTER 1 - DEVELOPMENT OF REGIONAL IMPACT (DRI) REVIEWS (CHAPTER 380 FS)

This chapter will help the Reviewer understand the DRI process and similar DRI-type land development scenarios including Florida Quality Developments (FQDs) and the Florida Job Siting Act. In addition to providing a general understanding of the process, the chapter will discuss the milestones at which the Reviewer should become involved, when the reviews should be conducted, how long the Department Reviewer is allowed to take and with whom coordination is required.

CHAPTER 2 - LOCAL GOVERNMENT COMPREHENSIVE PLAN (LGCP) REVIEWS (CHAPTER 163 FS)

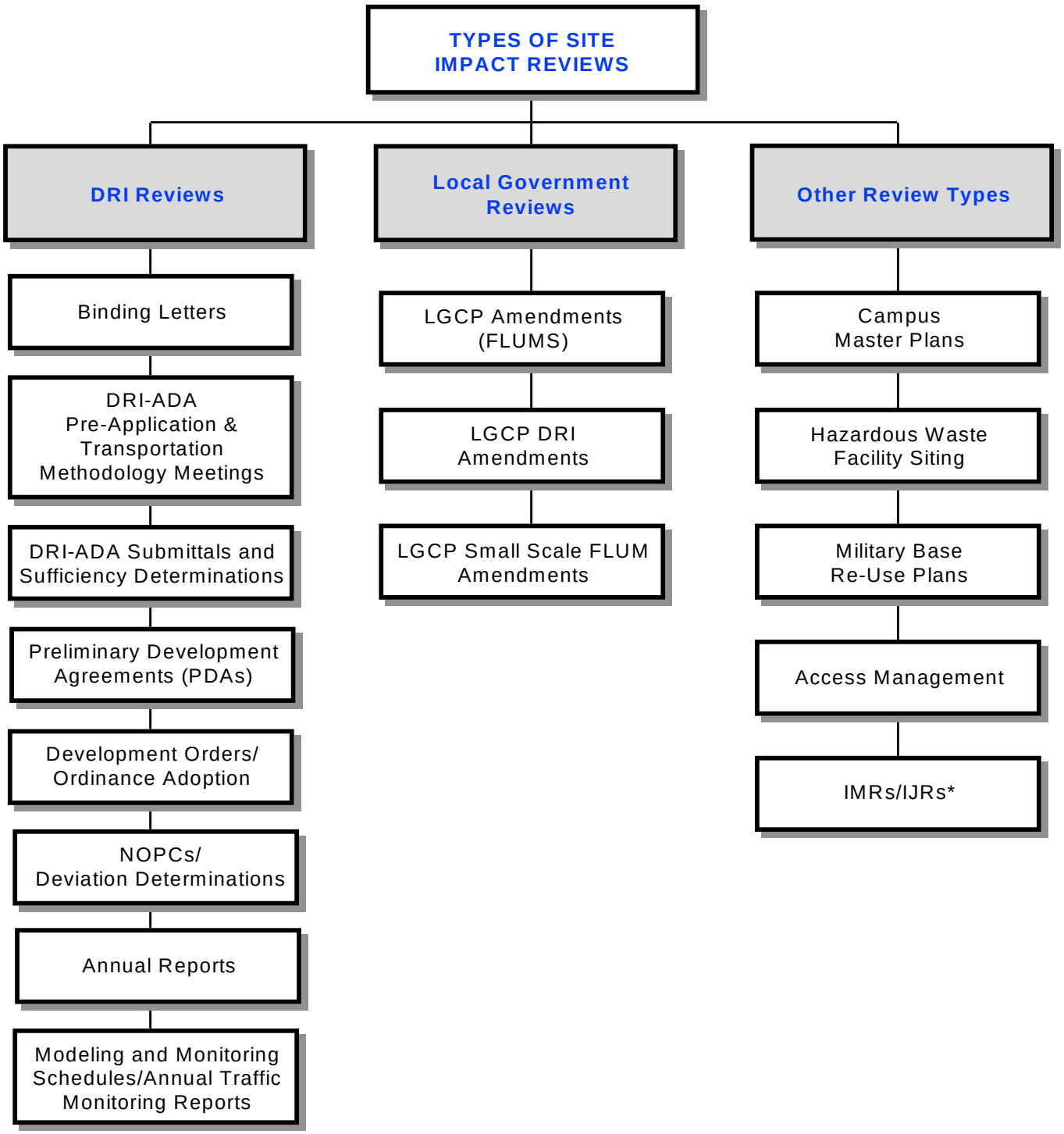
There are numerous occasions where the Department is statutorily required to assist the local government in the review of development proposals. Those of a site impact nature typically fall within one of two categories: LGCP Future Land Use Map (FLUM) amendments or DRI-LGCP amendments. Each of these reviews is conducted at the request of the Florida Department of Community Affairs (DCA). Planned Unit Developments (PUDs) or zoning changes having a impact on the SHS are also important but are not consistently reviewed unless included in the request for a FLUM change. PUDs are not typically required to be reviewed by the Department Reviewer. In addition, Intergovernmental Coordination Assistance and Review (ICARs) requests may arise. The Reviewer should refer to Chapter 3 in Appendix B for clarification and general guidance on ICARs. These latter non-LGCP amendment reviews are not statutorily mandated. All other local government planning reviews are described more fully in Appendix B.

CHAPTER 3 - OTHER TYPES OF REVIEWS

In addition to the above, the Department Reviewer may be presented with less frequent, but equally important, types of site impact review. These may be large scale, such as CMPs or Military Base Reuse Plans, or more isolated, such as the Hazardous Waste Facility Siting Act, Interchange Modification/Justification Reports (IJR/IMR) or projects which do not meet DRI thresholds. Once again, the Reviewer must understand the applicable processes for each and further acknowledge that these reviews are required on a consistent basis.

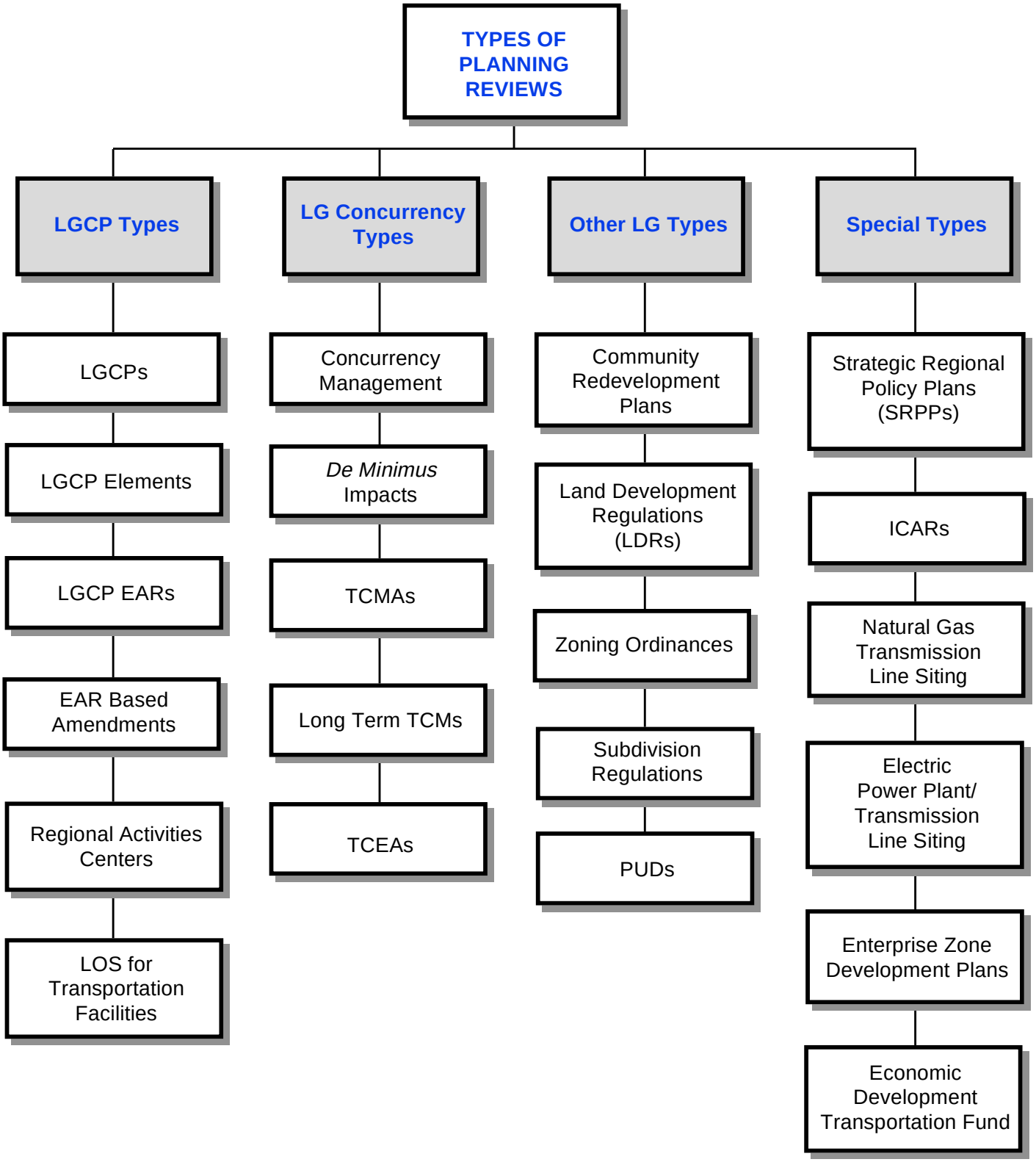
The Department Reviewer should reference Figures 2 and 3 which distinguish the required types of site impact reviews addressed in this Handbook (Figure 2) from the planning reviews that play a role in subsequent, but not specific, site impact reviews (Figure 3). Tables 3, 4 and 5 summarize the review times, FS and FAC references along with responsible coordinating agencies for DRIs, local government and other type reviews, respectively. These tables should also be used as a reference for further cited materials that should be obtained prior to initiating a specific site impact review.

Figure 2. Required Site Impact Reviews



*Typically initiated by the DRI Development Order negotiation process.

Figure 3. Other Department Planning Reviews (Appendix C)



CHAPTER 1. DEVELOPMENT OF REGIONAL IMPACT (DRI) REVIEWS

A DRI is defined by Section 380.06(1), FS, as any development which, because of its character, magnitude or location, would have a substantial effect on the health, safety or welfare of citizens in more than one county. The state has established thresholds to determine when a development must undergo the DRI review process. These determinations are made by the Florida DCA using Chapter 28-24, FAC. The numerical thresholds which serve as the primary means to determine DRI status are shown in Table 2. The Regional Planning Council (RPC) plays a role in the DRI process, coordinating application and review activities at the regional level. Local government participation is also important since the local planning agency plays a lead role in the identification of local issues or concerns relative to the project. The local government is also responsible for conducting a public hearing on the project and serves as the primary agency in the execution and approval of binding Development Orders (DO). As noted and described below, several types of developments may be treated similar to a DRI including specially defined DRI types, FQDs and the Florida Job Siting Act. All DRIs and FQDs are regulated by Chapter 380.06, FS. The Florida Job Siting Act is found in Chapter 403.950, FS, but is required to follow the same procedural rule (Rule 9J-2-045, FAC) as that imposed on DRIs.

This chapter describes the general DRI process (shown in Figure 4) along with the aspects of the process that the Department Reviewer should understand. The procedural requirements for applying for approval of a DRI are found in Rule 9J-2-045, FAC, of the DCA. The Reviewer must know the review times appropriate for each step of the DRI process noting that the actual review times for the Department Reviewer will likely be even shorter since the times reflect those for the lead coordinating agencies. These review times along with lead agency identification, statutory and code reference guidelines are depicted in Table 3 at the end of this chapter. This table also details similar information for FQDs and qualifying Florida Job Siting Act efforts. The latter two types of developments are described separately in the succeeding sections of this chapter.

Figure 4. DRI Process

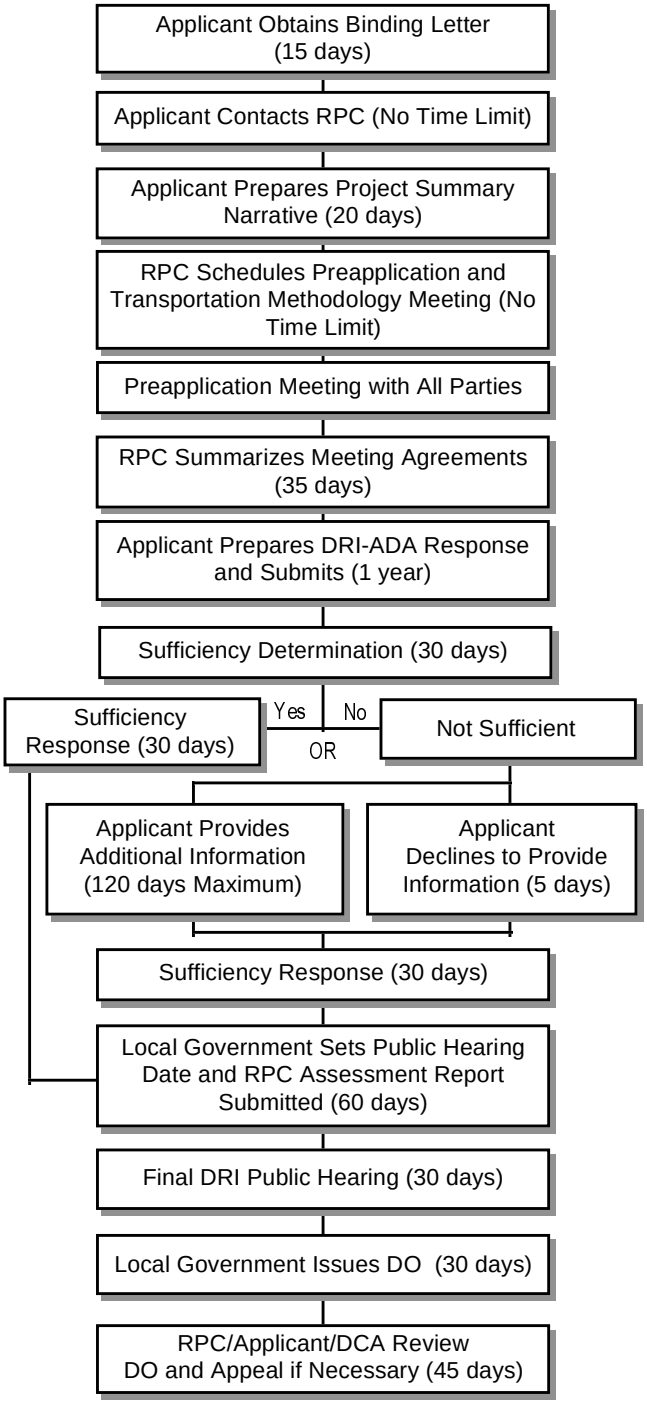


Table 2. DRI Thresholds as Defined by Chapter 28-24, FAC

Development Type/Threshold Unit	Threshold Percentage[1]		
	80%	100%	120%
Attraction/Recreation (28-24.016)			
1. Single Performance			
a. Parking Spaces	2,000	2,500	3,000
b. Seats	8,000	10,000	12,000
2. Serial Performance			
a. Parking Spaces	800	1,000	1,200
b. Seats	3,200	4,000	4,800
Hospitals--Beds (28-24.017)	480	600	720
Industrial (28-24.018)			
1. Parking Spaces	2,000	2,500	3,000
2. Acres	256	320	384
Mining (28-24.019)			
1. Acres	80	100	100
2. Gallons	2.4 M	3.0 M	3.6 M
Office (28-24.020)			
1. Gross Square Feet	240,000	300,000	360,000
2. Acres	24	30	36
3. Gross Square Feet[2]	480,000	600,000	720,000
Petroleum Storage (28-24.021)			
1. Barrels--Within 1,000 Feet of Navigable Water	40,000	50,000	60,000
2. Barrel--All Others	160,000	200,000	240,000
Marinas (Ports) (28-24.022)			
1. Wet Storage or Mooring of Watercraft	80	100	120
2. Dry Storage of Watercraft	120	150	180
3. Wet/Dry Storage or Mooring of Watercraft[3]	240	300	360
4. Dry Storage of Watercraft in a Marina Constructed and in Operation Prior to July 1, 1985	240	300	360
Residential--Dwelling Units (28-24.023)			
1. 25,000 Population or Less	200	250	300
2. 25,001 to 50,000 Population	400	500	600
3. 50,001 to 100,000 Population	600	750	900
4. 100,001 to 250,000 Population	800	1,000	1,200
5. 250,001 to 500,000 Population	1,600	2,000	2,400
6. 500,001 Population or More	2,400	3,000	3,600

Table 2. DRI Thresholds as Defined by Chapter 28-24, FAC

Development Type/Threshold Unit	Threshold Percentage[1]		
	80%	100%	120%
Schools (28-24.024)			
1. Full-Time Equivalent Students	2,400	3,000	3,600
2. Expansion in Design Population--Percentage	16%	20%	24%
Retail (28-24.025)			
1. Gross Square Feet	320,000	400,000	480,000
2. Acres	32	40	48
3. Parking Spaces	2,000	2,500	3,000
Hotel/Motel (28-24.026)			
1. Rooms	280	350	420
2. Rooms[2]	600	750	900
Recreational Vehicle--Spaces (28-24.027)	400	500	600
Multiuse--Percentage (28-24.028)	104	130	156
Airports (28-24.0281) Expansion Runway/Terminal	20	25	30
Industrial Plants, Industrial Parks and Distribution, Warehousing or Wholesaling Facilities (28-24.029)			
1. Parking Spaces	2,000	2,500	3,000
2. Acres	256	320	384
Port Facilities (28-24.030) (28-24.033) (28-24.034)			
1. Wet Storage or Mooring of Watercraft	120	150	180
2. Dry Storage of Watercraft	160	200	240
3. Wet or Dry Storage or Mooring of Watercraft with all Necessary Approvals Pursuant to Chapters 253, 373 and 403 and Located Outside Outstanding Florida Waters and Class II Waters	320	400	480
4. Wet or Dry Storage or Mooring of Watercraft in Areas Designated by Governor and Cabinet[3]	240	300	360
5. Dry Storage of Watercraft in a Marina Constructed and in Operation Prior to July 1, 1985	240	300	360
6. Mixture of Wet and Dry Mooring or Storage of Watercraft--Percentage	80	100	120
7. Wet or Dry Storage or Mooring of Watercraft Adjacent to an Inland Freshwater Lake[5]	120	150	180
8. Wet or Dry Storage of Mooring of Watercraft of 40 Feet in Length or Less or Any Type or Purpose[6]	40	50	60

Table 2. DRI Thresholds as Defined by Chapter 28-24, FAC

Development Type/Threshold Unit	Threshold Percentage[1]		
	80%	100%	120%
Retail and Service Development (28-24.031)			
1. Gross Square Footage	320,000	400,000	480,000
2. Acres	32	40	48
3. Parking Spaces	2,000	2,500	3,000
Multiuse Developments (28-24.032)			
1. Two or More Land Uses	116	145	174
2. Three or More Land Uses, One of Which is Residential with at Least 100 Dwelling Units or 15 Percent of the Applicable Residential Threshold, Whichever is Greater	128	160	192
Airports (28-24.035) Expansion Runway/Terminal[4]			
1. Percentages	20	25	30
2. Gross Square Footage	40,000	50,000	60,000

[1] A development that is at or below 80 percent of all numerical thresholds shall not be required to undergo DRI review. A development that is between 80 and 100 percent of a numerical threshold may be presumed to not require DRI review. A development that is at 100 percent or between 100 and 120 percent of a numerical threshold be presumed to require DRI review. A development that is at or above 120 percent of any numerical thresholds shall be required to undergo DRI review.

[2] In counties with population greater than 500,000 and only in geographic areas specifically designated as highly suitable for increased threshold intensity in the approved LGCP and the comprehensive regional policy plan.

[3] In areas designated by the Governor and Cabinet in the state marina siting plan as suitable for marina construction.

[4] Expansion of existing terminal facilities at a nonhub or small-hub commercial service airport shall not be presumed to be a DRI.

[5] Except for Lake Okeechobee or any lake which has been designated as outstanding Florida water.

[6] Exceptions to 380.0651(3)(e) requirements for DRI review shall not apply to any water port or marina facility located within or which serves physical development located within a coastal barrier resource unit on an unbridged barrier island designated pursuant to 16 USC 3501.

Specific Authority 380.06(2), 380.0651 (Supp. 1988), 369,307 (Supp. 1988), FS. Section 52, Chapter 93,206, Laws of Florida.
Law Implemented 380.06 FS. Chapter 93-206, Laws of Florida.
History--New 12-31-85, Formerly 27F-2.014, Amended 7-25-89, 1-5-94.

1.1 Types of DRIs

DRIs are classified in the following categories.

- Areawide DRI
- Downtown DRI
- DRI Master Plan Development
- Expedited DRI Review
- Conceptual DRI Agency Reviews

1.1.1 Areawide DRI

Areawide DRIs are development plans which encompass a defined planning area with two or more developments. These two or more development projects can be and often are represented by separate property owners. The areawide development plan includes a map and definition of proposed land uses including the amount of development proposed by use and phase. This type of DRI also includes an integrated capital improvements program for transportation and other public facilities to ensure development staging contingent upon the availability of needed facilities and services. The plans incorporate land development regulations, covenants and other restrictions adequate to protect resources and facilities of regional and state significance. In addition, the plan specifies responsibilities and identifies the mechanisms for carrying out all improvement commitments and identifies compliance conditions for the DO.

An applicant must petition the local government for authorization to submit an Areawide DRI application for a defined planning area. Once the petition has been approved, and the time for appeal has passed, an approved applicant for development may submit a DRI-ADA subject to the regular DRI review process. Typical examples of Areawide DRIs include airports, water ports, and in certain cases, redevelopment areas not located within a defined downtown area.

1.1.2 Downtown DRI

A downtown DRI covers an area of land within the downtown of a city. The downtown DRI is submitted by a development authority and covers any portion of the land area over which the authority has responsibility. The authority is considered the developer, even if the development will be undertaken by others. Such applications must contain all normal DRI information. In addition, the total amount of development planned for each land use category must be specified and monitored carefully given the number of parties involved.

1.1.3 DRI Master Plan Development

When a proposed DRI is planned for implementation over an extended period of time, the applicant may follow an alternative review procedure and file an application for master development approval of the project. As part of this procedure, the applicant agrees to present subsequent increments of the development for preconstruction review. One increment is usually proposed and reviewed concurrently with the Master Plan. The Master Plan Development Agreement is made between the applicant, the RPC and the local government. The RPC conducts a sufficiency review of the Application for Master Plan Development approval. This review includes consideration of:

1. Adequacy of information.
2. Necessity of subsequent review of phases, increments or issues related to regional impacts.
3. Additional information which may be required in subsequent incremental applications.
4. Issues which could result in the denial of an incremental application

Prior to the adoption of the DRI Master Plan DO, both the DO and associated agreements are reviewed by the developer, the landowner, RPC and the local government. The DO and associated agreements must:

1. Adequately address regional impacts identified in the application for master development approval and the Assessment Report prepared by the RPC.
2. Specify which regional issues have been sufficiently addressed.
3. Deny, approve or approve with conditions the conceptual or master plan development and any initial increments or phases of development that have been reviewed by the RPC.
4. Define issues subject to further review upon submission of subsequent incremental applications for development approval.
5. Identify issues which can result in denial of subsequent applications.

Department review of the Application for Master Plan Development approval is required by DCA. The other common DRI review are also involved in this portion of the DRI approval. Department review of the DO is done at the request of the RPC.

1.1.4 Expedited DRI Review

If the proposed DRI is believed to be consistent with the adopted LGCP and will not require a LGCP amendment, the applicant may request an expedited DRI review. The expedited review will require more timely response by the Department Reviewer. The Reviewer should follow similar but more expedited procedures outlined in this chapter starting with the formal preapplication meeting.

1.1.5 Conceptual DRI Agency Reviews

A Conceptual Agency DRI review reflects a general, but consolidated, review of a DRI's proposed location, densities, intensities of use, character and major design features. The purpose of the review is to consider whether these aspects of the proposed DRI comply with the issuing agency's statutes and rules. An applicant may request conceptual agency review either concurrently with normal DRI review or subsequent to a preapplication conference. A Notice of Proposed Agency Action is required (s. 120.60(3), FS), with a report stating whether the agency intends to grant conceptual approval, with or without conditions, or to deny conceptual approval.

The established time for review (s. 120.62(2), FS) is 90 days and starts when the RPC requests additional information**.** Conceptual Agency DRI review may also be initiated by the applicant subsequent to the preapplication conference. The Department Reviewer should be aware of this possibility since the applicant is essentially asking the Department to not only review, but conceptually approve, the project. The Department Reviewer has 90 days to conduct this review.

1.2 Review Requirements for New DRIs

The requirements for review and approval of a new DRI have remained fairly standard for several years. The steps involved are more numerous than those necessary for modification to an existing DRI and, once understood, can be uniformly applied to each scenario except for the review times allowed The following is a brief overview of the DRI process that is depicted in Figure 4 at the beginning of this chapter.

1.2.1 Binding Letter of Determination/DRI Determination

A binding letter summarizes the determination by DCA as to whether a proposed development must undergo a DRI review.

Prior to initiating any DRI application, it is typical for the applicant or one of the lead DRI agencies, typically the local government, to request a determination from DCA as to whether the project meets the definition of

a DRI. While the Department Reviewer may be requested by DCA for a determination of possible transportation impacts, this step in the DRI process does not mandate review by the Department. Chapter 28-24, FAC, spells out the criteria used by DCA to make this determination. Table 2 depicts the land use intensity thresholds found in this rule that serve as the primary basis for DRI determination. DCA must make a finding of sufficiency, or request additional information within 15 days of receipt of a request for a binding letter of interpretation or a supplement. This leaves the Department Reviewer with even less time if requested to provide assistance.

1.2.2 DRI-ADA Preapplication Conference/ Transportation Methodology Meeting

This conference is typically orchestrated by the lead agency, the RPC, in cooperation with the applicant. All review agencies including the Department are also invited. This is the first step in the review process for DRIs and generally represents the initial opportunity for the Department to communicate their expectations of the site impact analysis that will be performed by the applicant. It is important for the Department Reviewer to clearly articulate **ALL** major issues and concerns at this meeting and/or Transportation Methodology Meeting to minimize possible discrepancies or omissions during the initial DRI-ADA sufficiency review. Unit 4 elaborates on what the types of information should be requested at this meeting. Formal DRI-ADA requirements for review by the Department will include, at a minimum, Questions 21 and 22 (found within Chapter 28-24, FAC, and DCA Form RPM-BSP-ADA-1) dealing with transportation and air quality impacts of the proposed development.

Before filling an application for development approval, the applicant is instructed to contact the RPC to arrange a preapplication conference. This conference is conducted to identify issues, coordinate appropriate state and local agency requirements, and promote a proper and efficient review of the proposed development. The RPC will work with the applicant and Department Reviewer to arrange a separate Transportation Methodology Meeting to deal exclusively with transportation methodology issues. The applicant will be required to provide standard information about the proposed development in accordance with DCA Form RPM-BSP-PREAPP-INFO-1 ten working days prior to the preapplication conference. The preapplication conference will then be conducted to specify informational requirements, including the required number of DRI-ADAs, the method of their distribution to reviewing agencies, the deletion of questions from the DRI-ADA, and to clarify concerns of the reviewing agencies. The Department Reviewers must identify the required permits issued by the Department, the level and detail of information required, and the permit issuance processes as applicable to the proposed development. Specific informational needs related to the proposed development should also be identified but are often better addressed in the follow up Transportation Methodology Meeting. Department information which should be given to the applicant is detailed in Unit 4, Chapter 1.

After these meetings are conducted, the RPC will document the findings and agreements, including a summary of all assumptions and methodologies agreed upon within 35 days following the preapplication conference. The preapplication conference attendees and state and regional agencies involved in the DRI review process have a review time period specified by the RPC (at least 14 days) to comment, agree or disagree in writing with the summary. After agreement has been reached regarding assumptions and methodologies, the reviewing agencies, including the Department, may **NOT** subsequently object, unless changes to the project or information occur which make said assumptions and methodologies inappropriate.

1.2.3 DRI-ADA Application and Sufficiency Review

The applicant completes the DRI-ADA in accordance with the requirements agreed to in Step 2. The RPC, DCA or Applicant may request that another Preapplication Meeting be conducted if the DRI-ADA is not submitted within one year of the initial Preapplication Meeting. The DRI-ADA is then submitted to the RPC for distribution and review by the affected agencies including the Department. This is the first opportunity for the Reviewer to conduct a thorough review of the applicant's estimate of site transportation impacts anticipated by the proposed DRI. The Reviewer will be required to provide written comments or objections to the RPC and the applicant within a 30-day time frame. Additional information pertaining to the initial DRI-ADA application submittal may be requested only once, within the same above time frame, by the RPC. However, new information submitted by the applicant in the form of an amended or revised DRI-ADA is normally reviewed and commented upon by the reviewing agencies after the

first DRI-ADA submittal. In addition, DRI-LGCP amendments are normally initiated at this point to ensure consistency with the proposed DRI. These are discussed in Chapter 2 of this Unit.

1.2.4 Note on DRI-ADA Sufficiency Determinations

Sufficiency is the determination by the RPC that the applicant has supplied all of the necessary information in order to assess the development's regional impacts. When a DRI-ADA is filed with a local government, the applicant also sends copies of the application to the appropriate RPC and DCA. All review comments and requests for additional information as well as comments received from the various review agencies are coordinated by the RPC.

Different RPCs have different policies and procedures for summarizing and transmitting comments to the applicant. For that reason and to be safe, it is suggested that a copy of the Department's comments to the RPC be simultaneously sent to DCA, the applicant, and the applicant's attorney and/or consultant.

The RPCs have the responsibility to coordinate with all affected agencies with regard to both the notification and coordination of review. This coordination requires Department comments/interests to be weighed against concerns of other agencies that may conflict with the interests of the Department. In such instances, the RPC may carry forward a position which does not support the Department's conclusions.

1.2.5 RPC Assessment Report

The RPC has 50 days after receipt of the notice of public hearing, to prepare and submit a formal **Assessment Report** detailing recommendations to the local government on the regional impact of the proposed development. The Department Reviewer should review this report to make sure that Department recommendations are properly shared. This is important since this report will often be used to develop and subsequently adopt the binding DO between the applicant and the local government. The Department's review will be solicited by the RPC for incorporation into the **RPC Assessment Report** typically allowing less than 30 days for response. In addition, sufficiency comments are limited to two sets. Thus, it is imperative to resolve differences as soon as possible. This, once again, reinforces the need to communicate all relevant issues at the preapplication conference and/or the Traffic Methodology Meeting.

1.2.6 Preliminary Development Agreement (PDA)

A PDA is a written agreement between DCA, the RPC and the local government. It allows the applicant to proceed with a limited amount of development on the site prior to execution of a formal DO. PDAs are done solely at the applicant's risk since the PDA is contingent upon specific conditions being met and further agency approvals (See Rule 9J-2.018, FAC). This is not a required site impact review milestone but is extremely important for the Reviewer to be familiar with since the PDA typically presents binding conditions or concerns originating from the DRI-ADA sufficiency review and may be requested prior to the preapplication conference. It is in the best interest of the Department Reviewer to offer assistance and review of the PDA to the RPC and DCA so that potential transportation impacts can be addressed. DCA has 45 days after receipt of a proposed PDA to grant, deny or suggest modifications. The Department Reviewer's input will be solicited by DCA allowing for less than a 45-day response time.

1.2.7 DO/Local Government Ordinance Adoption

The DO is the binding order which authorizes and formally approves the DRI. It is executed between the applicant and the local government. The DO spells out most, if not all, of the binding conditions that will be imposed upon the DRI. At a minimum, this would include mitigation requirements and proportionate share responsibilities, monitoring procedures, DO compliance, commencement and termination dates, requirements for the annual report and a legal description of the property. It is in the best interest of the Department Reviewer to remain involved in this step, if only from a review standpoint, since the DO represents the binding conditions for subsequent development of the DRI.

The formally adopted and written decision on the proposed DO will be issued within 30 days after the final public hearing is concluded unless extension is requested by the applicant. The Department Reviewer may be requested to provide written comments at request of DCA.

1.2.8 Appeals to the DO

It is important to note that DCA, the development owner or the applicant are the only parties that may appeal the DO. The appeal must be filed within 45 days from when it was officially rendered. The RPC

can only recommend an appeal to the DO since DCA is the only agency with legal standing to appeal a DRI. This is normally accomplished through petitioning for an Administrative Hearing or Circuit Court in the event that the Administrative Hearing does not fully satisfy the initial objections. The appeal of a DRI DO is made to the Florida Land and Water Adjudicatory Commission (FLAWAC) by filing a notice of appeal with the commission. DCA reviews all DOs which have been rendered within the 45-day period for purposes of making a recommendation about the appeal. The Department Reviewer may be requested by the DCA reviewer to assist in the DO review for appeal recommendation but must complete their efforts within 45 days.

1.2.9 DRI Annual Reports

The DRI Annual Report is a yearly summary of information about the progress of development, applicant commitments for the DRI and its current status. Rule 9J-2.025, FAC, clarifies specific information to be included in each Annual Report. In addition, these reports are completed in a standard format specified by DCA on form RPM-BSP-ANNUAL REPORT (see Table 3). Some special requirements of the Annual Report including the due date are specified in the DO. This is not a required review by the Department for site impacts. However, it is common for several pieces of pertinent information to be communicated in this report including the **Annual Traffic Monitoring Report** findings, etc. which have a direct bearing on the surrounding transportation network and the scheduling of applicant improvements. Other forms of monitoring may be called for but are not part of the site impact review process. One of the most significant is the **Modeling and Monitoring Schedule** described below.

1.2.10 Modeling and Monitoring Schedules and Annual Traffic Monitoring Reports

This is a schedule for the mitigation of impacts on each significantly impacted roadway which will operate below the adopted level-of-service (LOS) standard at the end of each project phase or subset of that phase. The schedule identifies each roadway improvement necessary to achieve the adopted LOS standard, amount of development and its timing which will cause the roadway to operate below the adopted LOS (Rule 9J-2.045(7)(a)4.a, FAC). Written comments may be requested by DCA as part of the DO review process. The Department Reviewer will have less than 45 days to submit comments. For the Annual Traffic Monitoring Study, the review time period will be specified in the DO. The review request will be made by DCA or the RPC.

1.3 Review Requirements for Modification to Existing Approved DRIs

The modification of an approved DRI follows many of the same steps outlined for new DRIs. However, modifications must first be determined to either be substantial or nonsubstantial. All DRI changes are initially presumed to be substantial deviations. It is the applicant's burden to rebut this presumption. The Department Reviewer should review these DRI changes in much the same manner as a new DRI application. The Reviewer is encouraged to remain involved throughout the process even if the change is determined to be nonsubstantial until the possibility for further transportation impacts has been completely refuted.

1.3.1 Notification of Proposed Change (NOPC)

An NOPC is required to be submitted by the applicant to the local government, the RPC and DCA when a change is proposed to a previously approved DRI. These applications should be reviewed by the Department and reviewed for assessment of potential transportation-related impacts. Such a change request requires formal determinations from DCA, the RPC and the local government as to what level of further review will be required. A public hearing is conducted by the local government to determine if the proposed change constitutes a substantial deviation. Site impact review at this stage is not required. Written Department comments on the NOPC are typically required within 30 days.

1.3.2 Substantial/Nonsubstantial Determination

The applicant's first effort in modifying a DRI will be to obtain a determination from DCA as to how the change will be interpreted. In all likelihood, the applicant will seek to avoid any finding of substantial deviation since this will essentially create a review process very similar to that outlined for new DRIs. A substantial deviation is defined as a proposed change to an approved DRI which creates a reasonable likelihood of additional regional impact or any regional impact created by a change not previously reviewed by the RPC. It is also a change that, standing alone or cumulatively, can exceed criteria set forth in Section 380.06(19)(b-c), FS. The DRI review for a substantial deviation is normally limited to those areas impacted by the proposed change.

The Department is encouraged to review all NOPCs and to assist in identifying potential impact issues. This is important since nontransportation-related changes, most commonly density and/or land use changes, can have a direct bearing on resulting trip generation and distribution. This may create the need for a more detailed examination of anticipated transportation site impacts. The determination of substantial deviation is required within 30 days by DCA.

1.3.3 Finding of Nonsubstantial Deviation

If the change is determined by the local government, the RPC and DCA to be nonsubstantial, then the Department's review requirements are normally waived unless specifically requested by one of these agencies. Minor modifications to the DO normally follow and the change is expedited.

1.3.4 Finding of Substantial Deviation

If the change is determined to be substantial, it is very likely that the Department will be requested to perform some type of site impact review. The substantial deviation review will often follow the same steps as those outlined for new DRIs. However, such review is contingent upon the issues identified by the finding. For example, the Department may not be involved in the substantial deviation DRI review if the applicant can demonstrate that the surrounding transportation network will not be adversely affected or conditions worsened by the proposed change. Therefore, it is important for the Department to work with the local government, DCA and the RPC to make sure that the appropriate DRI issues brought about by the change are fully addressed in the review.

Once the substantial determination has been made, the RPC will arrange for a preapplication meeting to identify which specific DRI issues are to be addressed in the substantial deviation DRI-ADA. A review of the DRI-ADA will be conducted and the DO and annual reporting requirements likely changed. The Reviewer should interpret findings of substantial deviation as a need for further site impact review unless proven otherwise by the RPC, DCA or the applicant.

1.4 Florida Quality Developments (FQDs)

FQDs are defined as developments which are at or above the 80 percent numerical thresholds established for DRI reviews (See Table 2). FQDs have shorter review times but are not widely utilized by DRI applicants. While the review periods are shorter, the basic process and milestones are similar to those for new DRIs. The Reviewer should refer to the DRI steps, recognizing these shorter review times established by the RPC, when conducting site impact reviews for FQDs. FQD sufficiency reviews must be completed within 30 days and are specifically administered under Rules 9J-28 and 9J-2.045, FAC.

1.5 Florida Job Siting Act

The Florida Job Siting Act certification process is an expedited, consolidated review of proposed major economic development projects. The procedure is very similar to an expedited DRI, results in a single license which meets all necessary environmental permitting and land use planning criteria. Applications are limited to permanent business location/relocations and government facility relocations or expansions. Florida's existing business or government facility must meet additional specific criteria identified in s. 403.950, FS. These other requirements are summarized below.

1. The business must be of a specific industry type. In addition, locations on closed military installations may also be considered.
2. The annual wages must be 115 percent of the average annual wages for the state, 80 percent for those being prepared in enterprise zones.
3. The applicant must create at least 500 jobs in communities whose population exceeds 50,000 persons or 100 jobs in communities with populations less than 50,000. Only 100 jobs must be created for military base location applications. In addition, all of the thresholds may be reduced by 50 percent if the county unemployment rate is higher than the state average.

   Note: All eligibility criteria is found within s. 403.953, FS. The Department Reviewer is not responsible for making eligibility determinations.

Florida Job Siting Act applications must comply with the DRI-ADA analyses requirements.

Once the Office of Tourism, Trade and Economic Development (OTTED) determines an application to be sufficient, it provides a schedule for review and comment to the affected agencies. A hearing date is set by the Division of Administrative Hearings and the affected agencies are notified. The Department must issue a report within 65 days from determination of the application's sufficiency by OTTED. This report must

contain all information relating to the need for variances, exceptions, exemptions or other relief which may be necessary to facilitate the location of the proposed project. The conditions of certification which the Department believes are necessary to meet agency standards, including those that are nonprocedural, must also be provided. Each proposed condition of certification must include the specific statute, rule or ordinance which authorizes the proposed condition.

Written comments citing expected transportation issues related to the proposed project is required from the Department Reviewer. These comments are to be submitted to the applicant, OTTED, the Department of Environmental Protection, affected local governments and all other affected agencies identified by OTTED.

Table 3. DRI Type Review Reference Chart, Primarily Chapter 380, FS and Rule 9J-2, FAC

Review	Product	Agency	Review Time (1)	Statutory Guidelines	Rules, Procedures, Directives, Policies and Topics
Binding Letter *	Written Comments	DCA	< 15 days	380.06(4), FS	Rule 9J-2.016, FAC Rule 9J-2.045, FAC
Preapplication Methodology	One or more Meetings	RPC	As set by RPC	380.06(7)(b), FS	Rule 9J-2.021, FAC Topic # 525-030-115-c
ADA Sufficiency	Written Comments	RPC	< 30 days	380.06(10), FS	Topic # 525-030-115-c Rule 9J-2.045, FAC
PDA *	Written Comments	RPC	< 45 days	380.06(8), FS	Rule 9J-2.018, FAC Topic # 525-030-115-c
DRI DO *	Written Comments	RPC DCA	< 45 days	380.06(15), FS	Rule 9J-2.025, FAC Rule 9J-2.045, FAC Topic # 525-030-115-c
DRI Annual Report	None	LG	None	380.06(18), FS	Rule 9J-2.025(3)(b)14, FAC
Annual Traffic Monitoring Study and the Modeling and Monitoring Schedule	Written Comments	DCA & LG	As set in DO DO review <45 days		Rule 9J-2.045(7)(a)4.b., FAC Topic # 525-030-115-c
NOPC *	Written Comments	DCA	< 30 days	380.06(19), FS	Rule 9J-2.045, FAC Topic # 525-030-115-c
Sub Dev-DRI	Written Comments	RPC	Follows ADA process	380.06(19)(g), FS	Rule 9J-2.045, FAC
FQD Sufficiency	Written Comments	DCA	< 30 days	380.061, FS	Rule 9J-28, FAC Rule 9J-2.045, FAC
Job Siting Act	Report	DOC	< 65 days	403.950, FS	Rule 9J-2.045, FAC
Expedited DRI	Written Comments	RPC	As set by RPC	380.06(7)(a), FS	
Conceptual Agency Review	Notice of Proposed Agency action	RPC	90 days	380.06(9), FS	Rule 9J-2.021(2), FAC Rule 9J-2.022(1)(d), FAC
Master Plan Development	Written Comments	RPC	As set by RPC	380.06(21), FS	Rule 9J-2.028, FAC
Areawide DRI	Written Comments	RPC	Follows ADA process	380.06(25), FS	Rule 9J-3, FAC Rule 9J-2.045, FAC

*Not required but may be asked by the responsible agency to provide a review regarding potential transportation impacts.

(1) Department review times are actually shorter since these review times reflect those between the applicant and the lead agency.

CHAPTER 2. LOCAL GOVERNMENT COMPREHENSIVE PLAN (LGCP) REVIEWS

An LGCP is adopted by a city or county to preserve, promote and protect the public health, safety and welfare. This is accomplished through the adequate and efficient provision of land, transportation, water, sewer, parks, recreational facilities and housing, as well as the conservation, development, utilization and protection of natural resources within their jurisdictions.

The 1985 growth management legislation required the adoption of LGCPs for every city and county in Florida. Since that time, almost all of the comprehensive plans have been adopted and found in compliance with Chapter 163, FS. New comprehensive plans will still be developed and adopted as new areas incorporate. Approximately two to three new plans a year are being reviewed at this time. The review of these initial LGCPs does **NOT** constitute a site impact review. The Department's Topic *Paper 525-010-101-b* specifies minimum standards for review of LGCPs. Most Department activities related to site impact concerns originate from comprehensive plan amendments, specifically FLUM and DRI amendments. The site impact review discussions in this chapter are limited to LGCP FLUM and DRI amendment reviews along with a brief discussion on small-scale LGCP FLUM amendments.

Due to the importance of local government activities and their influence on the SHS, the Department Reviewer must understand the types of reviews which are not of a site impact nature. These reviews may have an influence on subsequent site impact reviews in that particular jurisdiction. Initial guidance for these reviews is included in Appendix C. Topics covered include LGCP preparation and initial adoption, LGCP amendments other than FLUM or DRI changes, LGCP Evaluation and Appraisal Reports (EARs), PUD and other local project development reviews such as zoning matters and Land Development Regulations (LDRs), Transportation Concurrency Management or Exception Areas (TCMA and TCEA) and Community Redevelopment Plans. All follow the same basic review requirements and corresponding Statutes, Administrative Rules and Forms referenced in Table 4.

2.1 LGCP Amendment Reviews

LGCP amendments are any action of a local governing body which change an adopted comprehensive plan. An exception to this definition is a legislative act which only codifies local legislation or corrects, updates or modifies the capital improvement element. Comprehensive Plans may only be amended twice per calendar year unless the amendment is a qualified exception. These latter exceptions include: DRIs, small-scale development activities, compliance agreements, the intergovernmental coordination element, and an emergency as defined in s. 163.3187(1)(a), FS.

The plan amendment review process for the Department consists of a Preliminary Review Determination (PRD) to ascertain if the Department Review is needed or suggested for assistance in the preparation of the Objections, Recommendations and Comments (ORC) Reports. The reviewer may be asked to review any number or type of LGCP amendments; however, FLUM and DRI amendments are the only types which can be classified as site impact reviews. A PRD may be performed in a number of cases including other types of LGCP amendments and EARs. The PRD must result in a determination by the Department as to whether or not they would like to review the proposed amendment. Once completed, the Department Reviewer will be required to formally request review participation to DCA. The Reviewer should make this determination and initiate the request to DCA on LGCP FLUM and DRI amendment changes, at a minimum.

The formal request to DCA may allow the Department to participate in the ORC report process. DCA should respond to the Department request within 21 days. If granted, the Department Reviewer will participate in the ORC review and report process. Like most reviews, the Reviewer is expected to comment in writing. The Reviewer has 30 calendar days from DCA's receipt of a complete amendment package to respond if an ORC review is requested and granted by DCA.

2.1.1 LGCP FLUM Amendments

FLUM amendments are LGCP-based amendments to change an adopted land use classification as depicted in the local government's FLUM series. These amendments are limited to twice annually unless the change is defined to be small-scale. Written objections, recommendations and comments for inclusion in the ORC report, or a statement that the

Department has no objections, recommendations or comments should be submitted to DCA. DCA will notify the Department within 30 calendar days from DCA's receipt of a complete amendment package as to when the PRD ORC Report is due.

2.1.2 DRI Comprehensive Plan Amendments

DRI Comprehensive Plan amendments are LGCP amendments undertaken to allow for consistency with a proposed DRI, or substantial deviation to an existing DRI. These amendments are not limited in number. They follow a regular LGCP amendment review process and are subject to the PRD process as noted above. Written objections, recommendations and comments for inclusion in the ORC report, or a statement that the Department has no objections, recommendations or comments should be submitted to DCA by the Department Reviewer. DCA will notify the Department within 30 calendar days from DCA's receipt of a complete amendment package if a ORC review is requested or if DCA decides to conduct a review.

2.1.3 Small-Scale Development Comprehensive Plan Amendments

Small-scale amendments may be initiated by the local government for up to 60 acres annually as long as the affected parcels do not exceed ten acres in size. They follow a regular LGCP amendment review process and are subject to the PRD process as noted in the explanation of the LGCP Amendment Review Process. These FLUM-based amendments are sufficiently small in size and impact to not fall within the two-per-year restriction of other amendments to the LGCP. Residential land use changes are limited to ten or fewer units/acre. There are other restrictions related to a parcel location; a change to the LGCP goals, objectives and policies; or areas of critical state concern. However, each local government is still restricted to a cumulative maximum of 60 acres of small-scale amendments each year. These amendments may be adopted with only one public hearing and are not required to be reviewed by DCA or the Department.

Table 4. Local Government Type Review Reference Chart, Primarily Chapter 163, FS and Rule 9J-5, FAC

Review		Product	Agency	Review Time Period	Statutory Guidelines	Relevant Rules, Procedures, Directives, Policies and Topics
LGCP		ORC	DCA	< 30 days	163, FS	Rule 9J-5, FAC Topic # 525-010-101-b
EARs		Meetings, Written Comments	RPC	Varies by RPC delegation agreement	163.3187, FS	Topic # 525-010-101-b
LGCP Amends	FLUM amends	ORC	DCA	< 30 days	163.3184, FS	Topic # 525-010-101-b
	DRI Amends				163.3187(1)(b), FS	
	EAR Amends				163.3187, FS 163.3184(b), FS	Topic # 525-010-101-b
PRD-LGCP Amendments		Request to Review	DCA	< 21 days	163.3184, FS	Rule 9J-5, FAC
Small Scale Development Amendments		None	LG	None	163.3187(1)(c), FS	
Community Redevelopment Plans		Comments	LG	As set by LG	163.360, FS	
LDRs[1]		None	LG	None[2]	163.3164(23), FS 163.3202, FS	

[1]Including Corridor Designation and Corridor Management Ordinances, PUDs, rezonings and Subdivision regulations.
[2]At the request of the local government.

CHAPTER 3. OTHER TYPES OF REVIEWS

There are several other site impact reviews that need to be understood. While these reviews may be less frequent, they are nonetheless just as critical. Unlike the previous two chapters, this chapter references several reviews that are required by FS or FAC.

There are five types of site impact reviews discussed in this chapter. Several of these are similar to those performed at the DRI and local government level. However, most are enacted by different statutes, reflect subtle differences in review time and character and occur less frequently. The unique review requirements for each and special instructions are contained in Unit 4. Table 5 depicts the appropriate FS and FAC, along with applicable review times, and lead agency identification for Department coordination. The five types of reviews discussed are shown below.

- CMPs
- Hazardous Waste Transfer Facilities
- Military Base Reuse Plans
- Access Management
- IJR/IMR

Several planning reviews not meeting the definition of a site impact review may be coordinated or undertaken as a courtesy by the Department. These are described in Appendix C. They include Natural Gas Pipeline Siting, Electrical Power Plant and Transmission Siting, SRPPs, Enterprise Zone Development Plans, and Economic Development Transportation Fund (EDTF) application reviews. The Department Reviewer should be familiar with these unique reviews although they are not site impact reviews.

3.1 Campus Master Plans (CMPs)

CMPs and resulting Campus Development Agreements (CDAs) are similar in nature to the adoption of a LGCP and DRI. The CMP requirements were imposed upon the state's ten four-year universities during the 1993 legislative session. This effort was initiated to formalize planning mechanisms and mitigate for future development of the State University System (SUS) participants over ten-year planning increments. These plans can be comprised of as many as 18 elements including eight required review elements: land use, housing, recreation and open space, general infrastructure, transportation, intergovernmental coordination, conservation and capital improvements. In addition, elements not subject to review but part of the CMP include academic mission, academic program, urban design, academic facilities, support facilities, utilities, architectural design, landscape design, facilities maintenance and, in certain cases, a coastal management element. These plans are prepared by the individual universities and adopted by the Board of Regents and are subject to review by the Department and other affected agencies. Site impact review considerations should be addressed prior to adoption of the CMP since they will form the basis for the execution of a CDA between the affected local government, the university in question and the Board of Regents. Although the binding legislation for CMPs and CDAs (e.g., s. 240.155, FS and Rule 6C-21, FAC) does not require Department involvement in development or execution of the CDA, the Department Reviewer is strongly encouraged to work through the local government in identifying transportation-related impacts and mitigating for such beginning with the initial CMP. This is important since many of the ten state universities impact the SHS. CDAs must be executed within 450 days from CMP adoption and must cover a minimum five-year period. CMPs must be updated every five years which will likely result in modifications to the CDA on a similar time frame basis. The Department has 90 days to review the CMP.

3.2 Statewide Multipurpose Hazardous Waste Facility Siting Act

In general, the state siting acts, including the Natural Gas Transmission Line Siting and Electric Power Plant or Transmission Line Siting, are expedited centralized, coordinated review processes for the purposes of siting of natural gas transmission lines, electric transmission lines, electrical plant sitings and hazardous waste facilities. The Department Reviewer should primarily be concerned about hazardous waste facilities and power plants since these are the only two cases where transportation-related site impacts can be quantified. Concerns for safety should also be a priority for the Department Reviewer when evaluating these applications.

This Statewide Hazardous Waste Facility Siting Act is intended to ensure that the location, construction, operation and maintenance of hazardous waste facilities and their subsequent construction do not produce adverse effects the environment or public health, safety, and welfare of the citizens. The act is referenced by s. 403.78, FS.

The Department is required to submit a report on issues within their jurisdiction to DEP within 90 days after receipt of the application. This report is required to

include specific findings regarding variances, compliance or noncompliance on all procedural requirements and any proposed condition of certification within the Department's jurisdiction. The specific statue, rule or ordinance authorizing each proposed condition must be identified. The Department Reviewer must coordinate this review with DEP and has approximately 90 days from receipt of the application to conduct the review and provide written comments.

3.3 Military Base Reuse Plan

There are optional military base reuse planning processes which supersede some of the DRI requirements and Comprehensive Plan requirements as they relate to the conversion of military bases designated for closure by the federal government. Within six months of May 31, 1994, or the designation of a military base for closure, the affected local government was required to notify DCA and the Department of Commerce (DOC) in writing about choice of this optional process. If it does not choose to utilize this process, all of the provisions of the DRI and LGCP (e.g., s. 380 and s. 163, FS) requirements will apply. The plan may be adopted as a separate component of the LGCP, or through amendment to appropriate portions of the LGCP. The binding legislation can be found in s. 288.975, FS.

As with the CMP, the Department Reviewer must review the plan and assist the local government in subsequent reviews conducted to quantify and/or mitigate for development impacts. The Department Reviewer is to provide written comments on the Military Base Reuse Plan within 60 days from receipt of the proposed amendment.

The military base may elect to seek the **Adopted Reuse Plan** provision for military bases established in Chapter 288, FS. The Department Reviewer will conduct a review of the plan under the Adopted Reuse Plan provisions. These provisions call for a shorter review period, 45 days from receipt of the adopted amendments. There is also a requirement to formally petition the local government in the event that the plan is not in compliance with the provisions of Chapter 288, FS.

3.4 Access Management

Access Management is the practice of managing the location, number and spacing of connections, median openings and traffic signals on the highway system. Proper management of access on major arterial facilities can lead to a significant increase in traffic safety and capacity. In 1988, the Florida Legislature formally recognized these benefits, and enacted the SHS Access Management Act (s. 335.18, FS) (revised, 1992). This act provided the Department with necessary authority to regulate access to the SHS. The Department has executed this responsibility through two major documents:

3.4.1 Rule Chapter 14-97

Chapter 14-97 provides for Access Management Standards System and the development of an access management classification system. As a result of this act and subsequent amendments, the Department has assigned an access classification to every segment of the SHS. The process requires extensive review of the entire system with public hearings and input. The rule was enacted by the District Secretary in 1992.

3.4.2 Rule Chapter 14-96

Chapter 14-96 provides for an application/permit process based on the access classification assigned by Chapter 14-97 and approved by the District Secretary. This rule gives the Department the authority to review specific access requests, requiring an analysis of traffic operations (for sites generating more than 1,200 vehicles per day) and adherence to the access management standards for each location in question, along with cooperation and coordination with local governments.

The Department Reviewer should utilize the following references for more information regarding access management or permit issues.

1. SHS Access Management Act, s. 335.18, FS.
2. Rule 14-97, FAC, SHS, Access Management Classification System and Standards.
3. Rule 14-96, FAC, SHS, Connection Permits, Administrative Process.
4. "Use of the Access Management Standards," FDOT, Systems Planning Office, 1992.
5. "Examples Using Access Management Standards," FDOT, Systems Planning Office, 1992.
6. "Legal Considerations," FDOT, Systems Planning Office, 1992.
7. "The Use of Trip Generation in Access Permitting," FDOT, Systems Planning Office, 1992.
8. Assignment of Access Management Classifications to the State Highway System, Topic No.: 525-030-155-A, FDOT, September 21, 1992.

9. Access Management on the State Highway System, Most Commonly Asked Questions, FDOT, 1992.
10. "Site Design and Access Management" Training Unit, FDOT, Systems Planning Office.
11. Land Development Regulations that Support Access Management for Florida Cities and Counties, FDOT and CUT, January, 1994.
12. Median Opening Decision Process Directive, Topic No.: 625-010-020-a, Effective September 14, 1995.

Site impact analysis requires a review of the proposed access from the standards adopted by the Department. The granting of access permits requires a different type of review as discussed in Steps 9 and 10 of Unit 3.

3.5 Interchange Justification and Modification Reports (IJR/IMR)

IJRs (or TIJR in case of the turnpike) document the need for new interchanges. An IMR (or TIMR in case of the turnpike) documents the need for proposed interchange modifications. They are also intended to quantify the projected impacts of the proposed interchange on the limited-access facilities, on the supporting arterial road system and on adjacent interchanges. The IJR/IMR is an access approval process and is a special type of mitigation analysis in the site impact analysis process.

Site impact analysis requires coordination with the IJR/IMR process whereas actual approval of new or modified access to the limited-access facility takes place in the IJR/IMR approval process. The Reviewer should consult the *Interchange Request Development and Review Manual* and *Approval of New or Modified Access to Limited Access Facilities*, Topic 525-030-160-d. In addition, the Reviewer must coordinate all IJR/IMR activities with the District Interchange Review Committee (DIRC).

Table 5. Other Type Review Reference Chart, Reviews With Unique Statutory Review Requirements

Review		Product	Agency	Review Time Period	Statutory Guidelines	Relevant Rules, Procedures, Directives, Policies and Topics
Campus Master Plan		Written Comments	BOR	< 90 days after receipt of CMP	240.155, FS	Rule 6C-21, FAC
Hazardous Waste Siting		Report on Jurisdictional Maters	DEP	< 90 days after receipt of application	403.78, FS	
Military Base Reuse Plan	Proposed	Written Comments	LG	60 days	288.975, FS	
	Adopted	Petition	LG	45 days		
Access Management		Conceptual Review	DOT	As part of other reviews	335.18, FS	Rule 14-96, FAC Rule 14-97, FAC
IJR/IMR TIJR/TIMR		Coordination with IJR/IMR Process	DOT	IJR/IMR process	335.18, FS	Topic # 000-525-015-b Topic # 525-030-160-d
Natural Gas Transmission Pipeline Siting		Preliminary Statement of Issues Report	DEP	< 60 days of Sufficiency	403.9401, FS	
Electric Power Plant and Electric Transmission Line Siting		Preliminary Statement of Issues Report	DEP	< 60 days of Sufficiency	403.501, FS	
SRPP		Written Comments	EOG	< 30 days of receipt	186.507, FS	Rule 27-E, FAC
Enterprise Zone Development Plan		Comments	LG	Set by LG	290.0057, FS	

UNIT III - STANDARD SITE IMPACT PROCEDURES

INTRODUCTION

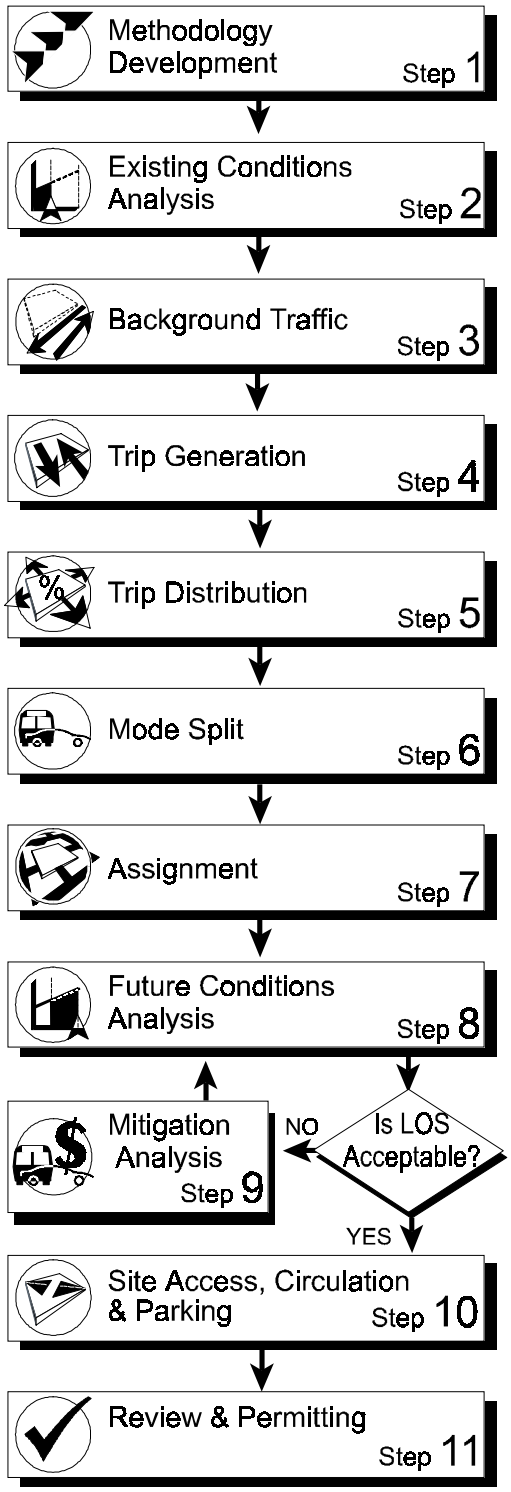
Figure 5 illustrates the basic framework for site impact analysis and review. In general, **ALL** site impact analyses and reviews should follow this set of basic procedures. The type of development will influence the level of detail or sophistication required for each step but some consideration should be given to each step in the process identified in Figure 5. Each of these steps is discussed in greater detail later in this unit.

The first step in any site impact analysis is the **Methodology Development**. This process usually begins when the applicant (developer or other party) contacts the local government, Regional Planning Council (RPC), Department or other agency to discuss a proposed development. A formal methodology development process is required for some types of developments, such as a Development of Regional Iimpact (DRI). Even if no formal process is required, it is good practice for participating agencies to agree to some methodology in advance of requesting that the applicant perform a site impact analysis to avoid wasted time and effort.

The next step is an **Existing Conditions Analysis**. This analysis establishes a basis of comparison for the proposed development. The basic analysis should consist of identifying the physical characteristics of the transportation system and traffic operating conditions of roadways and intersections using the Department's level of service (LOS) guidelines and standards or other accepted techniques and the latest Department annual average daily traffic (AADT) counts or other traffic counts.

Background Traffic, the expected increase in non-development traffic and traffic from other development, should be accounted for in future years. Background traffic is manually determined using a trend of historical volumes. If a travel demand forecasting model is used in the analysis, background traffic is determined in the modeling process. The background traffic is used as the base condition in determining the impacts of the development on the transportation system.

Figure 5. Site Impact Process



A preliminary **Site Access, Site Circulation and Parking Plan** is typically prepared by the applicant early in the project. This plan is considered in the trip generation, trip distribution and the assignment steps.

The **Trip Generation** step estimates the amount of travel associated with the proposed land use. **For the purposes of this manual, a trip is defined as "a single or one-direction vehicle movement with either the origin or destination inside the study site" (Institute of Transportation Engineers (ITE): *Trip Generation*)**. Since person-trips are sometimes used within the analysis, all "trips" in this document will be assumed to be vehicle movements and the phrase "person-trips" will be used to differentiate between these two measures. Due to a mix of land uses contained within a development, some trips may be made between land uses within the development. This interaction is referred to as internal capture and is often expressed as a rate (percentage of trips that occurs within the site). The internal capture rate is addressed as part of the trip generation step as defined in the methodology meeting. The characteristics of trips generated by typical land uses are typically estimated using established guidelines published in the latest edition of ITE's *Trip Generation.*

Once the amount of travel associated with a land use is determined in trip generation, **Trip Distribution** is performed to allocate these trips to origin and destination land uses and areas external to the site. Trip distribution can be performed concurrent with assignment if a manual process is used. Sophisticated computerized travel demand forecasting models can also be used. These models should be prepared in the Florida Standard Urban Transportation Modeling Structure (FSUTMS). Pass-by trips are then estimated. Pass-by trips are external to the development but are already on the transportation system (i.e., not new trips on the roadway). These trips enter the site as an intermediate stop, or are intercepted, by the proposed development. The pass-by rate (or percentage of total site trip generation that are pass-by trips) is discussed in the Transportation Methodology Meeting and applied during the trip distribution step.

Mode Split analysis estimates the amount of travel (person trips) that will use the various modes available to the site. For typical analyses, the amount of travel that uses modes other than automobiles is estimated using regional and local guidelines based on existing transit usage. Typically 3 to 5 percent is considered a maximum realistic share of travel for modes other than automobiles. The most sophisticated analyses may use elements of travel demand forecasting models and will perform separate assignments for future traffic volumes on highway (automobile) and transit systems. When required, an analysis of automobile occupancy factors may be performed as part of this step for use in the analysis of high-occupancy vehicle (HOV) lanes, etc.

Following the analysis of mode split, an **Assignment** of vehicle trips and transit riders (person-trips) to the transportation system is performed manually or using an FSUTMS model. The manual assignment process should be based on a review of the land uses around the site and engineering judgement.

Once the vehicles are assigned to the network, an **Analysis of Future Conditions** is required. An assessment of the impacts of the development-generated traffic on the transportation system is always requried. The basic procedure consists of an analysis of traffic operating conditions using the Department's (or other accepted) LOS guidelines and standards.

If the development causes the LOS on a roadway to be unacceptable or is a significant portion of the traffic on a roadway with an existing unacceptable LOS, the effects of the traffic impacts should be mitigated through physical or operational improvements, travel demand management strategies, fair-share contributions, or a combination of these and other strategies. If a mitigation analysis is required, the measures should clearly demonstrate that they contribute to reducing traffic congestion along the impacted facilities. The results of the **Mitigation Analysis** usually include an improvement plan that identifies a specific phasing of projects and level of project development which may be permitted before system improvements are necessary. This plan should also identify the responsible party or agency for implementing the improvements.

The **Site Access, Site Circulation and Parking Plan** may be modified as part of the mitigation analysis. This is an important element in the preparation and review of site impact analyses. Access points should be designed in

accordance with Access Management and driveway permitting requirements. Parking should be considered if on-street parking will be employed or parking operations have the potential to impact operations. This step requires coordination with the Department's permitting offices (such as driveways) and may be considered outside the framework of site impact analysis or review. The reviews performed in site impact analysis are usually conceptual and subject to final permit reviews subsequent to approval of the site impact analysis. The applicant should be made aware that additional coordination will be required with other Department offices.

All site impact analysis and reviews should undergo a **Review and Permitting** process where all appropriate agencies and Department divisions are allowed to comment on the site impact analysis. The reviews performed in site impact analysis are usually conceptual and subject to final permit reviews subsequent to approval of the site impact analysis.

Each of these steps is discussed in greater detail. Checklists designed to assist in the review of site impact analysis issues that are common to all types of developments are provided in Unit III. The issues that are unique to specific types of reviews are provided in Unit IV.

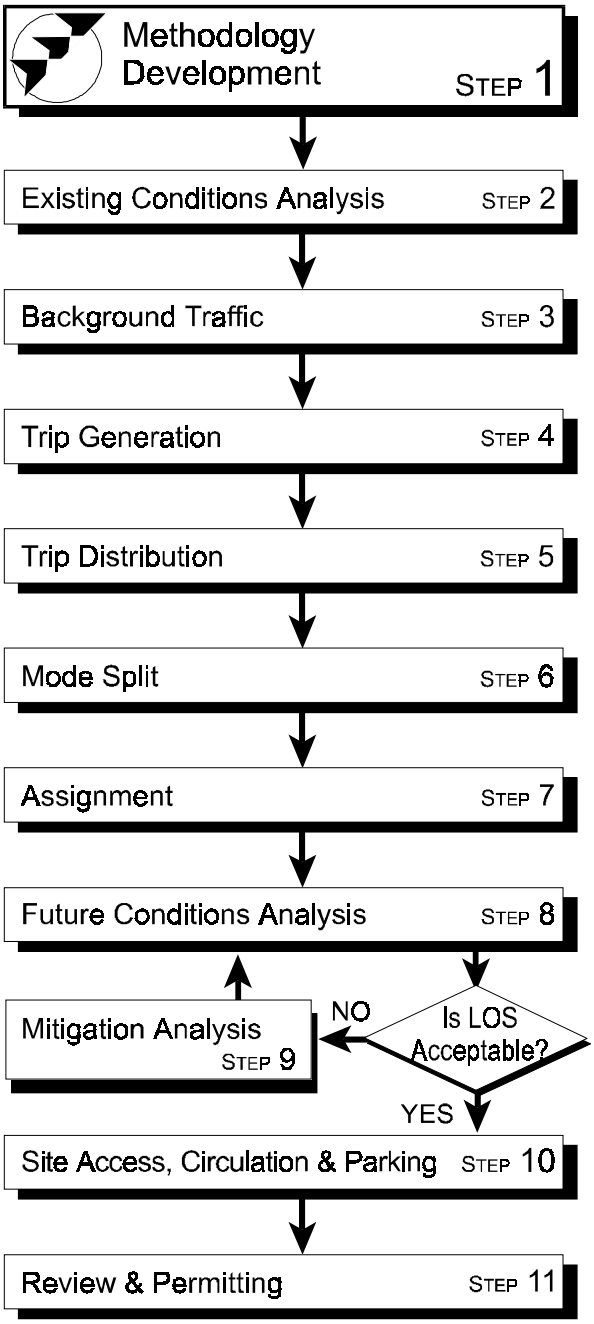
1. Methodology Development

Prior to conducting any site impact analysis, it is necessary to establish the minimum technical responsibilities and analyses that will be performed. It is the applicant's responsibility to ensure that the methods proposed follow the techniques and practices accepted by the Department and other participating agencies. The RPC serves as the coordinating agency for DRIs and is responsible for scheduling any Preapplication Methodology Meetings and any Transportation Methodology Meetings that may be required. This represents the most frequent type of review where methodology issues are formally communicated. The Department should participate in methodology development as appropriate for the development type and scope. During the methodology step, the Department's representative should be prepared to address any transportation-related concerns or methodology requirements as part of the site impact analysis effort.

The following items should be considered, discussed and agreed to by the Department and the applicant for site impact studies unless the item is not applicable to the proposed development. Each of the acronyms, abbreviations and symbols used below is defined and discussed in detail on the referenced pages.

- ❑ Definition of the proposed development (page 38)
- ❑ Type of study needed based on type, intensity and magnitude of the proposed land uses (page 38)
- ❑ General assumptions for trip generation (page 47), distribution (page 61), mode split (page 66) and assignment (page 67), known LOS and access management requirements (page 92)
- ❑ Study area limits based on accepted criteria (page 34)
- ❑ Analysis years based on proposed build out phases for multi-year developments (page 34)
- ❑ Analysis periods (100HV, 30HV, special event periods, weekends, etc.) (page 34)
- ❑ Availability of data and accepted data sources (page 38)
- ❑ Use of previously adopted development agreements for related projects (page 37)
- ❑ Any special study requirements associated with nearby transportation facilities or land uses (page 40)
- ❑ Traffic data collection requirements (page 39)

Figure 6. Site Impact Process



- ❑ Traffic characteristics (K, D, T, PHF, MOCF, etc.) (page 70)
- ❑ Existing and future land uses, intensities and characteristics (page 39)
- ❑ Existing and future demographic data and anticipated growth rates (page 40)
- ❑ Transportation systems data such as functional classifications, jurisdictions, traffic control devices (including signal g/C ratios, etc.), headways, etc., for highways, pedestrian, bicycle and transit systems (page 38)
- ❑ Use and selection of travel demand forecasting models (FSUTMS) (page 36)
- ❑ Background traffic projection methodology (page 42)
- ❑ Sources of trip generation data and acceptable ranges for trip reduction factors (internal capture and pass-by rates) (page 47)
- ❑ Trip distribution methodology (page 61)
- ❑ Mode split methodology and acceptable ranges (page 66)
- ❑ Traffic assignment methodology (page 67)
- ❑ LOS standards and concurrency requirements (page 77)
- ❑ Access management classifications and requirements (page 92)
- ❑ Parking availability and requirements (page 102)
- ❑ Acceptable mitigation strategies and any special study requirements associated with potential mitigation requirements, such as interchange modifications or justifications (page 87)
- ❑ Right-of-way and limited-access rights considerations (page 40)
- ❑ Zoning requirements (page 40)
- ❑ Consistency with MPO's long-range transportation plan, local government comprehensive plan (LGCP) and associated future land use maps (page 40)
- ❑ Environmental, engineering or construction permit requirements (page 106)
- ❑ Use of related transportation projects and programs in the MPO's long-range transportation plan, transportation improvement program (TIP) and the Department's adopted work programs (page 40)

Instructions specific to each type of site impact analysis or review are discussed in Unit IV.

Some of the most important factors in methodology development are discussed in detail below.

1.1 Study Area Requirements

The study area for site impact analysis is dependent on the type and intensity of the development and local jurisdiction requirements. The applicant and the Department's Reviewer should consult with all appropriate agencies to identify any specific criteria. The study area, sometimes called the area of influence, is typically estimated using judgment and then refined during the study process. Local criteria for refining the study area usually involve a comparison of project traffic to thresholds of the percentage of the maximum service flow rate at an established LOS criterion. Unit IV provides additional guidance on the study area requirements for various types of reviews. For example, the DCA rule for DRI requires that the study area include all facilities where traffic generated by the proposed development is equivalent to 5 percent (10 percent prior to 1994) of the maximum service volume at the LOS standard for the facility.

1.2 Analysis Years

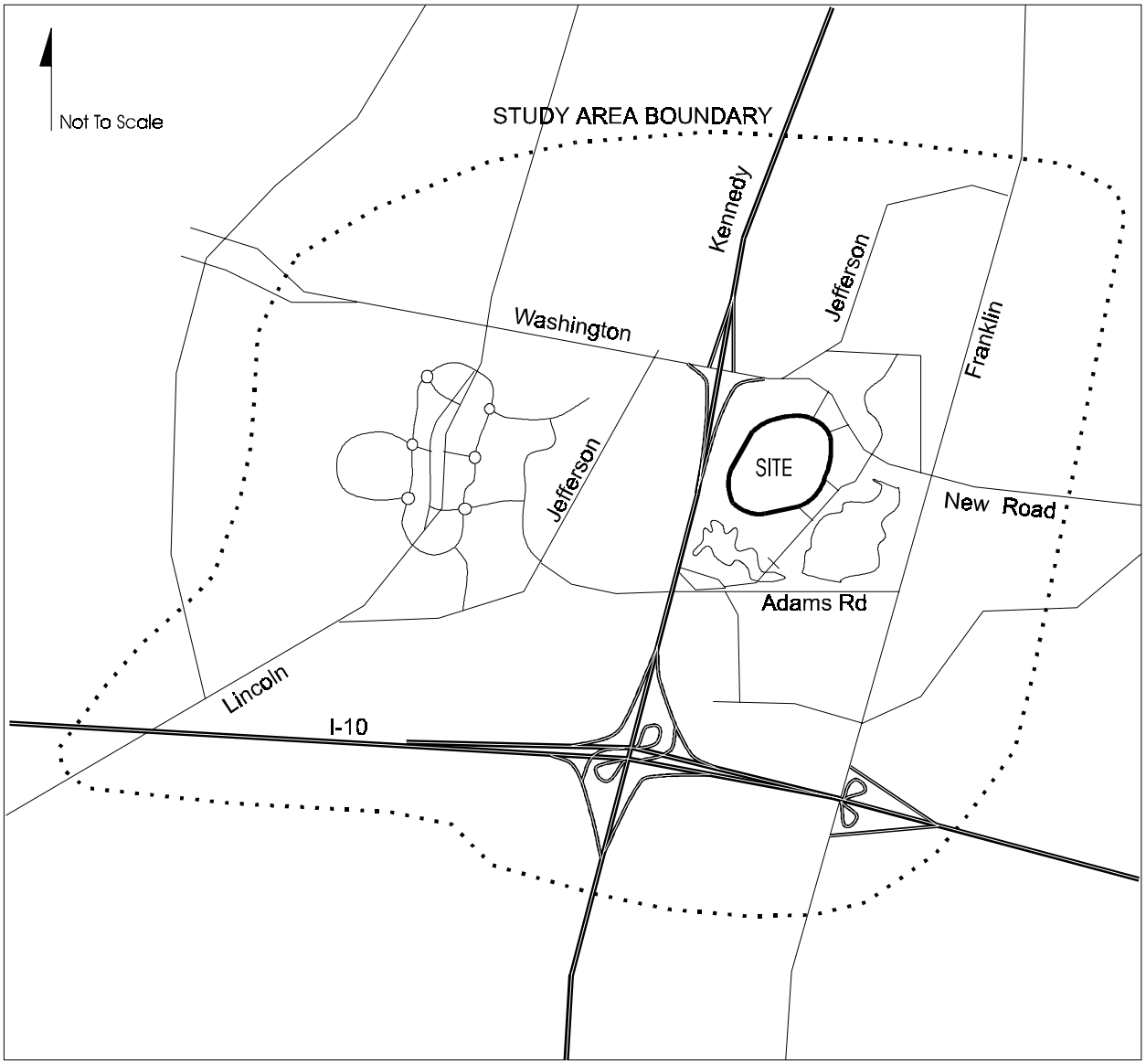
In general, the analysis years should be related to (1) the opening date of the proposed development, (2) build out of major phases in a multi-year development, (3) long-range transportation plans or LGCP horizons, and (4) TIP horizons or other significant transportation network changes. The level of detail associated with the site impact analysis should be related to the ability to predict the future.

Therefore, the sophistication of the analysis should be reduced for projects with build outs beyond ten years. Additionally, a change in the proposed development phasing (notice of proposed change in the DRI process - see Unit IV) may require a new analysis year be considered. Table 6 suggests study horizons as a function of the type of site impact review.

1.3 Analysis Periods

Site impact analyses should be based on a peak-hour analysis. The analysis period should be related to known and anticipated peaking patterns of demand on the transportation system and development traffic. The typical period used in Florida for most site impact analyses is the 100th highest hourly volume. This period represents a typical weekday peak hour during the peak season of the year (FDOT 1995 LOS Manual). If this period may not be adequate, the period selected should be the period that has the highest combination of development and background traffic.

Figure 7. Example Study Area



If development peaking does not generally agree with peaking of the transportation system, multiple analysis periods may be considered. The ranges of periods to be considered should include the 100th highest hourly volume, 30th highest hourly volume (required for all design applications), weekend peak periods or other special event peaks. For example, retail, special events and recreational facilities typically generate their peak usage during weekend off-peak periods. Guidance on the peaking characteristics of land uses is provided in **Step 4: Trip Generation.**

1.4 Use of Manual Methods Versus Travel Demand Forecasting Models

Two basic methodologies are used in site impact analysis. The process may be performed using manual methods or a travel demand forecasting model (developed in FSUTMS) for forecasting future traffic volumes. The method to be used should be determined as early as possible in the process.

The manual method consists of using existing traffic data trends to forecast background traffic. Trip generation rates or equations are then used to determine site traffic. Experience and judgment are required to properly estimate trip distribution and assignment with this method. The traffic anticipated to occur from the development is then added to the background traffic to determine the impacts of the development. This process assumes the proposed development will not cause significant diversions in background traffic flow patterns to occur.

The advantages of the manual method may include:

- The manual method may be more reliable when development horizons are less than ten years.
- The manual method may be more reliable for small developments (less than 500 peak-hour trips).
- There may be less opportunity for making adjustments that may be undetectable to a reviewer.
- The calculations can be performed by technical personnel in a reasonable period of time.
- Understanding of the use of FSUTMS and the equipment and software required to run FSUTMS is not required.

Table 6. Suggested Study Horizons

Type	Suggested Horizon
LGCP	Typically these developments occur in only one phase. Therefore, the existing and anticipated opening year of the development assuming build out and full occupancy is the only horizon year required.
DRI	The year of commencement (or opening of first phase of the development), the anticipated opening year of each major phase of the development assuming build out and full occupancy of each phase, and the termination year (or year of complete development assuming full occupancy) should be considered for all DRI type analyses. See FS 380.06 for additional guidance.
Special	Campus master plans (CMP), hazardous waste facility siting, military base reuse plans, access management and permitting reviews generally follow the DRI type of reviews for determining appropriate horizon years. Interchange Modification Reports (IMRs) and Interchange Justification Reports (IJRs) are design analysis of proposed mitigation improvements. Therefore, a design year horizon of 20 years from the anticipated opening year of the interchange is required. Major build out phases or the implementation of other transportation improvements may require additional analysis years be considered.
Concurrency	Typically these developments occur in only one phase. Therefore, the anticipated opening year of the development assuming build out and full occupancy is the only horizon year required.

- The manual method may be more reliable in fringe areas of a model, or where facility level volumes do not validate well.
- The manual method of trip generation is always performed manually. When using FSUTMS, model is adjusted to replicate this manually performed step.
- All calculations and analysis can be performed within the peak period using the manual method. FSUTMS generates peak season weekday average daily traffic (PSWADT) that must be converted to peak-hour planning analysis hour (100HV) or design hour (30HV) volumes manually.

The use of FSUTMS models for site impact analysis has gained wider acceptance in recent years and may be required for some types of development based on the intensity and type of land uses proposed.

Trip generation should usually be performed manually using ITE's *Trip Generation* to check against the model volumes. However, travel demand forecasting models may be effective tools in estimating development impacts during other steps of the analysis. If an FSUTMS model is used, the trip generation produced by the model should equal the manually estimated trip generation. Because of the dynamic nature of the traffic assignment process within the model, background and development traffic is forecasted in one complete model run.[1] The traffic originating or destined for the development is determined using a technique called select zone analysis. This techniques isolates the development trips which can then be manually subtracted from the total assignment to determine background traffic. Impacts of the development traffic can then be estimated.

The model generates PSWADT volumes that must be converted to peak-hour volumes for use in the analysis. Model Output Conversion Factors (MOCF) are used to convert PSWADT to AADT. AADT can then be converted to peak-hour volumes using an approved K-factor. These factors are discussed in greater detail in **Step 7: Assignment**.

The advantages of the modeling method may include:

- Large developments that consider extensive street systems and numerous traffic analysis zones are less cumbersome to analyze using the model method.
- Modeling methods are able to more easily consider the effects of development on diversions or shifts in travel behavior patterns.
- Modeling methods are able to analyze the potential effects of system improvements that may be required to mitigate traffic impacts more easily.
- FSUTMS is a district-approved tool which can assist in determining trip distribution, internal capture, mode split and the assignment of trips.

There are situations where a combination of the manual and modeling approaches is useful. For example, when the Department Reviewer questions the distribution and assignment of trips generated by the development using a manual method, the step can be compared with the results of an assignment made with the model. These combinations of manual or modeling methods are not discussed in detail in this Manual but may be required by the Department. Both manual and modeling methods are discussed for each step of the site impact analysis process in the subsequent sections.

1.5 Redevelopment Projects

If a redevelopment project is being analyzed, the analysis should consider the traffic associated with the existing development for comparison purposes. If trip generation, distribution or assignment of trips associated with the new development is anticipated to be significantly different from the existing development, then existing site traffic data should be carried through the entire analysis in parallel to the new development to determine the resulting traffic impacts created by redevelopment.

1.6 Consideration of Other Major Committed Developments

Other major committed developments defined as developments that have an approved development order (DRIs) or an approved concurrency management certificate should be considered in any site impact analysis. The traffic from these developments is part of the background traffic and is addressed in greater detail in **Step 3: Background Traffic.**

[1]From the Recommended Order in the Administrative Hearing of Westinghouse Gateway Communities, Inc, Department of Community Affairs and Southwest Florida Regional Planning Council vs. Lee County Board of County Commissioners Case Nos. 90-2636DRI, 90-2637DRI and 90-2638DRI: January 14, 1991.

2. Existing Conditions Analysis

Once the parameters are established in the methodology development step, the site impact analysis can begin. The first step in the process is to perform an analysis of the existing conditions through data collection and analysis.

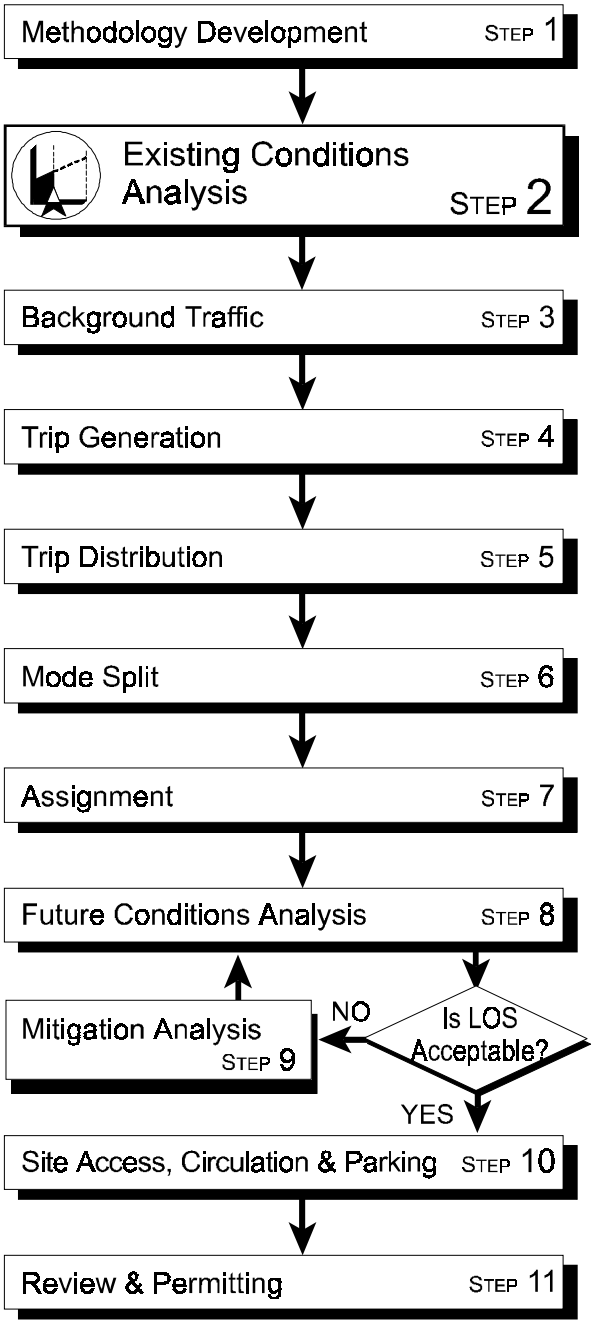
2.1 Data Collection

The specific data that must be collected during a site impact analysis is usually defined in the methodology development step. The applicant is responsible for the collection, assembly, analysis and presentation of all data. In general, the following types of data are required for the study area. Figure 9 summarizes the data collection and existing conditions requirements.

The **Proposed Site Development Characteristics** should be collected during this step to be used later, and will identify the location of the proposed development, site boundaries and other site-related characteristics. The proposed land uses should be identified by intensity and classification consistent with ITE's *Trip Generation*. Land use intensity is used as the independent variable in trip generation estimation. The common units for land use intensity include: gross leasable area (GLA), number of dwelling units, employees or acres. GLA is preferred for most land uses since ITE trip generation rates are usually more reliable using this variable. Land use types are numbered by a code provided in ITE's *Trip Generation.* The proposed access requirements, including median openings and driveway locations should be provided. The applicant should also demonstrate that the proposed development is consistent with land use goals and policies (such as in-fill policies or corridor preservation policies) in the MPO long-range transportation plan, LGCP, adopted future land use maps (FLUM) and zoning ordinances. The required study area or anticipated area of influence for the proposed development should be identified with site development characteristics.

The existing **Transportation System Data** will include the physical and functional characteristics of the

Figure 8. Site Impact Process



transportation system. The functional classification, access management classification and jurisdiction responsible for the facility (state, county or local) are required for all facilities within the area of influence. The area type (rural, transitioning, urban or urbanized area) is required. Geometric data such as the number of lanes, locations of intersections or interchanges are required. Transit service data such as transit routes and headways may be required. The presence of a transportation management organization that is responsible for the implementation of travel demand management strategies such as ridesharing programs or parking controls should be identified. Bicycle routes and pedestrian routes that could be affected by the development should be identified. Traffic control data, signals and signing at intersections and interchanges are required within the study area.

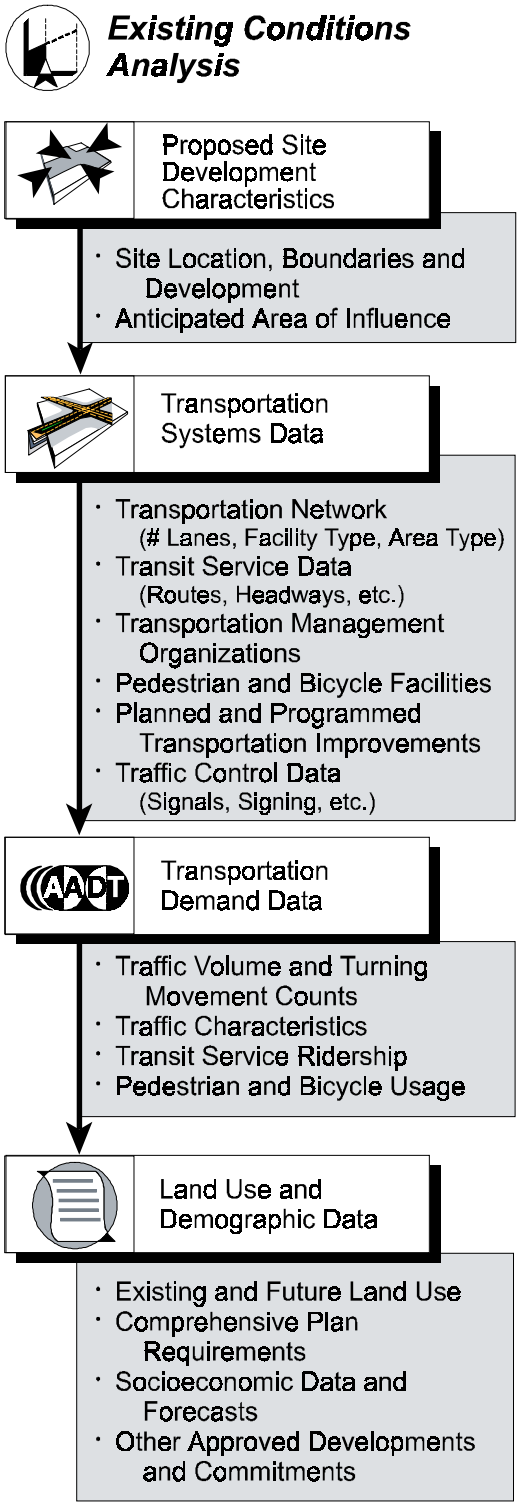
In particular, the applicant should identify any Florida Intrastate Highway System (FIHS) facilities or facilities on the State Highway System (SHS). More detailed information may be required for these facilities.

Programmed improvements on state highways and significant local (city or county) roads and transit facilities should be identified for at least the next three years or through each major phase of the proposed development. Anticipated improvements that are reported in the MPO long-range transportation plan, the MPO transportation improvement program and the Department's adopted five-year work program should be identified.

Existing **Transportation Demand Data** will include the identification of current and historical traffic volumes, turning movement counts, traffic characteristics such as K, D, T and PHF, ridership surveys or patronage data, bicycle usage and pedestrian usage. Existing data related to travel demand that will support trip generation analysis such as origin and destination data or market analysis may also be required.

Existing year traffic data should be collected in accordance with the procedures identified in the *1995 FDOT LOS Manual, Design Traffic Handbook, Interchange Request Development and Review Manual* and other requirements identified in the methodology development step. For DRIs and other larger developments, the last five years of historical data should be collected (if available). The Department's existing annual average daily traffic (AADT) counts,

Figure 9. Existing Conditions Analysis



classification counts, turning movement counts and automated telemetry recorder (ATR) sites should be the prime source for historical traffic data. This data is stored in the traffic characteristics inventory (TCI) and roadway characteristics inventory (RCI) databases maintained by the Department. Where Department data is not available, the applicant is responsible for collecting data in accordance with Department procedures and consistent with agreed methodologies. Data in years where significant transportation network changes occurred or major phases of related developments were opened to traffic that could affect a trend analysis should be excluded.

The link traffic counts should be collected to provide 15-minute volumes suitable for use in peak-hour analysis and in the peak periods and 24-hour volumes for converting to AADT using Department-approved factors. Traffic counts for 72 continuous hours should be collected along segments with 15-minute intervals. Tuesday, Wednesday and Thursday are the only days that are normally accepted. If counts are taken within an interchange, all ramp, freeway and crossroad counts should be made concurrently. In some instances, weekend or other off-peak period traffic counts are required by the Department.

Existing **Land Use and Demographic Data** will include future land use classification, intensity, population, employment, comprehensive plan data and zoning requirements. If an FSUTMS model will be used in the analysis, the traffic analysis zone that the proposed development will be located should be identified. The data provided in the model should be verified, to the greatest extent possible, within the study area.

Other committed developments should also be identified including related vested developments within the preliminary area of influence, adopted amendments to the comprehensive plan or other development agreements.

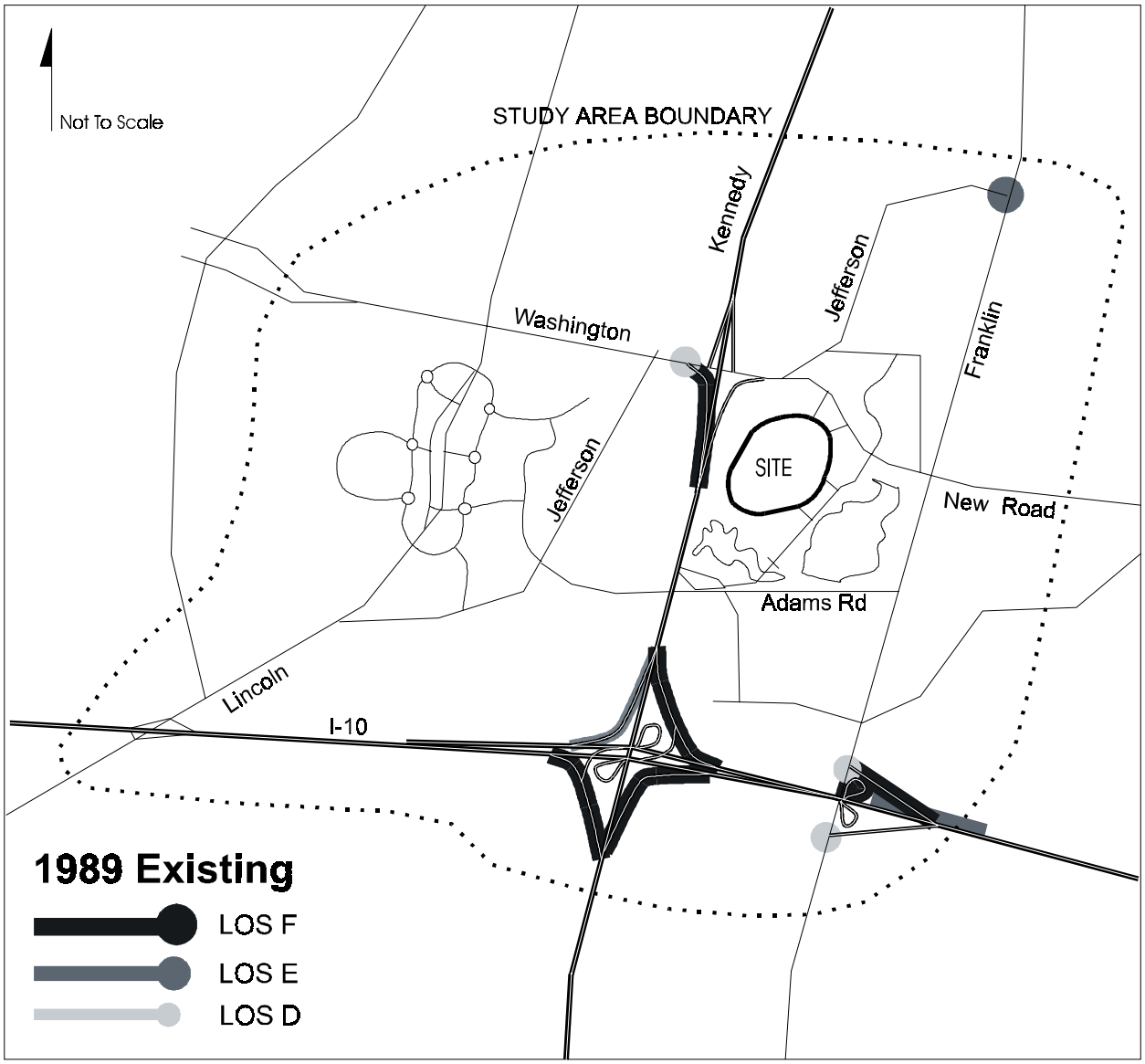
The applicant is responsible for collecting this information within the study area as directed by the Department. The applicant is also responsible for verifying all of the data collected. The following summarizes potential data sources:

- MPO Long-Range Transportation Plan
- MPO Transportation Improvement Program
- LGCPs
- Other DRI, development orders or development agreements
- Engineering and planning studies within the study area
- Local government concurrency management system requirements
- Local government land use zoning and design requirements

2.2 Operational Analysis

For site impact analysis, capacity analysis should be performed along each segment of the roadway system identified in the methodology step within the area of influence for the existing conditions. These facilities will include the major street segments, site access locations and intersections within the study area. Critical intersections for analysis may be identified based on the functional classification of the roadways or based on the volume of development traffic utilizing the intersection. All capacity analysis should be performed using a method or software approved by the Department. The latest version of the FDOT LOS Manual is of sufficient detail for most existing condition analyses. If an Interstate facility or other FIHS limited-access roadway may be affected by the proposed development, additional freeway segment, ramp and weave analysis procedures of the latest version of the HCM may be required. The Department's LOS standards, acceptable traffic factors and methods for analysis are discussed in greater detail in **Step 8: Future Conditions Analysis.** The Department does not accept the Critical Movement Analysis provided Transportation Research Circular 212. Figure 10 is an example of a LOS results for existing conditions.

Figure 10. Existing Conditions



3. Background Traffic

Background Traffic, the expected increase in non-development traffic and traffic from other development, should be accounted for in future years. Background traffic is only calculated directly when manual methods are to be used. When model methods are used, a complete model run (with development) is performed using a select zone analysis to isolate development traffic. Development traffic is then subtracted from assigned link volumes providing the "without development" traffic. The model methodology is explained further in **Step 7: Assignment**.

3.1 Manual Methods for Projecting Background Traffic

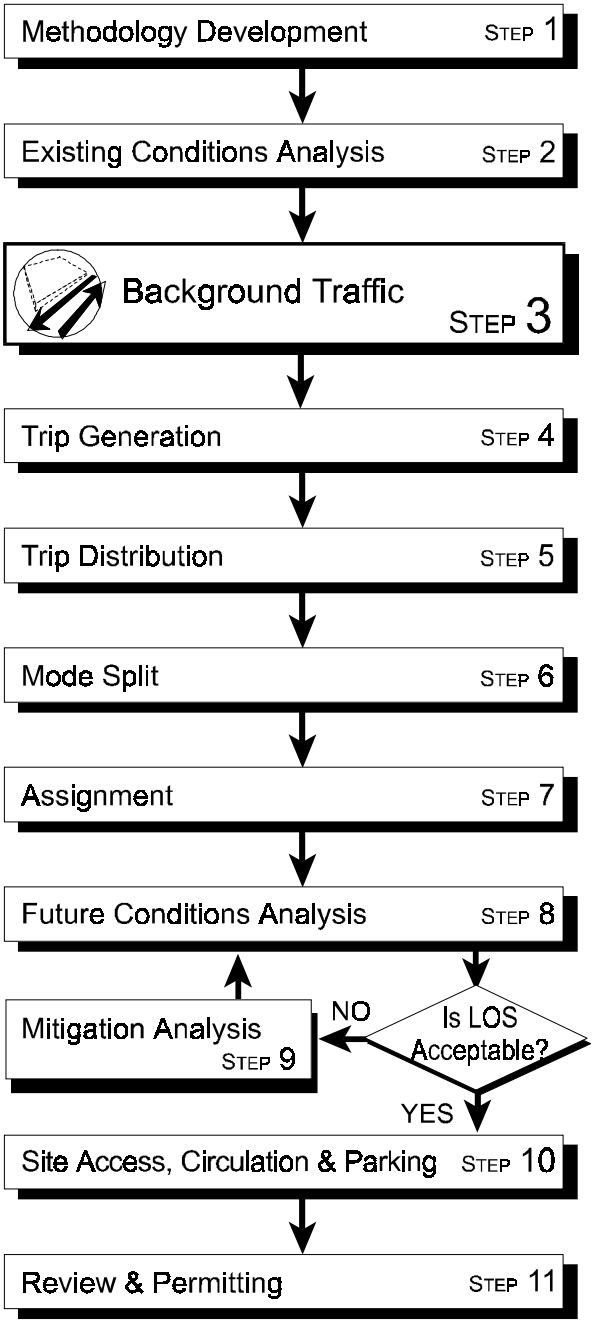
The projection of background traffic for site impact analysis is performed using trend or regression analysis. Several model forms are commonly used including linear, geometric and declining growth. These models are based on historic traffic data (trend) or be based on projections of a related demographic characteristic, such as population or employment for the study area. The manual method of projecting background traffic is summarized in Figure 12.

A trend analysis of AADT is used where sufficient traffic count data are available to establish a trend for each facility segment in the study area or for area wide traffic growth within the study area. Data for the last five years is recommended (at a minimum) for use to provide a basis for statistically relevant analysis. Data in years where significant transportation network changes occurred or major phases of related developments were opened to traffic that could affect a trend analysis should be excluded.

After future year AADT is projected using regression, K and D factors are then applied to develop peak-hour volumes. The use of K and D factors to estimate peak-hour volumes is discussed in **Step 7: Assignment**.

This is a simple, direct approach to projecting background traffic for short-term developments. However, it is not appropriate for long-range projections (more than five years). The basic procedure consists of selecting a growth rate (or regression technique), either linear, geometric or declining growth,

Figure 11. Site Impact Process



and forecasting nondevelopment traffic in each horizon year (or for each phase). Additional traffic may then be added from approved, but unbuilt (or vested) developments. The addition of vested development traffic should be applied carefully. The process of adding vested development traffic into background traffic is discussed under section **3.2 Build-Up Method**.

3.2 Build-Up Method

The build-up method of projecting background traffic is appropriate when performing manual projections of background traffic where other related developments are proposed that will affect local area traffic patterns. The method consists of cordoning off a subarea that contains all of the approved, proposed (vested) developments. The impacts on the transportation resulting from these approved developments are considered as part of the background traffic. When considering other vested developments as part of a manual projection of background traffic, double counting of the anticipated traffic growth is common. If the build-up method is used, a lower traffic growth rate than a direct trend analysis should be used. The vested development traffic then is added to the "natural" growth that would occur without the presence of the vested developments.

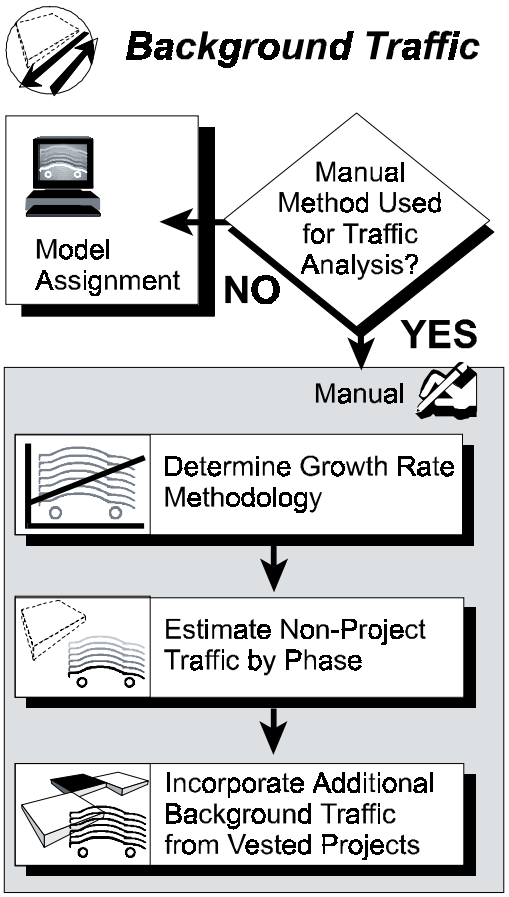
Other committed developments should that can be identified include related vested developments within the preliminary area of influence, adopted amendments to the comprehensive plan or other development agreements.

For example, if the build-up method were proposed and historical trends indicated a 4 percent per year linear growth rate, 2.5 percent may be used instead based on the anticipated "natural" (not from other developments) population growth within the study area (see Section 3.3 for use of demographic characteristics in growth rates). In addition to this natural growth that is anticipated to occur, two other DRIs are "vested" within in the study area. The anticipated development-related trips from these DRIs would then be added to the transportation system in addition to the natural growth that is anticipated to estimate background traffic.

3.3 Growth Factor Using a Related Demographic Characteristics

Where growth within the development study area is not stable or historical data is not adequate as a result of the opening of major related development phases or significant transportation improvements, background

Figure 12. Background Traffic



traffic growth may be predicted based on a related demographic characteristic. For example, traffic growth within an area could be tied directly to the anticipated population growth. Many forecasts made using this method are performed using an average growth rate of two or more factors, including:

- total population based on population growth established in the LGCP
- income
- auto ownership
- GLA or other similar land use types

3.4 Regression Analysis Techniques

When using either AADT or a related demographic characteristic for forecasting background traffic, the following techniques are available:

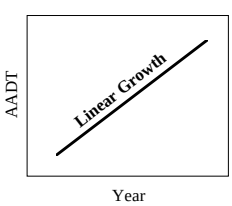
1. Identify the data that is required based on the study area and the sources of relevant data.

2. Obtain the historic traffic-count data for the existing locations(s) or urban growth variable data.

3. Perform a regression analysis using one of three model forms identified below and plot the patterns of traffic growth rates for the existing location(s). This process will involve the analysis and selection of a regression model.

4. Project traffic based on the analysis performed in Step 3.

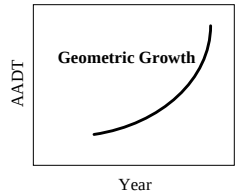
Regression analysis is the method of fitting a mathematical model that will adequately describe a trend in data for projection purposes. Three model forms are recommended for site impact analysis: linear, geometric and declining growth.



Linear growth predicts the future traffic based on a least-squares line developed from the historic traffic growth. This model assumes a constant amount of growth in each year (number of vehicles) and does not consider a capacity restraint. The mathematical model for linear growth is as follows:

$$Volume_{FY} = G_{Linear} * N + Volume_{BY}$$

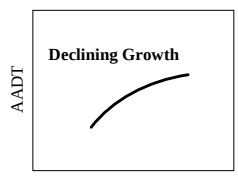
Where:
G = Linear growth rate
N = Years beyond the base year
FY = Future year
BY = Base year



Geometric growth, or compound growth, predicts the future traffic based on a constant percentage of growth from the previous year. This model is most applicable where there are extensive count data and no capacity constraint is appropriate. This growth rate replicates "natural growth" is typical for the projection of urban growth variables. Therefore, it may be most appropriate where urban growth variable rates are used as the basis for analysis. The mathematical form of geometric growth is as follows:

$$Volume_{FY} = Volume_{BY} * (1 + G_r)^{(FY-BY)}$$

Where:
G_r = Geometric growth rate



Declining growth predicts the future traffic growth based on a declining rate of growth over the analysis period. The model form recommended for site impact analysis is applicable where an extensive amount of traffic data are available and a capacity constraint is appropriate.

$$Volume_{FY} = Volume_{BY} + \sum_{BY}^{FY} \frac{X}{FY-BY}$$

Where:
X = Normal straight line growth from trend data

3.5 ZDATA Interpolation

In addition to forecasting AADT volumes directly, the applicant or Department may be required to develop FSUTMS model inputs (ZDATA files) for years that are not major horizon years in the model used in the site impact analysis. When the duration between model horizon years is less than five years, it may be appropriate to interpolate the ZDATA using a linear regression equation, for example between 2000 and 2005. Data in years where significant transportation network changes are anticipated to occur or major phases of related developments are proposed to open should be considered to the greatest extent and linear interpolation of ZDATA files are discouraged. More

detail on the use of ZDATA files in site impact analysis is provided in **Step 4: Trip Generation**.

3.6 Example Problem

The following example is provided to illustrate the difference of using each of the three models for forecasting. The historical two-way AADT on the selected facility is provided in Table 7.

Linear Growth. The results of the linear growth rate estimated an average growth of 300 vehicles per year. Therefore, the linear-growth model future year volumes can be estimated using the following equation.

$$Volume_{FY} = 300 * (FY - 1994) + 16{,}500$$

Geometric Growth. The estimated average geometric growth rate for the data provided was estimated to be 2.11 percent per year. Therefore, the following equation can be used to forecast traffic using geometric growth.

$$Volume_{FY} = 16{,}500 * (1.0211)^{(FY-1994)}$$

Declining Growth. The declining growth model uses the average linear growth (X) of 300 vehicles per year determined using the linear growth model to forecast traffic using the following equation.

$$Volume_{FY} = 16{,}500 + \sum_{1994}^{FY} \frac{300}{n - 1994}$$

Figure 13 and Table 8 illustrate the differences in using each of the three regression models provided.

Table 7. Historical Volumes

Year	Volume (AADT)
1980	12,300
1981	12,000
1982	13,500
1983	13,220
1984	13,000
1985	13,775
1986	14,125
1987	15,000
1988	14,000
1989	15,000
1990	15,600
1991	15,300
1992	16,500
1993	15,900
1994	16,500

Figure 13. Comparison of Regression Analysis Results

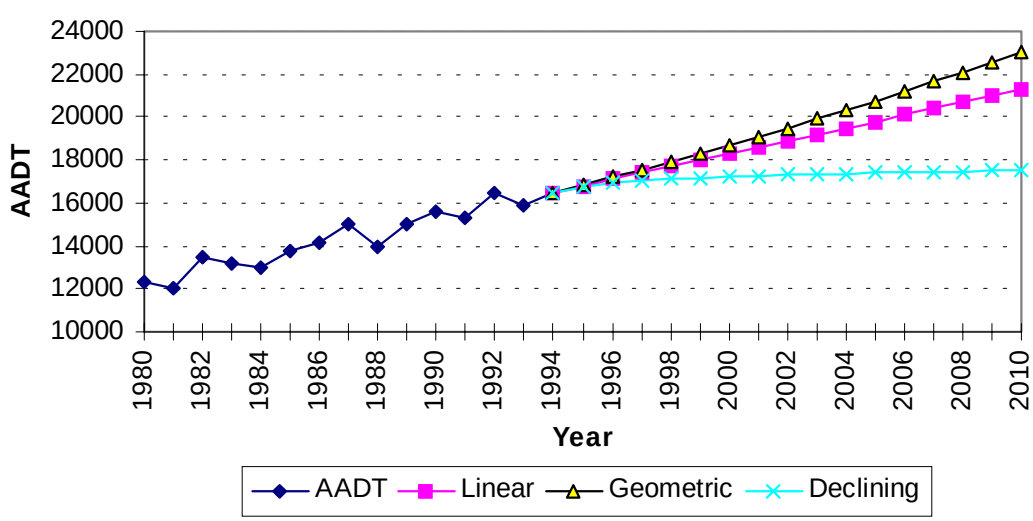


Table 8. Comparison of Regression Analysis

Year	AADT	Linear	Geometric	Declining	Linear Equations	Geometric Equations	Declining Equations
1980	12300						
1981	12000						
1982	13500						
1983	13220						
1984	13000						
1985	13775						
1986	14125						
1987	15000						
1988	14000						
1989	15000						
1990	15600						
1991	15300						
1992	16500						
1993	15900						
1994	16500	16500	16500	16500	16500	16500	16500
1995		16800	16848	16800	16500+300*(1995-1994)	16500*(1.0211)^(1995-1994)	16500 + 300/(1995-1994)
1996		17100	17204	16950	16500+300*(1996-1994)	16500*(1.0211)^(1996-1994)	16848 + 300/(1996-1994)
1997		17400	17567	17050	16500+300*(1997-1994)	16500*(1.0211)^(1997-1994)	17203 + 300/(1997-1994)
1998		17700	17937	17125	16500+300*(1998-1994)	16500*(1.0211)^(1998-1994)	17566 + 300/(1998-1994)
1999		18000	18316	17185	16500+300*(1999-1994)	16500*(1.0211)^(1999-1994)	17937 + 300/(1999-1994)
2000		18300	18702	17235	16500+300*(2000-1994)	16500*(1.0211)^(2000-1994)	18315 + 300/(2000-1994)
2001		18600	19097	17278	16500+300*(2001-1994)	16500*(1.0211)^(2001-1994)	18702 + 300/(2001-1994)
2002		18900	19500	17315	16500+300*(2002-1994)	16500*(1.0211)^(2002-1994)	19096 + 300/(2002-1994)
2003		19200	19911	17349	16500+300*(2003-1994)	16500*(1.0211)^(2003-1994)	19499 + 300/(2003-1994)
2004		19500	20331	17379	16500+300*(2004-1994)	16500*(1.0211)^(2004-1994)	19911 + 300/(2004-1994)
2005		19800	20760	17406	16500+300*(2005-1994)	16500*(1.0211)^(2005-1994)	20331 + 300/(2005-1994)
2006		20100	21198	17431	16500+300*(2006-1994)	16500*(1.0211)^(2006-1994)	20760 + 300/(2006-1994)
2007		20400	21646	17454	16500+300*(2007-1994)	16500*(1.0211)^(2007-1994)	21198 + 300/(2007-1994)
2008		20700	22102	17475	16500+300*(2008-1994)	16500*(1.0211)^(2008-1994)	21645 + 300/(2008-1994)
2009		21000	22569	17495	16500+300*(2009-1994)	16500*(1.0211)^(2009-1994)	22102 + 300/(2009-1994)
2010		21300	23045	17514	16500+300*(2010-1994)	16500*(1.0211)^(2010-1994)	22568 + 300/(2010-1994)

4. Trip Generation

Trip generation may be the most critical element of the site impact analysis reviewed by the Department. Trip generation is the process used to estimate the amount of travel associated with a specific land use or development.

A manual estimate of trip generation from the development is required in **ALL** analyses even when the model method is used. The process is shown in Figure 15.

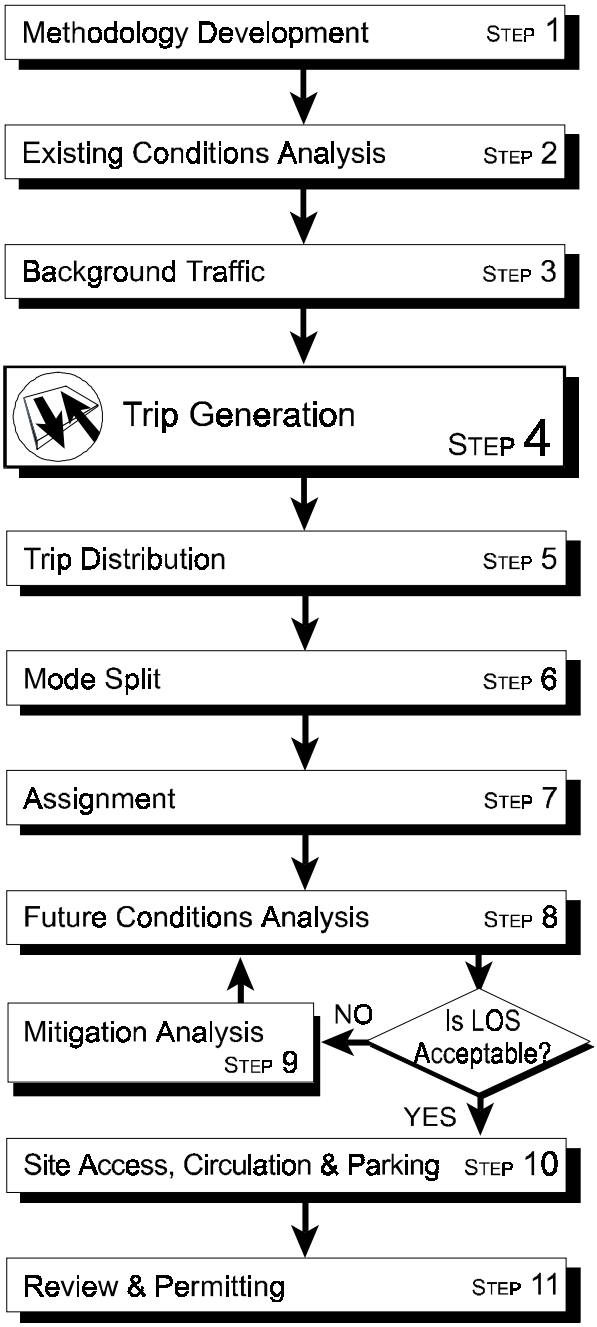
4.1 Trip Generation Data

For the purposes of this manual, a trip is "a single or one-direction vehicle movement with either the origin or destination inside the study site" (ITE *Trip Generation*) and one origin or destination external to the land use. Since person-trips may be used within the analysis, all "trips" will be vehicle movements and "person-trips" will be used to differentiate between these two measures. Trip generation is estimated through the use of "trip rates" that are dependent on some measure of the intensity of development, such as gross leasable area (GLA) of a particular land use type. ITE's *Trip Generation* is the most comprehensive collection of trip generation data available. The rates provided in ITE's *Trip Generation* are based on nationwide data. Many rates are not supported with a great deal of data. However, this manual is generally accepted as the industry standard; therefore, the rates from ITE's *Trip Generation* should be applied, but with caution when few data points exist.

A page from ITE's *Trip Generation* is provided in Figure 16. The land use categories in ITE's *Trip Generation* are standardized by name and identification number. The data provided includes:

- the independent variable upon which the rate is based; for example, GLA,
- statistical data on the number of samples taken,
- the average dependent variable for the measured land uses,
- trip directional-distribution rates for the sampled facilities (in/out directional distribution),
- an average trip generation rate,
- a range of trip generation rates,

Figure 14. Site Impact Process



- the standard deviation of sampled data, and
- a regression equation with support statistical measures.

4.2 Use of Trip Generation Rates or Equations

When estimating the total number of trips, the average rate selected should be considered carefully. The average rates provided in ITE's *Trip Generation* are calculated by different methods and can vary substantially from what is appropriate to the development as a result of the range of data selected, the number of sites sampled, and the method used to estimate the weighted average trip rate. Trip generation equations are also provided in ITE's *Trip Generation* that can provide better estimates of trip generation under certain conditions. The following method for selecting average trip generation rates or equations is provided in ITE's *Trip Generation*.

1. Calculate and compare the forecasted trips using both the regression equation and the average trip rate. If the difference is minor or, more important, does not change the conclusion of any analyses using the forecast, then use either method. If the results are not similar, then consider the next guideline.

2. Use the equation if there are (1) at least 20 data points that are distributed over the range of values typically found for the independent variable, (2) few data outliers, and (3) the y-intercept for the regression equation approaches zero. If these conditions are not met, then consider the third guideline.

3. Compare the line representing the equation and the rate to determine which best fits the data points for the independent variable being used. Use the equation or rate that best fits the data at the size of the independent variable being used. If neither the rate nor the equation fits the data points or if both fit equally well, consider the fourth guideline.

4. Review the standard deviation of the rate and the correlation coefficient (R^2-value) of the equation. These measures provide information about how well the line, in general, fits the data points. A low standard deviation of less than 110 percent of the average rate is good. A high R^2-value of more than 0.75 for the equation is good. Use the equation or rate, depending on how well its measure satisfies the standards. If a decision still cannot be made, consider the fifth guideline.

Figure 15. Manual Trip Generation

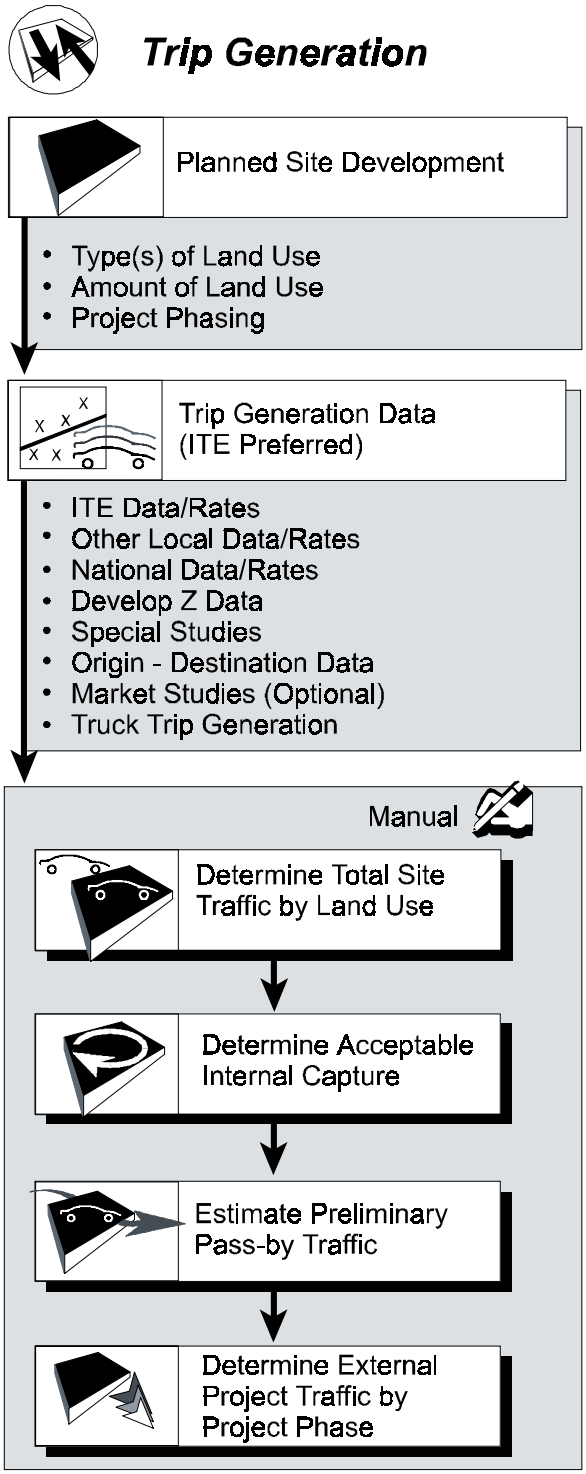
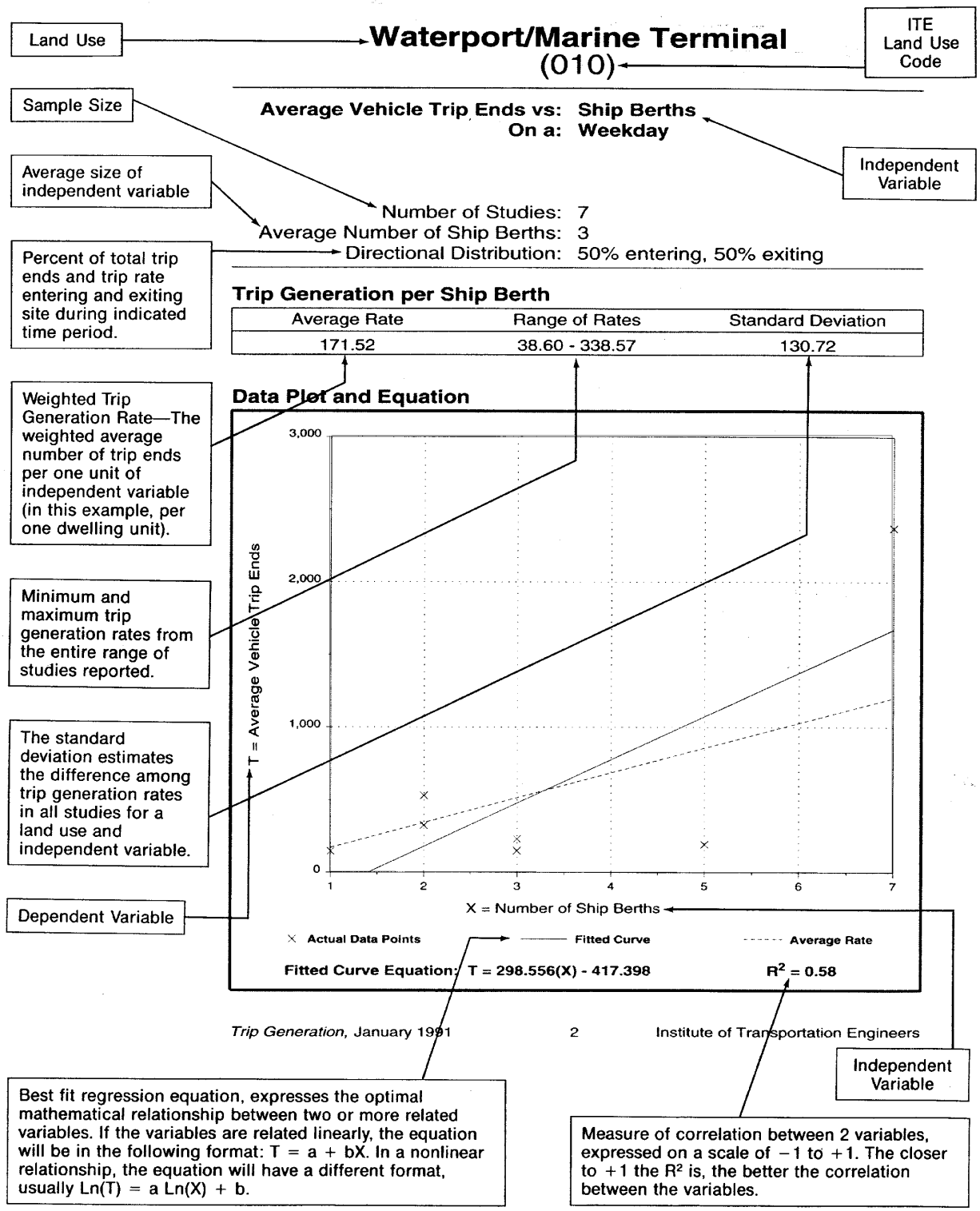


Figure 16. ITE Trip Generation Manual Page Example



Trip Generation, January 1991

5. Choose the rate or equation based on best judgement and collect data to justify the use of the rate or equation. Data should be collected at three or more similar independent sites to support your decision.

4.3 Limitations of Trip Generation Data

Trip generation rates provided by ITE are based on national averages. Florida's unique demographic makeup and the influence of tourism on travel in Florida may require variances from these national averages for certain land use types. Adjustments to these rates should reflect documented local conditions. Most data collected for ITE's *Trip Generation* were collected in suburban locations with little or no transit service (ITE: *Trip Generation,* pg. I-2). As a result, the trip generation rates provided by ITE may not be applicable for use in downtown areas or areas with regular transit service (ITE: *Trip Generation,* pg. I-41).

The alternative to using data from ITE's *Trip Generation* is to utilize data from other developments of similar size and scope or trip generation rate standards established by local governments. When these alternative sources are used, each rate should be justified and approved by the Department prior to use when data from other developments are proposed. At least three independent data samples are required. The data must be collected in accordance with ITE's *Trip Generation* requirements.

4.4 Special Considerations When Using the ITE *Trip Generation Manual*

The following should be considered by the Department when using data from ITE's *Trip Generation*.

1. **General Office** (Code 710): The average weekday trip rate per 1,000 gross square feet should be interpolated from the figure. Peaking characteristics should be obtained from the tables. You should note that the number of trips per 1,000 gross square feet tends to go down as the development gets larger. The largest office developments studied seem to be within 11 or 12 trips per day per 1,000 gross square feet.
2. **Residential** (Code 200): The study of residential trip making covers single-family detached housing, apartments, condominiums, mobile homes and retirement communities. Each has their own specific trip rates, but the most common use is the trip rate for the single-family detached unit. Single-family detached housing produces an average of 9.55 trips per unit per day. Larger household size, auto ownership and income tend a large percentage of retirees tend to cause the average trip rate to decline. Apartments (Code 220) require a lower trip generation rate than single-family detached households.
3. **Shopping Center** (Codes 820-828): The rates shown on the tables are averages within each size category. The average size center with each size category as related to the average rate is shown in each table under the column headed "Average Size Independent Variable/Study." Shopping centers from 400,000 to 500,000 gross square feet average approximately 50 trips per day per 1,000 gross square feet. Development of 500,000 square feet and more generate on the average around 34 to 37 trips per day per 1,000 gross square feet or 500 * 34 = 17,000 daily trips). The average rates can be estimated for centers of a different size by interpolating between the average rates and average size center of two adjacent size categories.
4. **Industrial** (Code 100): Occasionally, there is a problem distinguishing between comparable land uses such as light industrial and manufacturing. In cases where doubt exists, ITE suggests the composite rates (Code 100) be used.
5. **Hotel** (Code 310): A hotel is defined for trip generation purposes, as a place of lodging providing sleeping accommodations, restaurants, cocktail lounges, meeting and banquet rooms or convention facilities and other retail and service shops. Hotel traffic generally peaks in the AM peak after the AM peak of the adjacent street traffic. During the PM peak, hotel traffic peaking varies between 3:00 and 4:00 PM and 6:00 and 8:00 PM, with a lesser volume between 4:00 and 6:00 p.m. Hotels generate approximately ten trips per day per occupied room.
6. **Medical Office Building (**Code 720): The PM peak hour was generally observed to begin at about 4:00 PM.
7. **Office Park** (Code 750): Office parks are generally subdivisions or planned unit developments (PUD) containing general office buildings and support services such as banks, savings and loan institutions, restaurants and service stations arranged in a park or campus like atmosphere. These office parks are relatively new developments in suburban areas. Use this group with great care because of the small sample size. On some occasions, the use of **General Office** (Code 710) would be more realistic.

8. **Quality Restaurant (**Code 831): For trip generation, a quality restaurant is one with turnover rates of at least one hour or longer. The observed peak hour for restaurants was found to fall between noon and 1:00 PM, except on Saturdays, when the peak hour occurred between 8:00 PM and 9:00 PM.
9. **High Turnover, Sit-Down Restaurant** (Code 832): Restaurants of this type are sit-down eating places with turnover rates of generally less than one hour. Restaurants in this group are usually moderately priced and frequently belong to chains.
10. **Convenience Market** (Code 851): Be cautious of using 15- to 16-hour rates unless there is a way to ensure the market will not become 24-hour operation. Also, whether or not they have, or will have, gas pumps is a consideration.
11. **Mobile Home** (Code 240): This category is to be used for mobile home parks. Mobile home parks generally consist of trailers shipped, sited and installed on permanent foundations. Typically, they have community facilities such as recreation rooms, swimming pools and laundry facilities. Many such parks restrict occupancy to adults. In some situations, mobile homes are more characteristic of single-family dwelling units. If this is the case, the **Single-Family Detached Housing** (Code 210), or Apartments (Code 220) may be more appropriate, even though the unit is a mobile home.
12. **Recreational Homes** (Code 260): Recreational homes are usually contained in a resort together with local services and complete recreational facilities. These dwellings are generally second homes used periodically by the owner or rented on a seasonal basis. The data collected on this category did not include timeshare units. Until additional research is done, this category should cautiously be used for Recreational Vehicles (RVs) developments.
13. **Motel** (Code 320): A motel is defined as a place of lodging offering sleeping accommodations and possibly a restaurant. See also Hotel (Code 310).
14. **Warehousing** (Code 150): Warehouses are facilities primarily devoted to the storage of materials. However, a warehouse may have other uses, such as commercial intentions, and needs to be calculated differently. Conventional warehouses usually have low trip rates. However, with the implementation of just-in-time warehousing and warehousing for parcel services, ITE trip rates may not be adequate.
15. **Flea Markets:** ITE does not have a rate for flea markets; however, according to a study conducted in Colorado, the average trip generation rate equaled 16 trips per market booth. Manatee County staff used this data in reviewing DRIs. The owners of a flea market in Seminole County did actual counts over six weekends. Their estimated rate was 16.26 trips per booth or 6.2 trips per parking space.
16. **Office Showrooms** or **Warehouse Showrooms**: ITE does not have a rate for office showrooms. At this time, it is necessary to break the showrooms into the different functions and use the appropriate rate for each function.
17. **Community shopping** centers are characterized by shorter trips than a regional shopping center. Neighborhood shopping centers are characterized by shorter trips than community shopping centers.
18. **Discount department** stores typically have higher trip generation rates than standalone department stores.
19. **Outlet Malls** (Code 823): ITE does not have an approved trip rate for outlet malls. A documented and approved trip rate and pass-by rate should be reviewed and approved by the Department prior to use.

4.5 Selection of the Independent Variable

If an average rate or an equation is used, the analyst must select an independent variable from which to base the trip generation estimate. The independent variables are measures of the intensity of the development: GLA, total square feet, employees, number of units etc. The independent variable selection should be based on the available data (number of studies) and predicted reliability of the data (R^2-value or standard deviation). The independent variable most supported for each land use should be used. The standard deviation, R^2-value and number of samples in the range of the development's independent variable should be used to select the correct independent variable. GLA is typically the independent variable with the greatest number samples to support trip rates and equations provided in ITE's *Trip Generation*. Use of acres-of-land should be discouraged since it is typically the weakest of the independent variables in ITE's *Trip Generation*.

4.6 Timing of Trips

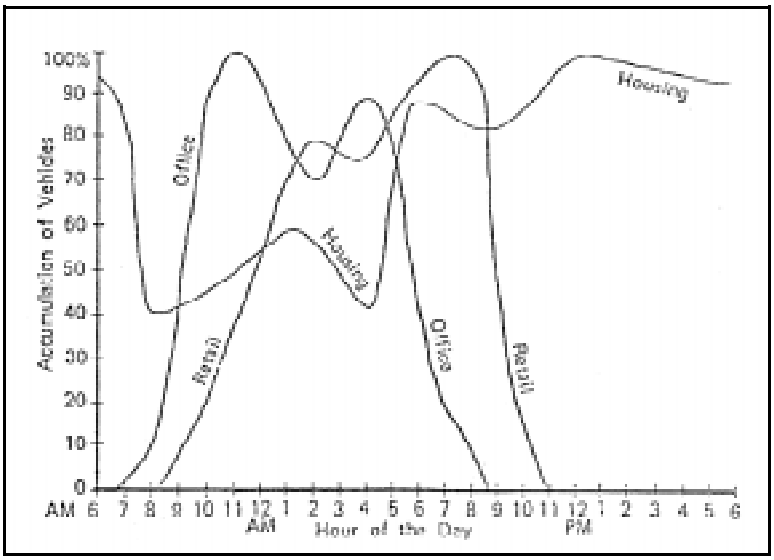
In trip generation, the peak period to be analyzed should be the period with the highest combined street and site generation traffic volumes. In most cases, the development peak will occur in PM peak hour of

adjacent street traffic (usually between 4:00 and 6:00 PM). The following describes generalized peaking characteristics of common land uses:

- Residential and office developments have peaks similar to normal street traffic (4:00 PM to 6:00 PM).
- Industrial land uses associated with manufacturing have peaks earlier than street traffic as a result of shift work. Usually, the peak period is between 3:00 and 4:00 PM. However, modern light-industrial land uses tend to have coinciding peaks with street traffic.
- For retail development it may be important to consider more than just the PM peak. Weekend traffic volumes approach weekday peak period volumes at many locations. If the retail development is in a corridor with high commercial and retail activity, the weekend peak traffic may exceed weekday peak period even though the through volumes on the links are significantly less. Traffic counts should be conducted to determine the appropriate analysis period for these land uses.
- Fast food restaurants have short trip durations and peak during midday peak periods.

Figure 17 illustrates typical daily distributions of trips for several land use types.

Figure 17. Daily Distribution of Trips



ITE peak-hour, trip-generation rates or equations should be used in all site impact analyses. When these rates are not available, they can be estimated using daily trip generation rates or equations and peak-hour-to-daily ratios (K-factors). Additionally, the trip generation rates used for entering and exiting vehicles from a site should be carefully evaluated to ensure that total trip generation during the peak period is not underestimated.

Figure 18 provides an example of the relationship of daily to peak-hour trip generation.

4.7 Multi-Use or Mixed-Use Developments

ITE defines multi-use (or mixed-use) as developments that contain a mix of land uses. However, there are a number of land uses identified in ITE that contain mixed land uses. For example, "a subdivision or planned unit development containing general office buildings and support services such as banks, savings and loans, restaurants, and service stations arranged in a park- or campus-like atmosphere should be considered an office park, not a mixed-use development. Similarly, office buildings with support retail or restaurant facilities contained inside the buildings should be treated as general office buildings because the trip generation rates provided reflect this situation" (ITE: *Trip Generation Manual*, I-42).

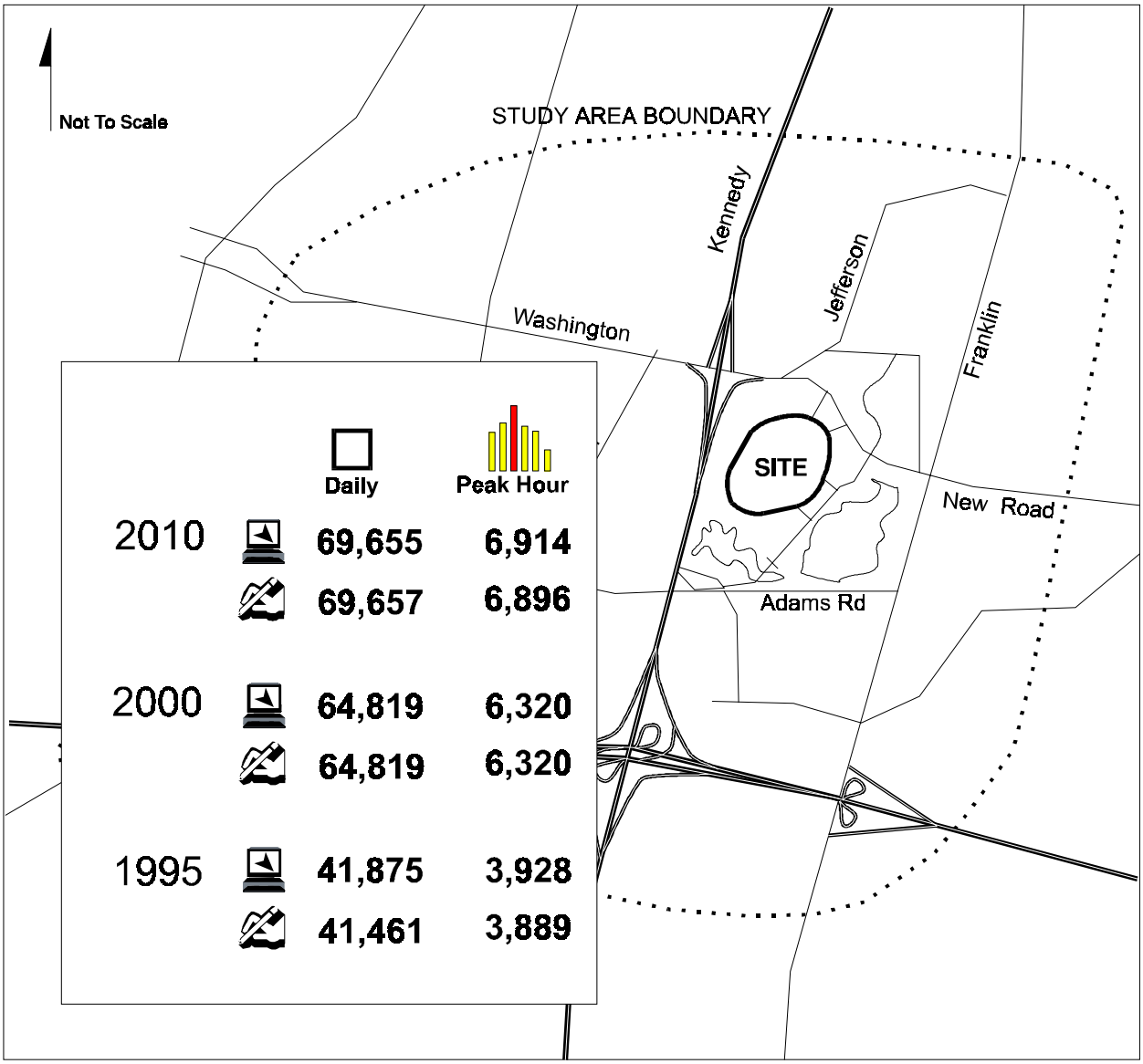
The Department should evaluate the grouping of several small land uses carefully. For example, when several small shopping centers are located within a large development, trip generation should be estimated using the sum of the trip generation for each shopping center and not by using the small shopping center trip generation rate applied to the sum of the dependent variable (GLA). Where appropriate, the small developments may be summed and a single rate can be used if a mixed-use development trip rate is provided by ITE.

4.8 Internal Capture Rates for Mixed Use Developments

The preferred methodology for site impact analysis of mixed-use developments in Florida is to address each land use independently and sum the resulting trip generation. However, there are many cases where the trip generation of developments is more complex as a result of mixed-use developments that "share" trips. For example, where large developments are planned near regional centers or where land uses share parking facilities, the total trip generation from the site will be less than would be estimated by summing the estimated trip generation if each of the land uses were estimated individually and summed. The reduction of trips that should occur is based on experience and knowledge of

the mix of the land uses and commonly is referred to as "internal capture." Internally captured trips must be contained within on-site circulation systems only. Internal capture trips should be calculated only after

Figure 18. Comparison of Peak Hour and Daily Trip Generation



total site trip generation is estimated. Internal capture rates are then estimated as a percentage of the total number of generated trips from a site. The internal capture rates are applied to the external trip generation for the site at the driveways by land use category.

Internal capture rates vary by the mix of land uses and size of developments. Sites having residential and nonresidential components have the highest potential for internal capture trips. Mixes of nonresidential land uses are less likely to have a significant internal capture rate unless a hotel or motel is contained within the site. The Department should be cautious when considering internal capture rates with large mixed-use developments. Large mixed-use developments are not believed to have significantly high internal capture rates. A rate of 20 to 25 percent is considered very high for any mixed-use development. Additionally, combinations of shopping are not considered mixed-use developments and internal capture rates should be considered for these types of development on a case-by-case basis (ITE: *Trip Generation*, pg. I-41-42). In any case, the rate used should be justified by the applicant and approved by the Department.

When evaluating internal capture, the following factors should be considered:

- Remote projects have more internal capture.
- Employment and residential centers should be constructed so that internal capture can be optimized at each phase of the build out.
- Residence and employment centers should be compatible (based on income) to allow internal capture.
- If there are ample nearby substitutes for internal capture trips, the internal capture rate may be adjusted. For example, if a mixed-use development is located near other large retail development, the internal capture rate may be adjusted downward to reflect the use of these nearby land uses as substitutes.
- Internal circulation roadways must be in place to accommodate internal capture rates.

The following guidelines are also recommended:

- Office uses may not attract on-site, home-based work trips immediately.
- Trips that cross or use the public road system cannot be considered internal.

Internal capture rates can also vary by the time of day based on mix of land uses. For example, "there is little trip making between residences and shopping/retail areas during the morning peak hour. On the other hand, there is considerable trip making between residences and offices during the morning and evening peaks" (ITE: *Trip Generation Manual*, I-50). Therefore, all internal capture rates should be checked for reasonableness using the projected peak-hour generation of the components of the mixed land use.

4.9 Primary, Pass-by and Diverted Trips

There are three basic types of trips generated by a development: primary, pass-by and diverted.

Primary trips are trips made for the specific purpose of visiting the generator. The stop at the generator is the primary reason for the trip. (ITE: *Trip Generation*, p. I-21). **Primary trips are new trips on the network**. An example of a primary trip is provided on Figure 19.

Pass-by trips are trips made as intermediate stops on the way from an origin to a primary destination. Pass-by trips are attracted from traffic passing on an adjacent street that contains direct access to the generator. These trips do not require a diversion from another roadway (ITE: *Trip Generation*, p. I-21) and are not new trips added to the system. These trips are involved in a "trip chain" of destinations with neither the origin nor the final destination of the primary trip being in the development. The percentage of trips that can be classified as pass-by for a site will vary by the type of land use, time of day, type and volume of traffic carried on the adjacent street, and the size of development.

Credit for pass-by trips is usually only allowed for retail and some commercial land uses such as fast-food restaurants with drive-through windows, service stations, and drive-in banks. In all cases, pass-by rates must be justified by the applicant and approved by the Department prior to use.

With pass-by trips, the total driveway volumes are not reduced. However, the the number of new trips added to the system resulting from the development is reduced.

An example of a pass-by trip is provided on Figure 20.

Figure 19. Primary Trip

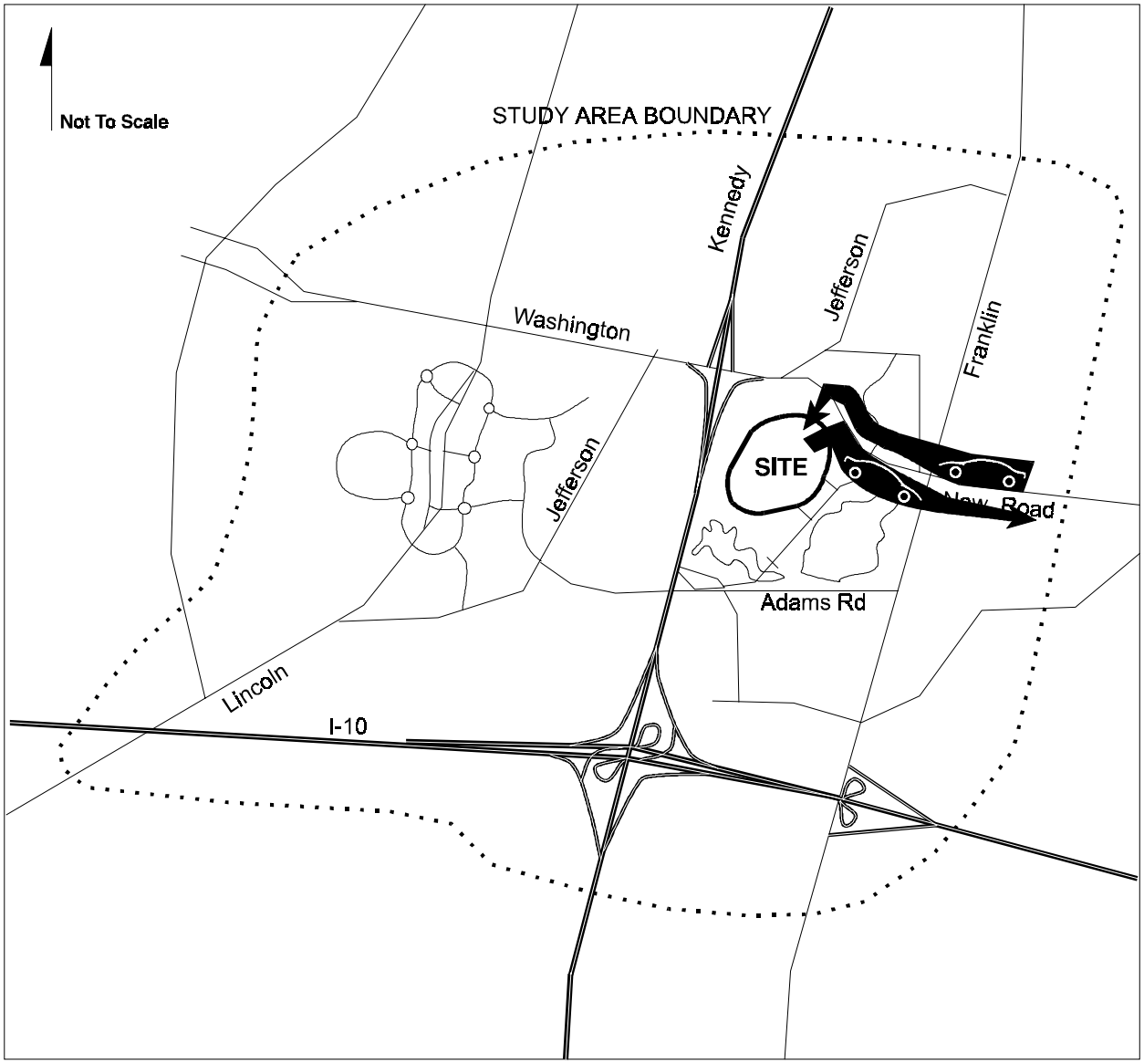
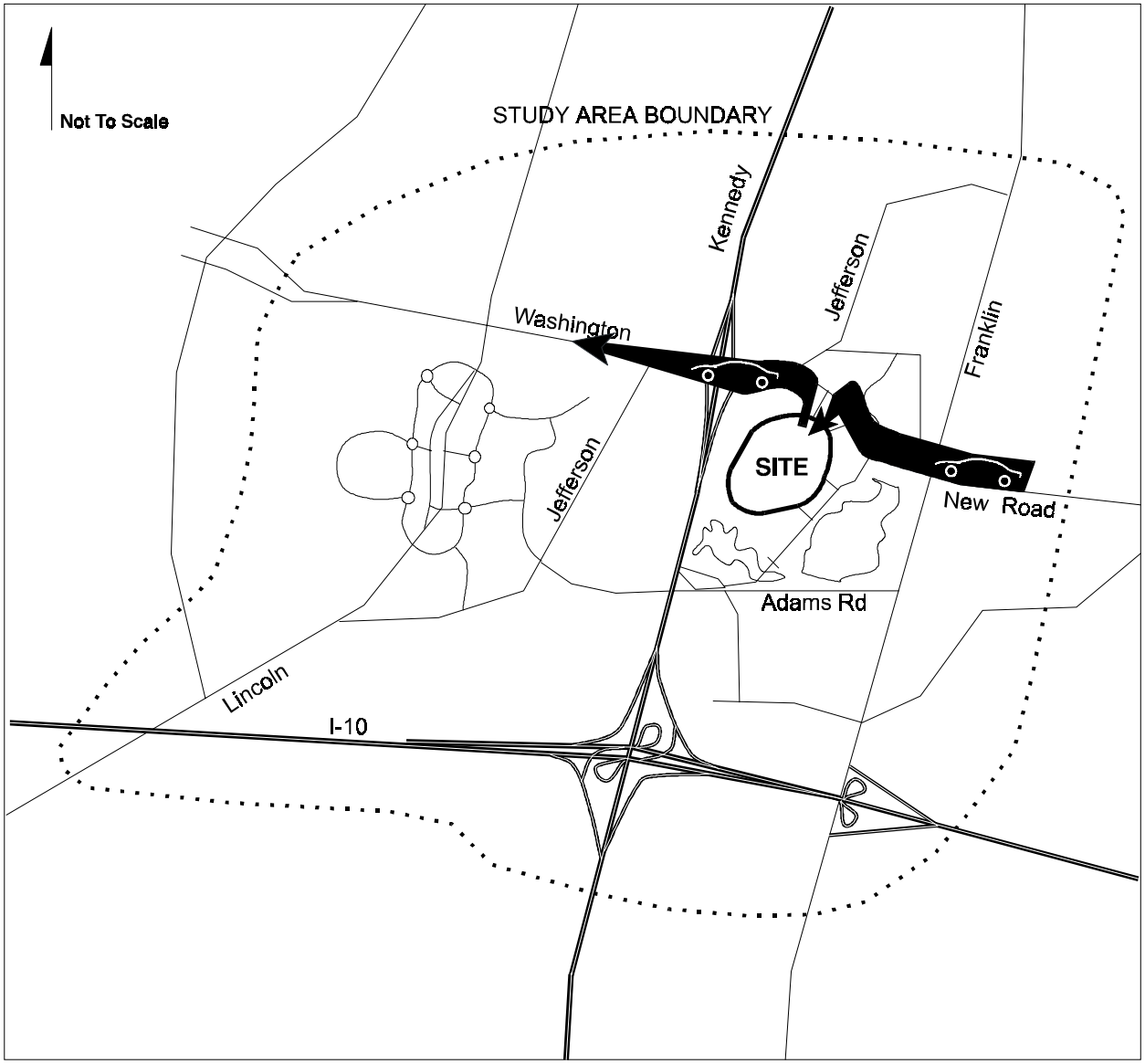


Figure 20. Pass-by Trip



When considering pass-by trips, the distribution of driveway volumes may change and be related to the street traffic. The analysis of pass-by trips should occur in two steps: (1) determine the number of new trips and pass-by trips for the site, then (2) assign the pass-by trips in proportion to the street traffic and the driveways and then assign the new trips in accordance with standard trip distribution procedures.

The pass-by trips estimated in the trip generation step are preliminary. Final pass-by trips are estimated following assignment when the number of pass-by trips considered can be compared with the total traffic on the facility.

In general, the number of pass-by trips should not exceed 10 percent of the adjacent street traffic during the peak hour or 25 percent of the project's external trip generating potential.

Diverted trips, like pass-by trips, are not new to the system overall; however, diverted trips are now utilizing a segment of the transportation system that they previously were not using to access the proposed development site. The new roads a diverted trip uses may or may not have direct access to the proposed development site. Facilities that receive diverted trips may require analysis of the impacts of the development trips. An example of a diverted trip is provided on Figure 21.

With diverted trips, the total driveway volumes are not reduced. Diverted trips are counted as new trips where they travel on segments required to reach the site where they previously did not travel.

ITE proposes the following methodology for estimating the percent of pass-by and diverted trips.

$$N_{pb} = p(VOL_{Pb})$$
$$N_D = p(VOL_D)$$

Where:

p = probability of a driver already in the traffic stream, stopping at the generator, $0 \geq p \geq 1$

VOL_{Pb} = volume available to produce pass-by trips

VOL_D = volume on other streets available to produce diverted trips

Average daily pass-by trip percentages trip and diverted trip percentages are provided as a function of GLA and average daily traffic on the adjacent roadways for several shopping centers in ITE's *Trip Generation* for shopping centers (ITE: *Trip Generation*, p. I-24-36). Peak-hour percentages are suggested to be 10 percent less than these daily percentages.

The percentage of pass-by trips in the PM peak hour for shopping centers is provided in Figure VII-1A and using the following equation in ITE's *Trip Generation*.

$$Ln\ (P_{PB}) = -0.341\ Ln\ (X) + 5.376$$

Where:

P_{PB} = percent pass-by

X = 1,000 GLA of shopping center

The PM peak-hour, pass-by trip percentages are usually 10 percent greater than in other times during day. (ITE: *Trip Generation*, p. I-23).

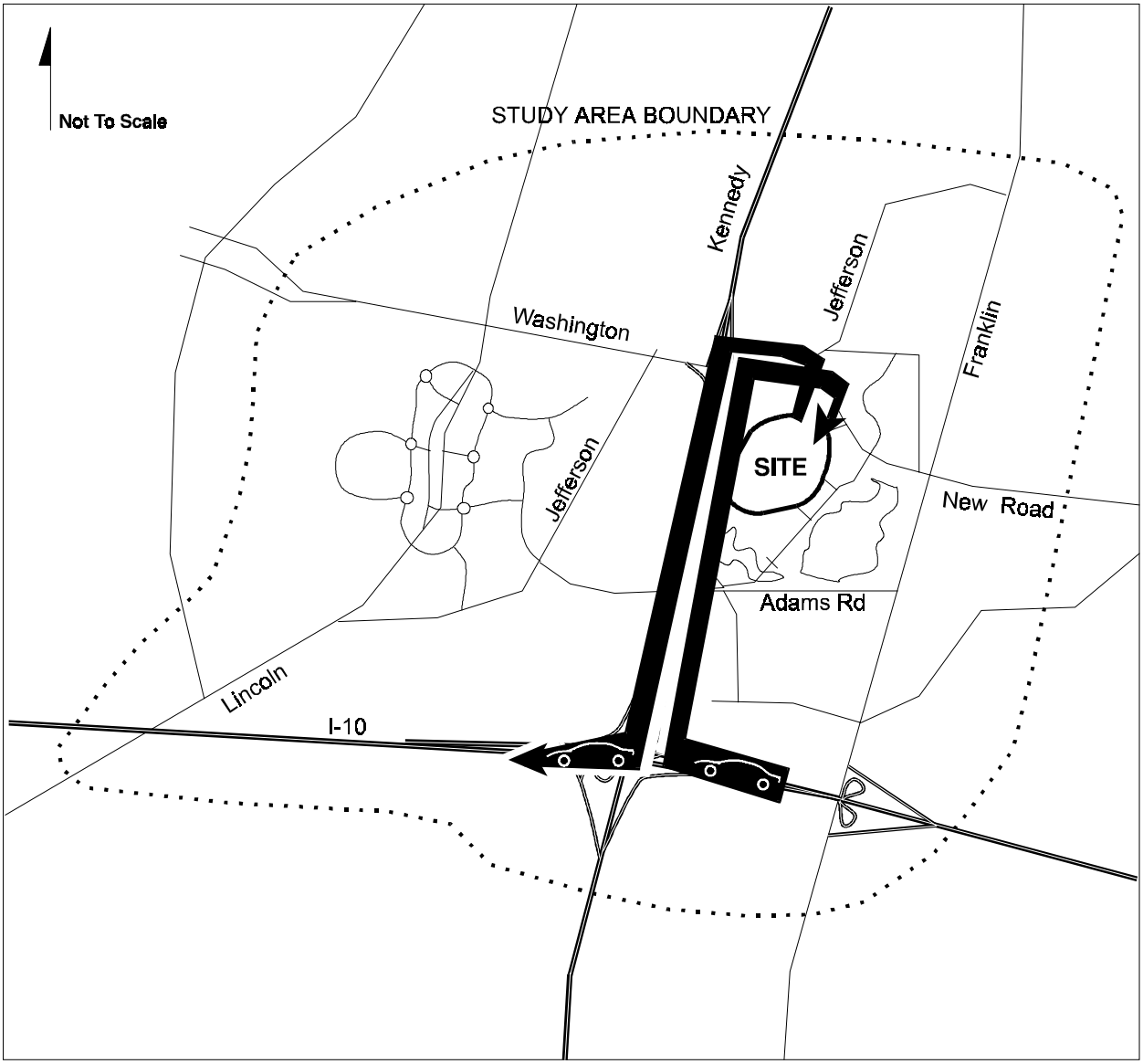
In all cases, pass-by and diverted trip rates must be justified by the applicant and approved by the Department prior to use.

When retail land uses are involved with a mixed-use development that attracts pass-by traffic, each land use must be analyzed separately using the following procedure:

1. Estimate the peak-hour, pass-by trip percentage for each retail parcel (shopping centers, convenience store, gas station, etc.) within the development. ITE's *Trip Generation* (page I-21) provides guidance on this step. The estimated pass-by trip percentage depends on the retail site's square footage.

2. Some of the pass-by trips will likely proceed to (or come from) other proposed development project land uses for their primary destinations. These trips cannot be claimed as pass-by trips to be reduced from total project trip generation because they are new trips generated by the project. Trips between the commercial parcel and other project land uses are internal trips.

Figure 21. Diverted Trip



There is no simple methodology for quantifying the overlap between pass-by trips and internal capture. Therefore, the analyst should estimate the worst-case scenario, justifying the estimate and discussing issues such as the interrelationships between project land uses and the through-trip potential for roadways adjacent to the retail site.

3. After the adjusted peak-hour, pass-by trips are quantified for each commercial parcel, they must be assigned to external roadways to determine how many project trips will be reduced from each roadway segment. The step should be performed for each individual parcel. Then the separately distributed trips can be summed up for each roadway segment.

4. It must be verified for each roadway segment that the total pass-by trips reduced from the segment does not exceed 10 percent of the peak-hour background traffic.

4.10 Special or Unusual Generators

When a generator is analyzed that cannot be adequately described by ITE, unusual generator data may be required based on the type, intensity and timing of trips to be generated. Judgment may be used to recommend trip generation characteristics that are appropriate for the development. However, the reasoning and data used to support these estimates must be documented and approved by the Department prior to use.

4.11 Estimating Trip Generation

Once trip generation rates or equations are selected using ITE's *Trip Generation*, the total site trip generation in vehicles is estimated. Daily and peak-hour trips are typically estimated. If a mixed-use development is evaluated, internal capture rates are then estimated to reduce the total estimated site trip generation, if appropriate. The result of the manual trip generation step is the total number of trips that will occur at the driveways. These trips are then classified as primary, pass-by or diverted trips.

4.12 Model Method of Analysis

The model method of site impact analysis uses FSUTMS models to forecast the behavior of development-generated trips within the site impact process. The following summarizes the steps required to replicate trip generation using ITE's *Trip Generation* for the development using FSUTMS:

1. Estimate site trip generation manually using ITE's *Trip Generation* (see section 4.11). Although preliminary estimates of pass-by and diverted traffic may be estimated manually in trip generation using ITE's *Trip Generation*, pass-by and diverted trips may be ignored when using the model method. Pass-by and diverted trips are not evaluated as part of the modeling process. Internal capture (within a single TAZ) is also estimated by FSUTMS and is reported by intrazonal trips. The model estimate of intrazonal trips for the development TAZ is acceptable as an estimate of internal capture.

   If there is a significant difference between the manually estimated internal capture and the intrazonal trips estimated in FSUTMS, the total external site ITE-based trip generation should be compared with the total "external" trip generation from the model until convergence occurs rather than the total trips reported by FSUTMS (which includes intrazonal) used in the following steps.

2. Convert the ITE-based trip generation to person-trips. ITE's *Trip Generation* provides daily estimates of trip generation for many land uses. However, these estimates are provided in "vehicle-trips." FSUTMS requires person-trips be input into the ZDATA3 file. Therefore, total trip generation (vehicles) estimated using ITE's *Trip Generation* should be converted manually to person-trips using an average automobile occupancy factor approved by the Department. Average automobile occupancy factors are provided in the model's PROFILE.MAS file (AOFAC) by trip purpose that may be used as default values.

The Department should review the analysis to ensure the proper application of automobile occupancy factors.

3. Develop a new traffic analysis zone(s) (TAZ) for the development and provide a connector from this zone's "centroid" to the transportation network. The connector should be coded consistent with other centroid connectors in the model (facility type, area type and number of lanes). The connections should be made to a facility that is appropriate to the intensity and type of land uses associated with the development and be consistent

with the preliminary site access plan (see **Step 10: Site Access**). More than one new TAZ may be required to separate residential and nonresidential land uses. In general, the new zone constructed should not be connected to any transit networks that may be run as part of the model.

4. Divide the total number of trips estimated using ITE's *Trip Generation* and converted to person-trips into productions and attractions: residential land uses are productions; nonresidential land uses are attractions. An exception to this rule is the conversion on nonhome-based productions and attractions by nonresidential land uses.

5. Apportion the productions and attractions among the FSUTMS trip purposes (home-based work, home-based shopping, home-based social or recreational, home-based other and nonhome-based other) by examining a completed GEN.OUT. For nonresidential land uses, select several zones that have a similar land use mix and are located in a similar area as the proposed development from GEN.OUT. These areas can be used to estimate the percentage of trips by trip purpose for the proposed development. Trip purpose percentages from residential land uses can be estimated using the areawide averages provided in GEN.OUT.

6. If trips are anticipated to have an origin or destination external to the model's study area, ZDATA4 files should be adjusted.

7. Run FSUTMS- Step One: External Trips (first iteration only - in subsequent iterations you may skip this step) through Step Six: Mode Split (Auto Occupancy)). During trip distribution, the "attractions" (nonresidential trip generation characteristics of each TAZ within the model) are adjusted within the model to match total productions within the model. This "balancing" is most critical for nonresidential land uses. Following the trip distribution and mode split phases of FSUTMS, a total trip table is generated in the HTTAB file.

8. Compare model calculations to ITE-based trip generation for the proposed development TAZ(s) by examining the trip table before assignment reported in MODE.OUT which summarizes the HTTAB file. Specifically, the total trips column for the development TAZ(s) should be compared to the total ITE-based trip generation. (The "total" in FSUTMS includes the sum of "origins/productions" and "destinations/ attractions," both of which include intrazonal trips.) MODE.OUT reports vehicle trip generation after person-trips are converted to vehicle-trips. Therefore, it is appropriate to compare the MODE.OUT total with the ITE-based trip generation from step 1.

   If the model being used contains transit and highway networks, the total of automobile trip making (single-occupant, and HOV) should be compared to the ITE-based trip generation reduced for the estimated transit usage approved by the Department. The total vehicle trips calculated by the model can be determined by summing the trips provided in MODE.OUT for the development TAZ(s) for the automobile modes.

9. Adjust the ZDATA3 input attractions and possibly productions, and rerun FSUTMS (generation through mode split) until the trips reported from HTTAB in MODE.OUT equal the ITE-based trip generation. Use the ratio of the model-estimated trips from MODE.OUT to ITE-based trip generation to adjust the ZDATA3 productions and attractions. The trips will usually converge (within 1 percent) within three model runs. Subsequent iterations may be required to reach a level of convergence that satisfies the Department.

   A rule of thumb of a maximum difference of 5 percent between the HTTAB and manually generated project total site trip generation is commonly used; however, absolute convergence is required in most cases. A table comparing the trip generation based on ITE's *Trip Generation* and the model-generated trips should be provided for each development TAZ.

5. Trip Distribution

The next step in the site impact analysis is trip distribution. The purpose of trip distribution is to analyze the trip-making characteristics between the proposed development and off-site areas. The level of effort involved in this step is a function of the intensity and type of development proposed, adjacent land uses and the time of day being evaluated.

Whether a manual or modeling method is used, trip distribution should be performed in each analysis year, documented and summarized in a table or figure that illustrates the percentage of total site trip generation that occurs in each zone.

5.1 Manual Methods

Manual methods of trip distribution are designed provide the analyst with a basic understanding of the travel patterns associated with the development. When performing manual methods of traffic distribution, good judgment is essential to conduct a proper evaluation. The following methods will assist in determining if the distribtions performed are appropriate. The methods can be divided into methods that use data from other sources to estimate trip distribution or manual gravity model methods that perform a "cardinal" or fundamental trip distribution.

5.1.1 ITE Directional Distribution Factors

This step consists of assigning a directional trip distribution factor from the ITE's *Trip Generation* to the entering and exiting trips during the peak analysis period. For example, for a site with only one driveway on a one-way roadway, 55 percent of the total site-generated traffic within the analysis period is entering and 45 percent is exiting.

Consider the following example. A small apartment complex is proposed (ITE Land Use Code 220). You predicted this site will generate 1,000 trips during the PM peak period. From ITE's *Trip Generation*, a directional distribution factor (D) of 68 percent entering and 32 percent exiting is assumed for the PM peak period. The resulting trip distribution is shown in Figure 23. By multiplying the D factors by the total peak-hour trip generation (two-way volume), the

Figure 22. Site Impact Process

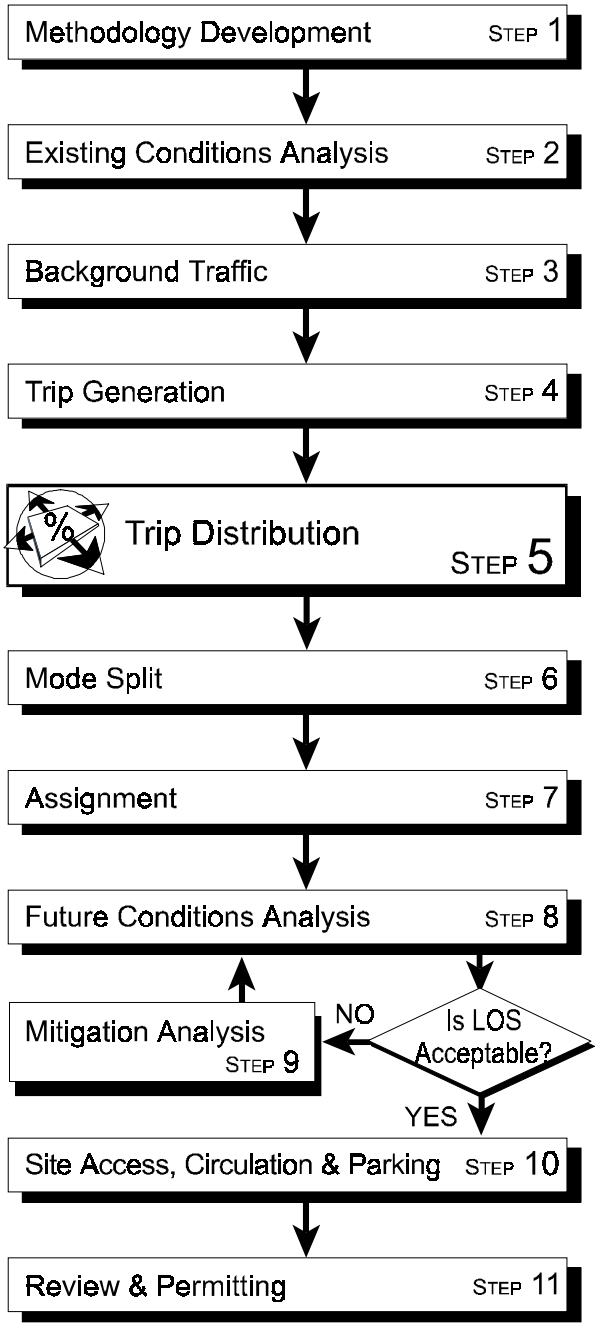
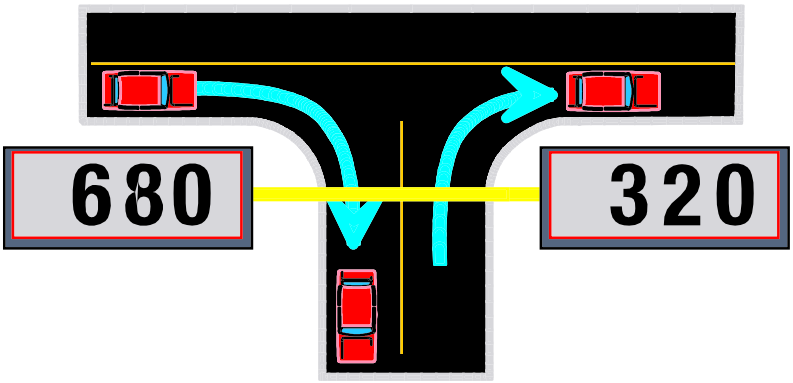


Figure 23. Direction Distribution Factor



exiting and entering driveway volumes can be determined.

5.1.2 Analogy Method

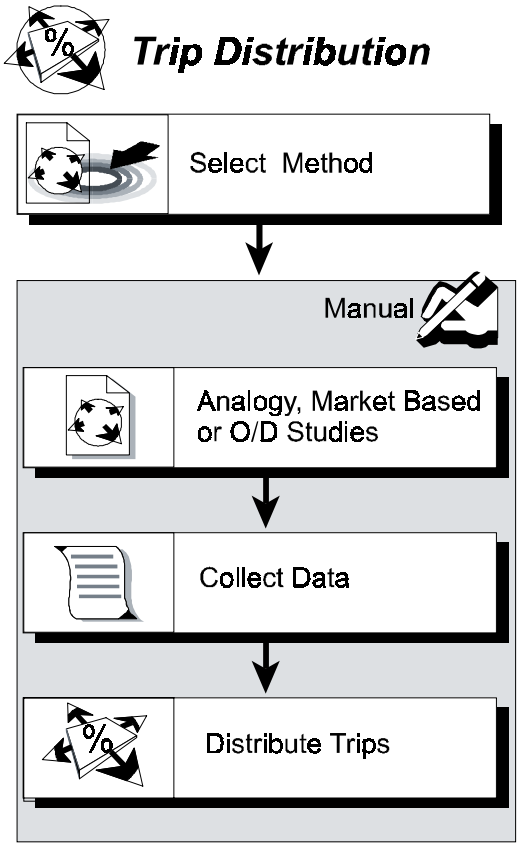
One of the most commonly applied manual trip distribution methods used in site impact analysis is to base the trip distribution on existing data collected at sites that are similar to the subject development. This data is usually traffic count and turning movement information. Some developments may include data from a license plate survey or origin and destination studies. Applications include (ITE: *Transportation and Land Development*, p. 54):

- fast-food restaurants where a competing establishment is near the site.
- service stations where traffic volumes on the adjacent streets are similar to those forecasted at the site.
- motel sites near an existing motel.
- residential developments on the fringe of an urban area.
- sites to be developed in residential use where the tract is one of the few vacant parcels in a developed area.
- occupied office buildings located in an office complex being developed by phases.

5.1.3 Origin and Destination Studies

Most origin and destination studies used in site impact analysis employ the analogy method; however, a unique origin and destination study may be required for some unusual developments. For example, a unique origin and destination study may be used for the relocation of a sports complex or stadium.

Figure 24. Trip Distribution Using Analogy, Market Based or O/D Studies



5.1.4 Market-Based Method.

The market-based method is most commonly applied to developments that have already performed trade area or market studies. Examples include tourist destinations and entertainment centers. This method involves the delineation of a study based on predicted service or market areas, dividing the area into zones and distributing the trips among zone pairs based on trip purpose. Since this method is not employed in typical analyses, it is not discussed in detail in this Handbook. However, further information is available in *Transportation and Land Development* (Stover and Koepke) published by ITE.

5.1.5 Surrogate Data

When acceptable data is not available and a manual method of trip distribution is performed, a surrogate source of data, such as employees' addresses or number of dwelling units may be used to estimate trip distribution. Such data must be documented, reviewed and approved by the Department.

5.1.6 Manual Gravity Models Method

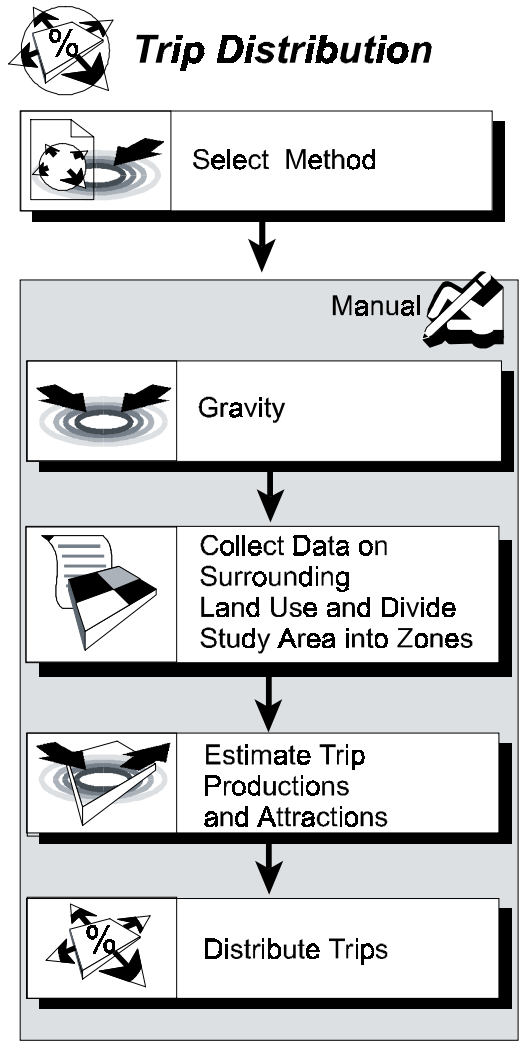
The gravity model method can be performed manually and is used by FSUTMS models in trip distribution. The manual gravity model process is summarized in Figure 25. The basic premise of the gravity model is that the number of trips between two zones *i* and *j* is proportional to the number of trips produced in zone *i* and the number of trips attracted to zone *j*, and inversely proportional to the amount of travel required for trips in zone *i* to reach zone *j*. The term "gravity" refers to the analogy of this model to Newton's Law of Gravity. The accuracy of the gravity model depends on the accuracy and availability of land use and demographic data in areas affected by the development. The following is a typical gravity model used in site impact analysis.

$$T_{ij} = \frac{ff_{ij} * P_i * A_j}{\sum_{j=1}^{n} A_j * ff_{ij}}$$

Where:
T_{ij} = trips from zone *i* to zone *j*
ff_{ij} = friction factor (adjustment factor) for zone pair *ij*
P_i = productions in zone *i*
A_j = attractions in zone *j*

The following steps must be performed (ITE: *Transportation and Land Development*, p. 58):

Figure 25. Manual Gravity Model Method



- Complete the trip generation step of the site impact analysis.
- Collect data on surrounding land use and demographics and divide the study area into traffic zones of homogenous land uses.
- Estimate the trip attractions and productions in each zone based on the zone's demographic characteristics.
- Distribute the trips generated by the development using the gravity model based on the relative attractiveness of each of the other zones. No adjustments to the model can be made to the coefficients in the gravity model, or friction factor, to impose a preference of travelers between zones.

The result of this process is a table of trips from the site to each possible destination zone and a table of trips from each possible origin zone destined for the site.

5.2 Model Method

No adjustments to the results of the model trip distribution are permitted. The results of the trip distribution step in FSUTMS are in DISTRIB.OUT.

The model method can be used to assist in performing manual distributions. Manual trip distribution results can be compared with model outputs for comparison purposes and reasonableness checks. The use of model methods to determine distribution percentages of vehicles is common in combination with manual assignment processes. However, for large networks model assignments may be a more expediant method for determining the minimum time path between traffic analysis zones. A blended methodology should be approved by the Department prior to use.

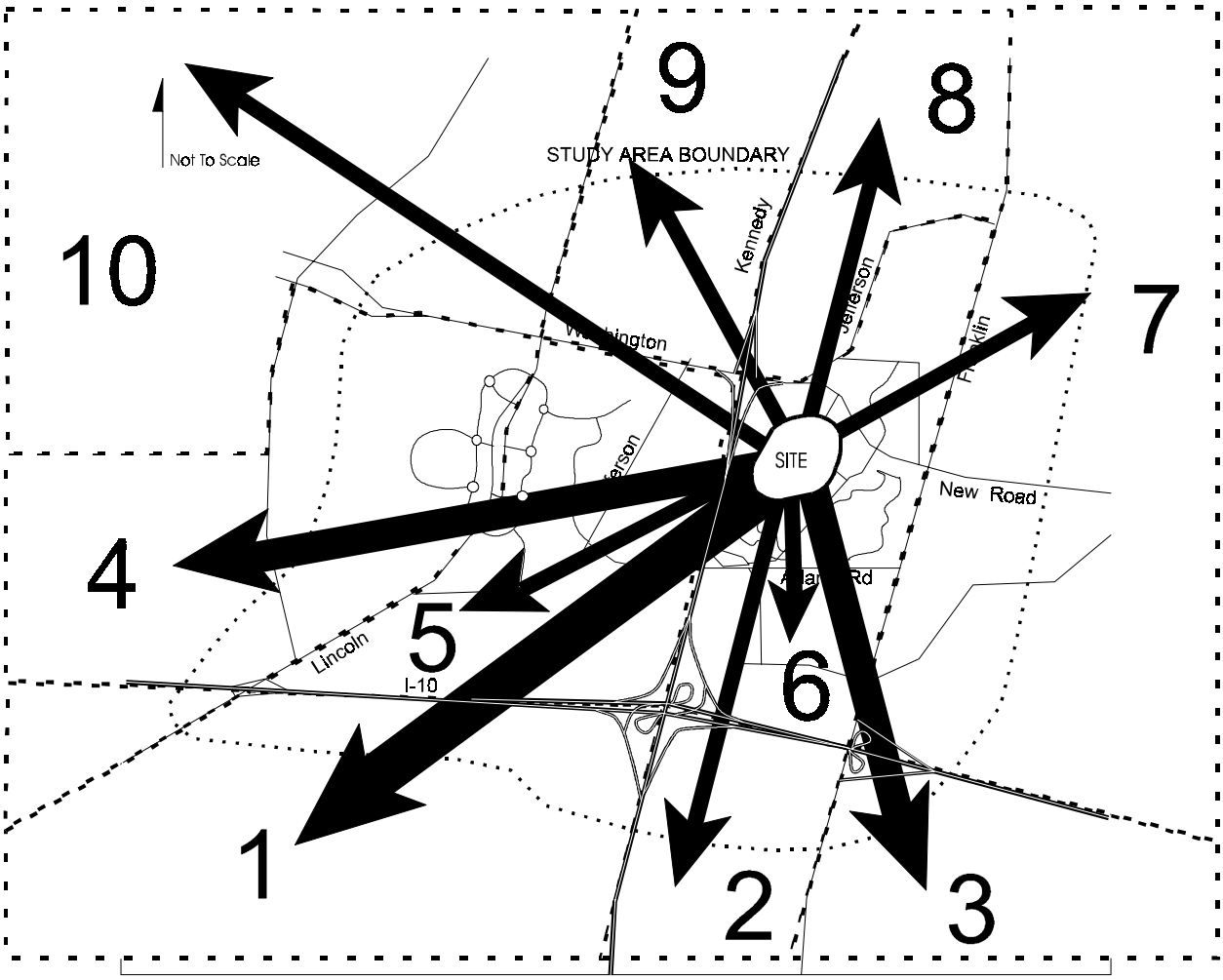
5.3 Documentation

The following documentation is recommended for site impact studies and is required in DRIs. The documentation shall be reviewed and approved by the Department.

- Map showing generalized site traffic distribution for manual methods
- Sufficient justification and explanation of the method used if the model assignment is manually adjusted
- Site traffic trip-length curve and average trip length for manual methods
- Comparison of model and manual methods

A common output of the trip generation step is a diagram that shows the relative demand for travel between zone pairs using desire lines within the study area as shown in Figure 26. The width of each desire line indicates the magnitude of the volume desiring to travel between the zone pair.

Figure 26. Trip Distribution Desire Lines



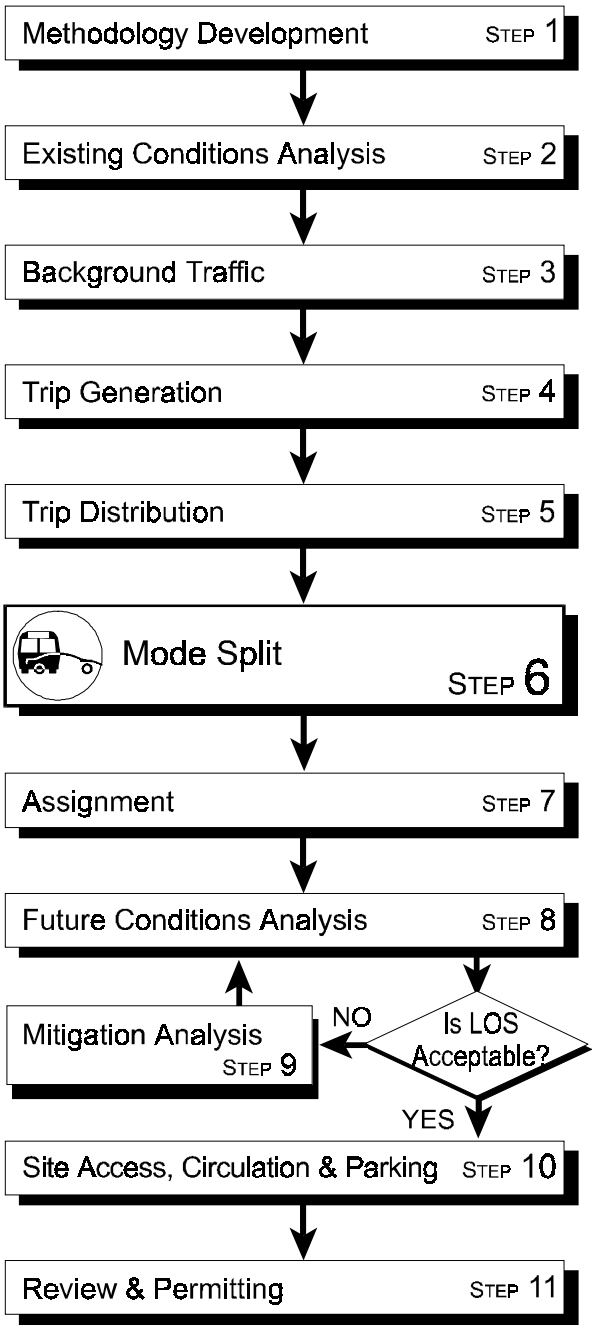
6. Mode Split

Mode split is the process of estimating the number of travelers between zones that are anticipated to use modes other than automobiles in site impact analysis. Data associated with most site impact analyses is taken from suburban locations where there is little or no alternative to automobile transportation. Therefore, mode split is not a significant part of many site impact analyses. With manual methods, the transit share is typically assumed to be some small percentage of total trip generation (usually less than 5 percent) and trips are reduced at driveways according to prior trip distribution. If transit or ridesharing is anticipated to be an issue, data from similar developments within the area should be used to refine the mode split estimate. Data may be available from local transit agencies or the RPC's estimate of transit usage within the area. This data should be used to support any proposed travel demand management techniques (e.g., telecommuting, flex-time, etc.) that may be proposed as mitigation for the traffic impacts (discussed in detail in a later chapter). The applicant must clearly document any estimate of mode split to transit or nonmotorized transportation. The proposed usage should also be supported through an agreement with the transit agency and an acceptable internal roadway design. Transportation management organizations (TMO) and transportation management associations (TMA), organizations whose purpose is to promote alternatives to single-occupant vehicle travel, should also support the proposed transit share when transit usage is considered.

As transit and other nonmotorized alternatives become available, mode split analysis will be required to a greater extent. In these cases, mode split estimations should occur based on the available alternatives between zone pairs following trip distribution (if performed manually) or using the mode split routines provided within FSUTMS.

Mode split sometimes involves the analysis of automobile occupancy for the analysis of HOV facilities. When HOV analyses are required manually, site trip distribution tables should be disaggregated into occupant-based trip tables. For example, single-occupant vehicles and two-or-more riders. If model methods are employed, the routines provided within FSUTMS are required.

Figure 27. Site Impact Process



7. Assignment

Assignment involves determining the traffic that will use each access point and route on the roadway network. This step is sometimes confused with trip distribution. Trip distribution is the step in determining where trips wish to go. Assignment is the step in which we place the trips on the network to reach the desired destination. This confusion occurs because it is prudent to perform trip distribution and assignment concurrently in many manual applications with limited study areas and potential impacts.

7.1 Manual Methods

Manual assignments for the analysis period in each analysis year (by phase--see section 1.2) should be made using the trip frequency, duration and direction (between zones) tables produced as part of the trip distribution (reduced for mode splits, if appropriate). Multiple paths should be assigned between origins and destinations based on experience and judgment to achieve realistic estimates. Pass-by trips should be analyzed in the network carefully. If pass-by trips are of concern, the following procedure is recommended by ITE in *Traffic Access and Impact Studies for Site Development: A Recommended Practice*, p. 30).

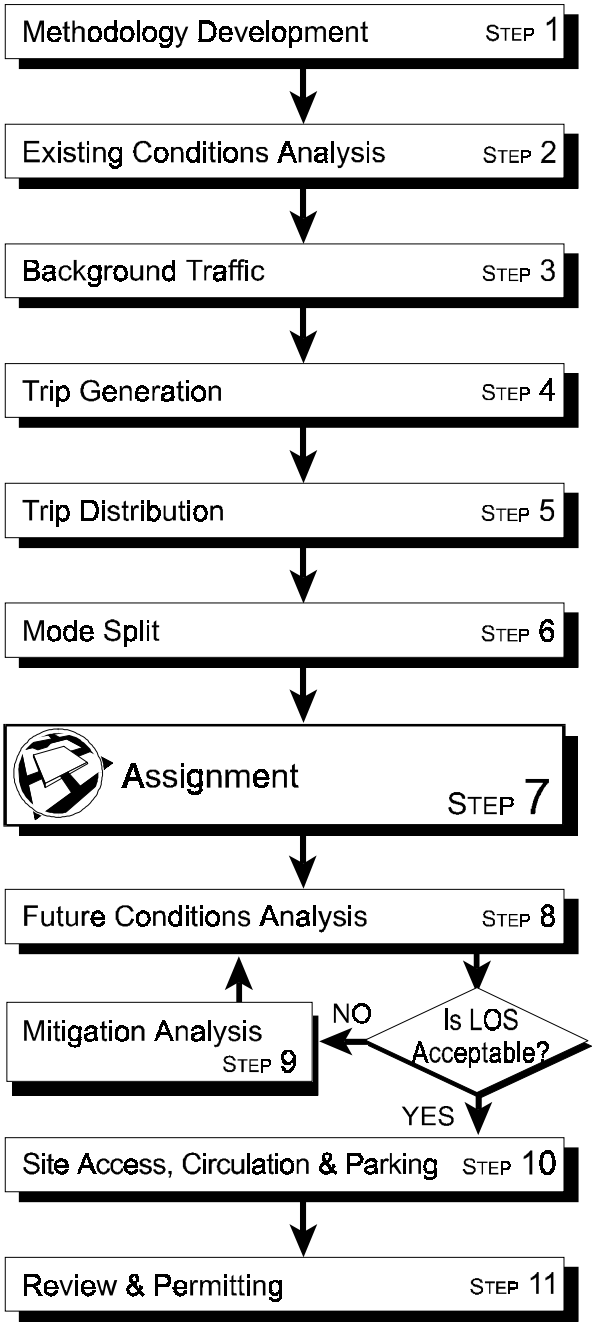
1. Apply the trip reduction factors for internal capture and pass-by traffic, then assign volumes to each roadway segment. Illustrate in a map the assignment of development trips and provide a corresponding table.

2. Assign trips to the network such that the primary, pass-by and diverted trips are distinguishable and can be easily reviewed. Pass-by trips should be evaluated carefully considering the location of driveway and the total traffic on the adjacent roadway links (see **Step 4: Trip Generation**).

3. Consider the effects of traffic diversion by existing traffic to other facilities as a result of the site-generated traffic, if appropriate.

4. Check the assignment for reasonableness. Generally, pass-by traffic should not exceed 10 percent of traffic on adjacent streets. If the access plan is modified during subsequent reviews or

Figure 28. Site Impact Process



permitting, the assignment process may have to be repeated and alternative site access and circulation plans considered until a logical assignment is achieved for the network.

The assignments should reflect the conditions anticipated to occur in the analysis year. Additionally, the following factors may influence the assignment of trips:

- the type of traffic control devices (drivers tend to avoid signalized left turns) at adjacent intersections
- the number of left turns at access points
- the design of the internal circulation systems and the location of residential land uses
- the outbound trips tend to be more evenly distributed among multiple exits than the inbound trips
- consider assignments to the on/off ramps at interchanges

The assignment process may be performed a number of times during a typical analysis based on the number of site access and internal circulation alternatives and traffic impact mitigation alternatives considered.

The preferred volumes to use during a manual assignment are peak-hour volumes. A daily trip assignment (AADT) may be performed for each analysis year. However, following the assignment of AADT, peak-hour volumes must be estimated using traffic factors as outlined later in this chapter.

7.2 <u>Model Methods</u>

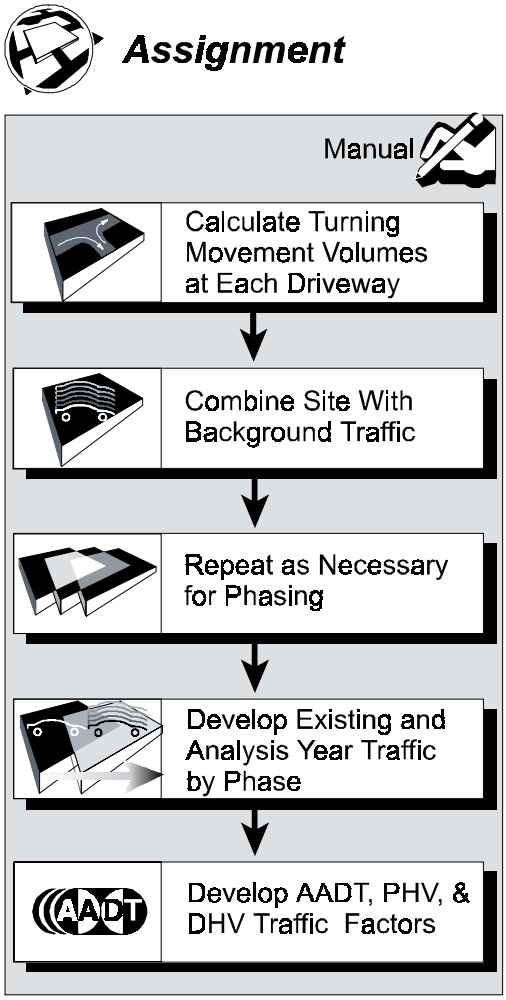
When modeling methods are used in assignment, the final assignment is based on an FSUTMS capacity-restrained, equilibrium highway assignment routine.

The preferred technique for site impact analysis is the SELECTED ZONE analysis tool. During this process, a single assignment is made that tracks total trips as one purpose and development trips as separate purpose. The loaded network output file (HRLDXY) resulting from a SELECTED ZONE analysis consists of two loadings for each link in the network:

- Total trips (purpose 1)
- Development trips (purpose 2)

This process follows the following steps:

Figure 29. Manual Assignment



1. Perform the FSUTMS trip generation process described in **Step 4: Trip Generation**. This process will provide all of the inputs necessary to run an assignment in FSUTMS including a "balanced" and adjusted trip table that replicates ITE's *Trip Generation*. The total trip table file generated by FSUTMS is HTTAB. The HTTAB file should contain vehicle trips approximating ITE's *Trip Generation* (see **Step 4: Trip Generation**).

2. Generate a new trip table (HTTABSZ) that contains only the trips to and from the development TAZ(s). This process is performed using the MATRIX UPDATE routine where the trips that do not interact (without an origin or destination in the development TAZ(s)) with the development are replaced with zeros.

3. Using the MATRIX MANIPULATE routine, join the HTTAB and HTTABSZ files to form a new two-purpose total trip table, HTTAB2. The HTTAB2 file identifies the total trips in HTTAB as purpose 1 and the development trips in HTTABSZ as purpose 2.

4. Assign trips to the network with the EQUILIBRIUM HIGHWAY LOAD routine inputting HTTAB2 as the total trip table. The SELECTED PURPOSES parameter should specify purposes 1 and 2.

5. Review the trip assignment summary that is part of the HASSIGN.OUT file produced by FSUTMS immediately following the "Report Highway Load" section of the output. Compare the total assigned trips in purpose 2 with the ITE-based trip generation estimate. The total development trips assigned to the network using FSUTMS should not differ from the ITE-based trip generation estimate by more than 5 percent. If significant differences exist (uncommon) adjust the ZDATA3 input file and rerun the model (skipping the HTTAB checks in **Step 4: Trip Generation**) until an acceptable convergence is obtained.

6. Review a plot of the loaded highway network by purpose. An alternate method would be to review the LOADED HIGHWAY NETWORK REPORT provided in the HASSIGN.OUT. These tables contain volumes on a link-by-link basis for the total network trips in purpose 1 and development trips in purpose 2. Non-development traffic is determined by subtracting development trips in purpose 2 from the total trips in purpose 1 on a link-by-link basis. This step is performed manually and reported in a table.

7. Check the assigned volumes supplied by the model for reasonableness. The volumes should be logical and the non-development traffic volumes should be compared with existing traffic data to identify any anomalies in the assignment.

8. Convert the PSWADT generated by FSUTMS to peak-period analysis volumes for use in analysis of the roadway conditions and impacts of the development.

The analyst may be required to refine the FSUTMS model to eliminate anomalies and make results reasonable. The most common types of modifications that are permitted include:

- Refinement of network input data such as the number of lanes. Facility type and area type should not be changed unless agreed to by the Department.
- Refinement of traffic analysis zone data (ZDATA1, ZDATA2, ZDATA3 and ZDATA4)

In some circumstances, such as at the fringe of a model, manual adjustments may be necessary. If post-assignment adjustments are made, the process must be clearly justified and documented. The procedure in National Cooperative Highway Research Program (NCHRP) Report No. 255 for adjusting link volumes and arriving at design traffic and turn movements is also recommended.

The model output volumes from FSUTMS represent the peak season weekday average daily traffic (PSWADT) volumes that represent the average of the 13 highest week, weekday traffic volumes. Therefore, model outputs must be converted from PSWADT to AADT using a model output conversion factor (MOCF) that is provided by the Department or agency responsible for the maintenance of the model. Once AADT volumes are developed, the volumes are converted to peak-hour analysis volumes using the procedure outlined in this chapter. All adjustments and conversion factors must be documented, reviewed and approved by the Department.

7.3 Required Volumes and Traffic Factors

The product of the assignment step of site impact analysis is to provide a set of volumes and traffic characteristics appropriate for use in the analysis of traffic operating conditions.

7.3.1 Annual Average Daily Traffic Volumes

Actual or estimated AADT volumes are required for all alternatives in each analysis year. AADT volumes can be derived from count data in the existing year. Department data sources should be used to the greatest extent possible. Estimated AADT can be derived from travel demand model forecasts of PSWADT in the future analysis years.

Seasonal adjustment factors (SF) provided by the Department must be applied to 24-hour existing year count data to estimate AADT volumes. The SF accounts for variation in daily traffic with each week and month and must be applied to counted traffic data after axle adjustments are performed. Model output conversion factors (MOCF) by the Department are used to convert PSWADT volumes assigned by travel demand forecasting models to estimated AADT volumes. Multiple MOCFs are available within each model based on the facility type and area type of the facility. The District or Central Office will provide MOCF for each model application.

If the Department does not require the model's planning year (unique ZDATA and network information) to match an analysis year, future AADT volumes should be adjusted using average annual growth rates approved by the Department. These growth rates can be based on a trend analysis of forecasted volume growth using the selected travel demand forecasting model within the area of influence. The applicant must also consider the effects of land use saturation, capacity restraints, the phasing of planned improvements, and the planning of other developments when forecasting travel demand beyond the planning year of the model. In special cases, observed trends within similar areas outside the area of influence may also be used.

If forecasts are being developed for an intersection or interchange that does not exist today, each turning movement must be evaluated to determine if balancing is appropriate once the AADT estimates have been developed. For example, the northbound to eastbound AM movement must be compared to the westbound to southbound PM movement. If the AADT volumes for each of these movements are within 10 percent or 750 vehicles, and there is no logical reason for the difference, then the average of the two movements will be used for each movement.[2] For intersections or interchanges with existing count data and future year FSUTMS-generated PSWADT, the recommended method for developing design traffic is TURNS4. TURNS4 is a spreadsheet--based software package approved by the Department for use in preparing design traffic estimates.

7.3.2 Planning Hour Volume (PHV), 100HV

PHVs are used in most site impact analysis applications. These volumes estimate the 100th-highest hourly volume (100HV) that occurs in an analysis year. This period (100HV) approximates a typical peak hour in the developed area's peak season. These volumes do not represent demand volumes that are appropriate for design purposes used in geometric design. The use of the 100HV for planning purposes in discussed in the Department's *LOS Manual*.

7.3.3 K_{100} Factor

The Planning Analysis Hour Factor or K_{100} Factor is the ratio of the 100th-highest hourly volume of the year to the AADT. In developed areas, the 100th-highest volume hour of the year represents a typical weekday peak traffic hour during the area's peak travel season. In Florida's developed areas, the daily peak hour usually occurs in the late afternoon for most state roads. Thus, in developed areas of the state, the 100th-highest hour of the year represents the typical "rush" hour during the area's peak traffic season. The K_{100} factor should represent a demand volume, not necessarily a measured volume.

The K_{100} factor is used to convert a peak-hour volume to an annual average daily volume. The K_{100} factors used in the site impact analysis should be obtained from the Department's continuous count stations. The K_{100} factor generally drops as an area becomes more urbanized and high traffic volumes are spread out over longer time periods.

7.3.4 Capacity Restraints and K_{100} Ranges

The estimated demand traffic K_{100} should be used, not the measured K_{100}. The minimum acceptable K_{100} values that the Department will accept are presented in Table 9. If the estimation process above yields a

[2] The 750-vehicle criteria is based on an assumed K of 10 percent and the equivalent DRI application threshold for design hourly volumes.

Table 9. Statewide Average K_{100}s

NON-FREEWAY ROADS				FREEWAYS	
Area	Uninterrupted Highways	Class I Arterials	Class II/III Arterials	Area	
Rural Undeveloped	0.090	-	-	Rural Undeveloped	0.092
Rural Developed	0.086	0.086	-	Rural Developed	0.092
Transitioning/Urban	0.083	0.084	0.082	Transitioning/Urban	0.090
Urbanized	0.080	0.082	0.080	Urbanized (Group 2)	0.087
				Urbanized (Group 1)	0.083

Table 10. Minimum Acceptable K_{100}s

NON-FREEWAY ROADS				FREEWAYS	
	Uninterrupted	Class I	Class II/III		
Rural Undeveloped	0.090	-	-	Rural Undeveloped	0.092
Rural Developed	0.086	0.086	-	Rural Developed	0.092
Transitioning/Urban	0.083	0.084	0.082	Transitioning/Urban	0.090
Urbanized	0.080	0.082	0.080	Urbanized (Group 2)	0.087

number lower than in the ranges, the roadway(s) probably exhibits capacity constraints and is currently not accommodating demand traffic volumes. Under this situation, the Department may accept values as low as, but not lower than those provided below. As the estimated K_{100} approaches the values in the table below. Additional documentation may also be required if the estimated K_{100} reflects a demand situation.

7.3.5 Directional Distribution Factor (D_{100})

The D_{100} or Directional Distribution Factor in the 100HV is used in converting AADT to Directional Planning Analysis Volumes (PHV). The peak-hour D_{100} factor is the proportion of traffic during the peak hour traveling in the predominant direction. The D_{100} factor recommended for use in Florida is 0.568. The minimum D factor allowed by the Department is 0.52. This assumes that 52 percent of the peak-hour traffic is traveling in one direction.

7.3.6 Peak Hour Factor (PHF)

The PHF is the hourly volume (during the peak hour) divided by the peak 15-minute rate of flow within the peak hour. Consideration of subhour peaks is important because congestion due to inadequate capacity occurring over a short time may take a substantial time to dissipate. The default PHFs were obtained from the Department's classification stations.

The maximum PHF that the Department will normally accept is 0.95. However, if adequate justification is provided by the applicant that a higher PHF is appropriate and represents an unconstrained situation, the Department may accept a somewhat higher value.

7.3.7 Design Hour Volumes (DHV), 30HV

DHVs are used to evaluate traffic operating conditions for the various analysis years and alternatives for interchange proposals (IJR/IMR) or other applications related to site impact analysis that require design traffic volumes. Design traffic volumes are based on the anticipated 30th highest hourly volume (30HV) rather than 100HV planning hourly volumes used in most site impact analysis. The 30HV is required for the design year of any Department design project. The following procedures discuss the requirements for using design hour volumes (30HV).

- Design Traffic Procedure, Topic 525-030-120-e
- Standards for the Florida Intrastate Highway System Plan, Topic 525-030-250-b
- Approval of New Access to Limited-Access Facilities, Topic 525-030-160-c
- Approval of Modified Access to Limited-Access Facilities, Topic 525-030-160-d

The minimum procedures for developing AADT estimates, DHVs, and DDHVs are provided in this chapter. Inputs are derived from existing count data and from forecasts of future volumes using approved models and data. For the purposes of this Handbook, the DHV are the 30th highest hour volume (30 HV), for the specific analysis year. Therefore, there is a design hour in the existing, opening, interim and design year for the 30HV that occurs within that analysis year.

7.3.8 Directional Design Hour Volumes

The following section of this chapter outlines the procedures for developing and applying the factors that describe the characteristics of traffic in the design hour analyses. Table 11 provides the range of acceptable values for each factor. Values outside these ranges may be considered for use but must be documented and approved by the Department prior to use. All factors must be consistent with Interstate Master Plan applications.

7.3.9 K_{30} Factor

The design hour used for the analysis of all interchange proposals is based on the 30th-highest hour traffic occurring annually. The K_{30} is the ratio of the demand traffic volume in the 30th-highest hour of the year to the AADT and is expressed in percent. The official methodology for developing K_{30} factors for the existing year is described in the Department's *Design Traffic Handbook* that supplements the Design Traffic Procedure (Topic No. 525-030-120-d).

Traffic count data collected during periods of breakdown or saturated flow does not account for the true demand for the facility. Along congested facilities, the K_{30} factor must reflect the demand for the facility not the traffic constrained by capacity. On facilities having HOV and general use lanes, different K_{30} factors for each may be required for each facility. The normal acceptable ranges for K_{30} factors for general use lanes are summarized by road type in Table 11. Values outside the ranges may be used only if specific justification and documentation by the applicant have been approved by the Department.

When estimating the K_{30} for future year analyses, an unconstrained factor must be used. This factor should be consistent with the conditions represented in travel demand forecasting model and the results of the forecasted conditions if a Master Plan is approved for the facility. The K_{30} determined for existing conditions may provide additional data to support the estimation of a K_{30} for future years. If a K_{30} is recommended by the applicant for future years that is different from the K_{30} within the approved Master Plan or outside the Department's acceptable ranges, the applicant must provide data to support the recommendation. The Department must approve the K_{30} used in each of the future analysis years.

The K_{30} factors can change over time if the area type changes. For example, a developing area may change from rural to urban. Any proposed revision in the area type must be supported by specific documentation of forecasted changes in population, land use and employment. Any change in an area type will require the concurrence of the MPO and the Department.

The procedures outlined for estimating K_{100} should also be used to estimate K_{30}.

7.3.10 Directional Distribution Factor, D_{30}

The volumes of all movements occurring during the design hour must be identified. This information is required for both the morning and evening periods because the traffic patterns may change significantly from one period to the other. The directional distribution of traffic on each facility must be determined by field measurements on the facility in the existing year. The directional distribution is expressed as D_{30}. This factor is the ratio of the higher peak directional hourly volume to the two-way hourly volume. The D_{30} factor is applied to the movement that is anticipated to be the predominant direction in the analysis period, either the morning or afternoon peak. The remainder of the two-way volume is applied to the complimentary movement when the two-way movement is a balanced DHV. The total two-way volume is the same in both peaks when the DHVs are balanced, but the predominate direction is reversed.

When unbalanced AADT movements are used, the following process will be used to develop the DDHV that occurs in each peak. The unbalanced one-way AADT is doubled and the K_{30} and D_{30} factors are applied in a similar manner as with the balanced AADT. The resulting DDHVs are applied to each movement in the appropriate peak hours.

Table 11. Acceptable Traffic Volume Factors for Design Traffic

Factor	Facility	Range		
		Low	Avg.	High
K_{30}	Rural Interstate Rural Arterial Urban Interstate Urban Arterial	9.6 9.4 9.4 9.2	11.8 11.0 9.7 10.2	14.6 15.6 10.0 11.5
Directional Factor (D_{30})	Rural Freeway Rural Arterial Urban Freeway Urban Arterial	52.3 51.1 50.4 50.8	54.8 58.1 55.8 57.9	57.3 79.6 61.2 57.9
Peak-Hour Factor (PHF)	Rural - Uninterrupted Flow Rural - Interrupted Flow Urban - Uninterrupted Flow Urban - Interrupted Flow	0.95 0.91 0.95 0.88		0.95 0.93 0.95 0.90
Truck Percentages Daily (T)	Rural Urban	8.0 2.0		20.0 16.0
Truck Percentages in the Design Hour (DHT)	Rural Urban	4.0 1.0		10.0 8.0
Bus	Based on observed values			
RV	Based on observed values			

Note: If bus and RV traffic is greater than one-fifth the presence of trucks, the default Highway Capacity Manual heavy vehicle factors can not be used (HCM: p. 3-17).

Source: Adapted from the *Interchange Request Development and Review Manual* and *Design Traffic Handbook*

When estimating the D_{30} for future years, data available on similar facilities, the travel demand forecasting model, origin and destination studies and the approved Master Plan should be employed. All DDHVs should be compared with existing ground counts to ensure the DDHVs developed for future years are logical and support the anticipated driver behavior. If a D_{30} is recommended by the applicant for application in future years that is different from the D_{30} within the approved Master Plan or outside the Department's acceptable ranges, the applicant must provide data to support the recommendation. Any changes in anticipated land use or travel patterns that impact the application of D_{30} should be documented by the applicant. The Department must approve the D_{30} used in each future analysis year.

The D_{30} can change over time as land use and travel patterns change. For example, concentration of employment in the central part of an urban area with residential on the outskirts, results in high D_{30} factors in morning and afternoon peaks. Employment or other nonresidential attractions located on the outskirts, induces a "reverse commute" trip component, which lowers the D_{30} factor. Changes in character from rural to urban can also change the D_{30} factor. The applicant's proposal to revise the D_{30} factor over time from the opening to the design year must be supported by documentation on the forecasted land use changes and the resulting changes in the directional split in the traffic volumes and approved by the Department.

The procedures outlined for estimated D_{100} should also be used to estimate D_{30} .

7.3.11 Composition of Traffic

The composition of the traffic stream should be identified for the morning and afternoon peak periods. The types of vehicles are identified in FDOT LOS Manual.

The percentage of traffic for each vehicle type must be expressed as a percentage of the total traffic for each peak period in each analysis year and the total daily volume. For facilities where significant fluctuation of the composition of traffic is observed or anticipated, the proportional use of each vehicle type should be specified for each direction of travel in each peak period.

The applicant will use available traffic classification counts from the Department's database to develop the required truck percentages and other factors in addition to the traffic count data collected by the applicant. If such counts are not available, the applicant must provide the classification to be approved by the Department. The percentage of trucks in the design hour (DHT) is normally estimated to be 50 percent of the observed daily truck percentage (T). The acceptable ranges for vehicle classification factors are listed in Table 11.

7.3.12 Peak-Hour Factor

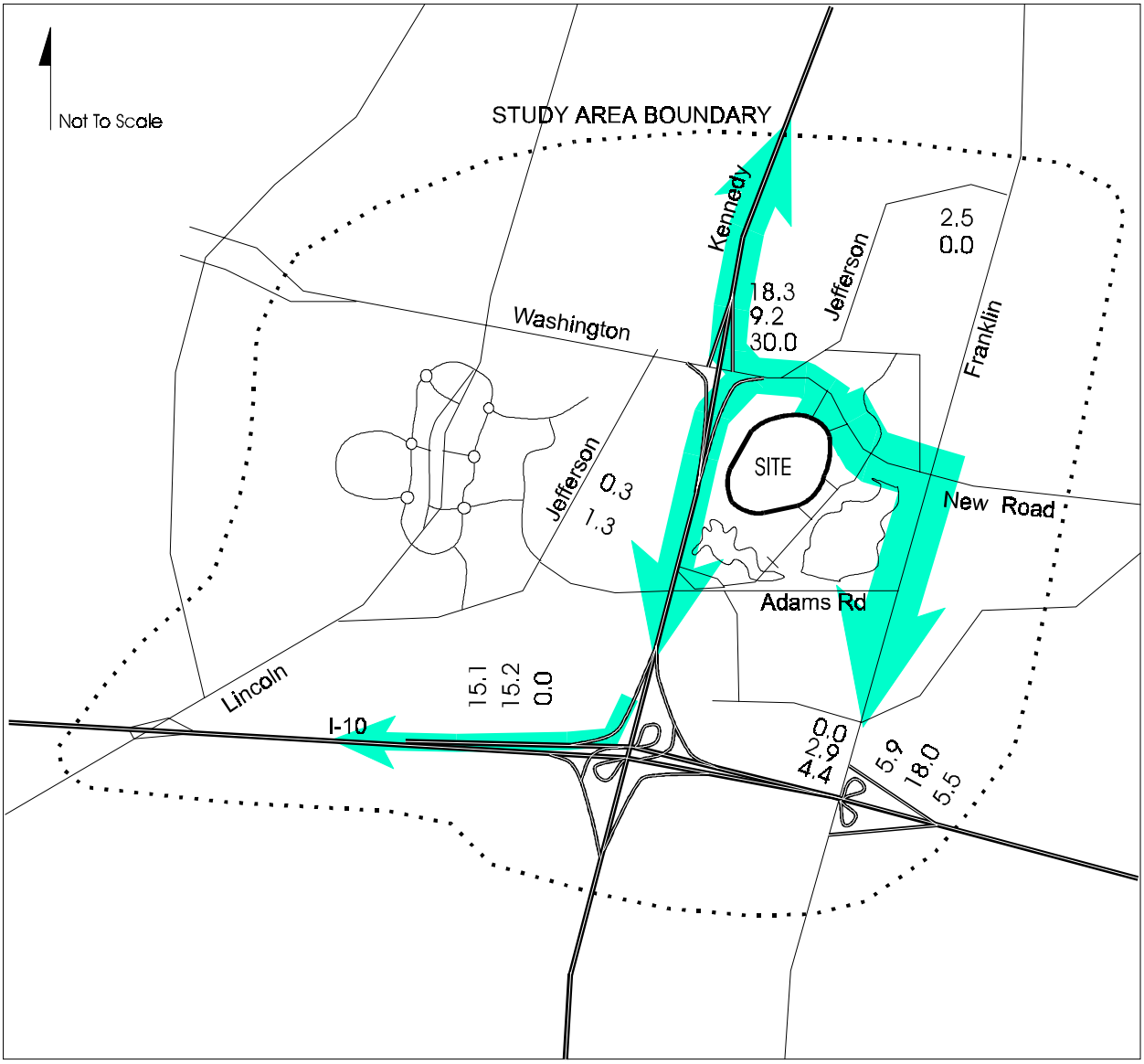
The PHF is calculated as the ratio of the hourly volume to four times the peak 15-minute volume. The acceptable ranges for PHF are also listed in Table 11. The procedures outlined for estimating the PHF in the 100th-highest hour should also be used to estimate PHF in 30th-highest hour applications.

7.4 Documentation

The results of the assignment process should consist of maps and tables showing:

- total AADT and analysis hour volumes in each analysis year
- development-generated AADT and analysis hour volumes in each analysis year

Figure 30. Assigned Volumes



8. Future Conditions Analysis

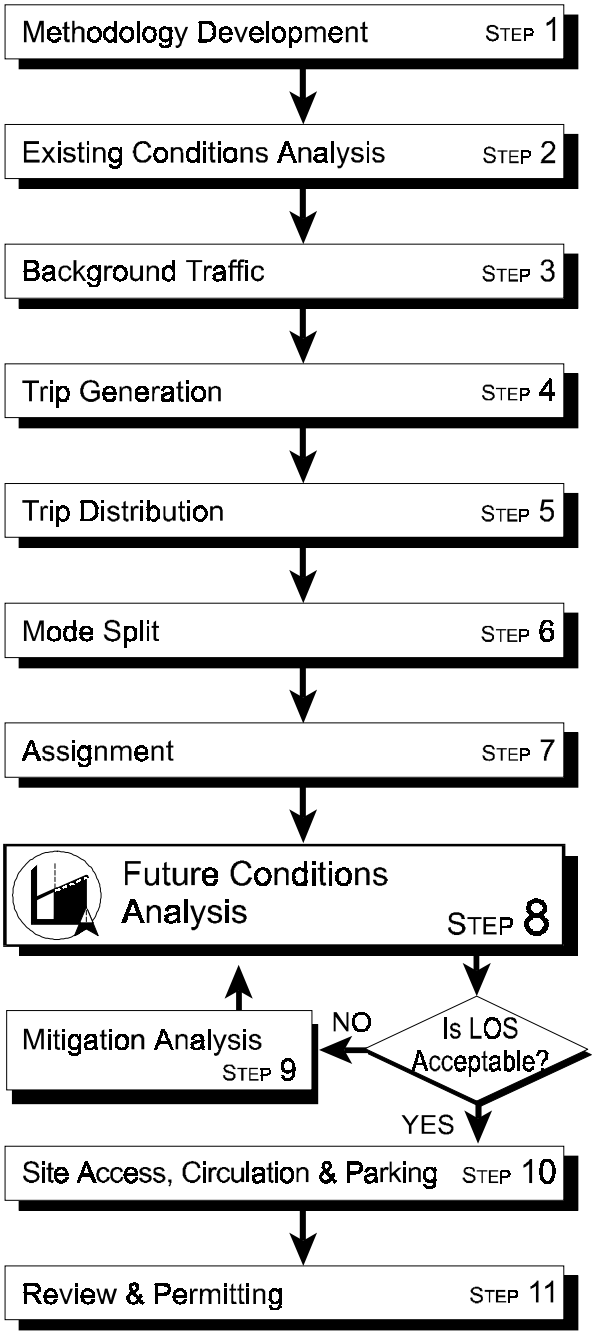
The purpose of the analysis of future conditions for site impact analysis is to determine the impact of trips generated by the development on the performance of the transportation system. Development-generated trips are evaluated to determine if the impacts are (1) significant and (2) adverse.

The significance of impacts is determined by considering the percentage of traffic on a roadway segment that is generated by the development during the peak hour in relationship to the maximum service volume at the LOS standard for the facility during the same period. The significance criterion varies by the type of development and local government jurisdiction. For example, the typical DRI level of significance is 5 percent of the maximum service volume at the level of service standard for the facility during the 100th-highest hour. However, local governments may establish more stringent levels of significance that will govern if the standard is adopted as part of the LGCP (Rule 9J-2.045(6), FAC). Therefore, the Department should review the criteria established by the local government prior to performing a review.

Developments are considered to adversely impact a roadway if:

- The roadway is significantly impacted and the level of service on the roadway with the development trips is below the adopted LOS standard.
- The roadway is significantly impacted and is currently a constrained roadway (roadways that will not be expanded because of physical, policy or environmentally limitations).
- The roadway is significantly impacted and is currently a backlogged roadway (a roadway that is currently operating below its LOS standard but is not programmed for improvement within three years in the Department's Work Program or five years in a local government plan).

Figure 31. Site Impact Process



When the roadway is significantly and adversely impacted, the developer is responsible for implementing measures to provide an adequate LOS or, if a constrained or backlogged facility is involved, to maintain the existing operating conditions. Strategies that may be implemented to achieve the desired level of service in the future are discussed in **Step 9: Mitigation Analysis**.

8.1 LOS Analysis

This step outlines the principals to be used in site impact analysis for the evaluation of existing conditions, future conditions and mitigation alternatives. The objective of this analysis is to understand the development transportation impacts. The analysis of transportation impacts is most directly understood by analyzing operating conditions to determine the LOS of operations on a transportation facility. LOS is a qualitative measure of traffic operating characteristics within a traffic stream as perceived by the users of the facility. Six levels of service are defined. They range from A to F. LOS A represents the best operating conditions and LOS F represents the worst. Measures of effectiveness such as average travel speed or volume-to-capacity ratio have been developed to approximate these qualitative representations quantitatively. Different measures of effectiveness are used for different types of roadways because users' perceptions of quality of flow vary by road type.

As a direct result of growth issues, the 1984 Florida Legislature passed the State and Regional Planning Act. It required the development of the State Comprehensive Plan, state agency functional plans and comprehensive regional policy plans. In 1985, the legislature passed the Growth Management Act which introduced an integrated planning process for state, regional and local governments. A major thrust of the act was for localities to forecast their needs for roads, water, sewer and other facilities, then ensure that the facilities were either available or funded and constructed concurrently with the growth that they would serve.

Each community was required to develop and adopt minimum LOS standards for transportation and other public facilities and develop concurrency plans to implement the adopted requirements. The Department's adopted statewide minimum acceptable operating LOS standards should be used for the SHS.

Transportation Concurrency Management Areas (TCMA) and Transportation Concurrency Exception Areas (TCEA) are special areas designated in local government comprehensive plans where special level of service standards or analysis techniques may be prescribed. If a development impacts either type of these areas, the Department should consult with local governments to determine an appropriate analysis technique and standard.

8.2 Florida's Planning LOS Standards

The Department's minimum acceptable operating LOS standards for the SHS were adopted by Administrative Rule in 1992. Rule 14-94, FAC mutually supports the DCA Rule 9J-5 on Minimum Criteria for Review of LGCPs and Determination of Compliance. They replaced the standards appearing in FDOT's 1989 *LOS Manual*. The standards are contained in Table 12.

To support urban infill, the Department's definition of "maintain" allows an increase in traffic volume or a decrease in speed of ten percent in urbanized areas. A 5 percent change is allowed in other areas.

A major element in the establishment of Florida's LOS standards is the division of the SHS into two basic elements: the FIHS and other state roads. The FIHS was introduced into state law in 1990 and consists of roadways which perform a mobility function that differs from local travel and property access by emphasizing high speed and accommodating higher service volumes. In general, roads on the FIHS are subject to a higher quality LOS standard than other roads, reflecting the importance of these roads to the state.

Development interests and the Department Reviewer should recognize that the LOS standards are to be applied based on the current area type throughout the 20-year planning horizon. For example, if a development is proposed in a transitioning urbanized area, the applicable standard is the transitioning standard throughout the 20-year period.

Although arterial LOS is stressed in the standards, detailed volume-to-capacity analyses at selected intersections will be necessary to evaluate specific projects. Both LOS and volume-to-capacity ratio criteria are appropriate to determine impacts from proposed developments and required mitigation efforts.

Table 12 Statewide Minimum LOS Standards for the SHS[1]

	Rural Areas[2]	Transitioning Urbanized Areas[3], Urban Areas[4] or Communities[5]	Urbanized Areas[6] under 500,000	Urbanized Areas over 500,000	Roadways Parallel to Exclusive Transit Facilities[7]	Inside Transportation Concurrency Management Areas[8]	Constrained[9] and Backlogged[10] Roadways
INTRASTATE[11]							
Limited Access Highway (Freeway)[12]	B	C	C(D)	D(E)	D(E)	D(E)	Maintain[15]
Controlled Access Highway[13]	B	C	C	D	E	E	Maintain
OTHER STATE ROADS[14]							
Other Multilane	B	C	D	D	E	*[16]	Maintain
Two-Lane	C	C	D	D	E	*	Maintain

LOS standards inside of parentheses apply to general use lanes only when exclusive through lanes exclusive through-lanes exclusive through lanes exist.

1. The indicated LOS designate lowest quality operating conditions for the 100th-highest volume hour of the year in the predominant traffic flow direction from the present through a 20-year planning horizon. The 100th- highest hour approximates the typical peak hour during the peak season. Definitions and measurement criteria used for minimum LOS standards are based on the most recent updates of the Transportation Research Board's *Highway Capacity Manual*, "Special Report 209." All LOS evaluations are to be based on "Special Report 209," or a methodology which has been accepted by the Department as having comparable reliability.
2. **Rural areas** are areas not included in a transportation concurrency management area, an urbanized area, a transitioning urbanized area, an urban area, or a community.
3. **Transitioning urbanized areas** are the areas outside urbanized areas that are planned to be included within the urbanized areas within the next 20 years based primarily on the U.S. Bureau of Census urbanized criteria of a population density of at least 1,000 people per square mile.
4. **Urban Areas** are places with a population of at least 5,000 and are not included in urbanized areas. The applicable boundary encompasses the 1990 urban area as well as the surrounding geographical area as agreed upon by the Department, local government and FHWA. They are commonly called FHWA Urban Area Boundaries and include areas expected to have medium-density development before the next decennial census.
5. **Communities** are incorporated places outside urban or urbanized areas, or unincorporated developed areas having 500 population or more identified by local governments in their LGCP and located outside of urban or urbanized areas.
6. **Urbanized areas** are the 1990 urbanized areas designated by the U.S. Bureau of Census as well as the surrounding geographical areas as agreed upon by the Department, Metropolitan Planning Organization (MPO) and FHWA, commonly called FHWA Urbanized Area Boundaries. The over or under 500,000 classifications distinguish urbanized areas with a population over or under 500,000 based on the 1990 U.S. Census.
7. **Roadways parallel to exclusive transit facilities** are roads generally parallel to and within one-half mile of a physically separated rail or roadway lane reserved for multipassenger use by rail cars or buses serving large volumes of home/work trips during peak travel hours. Exclusive transit facilities do not include downtown people movers, or HOV lanes unless physically separated from other travel lanes
8. **Transportation Concurrency Management Areas (TCMAs)** are geographically compact areas designated in LGCPs where intensive development exists or is planned in a manner that will ensure an adequate level of mobility and further the achievement of identified important state planning goals and policies, including discouraging the proliferation of urban sprawl, encouraging the revitalization of existing downtowns and designated redevelopment areas, protecting natural resources, protecting historic resources, maximizing the efficient use of existing public facilities, and promoting public transit, bicycling, walking and other alternatives to the single occupant automobile. Transportation concurrency management areas may be established in a LGCP in accordance with Rule 9J-5.0057, FAC.
9. **Constrained roadways** are roads on the SHS which the Department has determined will not be expanded by the addition of two or more through lanes because of physical, environmental or policy constraints. Physical constraints primarily occur when intensive land use development is immediately adjacent to roads, thus making expansion costs prohibitive. Environmental and policy constraints primarily occur when decisions are made not to expand a road based on environmental, historical, archaeological, aesthetic or social impact considerations.

10. **Backlogged roadways** are roads on the SHS operating at an LOS below the minimum LOS standards, not programmed for construction in the first three years of the Department's adopted work program or the five-year schedule of improvements contained in a local government's capital improvements element, and not constrained.
11. **Intrastate** means the FIHS which comprises a statewide network of limited and controlled-access highways. The primary function of the system is for high-speed and high-volume traffic movements within the state. Access to abutting land is subordinate to this function and such access must be prohibited or highly regulated. Highways included as part of this system are designated in the Florida Transportation Plan. **General use lanes** are intrastate roadway lanes not exclusively designated for long distance high speed travel. In urbanized areas, general use lanes include HOV lanes not physically separated from other travel lanes. **Exclusive through lanes** are roadway lanes exclusively designated for intrastate travel, which are physically separated from general use lanes and to which access is highly regulated. These lanes may be used for HOV and express buses during peak hours if the LOS standards can be maintained.
12. **Limited access highways (freeways)** are multilane, divided highways having a minimum of two lanes for exclusive use of traffic in each direction and full control of ingress and egress; this includes freeways and all fully controlled access roadways.
13. **Controlled access highways** are nonlimited access arterial facilities where access connections, median openings and traffic signals are highly regulated. The LOS standards shown are the ultimate standards to be achieved for controlled access facilities on the FIHS within a 20-year period. Signalized intersections are to be minimized on these facilities within 20 years making an uninterrupted flow standard generally applicable. Controlled access facilities on the FIHS currently not meeting the ultimate standards shall be allowed to remain on the FIHS with a "maintain" status.
14. **Other state roads** are roads on the SHS which are not part of the FIHS.
15. **Maintain** means continuing operating conditions at a level such that significant degradation does not occur based on conditions existing at the time of LGCP adoption. For roadways in rural areas, transitioning urbanized areas, urban areas or communities, significant degradation means (1) an AADT increase in two-way traffic volume of five percent or (2) a reduction in operating speed for the peak direction in the 100th- highest hour of five percent. For roadways in urbanized areas, for roadways parallel to exclusive transit facilities or for intrastate roadways in transportation concurrency management areas significant degradation means (1) an average annual daily traffic increase in two-way traffic volume of ten percent or (2) a reduction in operating speed for the peak direction in the 100th-highest hour of ten percent. For other state roads in transportation concurrency management areas, significant degradation means that amount defined in the transportation mobility element. For constrained roadways meetings or exceeding the LOS standards, "maintain" does not apply until the roadway is operating below the applicable minimum LOS standard.
16. ***** means the LOS standard will be set in a transportation mobility element that meets the requirements of Rule 9J-5.0057.

8.3 Analysis Approach

For site impact analysis, capacity analysis should be performed along each segment of the roadway system identified in the methodology phase within the area of influence at each major street and site access intersection within the study area. Critical intersections for analysis may be identified based on the functional classification of the roadways or based on the volume of development traffic utilizing the intersection (such as a DRI). All capacity analysis should be performed using methods or software approved by the Department. Capacity analyses should be performed for existing and future conditions as determined in the methodology phase. If an interstate facility or other FIHS limited-access roadway is affected, freeway segment, ramp, and weave analysis procedures of the latest version of the HCM should be used.

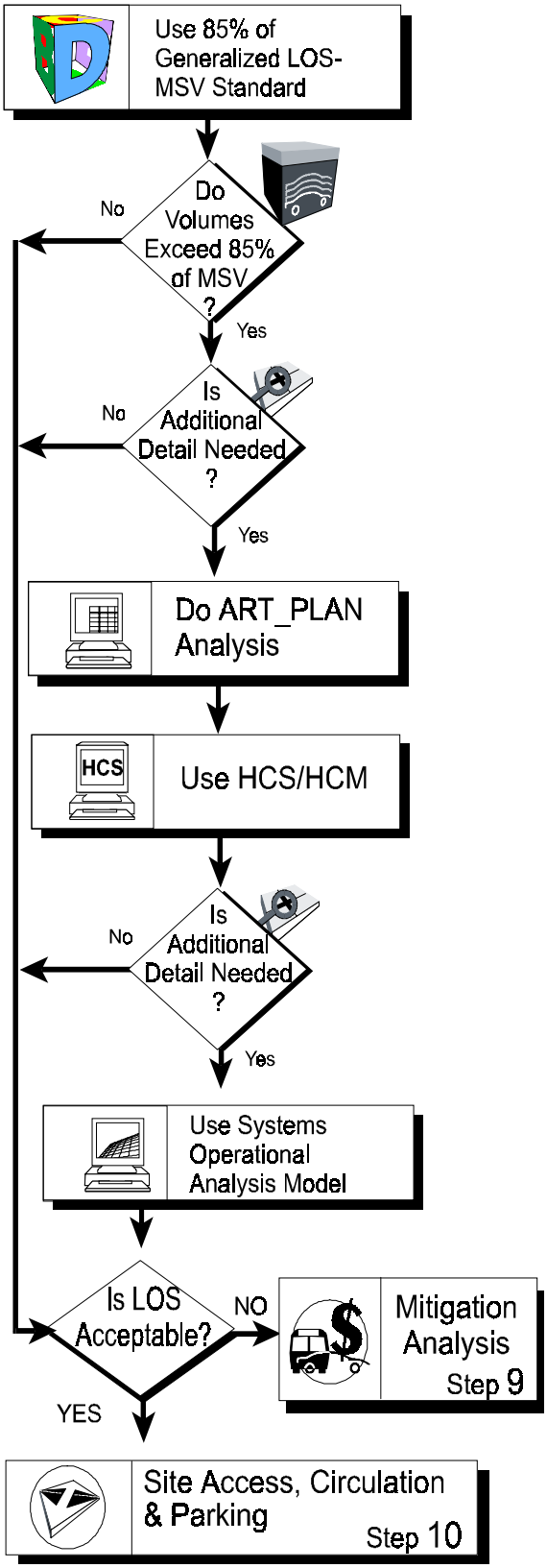
Capacity analysis for site impact analysis may be performed using the following methods and is illustrated in Figure 32.

1. Values shown in the generalized LOS tables are based on the HCM and actual Florida traffic and signalization data, making the tables applicable throughout Florida. However, it is recognized that traffic characteristics vary by area and facility. **They are guideline estimates** of highway LOS. The LOS standards must be adhered to in the Department reviews of LGCPs and DRIs by the Department Reviewer. The generalized LOS tables represent a first cut at estimating LOS. Since, these tables are based on average conditions across Florida, 85 percent of the standard was recommended as a conservative assumption for the conditions that might exist on any particular roadway.

   Therefore, a sketch planning level analysis is performed first using the FDOT Generalized LOS Table. If volumes (background plus development traffic) being analyzed exceed 85 percent of the maximum service volume (MSV) at the LOS standard for the facility, a more detailed analysis may then be required.

2. If the background plus development traffic exceeds 85 percent of the MSV at the LOS standard, then a more detailed planning analysis may be performed using ART_PLAN to develop a sketch planning analysis of LOS. The additional detail used to execute ART_PLAN may allow the applicant and/or reviewer to gain a better understanding of

Figure 32. Tiered LOS Approach



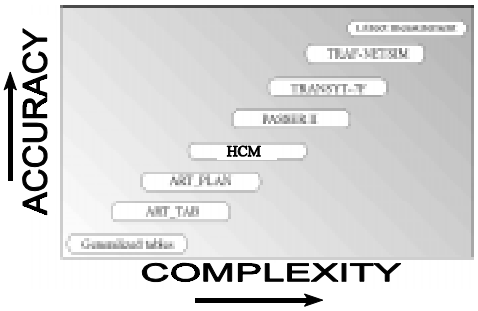
the possible traffic impacts. ART_PLAN allows consideration of individual intersections, however, the analysis technique is still a sketch planning tool.

3. If the generalized tables or ART-PLAN do not adequately describe the analysis conditions, the procedures of the latest version of the HCM should be used. PHV, or 100HV, are appropriate for the analysis period for all planning level analysis.

4. If additional detail is required in the analysis (e.g., analysis of an integrated traffic signal system) more sophisticated models, such as the system operational analysis models may provide guidance to the applicant and reviewer to assist in understanding the existing operating conditions. During design level analysis associated with determining the geometric and traffic operational requirements of mitigation alternatives (such as IMR/IJR), the generalized tables provided in the FDOT *LOS Manual* are not sufficient. HCM procedure must be used at a minimum. Facility or systems-level traffic operational analysis software such as PASSER II, TRANSYT-7F, or TSIS may be required. DHV, or 30HV, must be used on state highways. The design traffic requirements for 100HV or 30HV on local roadways will be determined using local requirements.

Figure 33 illustrates the relationship of complexity and accuracy provided by the tiered approach discussed above. The methodology proposed is consistent with FDOT *LOS Manual*. Table 13 summarizes the software approved for analysis.

Figure 33. Relationship of LOS Analysis



8.4 Inputs to LOS Analysis

The traffic characteristic (arrival types, K, D, T, PHF, turning movement percentages, etc.), traffic control features (such as signal phasing and timing plans) and road features (number of lanes, arterial class, free-flow speeds, etc.) used in planning analysis of LOS for site impact analysis should be based on local conditions. If the conditions are not known, the assumptions used in the latest version of the Department's *LOS Manual*, should be used as defaults. In operational and design analysis, all inputs should reflect the conditions existing or anticipated to occur during the analysis period.

8.5 Identification of Impacts, Needs, and Deficiencies

Analysis and plan development are conducted in an iterative process that is required for each analysis year and key location. The analysis is intended to show the relationship between operations and geometry, assess the deficiencies and to identify alternatives for consideration. Care should be taken to determine the portion of the deficiency that results from traffic added by the proposed development under study and not deficiencies that are caused by growth in normal traffic or other system inadequacies. In addition to comparing the LOS determined using the procedure identified above, the analyst must also consider the interaction of the various elements of proper site access, circulation, and parking design on the safety and operations of the adjacent streets and highways. Therefore, the capacity planning and design analysis and the principals identified in **Step 10: Site Access, Circulation, and Parking** must also be considered. These analyses should be conducted for conditions with and without the proposed development to compare the incremental impacts of the proposed development and to determine the need for mitigation of the impacts. Mitigation alternatives are discussed in **Step 9: Mitigation Analysis**. Care should be taken to determine the portion of the deficiency that results from traffic added by the proposed development under study and not deficiencies that are caused by growth in normal traffic or other system inadequacies.

8.6 Documentation

Following an analysis of existing and future conditions, the results should be documented in figures and tables that include LOS and capacity for each segment and intersection in the peak period in each analysis year.

Table 13. Status of Department Approval for Computation Tools

Computational Tool	Approved by the Department for Compute
Generalized LOS Tables	Planning level analysis subject to restrictions described in Chapter 5 of FDOT *LOS Manual*
ART_TAB	Planning level estimates of the breakpoint volumes expressed as directional, hourly and daily volumes along with peak hour peak direction through/right v/c ratios.
SIG_TAB	Planning level estimates of the breakpoint volumes expressed as directional, hourly and daily volumes along with peak hour peak direction thru/right v/c ratios.
Other Spreadsheet Generating Models - FREE_TAB,RMUL_TAB, UMUL_TAB, R2LN_TAB and U2LN_TAB.	Planning level estimates of the breakpoint volumes expressed as directional, hourly and daily volumes.
ART_PLAN	Planning level estimates of intersection stopped delay and LOS; arterial link travel speed and LOS; and overall arterial travel speed and LOS.
INTPLAN	Planning level intersection analysis to determine LOS at intersections.
HCM Software	All LOS Computations.
PASSER II	Design and evaluation of signal timing plans.
TRANSYT-7F	Design and evaluation of signal timing plans.
TSIS and subroutines such as TRAF-NETSIM	Detailed evaluation on a case by case basis.
Direct Measurement	Specialized studies where a high level of accuracy is required.

Note: The Department no longer accepts the Critical Movement Analysis procedure of *Transportation Research Circular 212*.

Note: The application and use of each of these software tools are discussed in the FDOT *LOS Manual* and in "Systems Analysis for Determining the Impacts of Proposed or Modified Interchanges."

8.7 Example

Table 14 illustrates one possible way of summarizing a LOS analysis performed using the generalized tables provided in the FDOT *LOS Manual* (a first-tier analysis). The following figures illustrate the results of LOS analysis performed at intersections, along arterial sections, within an interchange, on ramps and along a freeway system.

Figures 34, 35 and 36 are examples of how to illustrate the results of the LOS analysis.

Table 14. Example Conditions Analysis Worksheet

Roadway	From	To	Natural Growth in Background Traffic	Traffic From Other Vested Developments	TOTAL Background Traffic	Primary Trips	Pass-by Trips	Diverted Trips	TOTAL Site-Generated Trips	TOTAL VOLUMES	MSV at LOS Std.	Development % MSV	V/S	Meets LOS STD?

Figure 34. 1995 Conditions

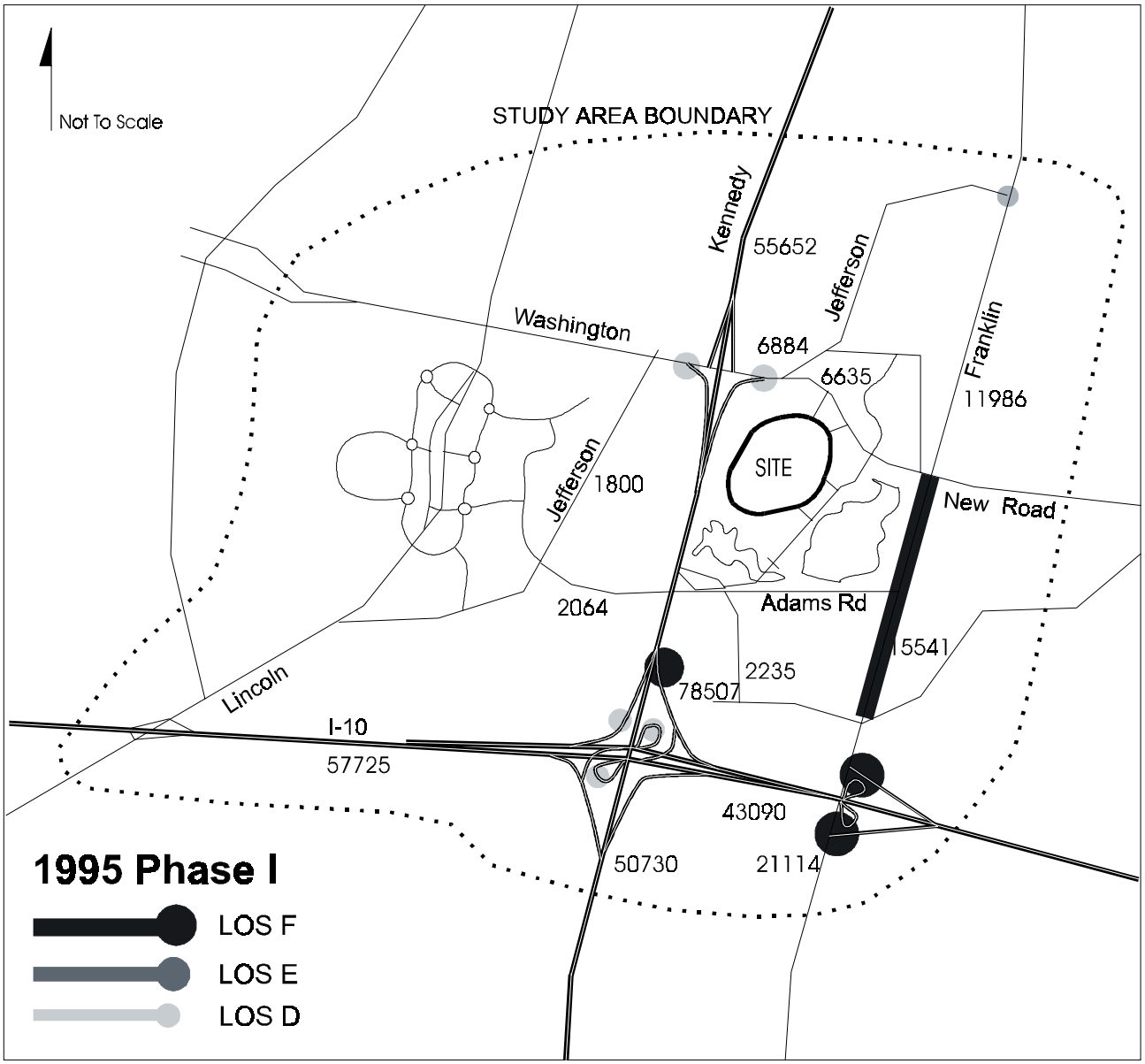


Figure 35. 2005 Conditions

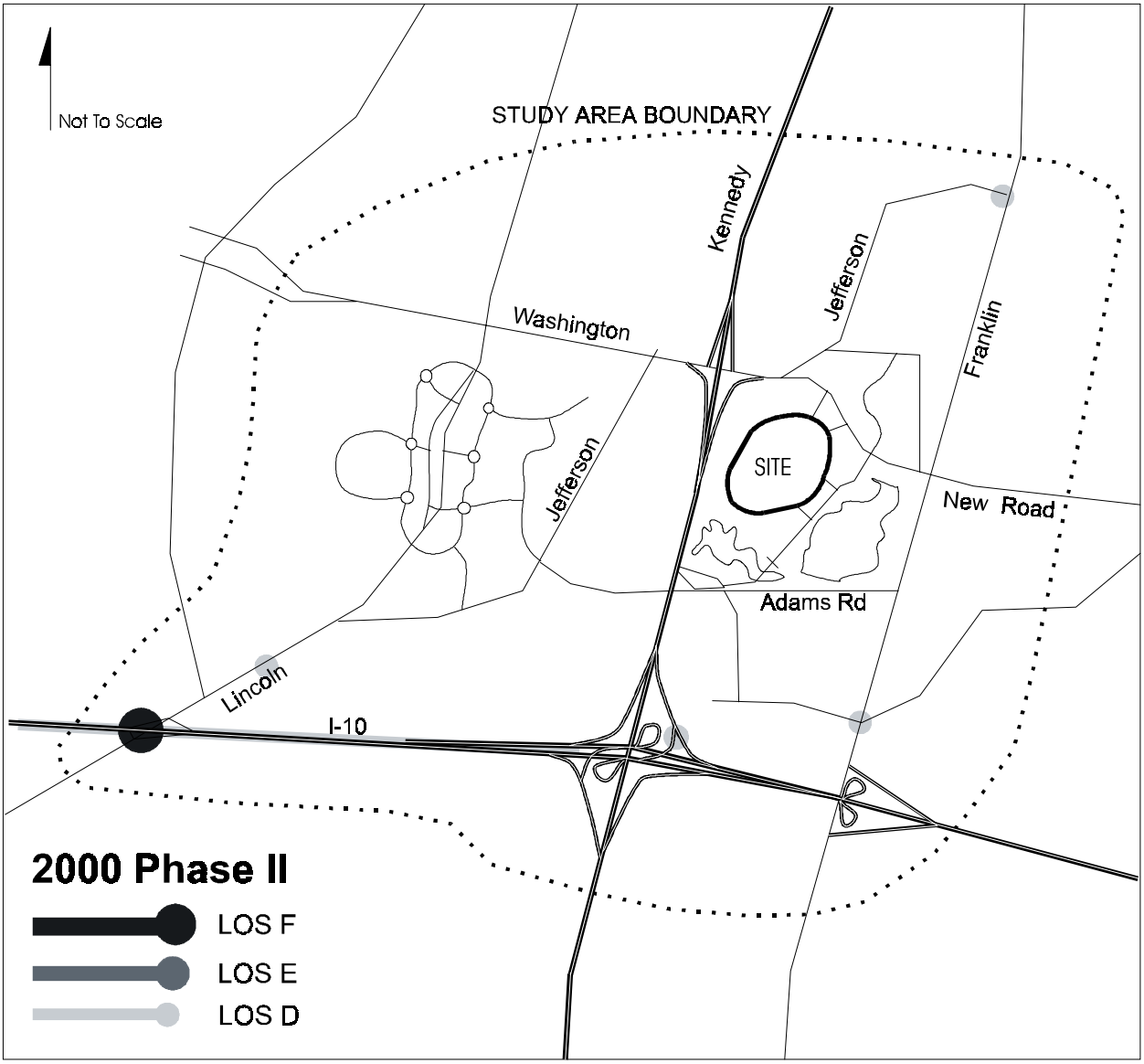
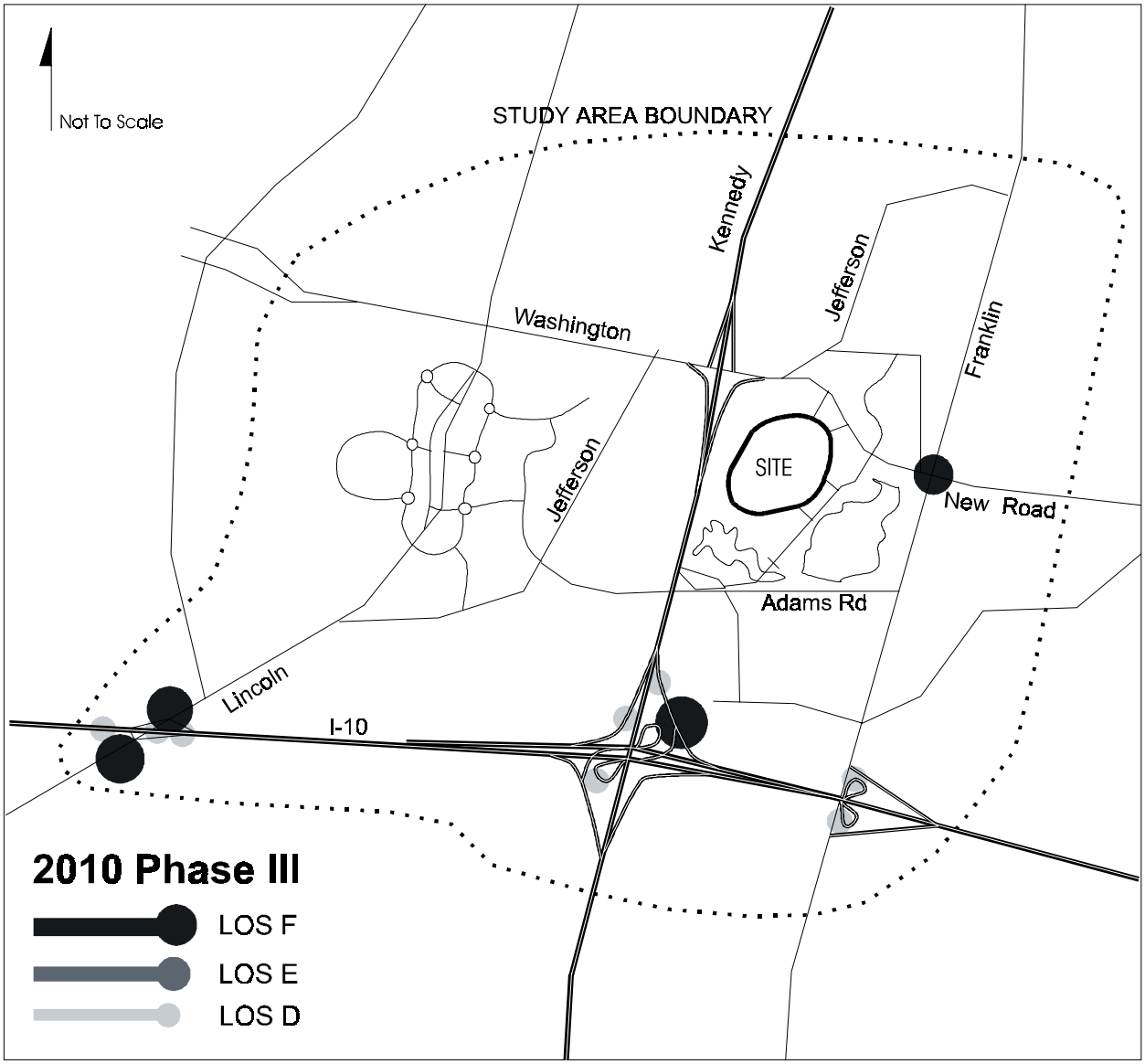


Figure 36. 2010 Conditions



9. Mitigation Analysis

The purpose of a site impact analysis is to determine if traffic impacts will occur and, if so, what mitigation measures should be taken. Mitigation can be in the form of increased capacity, or reduced demand. When the analysis indicates that the transportation system will operate at a desirable LOS in the development area of influence, no improvements are likely to be required. If, however, the development results in undesirable LOS, improvements must be investigated. The site impact analysis should determine the portion of the deficiency that results from traffic added by the proposed development and by growth in non-development traffic. The strategies considered should be compatible with state and local requirements. When reasonable improvements cannot sufficiently accommodate forecasted traffic, the developer may be required to adjust the development size, land use or phasing.

It is important to assess a range of alternatives. As improvements are made, they must be monitored to determine if they will operate as anticipated. Major developments must often be developed in phases if the existing infrastructure is in need of extensive improvements. When developments necessitate major improvements to the area roadways, the nature of these improvements and their timing can be related to the phasing of the development.

The mitigation measures should consider the following:

- phasing of the proposed development
- funding requirements
- potential for pipelining projects

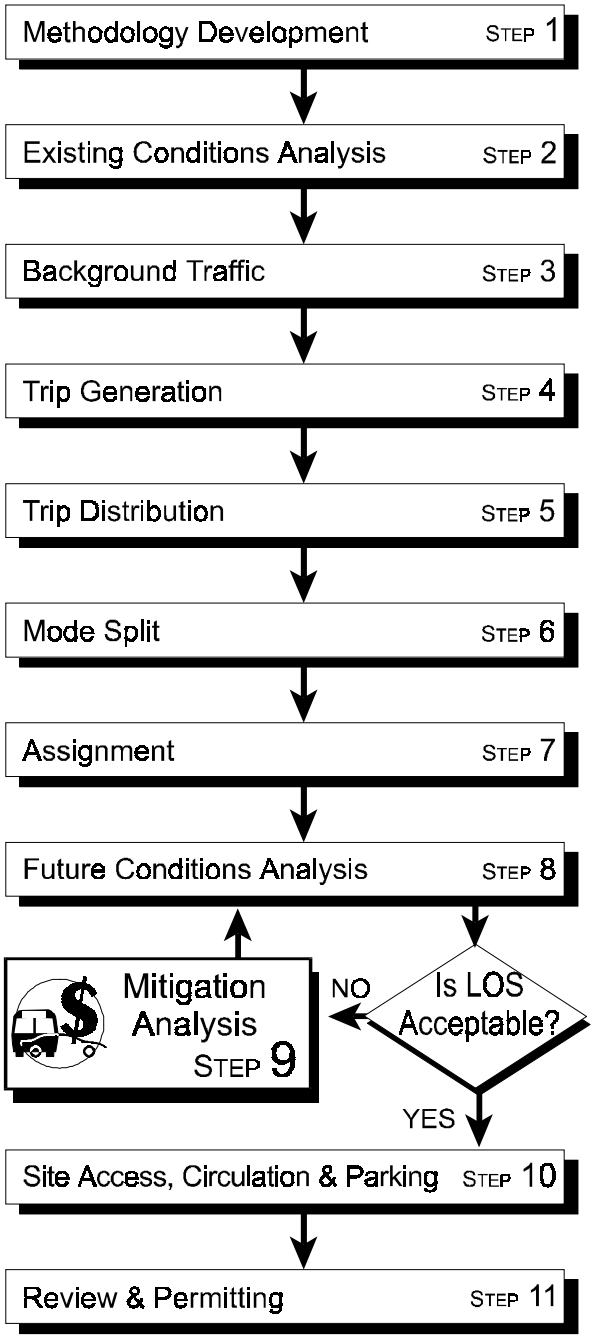
Pipelining is the concept of the developer paying the proportionate share of improvement costs at the time of physical development. This process is outlined in DCA's Transportation Policy 9J-2.045 and should be considered in mitigation analysis.

9.1 Mitigation Strategies

Examples of mitigation measures include:

- construction of new facilities
- addition of general-use lanes
- implementing transportation system management strategies (TSMs)
- access management strategies

Figure 37. Site Impact Process



- enhancements for the use of high occupancy vehicle (HOV) facilities and transit
- public transit improvements
- implementing travel demand management strategies (TDMs)
- site plan or land use changes

9.1.1 Construction of New Facilities

The construction of new facilities to address the transportation infrastructure needs resulting from new developments are enouraged. However, there are situations where the construction of a new facility may not be compatible with the region's long-range transportation goals and policies. For example, a common goal of the congestion management systems and air-quality planning requirements of metropolitan areas in Florida is to reduce automobile emissions. New facilities may negatively impact air quality by contributing to an increase in regional vehicle miles of travel resulting from the diversion of travel previously on the transportation network and the new trips generated by the development. Therefore, where the construction of new facilities are considered, features that facilitate future transportation system management strategies (e.g., ITS strategies), enhancements for the use of transit (e.g., geometric and operational improvements to accommodate bus travel) and future travel demand management strategies (e.g., access to park and ride lots) are encouraged.

In addition, the new facility must be consistent with all Department standards and policies, including the Department's "Typical Section/Laneage Policy" for FIHS facilities. FDOT Topic 525-030-250-b "Process, Criteria, and Standards for the Florida Intrastate Highway System Plan Development and Update" requires FIHS facilities to be at least four lanes with a restrictive median. This policy also limits the maximum number of general use lanes on interstates to six general purpose lanes and four HOV lanes. Turnpike facilities are limited to eight lanes. Other elements of the FIHS are limited to six lanes. The selection of corridors for new facilities should be coordinated with the Department and should be sensitive to other potential environmental impacts and reflect the principles of functional hierarchy and systems connectivity addressed in *Policy on the Geometric Design of Streets and Highways* (AASHTO: 1994).

9.1.2 Addition of General-Use Lanes

The addition of general-use lanes on existing facilities is another way of addressing the impacts resulting from new developments. However, the lane additions must be consistent with regional goals and policies for SOV travel and the Department's "Typical Section/Laneage Policy" for FIHS facilities and FDOT Topic 525-030-250-b "Process, Criteria, and Standards for the Florida Intrastate Highway System Plan Development and Update." The selection of corridors for new general-use lanes should be coordinated with the Department. Features that facilitate future transportation system management strategies, enhancements for the use of transit and future travel demand management strategies should be considered in conjunction with the addition of general-use lanes.

9.1.3 Transportation System Management Strategies

TSMs are improvements intended to utilize the existing transportation system's capacity to the greatest extent possible. These improvements consist of minor geometric improvements or traffic controls strategies rather than increasing the number of general-use lanes.

Examples of TSM improvements include:

- construct acceleration and deceleration lanes
- add intersection turning lanes
- improve intersection channelization
- modify traffic signals phasings or timings
- improve signal progression
- implement Ramp metering
- construct an interchange at an existing intersection
- add an auxiliary lane along a freeway
- modify an interchange (If an interchange with a freeway is proposed, these improvements require coordination with the Department's Interchange Modification Report Procedure — Topic 525-030-160-d discussed in Unit IV.)
- implement incident management programs
- implement traveler information systems
- implement intelligent transportation systems (ITS)

9.1.4 Access Management Techniques

Site access management techniques can help better distribute the traffic generated by the development to reduce localized impacts. The principals of site access planning are documented in **Step 10: Site Access, Circulation and Parking.** A few of the strategies that are effective as mitigation measures include:

- increasing driveway spacing
- reducing the number of driveways
- developing shared access driveways
- improving sight distance
- adding or removing median openings
- improving site circulation roadways

9.1.5 Enhancements for the Use of HOV and Transit

Enhancements for the use of transit alleviate traffic impacts by resulting in an increase in transit usage (a change in mode split - step 6), reducing the number of primary vehicle trips on the roadway system. These improvements should be evaluated carefully by the Department and changes in mode split must be supported by the developer based on data collected on projects of similar intensity and use. Some of the strategies that may be appropriate for mitigation include:

- construction of park and ride lots
- construction of bus shelters, turn-out, etc.
- construction of HOV access ramps
- implementation of HOV priority lanes at ramp metering and intersections

9.1.6 Public Transit Operational Improvements

Public transit operational improvement strategies are also strategies that are intended to reduce the amount of primary-trip vehicles on the transportation network by changing the mode split (Step 6). These strategies are encouraged; however, they must be carefully evaluated to ensure that the proposed changes in mode split are realistic. Additionally, the applicant should ensure that local transit agencies support the change in transit service and are committed to the proposed changes associated with the proposal. Examples of public transit operational improvements that may be appropriate for mitigation include new or modified service routes and employer subsidized transit.

9.1.7 Travel Demand Management Techniques

Travel demand management (TDM) techniques are designed to reduce the number of vehicles generated by the site on a daily basis or during the peak period, and could be effective under appropriate circumstances.

The effectiveness of these measures is often limited to short-term reductions or result in spreading of the peak period (lengthening the duration of the peak) and is a function of the intensity and type of land use being proposed. If demand management strategies are proposed by the applicant, local studies of similar strategies should be provided to support the proposed usage. The effectiveness of these measures should be identified as part of a monitoring plan and measures should be identified if the proposed TDM strategies are not as effective as proposed. Table 15 summarizes the potential effect of some TDM strategies.

Table 15. Potential of Travel Demand Management Techniques to Reduce Site Traffic

	Land Uses with the Potential to Reduce Development Trips			
Strategy	Daily	AM/PM	PM	Midday
Mandates for Transit Usage	O, S, I, R, L E	O, I, R, L, E	S	
Vanpools or Other HOV	O, S, I, R, E	O, I, R, E	S	
Modified Work Schedules		O, I, R		
Reduced Parking Allowances	O, I, R, L, E	O, I, R, L, E		
Internal Shuttle Transportation	O, S, R , L	L		O, S, R
Transit Subsidies	O, I, R	O, I, R		
Promote Pedestrian/Bicycles	O, S, I, R, L, E	R, L, E		O, S, I, R, L, E

For each strategy identified in the table above, there is a potential to reduce the site generated traffic during the periods identified for the following land uses: O=office, S=shopping/retail, I= industrial, R=residential, L=hotel/lodging, E=event centers.

Source: Traffic Access and Impact Studies for Site Development, (ITE: 1991), p. 37

9.1.8 Site Plan or Land Use Changes

Modifications to the site plan initially proposed by the applicant may ultimately be required if there are no other feasible alternatives to mitigate for the traffic impacts or to reduce the magnitude of impacts by modifying the assignment of traffic by the development. Examples of changes to site plans could include:

- reduce development land uses
- change proposed land uses
- modify development phasing
- revise internal circulation

9.2 Funding of Mitigation Improvements

The methodology for determining the developer's fair-share funding of mitigation improvements should be identified in the methodology phase of the project. The fair-share is determined in relationship to the number of trips generated by the development and the capacities on an affected roadway segment. The final fee and mitigation fee considered is typically negotiated among the applicant, local governments, RPC and the Department (if state highway improvements are involved) following the mitigation analysis that demonstrates the proposed improvements will result in an acceptable operating condition along the roadway. This negotiation should occur before or concurrent with the drafting of the development order for DRIs.

For smaller developments that are within a concurrency management area, the developer's share of mitigation improvements may be an impact fee that is assessed using a predetermined schedule of fees based on the intensity and type of land use. For example, each unit of single-family detached housing will be associated with a fixed fee. This fee is applied throughout the concurrency management area and reflects the proportional share of improvements required on the area's concurrency management system of roadways.

The following summarizes the DRI formula for calculating the proportionate share contribution of development impacts for SOV projects. This formula is also applicable to other developments where no methodology is established.

"*Proportionate share contribution* means, only in the context of this rule, a contribution from a developer or owner of a DRI to the local government or government agency having maintenance responsibilities for those facilities, which make adequate financial provision for the public transportation facilities needed to accommodate the impacts of the proposed development on roadways outside the local government of jurisdiction's Concurrency Management System area. The proportionate share contribution shall be deemed to make adequate financial provision for such facilities if it is equal to or greater than the sum of the costs of improvements attributable to the proposed development derived from the application of the formula below. The costs of improvements attributable to the proposed development are based on the sum of the costs of improving each significantly impacted state and regional roadway which are significantly and adversely impacted by the development.

The proportionate share of the cost of improvements of each such roadway is calculated according to the following formula

$$\frac{DRI\ Trips}{SV\ Increase} * Cost$$

Where:

DRI Trips: cumulative number of the trips from the proposed development expected to reach the roadway during the peak hour from the complete build out of a stage or phase being approved

SV Increase: the change in peak-hour maximum service volume of the roadway resulting from construction of the improvement necessary to maintain the adopted level of service

Cost: cost of construction at the time of developer payment of an improvement necessary to maintain the adopted level of service. Construction cost includes all improvement associated costs, including engineering design, right-of-way acquisition, planning, engineering, inspection and other associated physical development costs directly required and associated with the construction of the improvement, as determined by the governmental agency having maintenance authority over the roadway."

Source: Rule 9J-2, 045(2)(h) FAC

The Department publishes "Transportation Costs" each year that can be used to assist the reviewer in estimating construction costs.

For example, a proposed development will significantly impact an existing two-lane roadway by adding 750 peak-hour directional trips. The background traffic on this roadway is 710 directional vehicles per hour during the peak. The MSV at the LOS standard of C for this facility (Class Ia1, divided with bays) is 790 directional vehicles per hour. As a result of the proposed development, the proposed mitigation improvement for this roadway will be to widen the facility to a four-lane roadway with a median and turn bays at a cost of $1,366,000. The MSV for the proposed facility (Class Ia1 divided with bays) is 1,610 directional vehicles per hour, an increase of 820 directional vehicles per hour. Applying the DRI proportionate share formula, the developer will be responsible for the following costs:

$$\textit{Proportionate Share} = \frac{750}{820} * \$1{,}366{,}000$$

resulting in a cost of $1,249,290.10 to the developer.

The developer may be presented with options by the Department for the payment of the proportionate share determined using the DRI formula or other accepted methodology. The options for payment could include other transfer payments such as right-of-way donation, in addition to or in combination with releasing funds for construction equal to the required share of improvements.

9.3 Documentation

Documentation of the mitigation used for site impact analysis should include a detailed description of the proposed improvements and identification of the funding responsibilities. The applicant should also demonstrate that the proposed improvements satisfy the requirements of the local, regional and state agencies for LOS or other requirements identified during the methodology development phase.

10. Site Access, Circulation and Parking

The proper application of access management and basic site planning principles is essential to all site impact analysis. This process involves the review of proposed construction and improvement plans (public and private) assessing the probable impact of the project on traffic movements and evaluating safety and operations at the access points (driveways or roadways) to the development. The Department has developed numerous standards, guidelines, policies and recommended practices in the areas of corridor access management and site access planning for driveways. These standards are provided in FAC Rules 14-96 (driveway permitting) and Rule 14-97 (access management standards). An overview of some of the principal factors of basic site planning and access management follow.

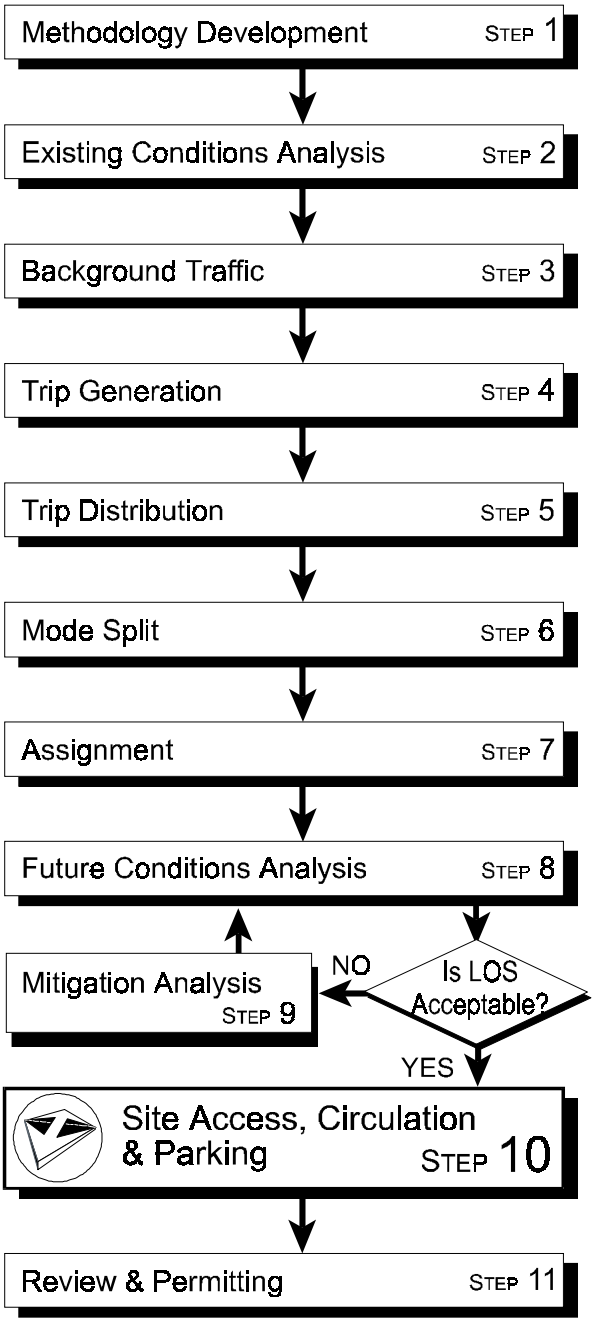
10.1 Access Management Issues

Access to the transportation system is critical to the success of any site plan. Access management is a comprehensive approach to the control and regulation of all aspects of highway access. This approach examines driveways, median openings, turn-lanes, traffic signals and their relationship to each other. The goal of access management is to ensure the safe and efficient flow of traffic through the road system and access to their destination by limiting the number of conflict points, separating conflict points, and removing turning vehicles and queues from through traffic. The Department has developed standards for access management criteria that are based on the function of roadways. These classifications are used to identify the use of the roadway for serving mobility or access.

In general, the greater a roadway serves access, the less able it is to serve through traffic or mobility along the roadway.

This principle is an essential element of access management. The application of these principles to roadway and corridor design features is discussed in greater detail in a number of Department publications such as *Basic Site Planning, Use of Access*

Figure 38. Site Impact Process



Management Standards and Examples, Access Management: Traffic Management Strategy, et. al.

Site impact design issues include identifying an appropriate design vehicle (the largest vehicle that will typically use the roadway), speeds and pedestrian conflict issues. The site plan should include the following information, at a minimum:

- Basic geometry of site roadways and driveways, including lane width, curve radii and vertical grades
- Detailed drawing of access, circulation and parking
- Landscaping details for analysis of site distances.
- Distance between driveways
- Corner clearance distances
- Median opening locations and spacings
- Potential left-turn conflict locations
- Existing driveways in opposing location of the proposed site

The access that is provided to a development should be a function of the amount of traffic generated (a function of its intensity and use) and the functional classification of the roadway being accessed.

Figure 39. Road Hierarchy

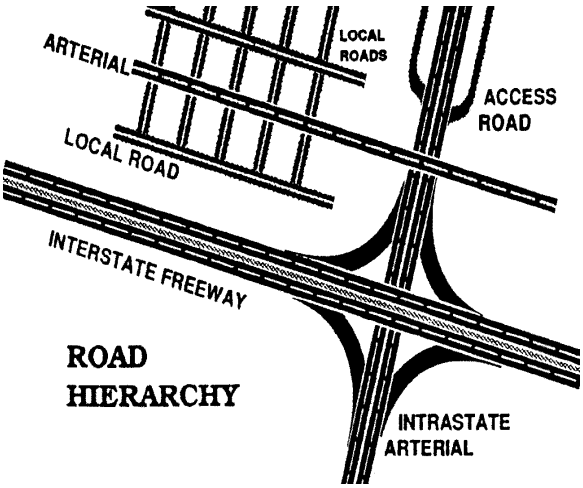


Figure 40. Site Access Issues

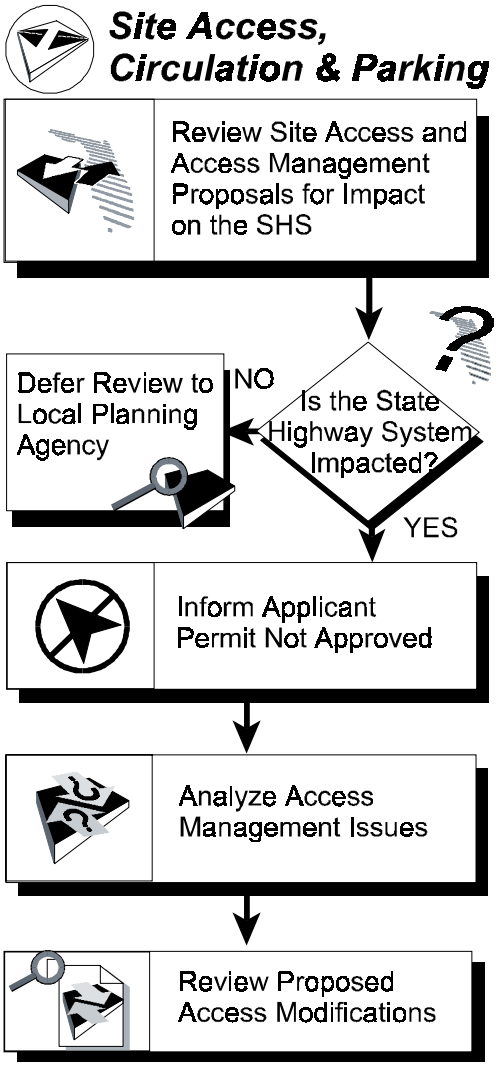
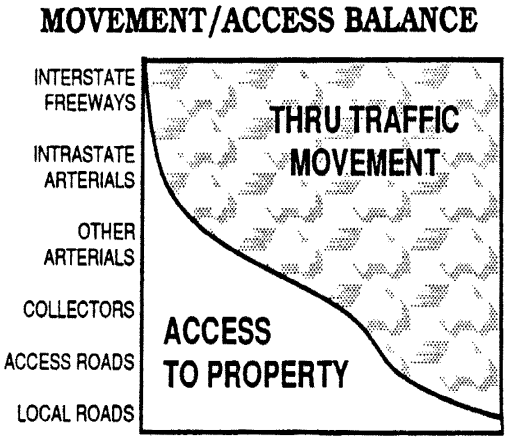


Figure 41. Functional Hierarchy



10.2 Driveway Issues

A driveway, as defined by the American Association of State Highway and Transportation Officials (AASHTO), is an access point constructed within the public right-of-way, connecting the public roadway with adjacent property. It is intended to be used in such a way that the access is given to the adjacent property and will not cause undue interference of the roadways or sidewalks. The AASHTO "Greenbook" states:

> ***Driveways are, in effect, at-grade intersections and should be designed consistent with the intended use. . . The number of accidents is disproportionately higher at driveways than at other intersections; thus their design and location merit special consideration. . . Driveways should not be situated within the functional boundary of at-grade intersections. This boundary would include the longitudinal limits of auxiliary lanes. . .***
>
> ***AASHTO "Greenbook" 1990, Pg. 841***

The design and operation of driveways are influenced by:

- type of adjoining land use
- dimensions of the property
- trip generation characteristics of the site
- design vehicle(s)
- type of highway which the driveway abuts
- neighboring driveways and driveways on opposite side of roadway

Important principles for the location of driveways include:

- **Access should be directed, as much as possible, to side streets or the supporting road system.** Even when there is direct access, side street access can help relieve pressure on the main road and provide less congested alternatives to the driver.
- **Driveways should be located as far from intersections as possible**, especially when if the spacing standards in the access management standards cannot be met.
- Driveways should not be designed to allow backing out on to the highway. If space is limited there should be a clearly defined "turn-around" on site.
- Driveways should be located away from the functional area of the intersection.

The site access plan should conform to local driveway standards and the driveway separation standards established as part of the Department's Access Management Program. The minimum separation of driveways is provided in the Table 3-11.

10.2.1 Review of Driveway Access Plans

Access plans should be reviewed for good traffic engineering design in a number of elements. The access plan should be of enough detail to review the following:

1. **Driveway Location**. The driveway spacing should meet the standards of Rule 14-97. The proposed driveway should be located outside the functional area of an intersection or freeway interchange.

2. **Total Number of Driveways**. The number of driveways should be appropriate to the type and size of the development.

3. **Driveway Radius or Flare**. Driveways should be designed to accommodate the prevailing types of traffic and speeds on roadways. Driveways should accommodate vehicles with a minimum interference with the through traffic.

4. **Driveway Width**. The driveway width should be adequate to handle type and volumes of traffic expected on a daily basis.

5. **Auxiliary Lanes**. Auxiliary lanes should be provided for significant left and right turning movements and where large speed differentials may occur for turning vehicles.

6. **Angle of Driveways**. Driveways should be conducive to safe, efficient entry and exit of site. One-way drives should operate as intended and designed not to cause confusion.

7. **Driveway Grade**. Driveways should provide for entry and exit at a safe speed.

8. **Sight Distance**. Adequate sight distance should be provided for entry and exit vehicles. Planters, poles, fences and signal boxes should be located outside the line of sight. Standards are provided in the Department's Standard Index No. 546.

9. **Circulation Pattern**. The site plan and design should allow for all vehicular circulation to take place on-site and not on the public roads.

10. **Projected Conditions**. The proposed site plan should be suitable for forecasted uses and expected traffic volumes. There should be enough storage on site to prevent queues from backing out on the road system.

11. **Physical Construction Design**. Construction materials used for internal roadways and driveways should be sufficient to withstand type and volume of traffic.

12. **General**. The overall design, circulation pattern, entrance/exit location provide for minimal impact on the street system should be consistent with providing reasonable access to the site for its proposed use.

Adapted from: Access Management for Street and Highways USDOT/1982 (Stover, Adkins, & Goodknight)

Figure 42. Driveway Issues

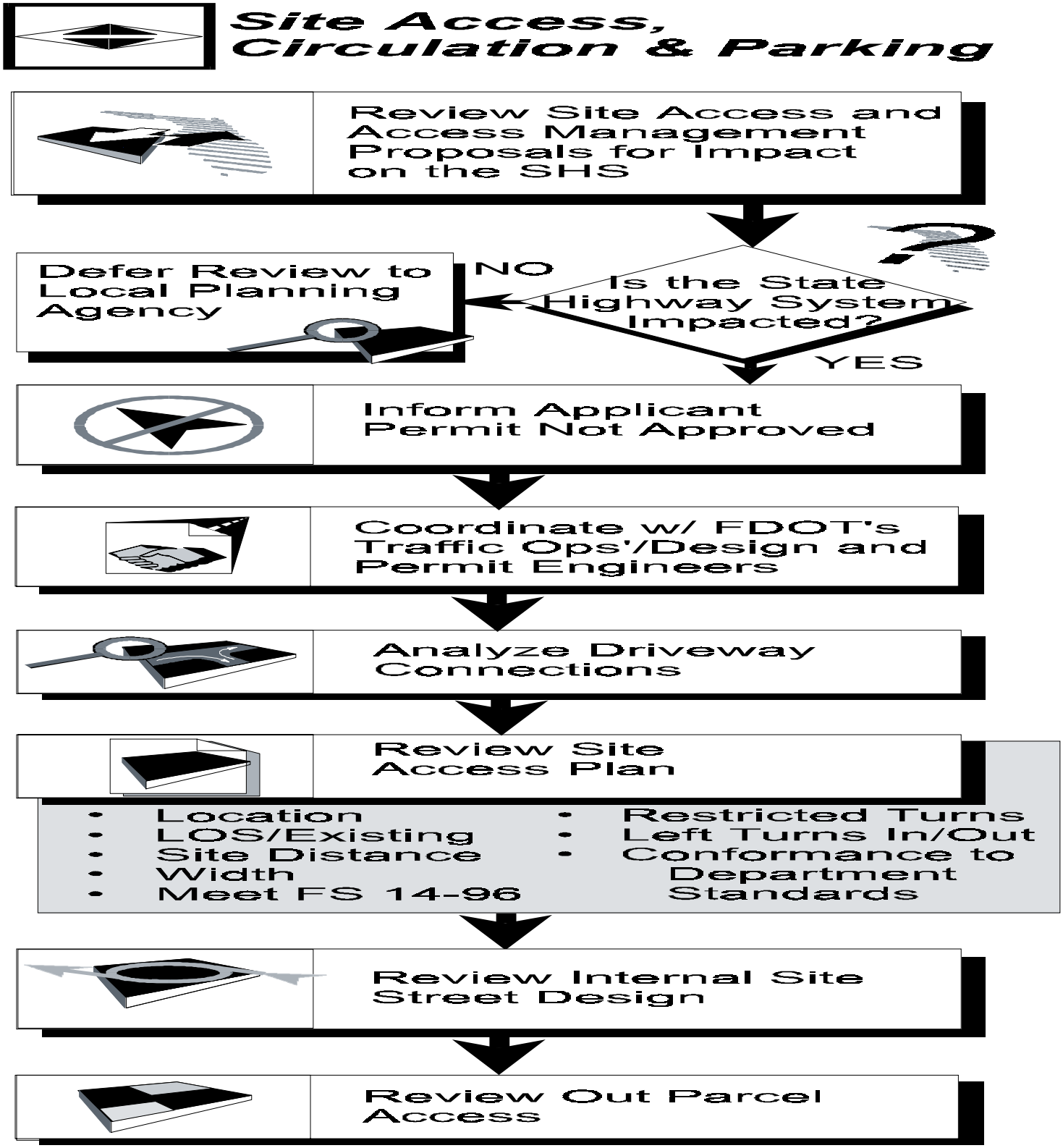


Table 16. Department Driveway Separation Standards and Median Opening

Connection Spacing and Corner Clearance						
Access Class	**Medians** "Restrictive" physically Prevent vehicle crossing "Non-Restrictive" allow turns across at any point	**Connection Spacing** (feet) > 45mph	<45mph	**Median Opening Spacing** Directional	Full	**Signal Spacing**
2	Restrictive w/ Service Roads	1320	660	1320	2640	2640
3	Restrictive	660	440	1320	2640	2640
4	Non-Restrictive	660	440	**	**	2640
5	Restrictive	440	245	660	2640/ 1320	2640/ 1320
6	Non-Restrictive	440	245	**	**	1320
7	Both Median Types	125		330	660	1320

10.2.2 Location Of Connections And The Functional Area Of Intersections

Access should not be located in the functional area of an intersection. The area along the roadway frontage where access may be located with minimal interference to through traffic can be identified by finding where access should **NOT** be. This is done by defining the approach and departure functional area of intersections, or other connections. The functional area of the approach side consists of distance traveled during perception reaction time, plus deceleration distance, plus any queue storage. A complete discussion of the approach functional area (critical in median opening design) is in the Department's Median Handbook. As illustrated, both left-turn and right-turn access can be provided with minimal negative impact on the adjacent street, if located outside the functional area. The connection may be located within this "window." The exact location should be determined as part of the internal site design. See the following exhibits.

10.2.3 Left Turn Queues

Left-turn queues are determined by review of actual conditions or by analysis of projected conditions. An average passenger vehicle length using in estimating a queue is 7.6 meters (25 feet). Typical left-turn queues at signals may range from 50 feet to over length over 375 feet.

10.2.4 Length of Queue at Signalized Intersections

The length of queue at signalized intersections can be determined using the following equation:

$$L = [\frac{V}{N}]ks$$

Where:

L = length of queue
V = estimated left turn volume
N = cycles per hour
k = constant, generally 2.0
s = average length per vehicle, 25 ft.

Or 1 ft. of storage x turning movement volume

10.2.5 Length of Queue at Unsignalized Intersections

The following standards are recommended for use in unsignalized median openings and at unsignalized intersections.

Table 17. Unsignalized Queues

Left Turns per Hour	Demand Volume	Recommended Queue SHS	FIHS
30	1.0	2	3
40	1.3	3	4
50	1.7	3	4
60	2.0	4	5
70	2.3	4	5
80	2.7	5	6
90	3.0	5	6

10.2.6 Departure Side of an Intersection's Functional Area

If the standards for driveway separation and corner clearance found in Rule 14-97 cannot be met, you should determine the functional area of the departure side of the intersection. This distance should be a guide for driveway access.

10.2.7 Exclusive Right-Turn Lanes

For typical urban highways in Florida, anytime right-turn volumes are expected to be greater than 40 right turns per hour, a separate right-turn lane should be considered. This is based on the guidance in *The National Cooperative Highway Research Program (NCHRP) Report No. 279, Intersection Channelization Guide* with the understanding that most of Florida's urban arterials experience peak hour flows of 500 directional vehicles per hour, per lane.

Anytime right-turn volumes are expected to be greater than 40 right turns per hour, a separate right-turn lane should be considered.

Where conditions may warrant a separate right-turn lane and it cannot be provided (right-of-way or environmental restrictions), an 11- to 15- meter (35 to 50 feet) radius should be provided on the approach edge of the connection.

Conditions for providing a separate right-turn lane for less than warranted traffic:

- right-turn volumes in the peak hour that would impact segment operations
- high operating speeds - such as 90 km/h (55 mph)
- site in an undeveloped or developing area where it is desirable to remove decelerating vehicles from the travel lanes

Figure 43. Functional Intersection Area

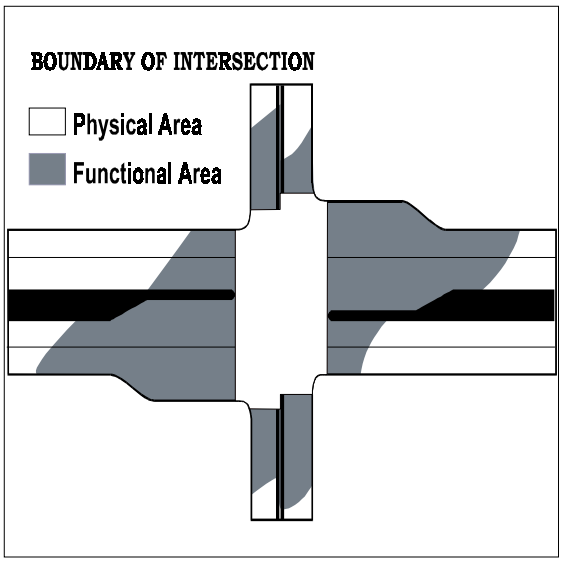


Figure 44. Functional Length of Turn Lanes

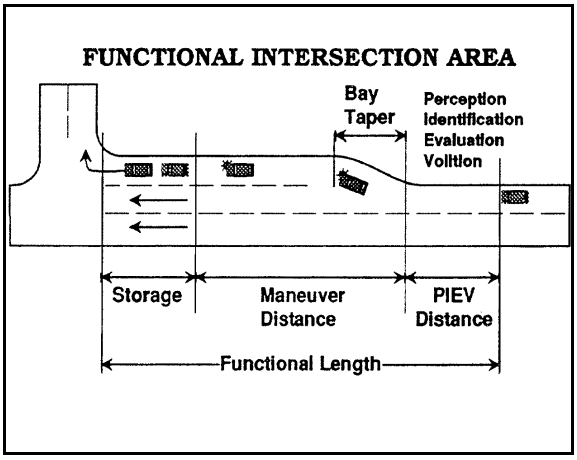


Table 18. Typical Departure Side Functional Area for Urban/Suburban Areas

	Meters	Feet
Minimum	75	245
Desirable	100	350

- poor internal site design causing potential of "backups" on the through lanes
- local government policy

Conditions for not requiring a right-turn lane where possibly warranted**:**

- pedestrian concerns
- dense or built-out corridor where space is limited
- sufficient length or property width is not available for appropriate design
- local government policy

When full-width right-turn lanes are recommended, the deceleration and storage lengths need to be determined. The right-turn storage length on the mainline will depend on whether or not there is signal control on the mainline. Where there is no signal control on the mainline, neither right-turn nor the adjacent through vehicles will stop. The mainline through vehicles will proceed through the driveway intersection without stopping and the right turn vehicles will slow down to make the turn, but should not stop when adequate turn radius is provided. In this case, the total deceleration length in the Department's Standard Index No. 301 should be used without storage. However, a more stringent criterion which could be used where poor site layout and heavy queuing are expected, would requires minimum storage for four cars or 100 feet in urban/suburban areas and minimum storage for two cars or 50 feet in rural/small town areas.

10.2.8 Selecting the Design Vehicle

Selection of a design vehicle depends on the largest typical vehicle type that would use the driveway on a daily basis. Since more than one design vehicle may be appropriate at certain locations, driveway designs based on more than one design vehicle is recommended. The AASHTO definition of "truck" is a vehicle having dual tires on the rear axle. Therefore, all single-unit (SU) and semi-trailers (WB) are considered "trucks" while light delivery trucks, vans and pick-up trucks are operationally similar to passenger cars and are included in the passenger-car (P) class. When used throughout the rest of this chapter, the symbol "T" will represent a design based on the SU design vehicle with accommodations for WB trucks and the symbol "P" will represent a design based on the "design vehicle" with accommodations for SU trucks.

Once the Department Reviewer has determined the design vehicle(s), the appropriate maneuvering areas on and off site are determined using *Standard Index No. 515 (Turnouts).*

10.2.9 Connection Return (Radius)

Connection returns are covered under *Standard Index No. 515* as a function of both the daily trips at the driveway and the type of typical section e.g., urban (curb and gutter) or rural. Any connection on a highway having a posted speed over 45 mph shall have radial returns. Also, any connection requiring or having a specified median opening with left-turn storage and served directly by that opening shall have radial returns.

As indicated in ITE's *Transportation and Land Development*, research shows that while the speed of a right-turn vehicle entering a driveway decreases as the available connection width and/or curb return radius decreases, this speed is still very slow for all reasonable combinations of connection width and curb return radii. Even large radii (9 meters/30 feet) and connection width (11 meters/35 feet) produce entry speeds of only 20 km/h (12 mph). Also, the exit turn radius has very little influence on the exit speed and acceleration of right-turn vehicles.

The operational characteristics of corner radii (assuming approach and departure occurs in the curb lane) are summarized in Table 19 for different design vehicles. Note that in areas where there is substantial pedestrian traffic, shorter driveway crossing distance facilitated by smaller turn radii should be beneficial in decreasing the time in which pedestrian traffic is exposed to vehicular traffic.

Table 19. Operational Characteristics of Corner Radii

Corner Radius (ft)	Operational Characteristics
20-30	Low speed turn for p vehicle, crawl speed turn for SU vehicles with minor lane encroachment
35-40	Moderate speed turn for P vehicle, low speed turn for SU vehicle, crawl speed turn for WB-40 or WB-50 vehicle with minor encroachment
50	Moderate speed turn for all vehicles up WB-50

Source: NCHRP Report 279, Transportation Research Board

10.2.10 Flare Use

In curb-and-gutter sections the use of a flare helps vehicles on and off the road. Requirements for flare use are found in *Standard Index No. 515.*

10.2.11 Connection Width

The speed of a right-turn vehicle entering a driveway decreases as the available connection width and/or curb return radius decreases. However, research indicates that the presence of a vehicle exiting the driveway has a greater effect on the speed and path of the right turning vehicle (entering the driveway) than explained by the reduction in the available connecting width only.

A traffic control island should be used to separate driveway entering and exiting traffic on a driveway where the total number of lanes (entering and exiting combined) is greater than two, or the expected daily driveway volume is over 1,000 vehicles.

The Department Reviewer should also note that when expected traffic is over 4,000 vehicles per day, the connection should be designed as a normal street intersection. Driveway connection width is covered under *Standard Index No. 515* as a function of both the daily trips at the driveway and the type of typical section (curb-and-gutter or rural/flush).

10.2.12 Angle of Connection

Angles between driveways and abutting roadways other than a right angle tend to increase the driveway intersection area and thereby increase the exposure time of conflicting vehicular movements. Trucks tend to have a blind spot when they turn on a large obtuse angle. However, angles less than 90 degrees but greater than 60 degrees normally do not seriously interfere with the visibility of auto drivers.

Therefore, connection angles at the intersection of two-way driveways with two-way roadways having unrestricted turning movements should be set at, or as close as practical to, 90 degrees. However, a pair of two-way driveways or a pair of one-way driveways with limited turning maneuvers may be set at connection angles less than 90 degrees since the number of conflict points will be reduced and the right-turning speed will be increased.

Angle of connection is covered under *Standard Index No. 515* as a function of both the daily trips at the driveway and the type of typical section e.g., urban (curb-and-gutter) or rural.

10.2.13 Traffic Control Islands

Islands are generally described according to their main function as:

- Pedestrian refuge islands
- Traffic divisional islands
- Traffic channelization islands

Channelization islands are recommended at driveways where:

- Skewed or flared driveway design results in excessive pavement area which may confuse drivers.
- Prohibited movements require blocking to prevent illegal, improper, or unsafe maneuvers.
- Traffic on the driveway approach requires separation in terms of speed, direction and right-of-way control as in the case of through and free-flow right-turn movements on the same approach.
- Right in and out driveways where movements are unclear.

An island may serve a combination of these functions. Islands should be clearly visible at all times and located sufficiently in advance so that the vehicle operators will not be surprised by their presence. Islands should occupy the minimum amount of roadway space needed

for the purpose and yet be large enough to command attention.

In accordance with *A Policy on Geometric Design of Highways and Streets*, AASHTO (1990), triangular curbed islands could be seven square meters (75 square feet) for most circumstances. The desirable area for both is nine square meters (100 square feet). Elongated islands should not be less than 1.2 meters wide (four feet) and six meters long (20 feet).

Pedestrian refuge islands should preferably be at least 1.8 meters (six feet) and in no case less than 1.2 meters (four feet) wide. People in wheelchairs cannot safely take refuge in islands that are less than four feet wide.

10.2.14 Driveway Grade

Standard Index No. 515 (Turnout Profiles) contains guidance on driveway grade. A non-abrupt grade is important because the entering vehicle will have to slow to a crawl while crossing the highway in order to prevent the vehicle from experiencing a jolt from the driveway. This may lead to right-angle crashes.

Table 20. Driveway Grades

Maximum Driveway Grades	
Commercial	10%
Residential	28%

10.2.15 Connection Depth/Throat Length

The connection depth of a driveway (also called throat length or throat depth) as measured from the edge of the abutting roadway to the near edge of the buffer area or internal access roads, is governed by the internal traffic circulation and parking layout of the development it serves. Operationally, driveway connection depth should be sufficient to allow a driver to enter the driveway without interfering with a vehicle following on the main roadway. Sufficient connection depth should be a part of any gated development with sufficient space to turn around without backing into the highway.

Suggested connection depths for typical land uses are presented in the Table 21.

Figure 45. Throat Depth

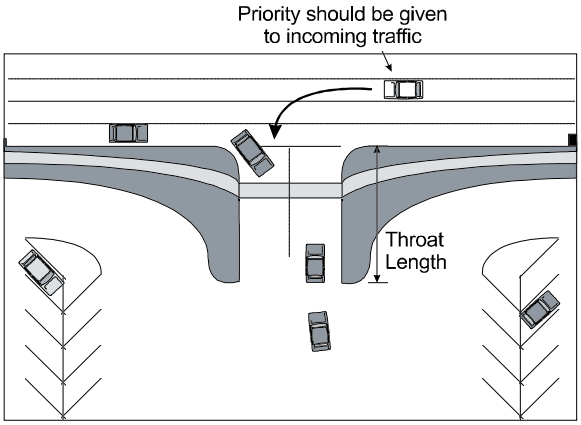


Table 21. Connection Throat Lengths

Generally Adequate Connection Throat Lengths	Meters	Feet
Regional Shopping Centers (Malls)	75	250
Community Shopping Center (Supermarket, Drug Store, other Stores)	25	80
Small Strip Shopping Center	10	30
Regional Office Complex	75	250
Office Center	25	80
Other Smaller Commercial Developments	10	30

Note: This guidance is for the major connections (predominant traffic movement) to a larger site, not the minor connections.

10.2.16 Sight Distance

The *Standard Index #546* specifies the following sight distances, depicted in Table 22, for right and left turns at intersections on multilane roads with medians. These should be considered minimums.

Figure 46. Intersection Sight Distance

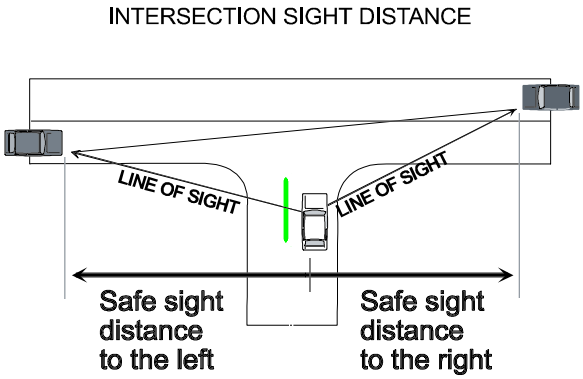


Table 22. Right- and Left-Turn Sight Distance Minimums

Speed (mph)	Sight Distance at Intersection
35	470
40	580
45	710
50	840
55	990
60	1150
Metric Speed (km/h)	**Sight Distance (M)**
60 km/h	160
70 km/h	205
80 km/h	255
90 km/h	310
100 km/h	375

10.2.17 Drive-In Facility Queues

The provision of site circulation and storage is a key component of site impact review. Interference from queued vehicles can cause vehicles to block the through lanes, leading to unsafe conditions.

Even though prediction of queuing is a complicated science, research has shown that driver behavior limits the queue at drive-in establishments because when drivers see an excessive queue, they typically go somewhere else.

A summary of observed queue distances at drive-thru facilities is provided in Table 23.

Table 23. Summary of Observed Queue Distances at Drive-Thru Facilities

Use	Observed Queue	Queued Vehicles Near-Maximum Lane Length Needed
Fast-Food (Hamburger)	9	60 m (198 feet) *
Bank	7	47 m (154 feet)
Car Wash (self-service)	2	13 m (44 feet)
Day Care	9	60 m (198 feet)
Dry Cleaner	2	13 m (44 feet)

Source: Queuing Areas for Drive-Thru Facilities, ITE Journal, May 1995

*Queue length per vehicle is 6.5 meters (22 feet) which is less than the average 7.6 meters (25 feet) used for queues on the road system.

10.3 Site Circulation

In addition to properly locating the access points using the functional classification of the adjoining roadway and the projected traffic generation, all site plans should provide good circulation on the site. The on-site roadways should be designed to allow vehicles to travel within the site without reentering the highway system. Other characteristics to identify include:

- Major generators should be located near the principal access points and major roadway.
- Driveways are provided to handle entering and exiting traffic.
- Driveways should be located away from other conflict points.
- Designs that reduce or eliminate pedestrian and bicycle conflicts.
- Designs that provide adequate pedestrian and bicyclist protection at medians.
- Designs that provide roadway turning widths, radii and grades that accommodate transit vehicles (buses), trucks (if appropriate) and emergency vehicles.
- Adequate service areas for parking, loading and emergency lanes (fire lanes) should be provided.

The following detailed criteria are provided for determining the geometric standards for driveway designs.

10.3.1 Transit-Friendly Design

The design of site circulation, parking and access should easily accommodate bus and pedestrian movements for existing or future bus services. Transit friendly designs are generally defined as those within a reasonable walking distance of an existing or proposed transit stop or station. Other aspects of transit friendly designs include providing ample pavement widths and turning radii to accommodate transit. Pedestrian and transit-friendly design are discussed in greater detail in "Pedestrian and Transit Friendly Design" published by the Public Transit Office of the Department.

10.3.2 Service and Delivery Facilities

Large developments should be designed with separate drives for trucks for service and delivery functions. These facilities should generally be separated from automobile access and circulation and not interfere with pedestrian movements or parking. Rear access or court access is commonly used based on the development type. For guidance on the design of these facilities see *Transportation and Land Development* published by ITE.

10.4 Parking Generation

Parking generation is typically performed in conjunction with trip generation for a site. This process is similar to estimating the driveway traffic, however, the amount of parking is also estimated. Estimates of parking generation are provided in *Parking Generation*, 2nd edition report by ITE and is similar to their *Trip Generation Manual* in format. The same land uses and codes are used in both documents. *Parking Generation* includes average observed parking occupancies, a plot of data points and regression equations for various independent variables studies. Information is provided for weekday, Saturday and Sunday conditions for individual land uses. The rates in the report are applicable to non-CBD stand alone land uses.

Table 24 lists typical parking rates for selected land uses. These are applicable for stand-alone uses only. Modifications to total parking requirements may be made for multiuse centers, shared parking facilities, significant use of public transportation, and vehicle occupancy. The day of the week and month will also result in variations in the rates. Reference should be made to the *Parking Generation* before using the values in Table 24. As was the case with the trip generation rates, some of the parking studies were based on a small number of samples. Additional information is available in *Transportation and Land Development* published by ITE and *Shared Parking* published by the Urban Land Institute.

The parking generation estimate is a function of the amount of daily traffic generated, the turnover rate and time of day utilization. Figure 47 illustrates the general parking accumulation of office, housing, and retail land uses that can be used to determine the percentage of daily traffic that occurs in the analysis period. The peak accumulation of individual uses occurs at different times. For example:

- On an average weekday the peak accumulation for office space occurs at 11:00 AM. At that time, the accumulation for retail and housing is roughly 60 percent.
- After 5:00 PM (on a weekday), office parking decreases rapidly; at the same time, housing and retail parking increases.
- On Saturdays, the situation is entirely different; office parking is very light, retail parking is heavy, and residential parking is usually greater than on weekdays.

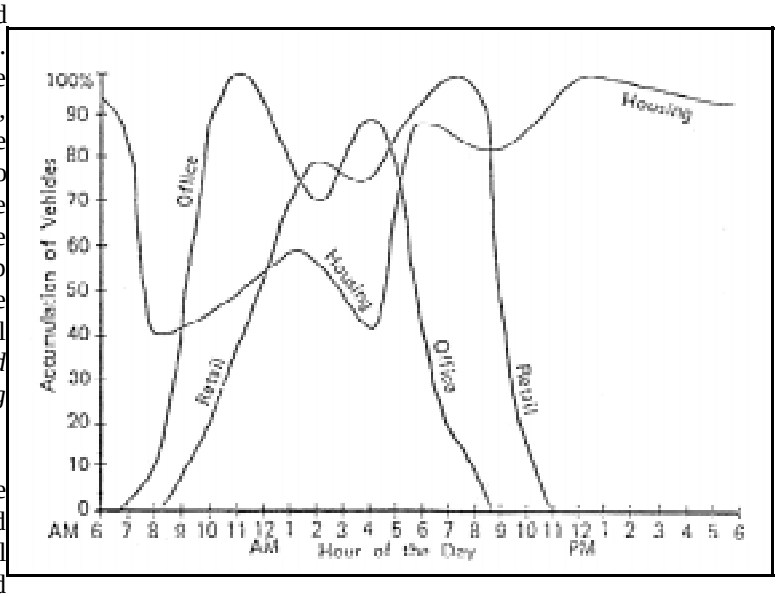


Figure 47. Daily Variation in Parking Demand

10.4.1 Shared Parking

At a mixed-use center it may be possible to share the parking facilities of the various land uses. Since the peaks of various land uses may not occur simultaneously, it may be possible for these different land uses in a mixed-use center to share parking facilities. *Shared Parking*, a report published by the Urban Land Institute, contains a detailed procedure for determining parking needs based on this principle. The basic steps in the process are as follows:

1. Initial Project Review: Identify type and size of land uses proposed and interrelationship among these.

2. Adjust for Peak Parking Factor: Starting with average parking generation rates, make adjustments for seasonal variation, transportation mode, and presence of a captive market of users.

3. Analysis of Hourly Accumulation: Estimate hourly accumulations of each land use for weekday and/or weekend conditions.

4. Estimate total hourly accumulation of site based on values from Step 3.

Care should be taken to ensure that the parking areas and various land uses are within reasonable walking distance of each other.

10.4.2 Parking Lot Layout

Parking lot layout is an integral part of proper site planning. It involves the arrangement of circulation aisles, parking stalls, islands and traffic diverters in association with building and access drives to the adjacent street. Circulation should be safe and efficient to drivers and pedestrians. Properly designed parking satisfies the following principals:

- The orientation of parking aisles (not spaces) should be perpendicular (spaces should be aligned parallel) to the building faces to accommodate convenient pedestrian movements and provide greater visibility to pedestrians and drivers. Where parallel parking aisles must be used for small generators, adequate parking bays and driveway design should be reviewed.
- No parking should be immediately adjacent to the building except those required in the ADA guidelines.

Table 24. Parking Requirements

Land Use (Trip Gen Unit)	**Parking Generation Rate (Ref 5)**		**Typical Requirements (Ref 2, 6)**
Residential (Dwelling unit)	Weekday	Weekday	
Single-Family	---	---	2.0
Multifamily Apt.	1.04	1.21	---
3 or more BR	---	---	2.0
1-2 BR	---	---	1.5
General Office (1000 sf GLA)	2.79GFA	0.79 GSF	3.0 GLA
Shopping Center (1000 sf GLA)	3.23*	.97*	---
>600,000 sf	---	---	5.0
400 - 600,000 sf	---	---	4.5
25 - 400,000 sf	---	---	4.0
Convenience Store (1000 sf GLA)	---	---	3.0
Restaurant (1000 sf GLA)	9.0 - 12.5	7.0 - 15.9	20.0
Industrial (Employee)	0.75	---	0.6
Theatre (Seat)	0.19	0.26	0.3
Hotel (Room)	0.8	1.0	1.25
* Off peak season			

- Aisle lengths should not exceed 300 feet without a break in circulation.
- Parking design (angle of parking, modulation, stall width and length, and pavement markings) should follow accepted principals provided in *Transportation and Land Use* published by ITE.
- Outparcels should be located to serve vehicles near major driveways.
- On-site circulation is performed without using external roadways.

10.5 Safety

In addition to an analysis of operating conditions, the review of existing and proposed future conditions should include a review of safety features. The site plan should be reviewed to ensure that the internal circulation system and external access points are designed for pedestrian, bicycle and vehicular safety to minimize potential conflicts. Locations for transit stops and their associated pedestrian flows to building access points require thorough assessment to ensure safety. Similarly, pedestrian flows to and from parking facilities need careful consideration during site planning. In cases where heavy pedestrian or bicycle volumes are expected, pedestrian LOS, as discussed in the HCM, should be used.

10.6 Recommended Site Access, Circulation and Parking

The recommended site access, circulation and parking plan should only be finalized following the analysis of traffic mitigation strategies and alternatives. The mitigation strategies considered may impact the location of driveways and access management requirements on adjacent roadways. The proper application of access management and basic site planning principles is essential to all site impact analysis. This process involves the review of proposed construction and improvement plans (public and private) assessing the probable impact of the project on traffic movements and evaluating safety and operations at the access points (driveways or roadways) to the development. The Department has developed numerous standards, guidelines, policies and recommended practices in the areas of corridor access management and site access planning for driveways. These standards are provided in FAC Rules 14-96 (driveways) and Rule 14-97 (access management). An overview of some of the principal factors of basic site planning and access management follow.

11. Review and Permitting

The final step toward site impact analysis approval is agency review and permitting. All site impact analysis and review should undergo a **Review and Permitting** process where all appropriate agencies and Department divisions are allowed to comment on the site impact analysis. The Department's review shall address the impacts of the proposed development on the SHS and other regionally significant roadways as determined by the District.

11.1 Reviews of Site Impact Analysis

The reviews and recommendations of the Department should be prepared in a clear and concise manner that can be easily understood by the developer, DCA, RPC or any other agency that may be affected by the Department's review.

11.2 Permitting

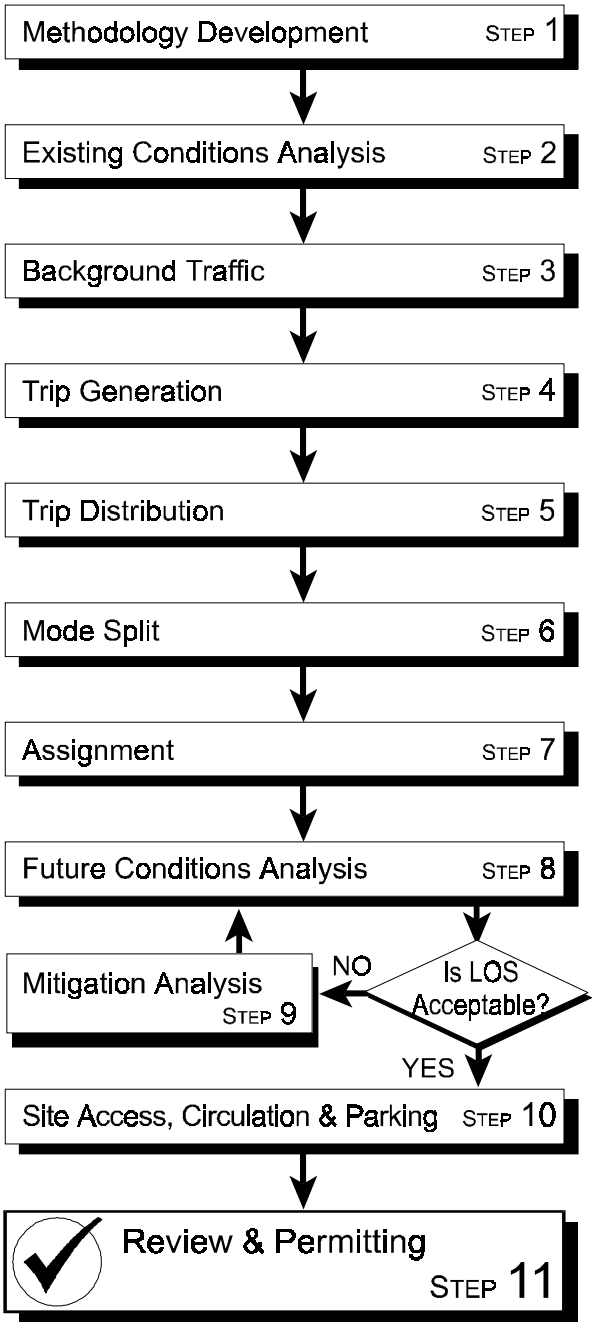
The Department is required to provide applicants with information regarding the types of permits that may be required and how such permits may be obtained. It is the applicant's responsibility to ensure that the methods and analysis leading to the findings follow techniques and practices accepted by the Department and other participating agencies as detailed in this manual and other policies, directives, standards or criteria of the Department.

11.2.1 Hazardous Materials and Petroleum

The FHWA and FDOT will not accept any lands purchased or donated that are contaminated by any hazardous material or petroleum. FDOT requires the Right-of-Way Certificate to reflect the existence or nonexistence of hazardous material or petroleum. The applicant will certify to the Office of Right-of-Way one of the two following statements:

> *There is no knowledge on the part of the seller/donor of hazardous material or petroleum usage or contamination of soils or ground water by hazardous material or petroleum.*
>
> OR
>
> *All hazardous materials or petroleum have been removed or any contamination of soils or groundwater has been remedied, or is being remedied.*

Figure 48. Site Impact Process



All analyses pursuant to determination of the existence or nonexistence of hazardous materials or petroleum will follow policies and procedures set forth by the FHWA and FDOT as required by statute or administrative rule.

If right-of-way is donated, the applicant will certify that, to his/her knowledge, there are no hazardous materials or petroleum on the donated property. If hazardous materials or petroleum are found on the donated property, the applicant will be responsible for the clean-up efforts as prescribed by subsection 337.27(6), F.S.

11.2.2 Railroad Trackage

If a new railroad vehicle crossing or trackage is required, the development order must provide that, if the railroad vehicle crossing permit is denied, the developer shall, within 90 days file a petition for determination of whether a substantial deviation has occurred, pursuant to subsection 380.06, FS.

Review of a site impact analysis does not imply concurrence with railroad crossing changes. The permit process is separate from the site impact analysis process. Applications for crossing changes must be processed in addition to the site impact analysis. Normally, the permit is processed after the site impact analysis development order is adopted.

If goods movement by rail or intermodal transfer is anticipated, transfer points, truck activity, and impacts of increased rail activity on existing crossings need to be addressed.

11.2.3 New Interchanges or Modified Interchanges

New interchanges and modifications to existing interchanges on Interstate and FIHS limited-access facilities are governed by FDOT Policy Statements Topic No. 000-525-015 (Approval of New or Modified Access to Limited-Access Facilities) and Topic No. 525-030-160 (Procedure for Approval of New or Modified Access to Limited-Access Facilities) and the *Interchange Request Development and Review Manual* prepared by the Department. Any proposal for new or modified access should be coordinated through the District Interchange Review Committee.

11.2.4 Utilities Located Within the Right of Way

The Department encourages the developers to locate all new development utilities outside the Department's proposed future right of way. Modifications to utilities within the right of way (including airspace above the right of way) require a utility permit from the Department. The review of the site impact analysis does not constitute review for permit. Comments or lack of comments on utilities cannot be considered a Department position on the future permit applications.

11.2.5 Park-and-Ride Facilities

Proposed park-and-ride facilities must meet the requirements of Topic No. 725-030-002, Park-and-Ride Lot Program.

11.2.6 Roadway Drainage

State highways adjacent to the development shall be reviewed for stormwater management needs by the District drainage staff. The review of the site impact analysis does not constitute a review for a drainage permit. Comments or lack of comments on drainage cannot be considered a Department position on the permit. In addition, the water management districts require a number of permits, including but not limited to the requirements for stormwater pollution prevention and the National Pollution Discharge Elimination System.

11.2.7 Access Management and Driveway Permits

Access permitting is governed by Rule 14-96 FAC (State Highway System Connection Permits Administrative Process) and Rule 14-97 FAC (Access Management Classification System and Standards). When a direct connection is required, the applicant should contact the District access management permitting staff. Median openings may also be addressed during this permitting processes. **The review of the site impact analysis does not constitute a review for a permit.**

11.3 Expedited Permitting Review

In 1996, the Department established an expedited permitting review process that is intended to encourage and facilitate the location and expansion of economic development projects that offer job creation and high wages. This process applies to all permits and will be governed by an interagency agreement that is coordinated by the Office of Tourism, Trade and Economic Development. This process is outlined in greater detail in Unit IV.

The following summarizes the highlights of the procedures for performing a typical site impact analysis review.

Table 25. Summary of Site Impact Analysis Process

Process	Pg. Ref.	Y	N
Step 1: Methodology Development			
A. Show location of the site relative to the surrounding roadway network (map).	34		
B. Identify proposed buildout year(s) [project phase(s)].	34		
C. Define proposed development in acceptable terms for each proposed phase of implementation.	38		
1. Number of dwelling units (DUs) for residential land uses.	50		
2. Square feet (SF, GLSF) for commercial, office, retail, industrial and governmental land uses.	50		
D. Include within study area boundaries all SHS/FIHS segments and intersections on which project traffic constitutes five percent or more of the adopted minimum LOS maximum service volumes.	34		
E. Define if site impact analysis is to be performed using manual calculation mechanisms, computer modeling or a combination of the two.	36		
1. Determine if manual approach is appropriate for the scale and location of the proposed project.	42		
2. If modeling techniques are to be employ, assure that the latest FSUTMS model is used.	37		
a. Extract project site as a separate TAZ.	59		
b. Check that the buildout year(s) of the project are coincidental with future years of the approved FSUTMS model.	34		
c. If not, carefully review proposed methodology for determining interim year conditions for acceptability.	44		
3. Described measures for validating the model for the project analysis.	68		
a. Determine if local roadways, such as local collectors, need to be added to the network to properly analyze traffic behavior at the project level.	69		
4. Assure that only transportation network improvements included in the first three years of the TIP or Department's Work Program are to be included in future year network conditions, unless otherwise documented by the appropriate agency.	39		
a. Listed in the MPO's adopted long-range plan.	40		
b. Consistent with Local Government Comprehensive Plan (LGCP) Transportation Element improvements for year(s) shown.	40		
Step 1: Methodology Development (cont'd)			

Process	Pg. Ref.	Y	N
(E)(4) c. Consistent with other recent Department-approved plans and studies (such as action plans, master plans, MISs, AISs).	40		
G. Apply seasonal and, if appropriate, model output conversion factors from the Department to derive AADT volumes.	37		
Step 2: Existing Conditions Analysis			
A. State how data on existing conditions collected.	38		
1. Identify data sources.	38		
2. Identify locations and durations for traffic data collection.	39		
3. Include measures to account for previously adopted development agreements including appropriate portions of other DRIs.	40		
4. Identify any Department Work Program (WP) or TIP projects included in the analysis of existing conditions.	39		
a. State if project is listed within the first three years of the WP/TIP.	39		
b. Identify funding source(s) for the project.	39		
5. Identify traffic characteristics to be used in the analysis.	39		
a. Verify that each characteristic is within the range accepted by the Department based on facility type and area type.	71 73		
6. Identify measures for collecting information on transit, bicycle and pedestrian volumes and facilities, if appropriate.	40		
7. Identify TMOs, TDMs and other such special considerations as are appropriate to the analysis.	40		
B. Compare the existing segment and intersection LOS relative to the maximum service volumes for the minimum LOS for the same facilities.	78		
Step 3: Background Traffic (Manual Calculation Method)			
A. If a manual analysis approach is used, describe an acceptable methodology been described for determining future year volumes of the surrounding roadway network.	42		
1. Base growth rates on the historical and current development activity of the surrounding area.	42		
B. Provide forecasts of background traffic volumes for each project phase.	42		
Step 4: Trip Generation			
A. Base trip separation rates on Institute of Transportation Engineers (ITE) *Trip Generation* (latest edition) data.	47		
Step 4: Trip Generation (cont'd)			

Process	Pg. Ref.	Y	N
B. If the proposed land use is underreported in the ITE *Trip Generation* manual, identify an acceptable alternative means for determining project trip generation characteristics.	50		
C. Analyze the hour which represents the highest volumes, worst-case conditions of project + adjacent roadway traffic.	51		
D. Determine internal trip capture characteristics of the proposed project land uses.	52		
1. Assess reasonableness of internal capture rates based on proposed land uses and general location of the site(s).	52		
E. Determine level of pass-by trip characteristics for the project land uses.	54		
1. Assess the reasonableness of the pass-by rates based on the proposed land uses and general location of the site(s).	54		
F. Describe a means of determining truck/heavy vehicle volumes for land uses involving high volumes of truck traffic.	74		
Step 5: Trip Distribution			
A. If a manual methodology has been identified, define an acceptable method for determining trip distribution, based on the land use of the proposed project and that of other study area land uses.	61		
B. If an FSUTMS model distribution was used, check the number of model-produced trips against the number of manually estimated trips for the site.	59		
C. Document external/internal trip assumptions.	64		
Step 6: Mode Split			
A. Identify any split of vehicle trips to alternate travel modes.	66		
B. Support through documentation this split (ridership data from local transit agency, etc.).	66		
Step 7: Assignment (and Background Traffic for Model-Based Assignments)			
A. Calculate both AADT and peak-hour assignments for each phase of the project.	68		
B. If using a computer-based assignment procedure, use a single assignment method for calculating background traffic volumes.	68		
C. Verify that project trip assignments account for 100 percent of external project trips.	74		
Step 8: Future Conditions Analysis			
A. Identify the acceptable minimum LOS standard for study area roadway links based on the adopted LGCP and Department standards for State Highway System (SHS) facilities.	78		
Step 8: Future Conditions Analysis (cont'd)			

Process	Pg. Ref.	Y	N
B. Determine appropriateness of the tools used in performing project impact LOS analyses for the types of facilities being analyzed.	80		
1. Use only tools approved for use by the Department.	82		
C. Determine the LOS on SHS/FIHS study area segments by phase for both with and without project scenarios.	81		
D. Perform merge, diverge, weaving and ramp queuing analyses for freeway segments in the study area.	82		
E. Assure that analysis procedures used for evaluation of future traffic operations are consistent with those used to evaluate existing conditions.	80		
Step 9: Mitigation Analysis			
A. Identify transportation system improvements which will result in acceptable levels of service on SHS and FIHS facility segments.	87		
1. Identify needed improvements for each phase of the project.	87		
2. Include improvement measures other than addition of roadway laneage or new roadway facilities.	88		
a. Include documentation from appropriate agency(ies) to verify the feasibility of the proposed improvement(s).	91		
3. Verify that any proposals for additional highway network lane miles adhere to the Department's maximum laneage policy for SHS and FIHS facilities.	88		
B. Determine if measures are required to mitigate the impact of an increased percentage of trucks in the traffic stream due to the project.	87		
1. Ascertain whether modifications to curb radii at critical intersections are required.	98		
2. Ascertain whether modifications to left-turn and right-turn channelization at study area intersections will be required to accommodate project-related truck traffic.	96 97		
C. Ascertain whether the proposed improvements to SHS or FIHS facilities will require that noise impacts from these study area segments be studied for potential noise impacts and associated mitigation for noise-sensitive sites adjacent to these segments.			
1. Address measures for dealing with these potential noise impacts.			
D. Ascertain whether the proposed improvements will have a negative impact on the air quality conformity status of the overall surface transportation network.			
1. Propose alternate improvement scenarios if air quality conformity impacts cannot be ameliorated.			
Step 9: Mitigation Analysis (cont'd)			

Process	Pg. Ref.	Y	N
E. Determine if detailed air quality modeling for concentrations of emissions will be required on any study area segments during project implementation.			
F. Identify all additional rights-of-way, including intersection flareouts, required to accommodate proposed project mitigation improvements.	99		
G. If a mode split to transit or other alternate transportation mode has been assumed by the applicant (reference Step 7), identify measures to be incorporated into the development's design and implementation in support of these alternative mode choices.	102		
H. Determine if proposed impact mitigation improvements require approval of an IMR or IJR.	107		
Step 10: Site Access, Circulation and Parking			
A. Identify the number and general location of proposed points of access.	92		
1. Check these access points for conformance to Department access and driveway spacing standards.	96		
B. Evaluate joint or unified access with neighboring nonproject parcels, if possible.	94		
C. Determine whether reasonable connections between neighboring parcels internal to the project are proposed to provide for a complete project traffic circulation system while minimizing demands for external driveways or access points.	102		
D. Determine if any proposed access points can be relocated to side (non-SHS) streets.	96		
E. Provide maps which show existing median cuts and driveways.	94		
F. Determine whether proposed location(s) of access points relative to existing (or proposed) median cuts will require signalization during project implementation.	102		
1. Assess whether potential signalization locations conform to the Department's signal spacing standards for the SHS facility type and area type as set forth in the Department's Access Management Standards.	96		
G. Identify proposed partial access points.	94		

UNIT IV - INSTRUCTIONS FOR SITE IMPACT REVIEW

INTRODUCTION AND INSTRUCTIONS

Unit Introduction

Unit II described the types of projects which may require review by the Department for their impacts on the State Highway System (SHS)/Florida Intrastate Highway System (FIHS). Unit III discussed the procedures used in the site assessment of these projects. Univ IV pools these two sets of information into practical applications. Through narrative discussion, the Unit identifies at what point(s) in project development opportunities for Department input are most likely to arise. It also describes the nature of the Department's role in the projects' progress through what is often a multi-agency review process.

The Unit culminates in a series of checklists. These checklists have ben designed to assist Department Reviewers in their examination of the different types of submittals associated with site impact assessment. Reference is made in the abovementioned narrative discussions as to the checklist appropriate for each type of review. In most instances, the format of the checklists parallels the information presentation of Unit III.

Instructions for Performing Reviews

In almost all instances in which the Department provides some form of site impact review, it is not the primary agency to which the information is submitted. Rather, that role lies with a local jurisdiction land use control agency, Regional Planning Council (RPC) or another state agency such as the Department of Environmental Protection. The Reviewer should begin by familiarizing himself/herself with available background information on the project. If none has been provided as part of the notice of review, a telephone call to the project coordinator for the agency requesting review comments is appropriate.

It is recommended that the Reviewer follow this with a reading of the submittal document. This provides the Reviewer with a general overview of the submittal contents. It is suggested that no attempt at review by attempted during this first reading. Upon completion of this reading, it should be possible to identify the appropriate checklist to use in performing a detailed review of the submittal.

As part of the review process, it is recommended that the Reviewer perform spot checks or independent verification of the data and analyses submitted by the applicant. Examples of data collection verification may include checking applicant-collected traffic volumes against those recorded by the Department in its most recent annual counting of the facility. Independent verification of analysis results might entail performing his/her own Highway Capacity Software analysis of a roadway segment using the applicant's data for comparison of Level of Service (LOS) results with those reported in the submittal.

Use of the Checklist

As previously stated, the checklists have been organized to generally follow the site impact assessment process described in Unit III. The exception is review of a DRI-ADA submittal. This latter checklist reflects the format of Question 21 of the DRI-DA established by the Department of Community Affairs (DCA).

It is suggested that a photostatic copy of the appropriate checklist be made for use in performing the review. Each checklist provides a space at the top of the first page for noting:

- Name of the Project
- Name of the Reviewer
- Date the Review was Performed
- Date the Review must be completed and comments returned to the requesting agency.

All of the checklists have the same general format.

- Review criteria, phrased in the form of a "yes" or "no" response question
- Page number cross-reference to the corresponding Unit III discussion of the criterion
- "Yes" column for marking an affirmative response to the criterion in the submittal
- "No" column for noting a negative response to the criterion in the submittal
- "N/A" column to allow the Reviewer to indicate a criterion that is not applicable to the project.
- "Comment" column for Reviewer's convenience.

DRI Checklist 1: Transportation Methodology Meeting Information Submittal Checklist has one additional column. A "P" is used to indicate those

questions for which a preliminary response should be provided by the Applicant as part of the Transportation Methodology Meeting Information Submittal.

The checklists have been organized using a modified outline format. The general review category is indicated by the heading in **Bold** letters. All questions immediately following a bold heading relate to that heading.

Within a given category, a series of questions generally related to review of the subject manner are provided. These directly related questions are sequentially designated A, B, C and so forth. Some of these primary, or first-tier, questions have related questions which address more detailed issues. These related questions are indicated by a numerical indication: 1, 2, 3 and so forth. In a few instances, additional questions are necessary to adequately evaluate the response to "numerical" questions. This final echelon of review questions are denoted by a lower case letter.

The following example, taken from the Transportation Methodology Meeting Information Submittal Checklist, demonstrates the application of this format.

Data Collection and Existing Conditions

A. State how data on existing conditions collected?
   1. Acceptable data sources identified?
   2. Acceptable locations and during for traffic data collection identified?
      a. 3 consecutive days for 24-hour Counts in urban locations?
      b. 5 consecutive days for 24-hour Counts in rural locations?

This format enables the Reviewer to reference specific criteria in both written and oral discussions. It also allows the Reviewer to expand the list with additional criteria which may be appropriate to a specific project.

For an adequately prepared submittal, review of the questions posed in the checklists should result in either a "Yes" or "N/A" response. For those cases where a number of the responses are "No," indicating a lack of adequate data, detail or inaccuracies in the analysis, a recommended course of follow-up action is provided at the conclusion of the checklist.

In all cases, the checklist should serve as a helpful guide in developing a list of comments to return to the agency that has requested the review. It is also useful to submit a copy of these comments directly to the applicant so that all Department concerns are clearly understood.

There are two actions which the Reviewer can take to increase the likelihood of receiving complete and adequate information in all submittals. The first is to assure that the Applicant is aware of resources available through the Department which will assist the preparation of plans and documentation which meet Department criteria. A list of these materials are provided in Table 26. The second action is make copies of the Department's review checklists available to potential applicants and other reviewing agencies. This will clarify for all parties involved the general issues which the Department will bring to the table when performing a site impact review.

Table 26. Information Provided to or Available to Applicant Checklist

The following publications are available through:

Florida Department of Transportation
Maps and Publication Sales
Mail Station 12
605 Suwannee Street
Tallahassee, Florida 32399-0450

Requestors should verify cost before ordering by contacting the office at (904) 488-9220 or (904) 488-0693. Pre-payment and a cover letter indicating the stock number and title of each publication being ordered are required. A street address for shipping is required. All orders being shipped to a Florida address must include six-percent sales tax, and discretionary tax when applicable, or a tax exempt number.

Information Provided/Availability Made Known to Applicant	Stock No.	Y	N	N/A
Publications Available from Department				
Access Management Classification Systems & Standards Rule (Rule 14-97)	M100			
Bicycle Facilities Planning and Design	M108			
Connection Permits Administrative Process (Rule 14-96)	M114			
Drainage Connection Permit Handbook	M124			
Drainage Manual	M125			
Flexible Pavement Design	M132			
Florida Pedestrian Safety Plan (No Charge)	M133			
Florida's Level of Service Standards and Guidelines manual for Planning	M134			
Life Cycle Cost Analysis for Transportation Projects (No Charge)	M142			
Minimum Specifications for Traffic Control Signals and Devices (No Charge)	M144			
Manual on Uniform Traffic Studies (MUTS)	M145			
Project Development and Environmental Guidelines	M152			
Roadway and Traffic Design Standards	M162			
Traffic Engineering manual	M179			
Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways	M180			
Structure Standards 1994 Metric Version	M245			

Information Provided/Availability Made Known to Applicant	Stock No.	Y	N	N/A
Other Information				
• Recommended transportation site impact methodologies used and/or required by the Department including software programs, traffic modeling techniques and trip generation methodologies (other software may be used if agreed to be all parties).				
• Information on relevant existing or proposed rights-of-way, proposed or current Major Investment Studies (in urbanized areas), FIHS action or master plans and any corridors designated in the Florida Transportation Plan within the study area.				
• Procedures and requirements for new or modified access to interchanges on limited-access facilities (*Interchange Request Development and Review Manual*)				
• How information regarding facilities programmed for improvement in the first three years of the Department's Five-Year Adopted Work Program may be obtained.				
• Resources for obtaining Department guidance on such mitigative techniques as public transportation and programs providing alternatives to single-occupant vehicle travel.				
• Department guidance on such other transportation-related issues as air quality, right-of-way protection, railroad crossing safety and evacuation routes, as appropriate.				

CHAPTER 1. INSTRUCTIONS FOR DRI REVIEWS

The instructions and review requirements outlined in this Chapter are applicable to all types of Development of Regional Impacts (DRIs), Florida Quality Developments (FQDs) and the Florida Job Siting Act. Additional considerations unique to a particular step in the DRI process or to a unique type of DRI are addressed in the review checklists. This Chapter primarily focuses on DRI-Application for Development Approval (ADA) reviews and Conceptual Agency/DRI Comprehensive Plan Amendment reviews, which normally represent the most crucial Department reviews undertaken for DRI type development applications. Other parts of the review process, specifically Binding Letters of Interpretation, Preliminary Development Agreements, Local Government Development Orders and Notifications of Proposed Change (NOPCs) are addressed at the end of this chapter.

Table 27 shows the steps of the DRI review process. Time constraints imposed upon the Department Reviewer have been identified. The following list highlights the activities in which the Department Reviewer has opportunities to respond with comments, through the coordinating RPC or other agency to the applicant. Tables 28 and 29 present the current requirements of the DRI-ADA for Questions 21 and 22.

- Preapplication Conference Format Meeting
- Preapplication Conference Project Summary Narrative Review
- Transportation Methodology Meeting Information Submittal Review
- Review of RPC Regional Issues List and Agency Comments (which may include Transportation Methodology Letter of Understanding)
- DRI-ADA Review
- DRI-ADA Sufficiency Review
- Local Government Development Order Review
- Annual Report Review

1.1 Preapplication Conference Format Meeting

The purpose of this meeting is for the RPC staff to assure that they are aware of all the issues to which reviewing agencies will require the applicant to respond.

The Department Reviewer's role in this meeting has three purposes. The first is to establish whether or not the Transportation Methodology Meeting is to be conducted as part of the Preapplication Conference.

The second purpose of the Preapplication Conference Format Meeting is to identify the information the applicant is requested to submit for review prior to the Transportation Methodology Meeting. The preliminary response by the applicant to the questions identified in DRI Checklist 1 with an asterisk (*) should be contained in the applicant's Transportation Methodology Meeting Information submittal. The applicant should be made aware that the Transportation Methodology Meeting Information Submittal should be received by the RPC 20 days prior to the meeting for distribution to reviewing agencies.

This meeting also affords the Department Reviewer to request opportunities for review of submittals prepared by the RPC prior to their transmittal to the applicant. Specific requests for review of RPC summaries of the Preapplication Conference and the Transportation Methodology Meeting should be made at this time. The Department should also state its desire to be a reviewing agency for the annual monitoring report, should the DRI achieve approval.

1.2 Transportation Methodology Meeting

The Transportation Methodology Meeting is a pivotal point in the DRI process. It is the first opportunity for the Department to express its critical concerns with respect to the project's potential impact on the SHS. It also provides an opportunity for the Department to identify information available from the Department which may be useful in performing a thorough and accurate assessment of project impacts. Checklists have been provided for each of these purposes. The checklists cover issues raised in a typical DRI review. The list should be modified, as appropriate, to address specific project characteristics. DRI Checklist 1, beginning on page 25, should be used by the Reviewer during this stage of the DRI review process. As previously noted, the information provided in Table 26 is information which the applicant should be made aware is available from the Department.

1.3 RPC Regional Issues List and Agency Comments

Subsequent to the Preapplication Conference and Transportation Methodology Meeting, the RPC summarizes the results of these meetings, in writing, to the applicant. The Department Reviewer should review these documents prior to transmittal to the applicant per his/her prior request. The Department Reviewer must recognize that the analysis conditions, restrictions and special conditions identified in these transmittals are binding on both the applicant and the Department (regardless of who subsequently reviews the ADA). For this reason, the review by the Department of these materials is highly advisable.

The RPC Regional Issues List and Agency Comments may include the Transportation Methodology Meeting Letter of Understanding (MLOU). the MLOU summarizes the study area and data, data collection, analysis approaches and mechanisms, data presentation and mappings, and documentation requirements agreed to by the applicant and all agencies reviewing the transportation issue. The basis for the review of the MLOU should be a combination of two sets of documentation: the Department Reviewer's review of the Transportation Methodology Meeting Information Submittal and the Reviewer's notes from the meeting itself. DRI Checklist 1, beginning on page 125, should be used again by the Reviewer during this stage of the DRI review process.

1.4 Sufficiency Review

The Department Reviewer's first responsibility upon receipt of a DRI-ADA is to determine whether the applicant has:

1. adhered to the conditions set forth in the MLOU.
2. provided sufficient detail and support documentation to enable the Department Reviewer to adequately assess project impacts on the SHS.
3. proposed impact mitigation measures which adequately protect LOS on SHS/FIHS facilities.

DRI Checklist 2, beginning on page 131, should be used by the Reviewer during this stage of the DRI review process.

1.5 Application for Development Approval (ADA) Reviews

The DRI-ADA submittal and subsequent review by the Department represent the crux of the DRI review process. It constitutes the first and most comprehensive opportunity for the Department Reviewer to communicate Department concerns to other review agencies and the applicant regarding the transportation impacts caused by development. The following checklist summarizes both formal and informal areas of review for the DRI-ADA. The Reviewer should use this list as a general guide in the DRI review process.

The Department Reviewer should also be familiar with the deadline requirements of the DRI. The ADA review period is 30 calendar days. A comment by the Department after the legal deadline of 30 calendar days, which starts from the RPC's receipt of the ADA, can technically be ignored by the applicant. Although there is usually some flexibility in this area, it is limited and should not be assumed. Under no circumstance should the Department Reviewer assume more than 30 days for review. Close coordination with the RPC is encouraged to ascertain whether or not flexibility in the schedule exists.

The Department Reviewer is encouraged to first browse the ADA document to gain an overall understanding of the project and how transportation relates to other proposed development considerations. In general, the Department Reviewer should not try to review any area beyond his/her technical capability. Based on the initial perusal, if additional Department or Consultant expertise is needed to complete a thorough submittal review, it should be sought immediately.

Table 28 depicts DCA's DRI-ADA Question 21 for which the applicant prepares a response. DRI Checklist 3: DRI-ADA Review Checklist, beginning on page 133, has been prepared to correspond to the format of Question 21. The checklist questions assume the Reviewer has performed thorough and timely reviews of all earlier submittals and therefore, focuses on the substance of the applicant's responses.

1.6 Local Government Development Order Review

The Department Reviewer has several opportunities to make the applicant, the RPC and other involved parties aware of the Department's issues of concern regarding the impacts of a proposed DRI. This Local Government Development Order (LGDO) Review is the Department's final opportunity to assure that access to and LOS on SHS segments located in the project impact area are adequately protected.

The Department Reviewer should be aware that the land uses and land use densities and intensities set forth in the DRI-ADA are not necessarily those

authorized in the LGDO. It is not unusual for ADA-proposed land use densities and intensities to be reduced once the applicant's proportionate share of project impact mitigation costs have been determined.

The Department Reviewer must also assure that the Department remains informed about the status of the project as it is implemented. Through the provisions of the annual monitoring requirements set forth in the LGDO, the Department has a final opportunity to require periodic monitoring of the project's impacts on the operation, noise levels and air quality of the SHS.

The LGDO Review checklist (DRI Checklist 4 on page 139) has been designed to address these points: preservation of the Department's SHS LOS and access standards, the implications of reduced land use densities and intensities, the continued involvement of the Department in the annual reporting and review of project implementation.

If the Department Reviewer believes the LGDO fails to adequately ensure the integrity of the SHS, the District's Director for Planning and Programming should be notified immediately. Objections to conditions of the LGDO must be appealed in writing to DCA within 45 days of the issuance of the LGDO. Objections expressed by the Department after this 45-day appeal period have no legal standing with DCA, RPC or the applicant.

1.7 Project Monitoring Report Review

The Department should have it stipulated as a condition of the LGDO that it is a reviewing agency for the Project Monitoring Report if one is required of the project. The following discussion assumes that this stipulation has been made.

The purpose of this review is to assure that SHS LOS and access management standards are maintained throughout project implementation. The review also provides an opportunity to assure that LGDO-mandated transportation improvements are realized in a timely manner. DRI Checklist 5, beginning on page 141, should be used by the Reviewer during this stage of the DRI review process.

1.8 Conceptual Agency (Access) Review

Occasionally, an applicant will request that a Conceptual Agency Review of the project be conducted concurrent with the DRI-ADA review. This Conceptual Agency Review usually examines the submitted material for adherence to Department access management standards and guidelines. The information to be reviewed is usually submitted to the agencies at or subsequent to the Preapplication Conference or Transportation Methodology Meeting.

The applicant needs to be made aware that Conceptual Agency Review is transmitted to the District's Permits section where it will be reviewed by a District Permits Engineer. The Conceptual Agency Review Checklist (DRI Checklist 6, page 143) is provided to enable the District's Reviewer to inform the applicant of the scope of this type of review, should it be requested. As noted on the Checklist, the Applicant needs to be made aware that approval of the Conceptual Agency Review Submittal neither constitutes nor guarantees formal permit application approval.

1.9 Notice of Proposed Change (NOPC) and Substantial Deviation Determinations

The Department has a role in review of all NOPC and Substantial Deviation Determinations for approved DRI LGDO processes by RPC.

Several factors must be considered in determining the Department's response to these notifications. DRI Checklist 7 (page 145) identifies these critical issues.

1.10 Florida Quality Developments (FQDs) and Florida Job Siting Act Certification Reviews

FQD and Job Siting Act Certification applications are required to perform analyses of transportation impacts consistent with DRI-ADA analysis requirements. To assure that these procedures are followed, it is recommended that key steps in the DRI-ADA review process be followed.

- Preapplication Conference Format Meeting
- Transportation Methodology Meeting Information Submittal Review
- Transportation Methodology Letter of Understanding Review
- DRI-ADA Review

The checklists provided for the Reviewer's use in earlier sections of this chapter (Sections 2.1 through 2.7) respectively) are appropriate for use in performing FQD and Job Siting Act Certification Reviews.

1.11 Conclusion

The DRI approval process is long and complicated, requiring frequent, thorough and thoughtful review of large amounts of information. The following are general recommendations that may be helpful in negotiating the DRI-ADA process.

- Resolve Minor Problems by Phone. If there is an apparently minor question and assuming this is accepted protocol among parties involved (if in doubt, ask at Methodology Meeting), call the consultant directly in an attempt to resolve the question.
- Support Local Agencies in their Attempts to Achieve/Maintain Local and Collector Road Continuity. When the Department helps solve the problems on a local system it often reduces problems on the state system. Local rights-of-way systems frequently have discontinuous patterns. Consequently, the state system is used for many local trips. Many reasons have caused discontinuity in local street rights-of-way. These factors range from lack of planning to intentionally planned enclaves. Developer pressure for very large enclaves without through streets persist. Department needs to work with and stand behind local planners' attempts to create continuous local street systems.
- Work to Ensure Maintenance of the Existing Roadway System's Functional Roadway Classification Structure.

Table 27. DRI Review Procedures Flow Chart

1. Initial Information Meeting.
2. Binding Letter of Interpretation (BLI Procedure if requested by applicant) (**15 days after receipt of application**).
3. RPC staff/applicant meeting to arrange format of Preapplication Conference and contents of Project Summary Narrative.
4. Submittal of project summary narrative by applicant to RPC (**20 days prior to preapplication meeting**) for inclusion with meeting notification.
5. Notification of preapplication meeting to reviewing agencies (**10 days before meeting**).
6. Preapplication meeting conducted by the RPC Clearinghouse Review Committee (CRC). DRI review fee payable at this time. The Preapplication Conference and Transportation Methodology Meeting are often combined, one immediately following the other.
7. Transportation Methodology Meeting between applicant and reviewing agencies.
8. Submittal of CRC-approved Regional Issues List and agency comments to applicant (**10 days following pre-application meeting**).
9. Site inspection .
10. Applicant submits distribution, generation and internal capture. This information is often submitted as part of the Project Summary Narrative (**5 days**).
11. RPC and possibly other agencies conduct preliminary review of distribution, generation and internal capture. This review usually occurs prior to the Transportation Methodology Meeting for comment and resolution at the Transportation Methodology Meeting.
12. Receipt of Application for Development Approval (DRI-ADA) by local government, RPC and reviewing agencies.
13. Preliminary review of DRI-ADA sufficiency by RPC staff, local government and other reviewing agencies (**30 days**).
14. Preliminary assessment letter submitted to applicant by RPC (**5 days**).
15. Applicant provides written intention either to respond or not to respond to the preliminary assessment letter (**120 days**).
16. Applicant's additional information received by RPC.
17. Determination of sufficiency for final review of additional information by RPC staff, local government and other reviewing agencies (**30 days**).
18. RPC staff notifies local government to set public meeting if information is determined to be adequate to conduct final review (**60 days**).
19. Local government advertises public hearing date and submits copy to RPC and other required agencies.
20. Notice of published hearing date received by RPC.
21. Final review of ADA and additional information by RPC staff and other agencies.
22. Distribution of RPC staff final report - 10 days in advance of Council meeting.
23. RPC acts on final review report.
24. Adopted review report submitted to local government and applicant - at least 10 days in advance of the public hearing.
25. Local government holds public hearing.
26. Local government issues Development Order (**30 days**).
27. Development Order review by RPC/Applicant/DCA and possible appeal.
28. Annual Project Review submitted on date stipulated in Development Order to the local government, DCA, all affected permit agencies and RPC.

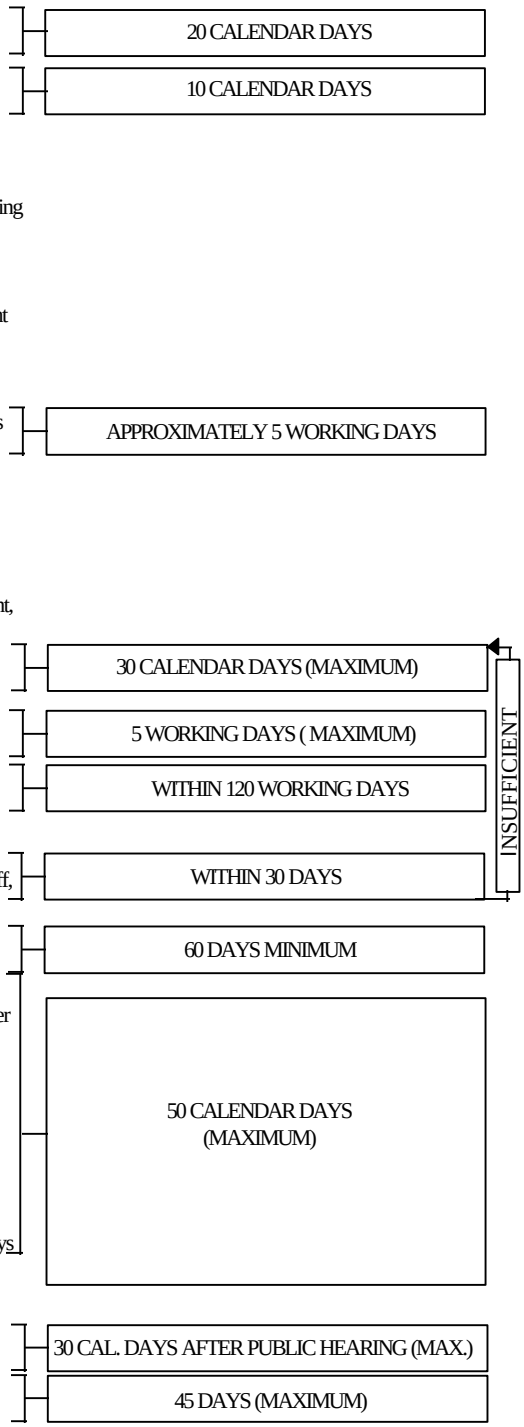


Table 28. Question 21 - Transportation

See State Comprehensive Plan (Chapter 187, FS)

Goal (11); Policy (2)
Goal (12); Policies (3), (4)
Goal (16); Policy (1)
Goal (18); Policies (1), (3), (4), (6)
Goal (20); Policies (2), (3), (8), (9), (10), (12), (13), (15)
Goal (25); Policy (5)

Road Link/Intersection:
Existing Level of Service:
Adopted Level of Service Standard:
Level of Service After Project Buildout:

A. Using Map J or a table as a base, indicate existing conditions on the highway network within the study area (as previously defined on Map J), including annual average daily traffic (AADT), peak-hour trips directional, traffic split, levels of service (LOS) and maximum service volumes for the adopted LOS. Identify the assumptions used in this analysis, including "K" factor, directional "D" factor, facility type, number of lanes and existing signal locations. (If LOS are based on some methodology other than the most recent procedures of the Transportation Research Board and FDOT, this should be agreed upon at the preapplication conference stage). Identify the adopted LOS standards of the FDOT, appropriate Regional Planning Council (RPC) and local government for roadways within the identified study area. Identify what improvements or new facilities within this study area are planned, programmed or committed for improvement. Attach appropriate excerpts from published capital improvements plans, budgets and programs showing schedules and types of work and letters from the appropriate agencies stating the current status of the planned, programmed and committed improvements.

B. Provide a projection of vehicle trips expected to be generated by this development. State all standards and assumptions used, including trip end generation rates by land use types, sources of data, modal split, persons per vehicle, etc. as appropriate. The acceptable methodology to be used for projecting trip generation (including the Florida Standard Urban Model Structure (FSUTMS) or the Institute of Transportation Engineers (ITE) trip generation rates) shall be determined at the preapplication conference stage.

C. Estimate the internal/external split for the generated trips at the end of each phase of development as identified in (B) above. Use the format below and include a discussion of what aspects of the development (i.e., provision of on-site shopping and recreation facilities, on-site employment opportunities, etc.) will account for this internal/external split. Provide supporting documentation showing how splits were estimated, such as the results of the FSUTMS model application. Describe the extent to which the proposed design and land use mix will foster a more cohesive, internally supported project.

INTERNAL/EXTERNAL SPLIT-VEHICLE TRIPS

Phase	Vehicle Trips (ADT)		Peak-Hour Vehicle Trips	
	Internal	External	Internal	External
Existing Phase 1 . . n				

D. Provide a projection of total peak-hour directional traffic, with the DRI, on the highway network within the study area at the end of each phase of development. If these projections are based on a validated FSUTMS, state the source, date and network of the model and of the TAZ projections. If no standard model is available or some other model or procedure is used, describe it in detail and include documentation showing its validity. Describe the procedure used to estimate and distribute traffic with full DRI development in subzones at buildout and at interim phase-end years. These assignments may reflect the effects of any new road or improvements which are programmed in adopted capital improvements programs and/or comprehensive plans to be constructed during DRI construction; however, the inclusion of such roads should be clearly identified. Show these link projections on maps or tables of the study area network, one map or table for each phase-end year. Describe how these conclusions were reached.

E. Assign the trips generated by this development as shown in (B) and (C) above and show, on separate maps or tables for each phase-end year, the DRI traffic on each link of the then-existing network within the study area. Include peak-hour directional trips. If local data is available, compare average trip lengths by purpose for the project and local jurisdiction. For the year of buildout and at the end of each phase, estimate the percent impact, in terms of peak-hour directional DRI trips/total peak-hour directional trips and in terms of peak-hour directional DRI trips/existing peak-hour service volume for desired LOS, on each regionally significant roadway in the study area. Identify facility type, number of lanes and projected signal locations for the regionally significant roads.

F. Based on the assignment of trips as shown in (D) and (E) above, what modifications in the highway network (including intersections) will be necessary at the end of each phase of development to attain and maintain local and regional LOS standards? Identify which of the above improvements are required by traffic not associated with the DRI at the end of each phase. For those improvements which will be needed earlier as a result of the DRI, indicate how much earlier. Where applicable, identify Transportation System Management (TSM) alternatives (e.g., signalization, one-way pairs, ridesharing, etc.) that will be used and any other measures necessary to mitigate other impacts such as increased maintenance due to a large number of truck movements.

G. Identify the anticipated number and general location of access points for driveways, median openings and roadways necessary to accommodate the proposed development. Describe how the applicant's access plan will minimize the impacts of the proposed development and preserve or enhance traffic flow on the existing and proposed transportation system. This information will assist the applicant and governmental agencies in reaching conceptual agreement regarding the anticipated access points. While the ADA may constitute a conceptual review for access points, it is not a permit application and, therefore, the applicant is not required to include specific design requirements (geometry) until the time of permit application.

H. If applicable, describe how the project will complement the protection of existing, or development of proposed, transportation corridors designated by local governments in their comprehensive plans. In addition, identify what commitments will be made to protect the designated corridors such as interlocal agreements, right-of-way dedication, building set-backs, etc.

I. What provisions, including but not limited to, sidewalks, bicycle paths, internal shuttles, ridesharing and public transit, will be made for the movement of people by means other than private automobile? Refer to internal design, site planning, parking provisions, location, etc.

Table 29. Question 22 - Air

See State Comprehensive Plan (Chapter 187, FS)

Goal (6); Policy (19)
Goal (11); Policies (1), (2), (3), (4)
Goal (22); Policy (3)

A. Document the steps which will be taken to contain fugitive dust during site preparation and construction of the project. If site preparation includes demolition activities, provide a copy of any notice of demolition sent to the Florida Department of Environmental Regulation (FDER) as required by the National Emission Standards for Asbestos, 40 CFR Part 61, Subpart M.

B. Specify structural or operational measures that will be implemented by the development to minimize air quality impacts (e.g., road widening and other traffic flow improvements on existing roadways, etc.). Any roadway improvements identified here should be consistent with those utilized in Question 21 - Transportation.

C. Complete Table 22-1 for all substantially impacted intersections within the study area, as defined in Map J and all parking facilities associated with the project. Using the guidance supplied or approved by FDER, determine if detailed air quality modeling for carbon monoxide (CO) is to be completed for any of the facilities listed in the table.

TABLE 22-1
PHASE: _____(One Table for Each Phase)
YEAR OF PHASE_____ COMPLETION _____

Source Type (1)	Peak-Hour Traffic		Maximum Hourly Service Volume (2)	
	Projected	Existing	Projected	Existing

(1) Specify source type as either intersection, surface parking area or parking deck. For each intersection, provide an approach volume for each link. For each parking facility, provide the total (incoming and outgoing) volume.

(2) These should be compatible with maximum service volumes utilized in Question 21 - Transportation.

D. If detailed modeling is required, estimate the worst-case, one-hour and eight-hour CO concentrations expected for each phase through buildout for comparison with the state and federal ambient air quality standards. Utilize methodology supplied or approved by FDER for making such estimates. Submit all air quality modeling input and output data along with associated calculations to support the modeling and explain any deviations from guidance. Provide drawings of site geometry and coordinate information for each area modeled. Show the location of the sources and receptor sites.

Modeling assumptions should consider federal, state and local government programmed link and intersection improvements with respect to project phasing. Any roadway improvements utilized in the model should be consistent with those used in Question 21 - Transportation. Provide verification of any assumptions in the modeling which consider such programmed improvements. It is recommended that air quality analyses be completed concurrently and in conjunction with the traffic analyses for the project.

E. If initial detailed modeling shows projected exceedance(s) of ambient air quality standards, identify appropriate mitigation measures and provide assurances that appropriate mitigating measures will be employed so as to maintain compliance with air quality standards. Submit further modeling demonstrating the adequacy of such measures.

Project: _____ Date of Review: _____

Reviewer: _____ Due Date for Comments: _____

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment	P
Project Information						
A. Site relative to the surrounding roadway network shown?	34					P
1. In map format?	34					P
B. Project phasing shown?	38					
1. Single phase project?	38					
2. Multiple phase?	38					
C. Proposed buildout year(s) of project phase(s) identified?	34					P
D. Development defined in acceptable manner for each phase of implementation?	47					P
1. Number of dwelling units (DUs) for residential land uses?	47					
2. Square feet (SF or GLSF) for commercial, office, retail, industrial and governmental land uses?	47					
E. Acceptable study area limits identified?	34					P
1. Critical roadway segments identified?	34					P
2. Critical intersections identified?	34					P
Data Collection and Existing Conditions						
A. Stated how data on existing conditions will be collected?	38					P
1. Acceptable data sources identified?	38					P
2. Acceptable locations and durations for traffic data collection identified?	39					P
a. Three consecutive days for 24-hr counts in urban locations?	40					
b. Five consecutive days in rural areas?	40					

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment	P
Data Collection and Existing Conditions (cont'd)						
(A.) 3. Measures identified for collecting transit, bicycle and pedestrian volumes and facilities info?	39					P
4. TMOs, TDMs and other special considerations appropriate to analysis identified?	39					P
B. Measures included to account for previously adopted development agreements including other DRIs?	40					
C. Department Work Program (WP) or TIP projects used in existing conditions analysis?	39					P
1. Project(s) listed in first three years of the WP/TIP?	39					
2. Funding source(s) identified?	39					
D. Traffic characteristics to be used in the analysis identified?	70					
1. Each characteristic within range accepted by Department for facility and area type?	71 73					
Project Approach						
A. Site impact analysis to use primarily manual calculation mechanisms?	36 42					P
1. Manual approach appropriate for project scale and location?	42					
2. Acceptable methodology described for determining future year roadway network volumes?	42					
a. Growth rates reasonable based on historical and current area development activity?	43					
B. Site impact analysis to use computer-based calculation mechanism?	36					P
1. Latest FSUTMS model for the area to be used?	36					

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment	P
Project Approach (cont'd)						
(B.) 2. Project site extracted as separate TAZ?	59 68					
3. Zdata files for project TAZ appropriate?	68					
4. Buildout year(s) of project coincidental with future years of the approved FSUTMS model?	36					
a. If not, acceptable methodology proposed for determining interim year conditions?	44					
5. Described measures for project level validation of the model?	69					
a. Will local roadways need to be added to analyze traffic behavior at project level?	69					
C. Any transportation network improvements not included in first three years of the WP or TIP proposed in future year network conditions?	39					P
1. Listed improvements included in MPO's adopted long-range plan?	39					
2. Listed improvements consistent with LGCP Transportation Element for year(s) shown?	40					
3. Listed improvements consistent with other recent Department-approved plans (i.e., action plans, master plans, MISs, AISs)?	40					
D. Provided source for seasonal and, if appropriate, model output conversion factors from the Department to derive AADT volumes?	70					

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment	P
Trip Generation						
A. Trip generation rates based on ITE: *Trip Generation* (latest edition) data?	47					
1. If land use under reported in ITE: *Trip Generation* manual, is acceptable alternative means of determining project trip generation characteristics identified?	50					
B. Proposes to analyze highest hour of project + adjacent roadway traffic?	51					
C. Internal trip capture characteristics proposed?	52					
1. Internal capture rates reasonable, based on proposed land uses and location?	52					
D. Pass-by trip characteristics assumed?	54					
1. Pass-by rates reasonable, based on proposed land uses and location?	54					
E. Means of determining truck/heavy vehicle volumes described?	74					
F. If using a model-based trip generation method, prepared to show TAZ maps and project Zdata files?	59					
Trip Distribution						
A. If using a manual methodology, proposed a method for trip distribution?	61					
1. Method acceptable, based on proposed and other area land uses?	61					
2. Site traffic trip length curve and average trip length data provided?	63					
B. If using a computer model methodology, is the number of model produced trips to be checked against the number of manually estimated trips for the site?	60					

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment	P
Trip Distribution (cont'd)						
(B.) 1. Expressed understanding of documentation requirements for average trip length, friction factors or trip length frequency?	64					
2.. External/internal trip assumptions documented?	57					
Mode Split						
A. Split of vehicle trips to alternate travel modes proposed?	66					
B. Documentation supporting mode split provided?	66					
Trip Assignment						
A. Will show both daily and peak-hour assignments for each project phase?	68					
B. If proposing to use an FSUTMS model assignment procedure, is the applicant prepared to show trip assignments, by purpose, for each phase of the project?	69					
C. If using FSUTMS assignment procedure, is single assignment method proposed for calculating background traffic volumes?	69					
Analysis Procedures						
A. Identified acceptable minimum LOS standard for study area roadway links?	78					
B. Identified tools for performing LOS determinations?	80					
1. Tools appropriate to the types of facilities analyzed?	80					
2. Department-approved tools identified?	82					
a. Location(s) of possible queue analyses identified?	96					
C. LOS for each critical roadway segment and intersection by phase?	80					

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment	P
Other Considerations						
A. Recognized need to adhere to Department standards for SHS access controls?	96					
B. Applicant aware that improvements on SHS facilities subject to the Department's maximum number of lanes policy?	88					
C. Applicant aware that any project phase depending upon an approved IJR/IMR shall not be approved until request approved?	107					
1. IJR/IMR such approval request cannot be initiated until at least 45 days following the issuance of a Development Order?	107					
D. Applicant indicated the need to adhere to Department Driveway Separation Standards?	94					
E. Applicant defined method to determine left-turn queues at signalized intersections?	96					

P = Preliminary Response expected as part of Applicant's Transportation methodology Meeting Information Submittal.

Project: _____ Date of Review: _____

Reviewer: _____ Due Date for Comments: _____

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
A. Adequate explanation of existing conditions data collection and analysis procedures for Section A review?	38 77				
B. Adequate discussion of trip generation data, assumptions and methods provided for Section B review?	47				
C. Adequate discussions and analysis results for each project phase for Section C review?	38				
D. Adequate documentation for each project phase regarding forecasting and analysis of background daily and peak-hour traffic distribution and assignment for Section D review?	42 75				
1. Assignment of background traffic, by phase, graphically depicted?	42				
E. Adequate documentation for each project phase regarding distribution and analysis of daily and peak-hour traffic volumes for Section E review?	61 75				
1. Project trips graphically depicted for each project phase?	67				
2. Percentage of project traffic in traffic stream at buildout documented?	68				
3. Project study area boundary maintain adherence to study "significantly impacted" SHS facilities requirement?	34				
F. Recommended impact mitigation improvements, including TSM and alternate mode improvements, discussed and analyzed in sufficient detail for Section F review?	87 91				
G. Adequate discussion and graphics describing internal project traffic circulation and access strategies for Section G review?	92 105				

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
H. Adequate discussion of project's contribution to designated transportation corridor development for Section H review?	88				
I. Sufficient discussion of project impacts on public transportation facilities for Section I review?	89				

Project: _____ Date of Review: _____

Reviewer: _____ Due Date for Comments: _____

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
Section A: Existing Conditions					
A. (Reference Section E response) Study area boundaries adjusted, if necessary, to include all SHS/FIHS segments and intersections where project traffic is five percent or more of adopted minimum LOS volumes?					
B. Existing conditions adequately shown using Map J or in a table?					
1. AADT shown?					
2. Peak-hour directional trips shown?					
3. Existing segment and intersection volumes and LOS and maximum LOS volumes shown?					
a. LOS standards exceeded?					
C. Traffic characteristic (K, D, facility type, laneage, traffic composition) assumptions stated?					
1. Within accepted ranges per MLOU[a]?					
D. Planned and programmed transportation network improvements identified?					
1. Agency documentation provided which substantiates project(s)' status?					
E. Data collection and analysis performed per MLOU[1]?					
F. Reviewer performed spot verification of roadway and intersection volumes and LOS analysis assumptions to confirm findings?					

[1]MLOU, if prepared, or as discussed, in Transportation Methodology Meeting

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
Section B: Trip Generation					
G. Trip generation projections by land use and phase provided?					
H. Trip generation calculations performed per MLOU?					
I. Reviewer performed spot verification of trip generation rates, by land use, to confirm phase and project totals?					
Section C: Internal/External Split by Phase					
A. Internal/external project trips calculated using internal capture and pass-by characteristics per MLOU?					
1. Master Plan map depicting internal circulation to support internal capture shown?					
B. Reviewer performed spot checks of project-based external trips applying approved and documented internal capture and pass-by trip rates to project trips shown in Section B?					
Section D: Projections					
A. Forecasts of total peak-hour trips, with and without project, identified by phase?					
B. Distribution methodology described and assumptions fully documented?					
C. For computer-based distribution method, has FSUTMS model validation or modification at project level documented?					
D. Trip distribution method shown per MLOU?					
E. Reviewer performed random spot checks of forecasts per analysis method used?					
1. For manual calculation analysis, approved growth rates per year applied to existing traffic volumes?					

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
Section D: Projections (cont'd)					
(E.) 2. For model-based analysis, future year ZDATA files reviewed for reasonableness and inclusion of other development?					
F. Proper documentation provided for any new transportation system improvements reflected in the future year(s) network?					
G. Maps or tables provided showing total traffic with and without the project, by development phase?					
Section E: Development's Trip Assignments					
A. Assignment of AADT project trips, by phase, to surrounding transportation network performed?					
1. Assignment also performed at directional peak-hour level?					
B. Comparison of average trip length for project and no-project scenarios performed?					
C. Reviewer verified that project trip assignments account for 100 percent of external project trips, as documented in to Sections B and C responses?					
D. If splits to alternative modes assumed, supporting documentation from service agencies been included?					
1. Service feasibility verified?					
2. Auto occupancy adjustment factors by trip purpose verified?					
E. For model-based assignment methods, full documentation of manual model adjustments provided?					
F. LOS for regionally significant roadways' segments, SHS/FIHS facilities and critical intersections calculated, with and without project?					
G. Trip assignments and LOS analyses performed per MLOU?					

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
Section E: Development's Trip Assignments (cont'd)					
H. Maps or tables provided which summarize LOS by phase, with and without project?					
I. Merge, diverge, weaving and ramp queuing analyses performed for study area freeway segments?					
J. Reviewer performed spot checks of LOS analyses to verify appropriateness of analysis technique and accuracy of reported results?					
Section F: Recommended Road and Intersections' Improvements					
A. Transportation system improvements which will result in acceptable LOS on SHS and FIHS facility segments identified?					
1. Improvements been identified for each project phase?					
2. Improvements include measures other than addition of roadway laneage or new roadway facilities?					
a. Documentation from appropriate agency(ies) included to verify improvement feasibility?					
3. Improvements adding highway network lane-miles adhere to SHS/FIHS maximum laneage policy?					
B. Measures required to mitigate for increased percentage of trucks in the traffic stream from project?					
1. Curb radii modifications at critical intersections required?					
2. Intersection left-turn and right-turn channelization modifications required?					
C. Proposed improvements to SHS or FIHS facilities avoid noise impacts to study area segments or need to study potential noise impacts and associated mitigation for noise-sensitive sites adjacent to these segments?					

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
Section F: Recommended Road and Intersections' Improvements (cont'd)					
(C.) 1. Measures for dealing with noise impacts adequately addressed?					
D. Proposed improvements avoid have a negative impact on the air quality conformity status of the overall network?					
1. Alternative improvement scenarios proposed if air quality conformity cannot be maintained?					
2. Detailed air quality modeling required on study area segments during project implementation?					
E. Identified where additional rights-of-way including intersection flareouts, may be required for proposed improvements?					
Section G: Access and Median					
A. Number and general location of proposed points of access identified?					
1. Access points conform to Department access and driveway spacing standards for SHS/FIHS?					
B. Joint or unified access with neighboring nonproject parcels evaluated?					
C. Reasonable connections between internal project parcels proposed to provide complete project traffic circulation system and minimum demands for external driveways or access points?					
D. Can proposed access points be relocated to side (non-SHS) streets?					
E. Maps provided which show existing median cuts and driveways?					
F. Proposed location(s) of access points relative to existing (or proposed) median cuts require signalization?					

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
Section G: Access and Median (cont'd)					
(F.) 1. Potential signal locations conform to Department signal spacing standards for the SHS facility type and area type?					
G. Partial access points proposed?					
H. Reviewer independently verified Access Management Standards applied in the study area are appropriate for facility type, area type and laneage of the roadway segment?					
Section H: Corridor Designation					
A. Commitment to assisting Department or local government in establishment of LGCP-designed transportation corridors provided?					
1. Measures to be taken in promoting corridor development described?					
2. ROW donation along corridors discussed?					
Section I: Public Transit					
A. If mode split assumed per Section E response, measures to be incorporated in development's design and implementation supporting these mode choices identified?					

Project: _____ Date of Review: _____

Reviewer: _____ Due Date for Comments: _____

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
Concerns Related to Approved Land Uses					
A. Approved land use categories intensities and densities comparable to Question 21 of the DRI-ADA analysis?					
B. Approved land use intensities and densities support internal capture, pass-by mode splits and project internal/external characteristics of DRI-ADA Question 21 analyses?					
1. Is change(s) in project traffic assignments reasonable given land use changes?					
C. Department LOS standards achieved on SHS segments, at each development phase, with improvements proposed under adopted land use scenario(s)?					
D. If public transit, TDMs, TCMs or TSM measures proposed, remain feasible under approved land use scenario(s)?					
E. Internal traffic circulation plan and access points revised to reflect approved land use scenario(s)?					
Concerns Related to SHS Access and LOS Standards					
A. LGDO provide for phased implementation of full site access contingent upon project-generated background traffic volumes?					
B. LGDO provide estoppel procedures for suspending project implementation should LOS on SHS roadway segments fall below minimum standards as a direct result of project traffic?					

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
Involvement in Project Monitoring					
A. LGDO mandate submittal of a periodic Project Monitoring Report?					
1. LGDO identify Department as a reviewing agency for the Project Monitoring Report?					
2. Project Monitoring Report call for annual LOS, noise and air quality determinations for significant impact area SHS facilities?					

If the Department Reviewer believes the LGDO fails to adequately ensure the integrity of the SHS, the District's Director for Planning and Programming should be notified immediately. Objections to conditions of the LGDO must be appealed in writing to DCA within 45 days of the issuance of the LGDO. Objections expressed by the Department after this 45-day appeal period have no legal standing with DCA, RPC or the applicant.

Project: _____ Date of Review: _____

Reviewer: _____ Due Date for Comments: _____

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
A. Trip generation rates determining project-to-date and total project impacts consistent with rates and trip generation procedures identified in DRI-ADA and LGDO?					
B. Internal capture and pass-by trip characteristics used in reporting of project-to-date conditions appropriate for land use mix and locations currently in development?					
C. Is the distribution of project traffic on the transportation network consistent with the methodology approved for use in the DRI-ADA analysis?					
D. Background traffic volume annual growth rates consistent with forecasts used in DRI-ADA analyses?					
E. LOS for project area SHS segments determined?					
1. Field counts collected to record current project and without-project volumes?					
2. LOS analysis procedures consistent with techniques used in DRI-ADA response?					
3. Facility type, area type and laneage of SHS segments analyzed reflect current year conditions?					
F. Status of projects within the project impact area identified as programmed or under construction in the DRI-ADA updated?					
G. Other transportation network improvements affecting use of project impact area SHS facilities identified?					
H. Status of LGDO-mandated improvements to be undertaken by the developer provided?					
1. Status consistent with the amount of project development that has occurred per the LGDO?					

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
I. Noise and air quality data collected and consistency with Department criteria, as set forth in the LGDO, ascertained?					
J. All Department review comments detailed and transmitted to RPC Coordinator for transmittal to the developer?					
1. Duplicate set of Department comments transmitted directly to the developer (or its authorized representative)?					

Review to be performed by District Permits Engineer
or designated representative

Project: _____ Date of Review: _____

Reviewer: _____ Due Date for Comments: _____

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
A. Appropriate access management classification of affected SHS roadway segment identified?					
B. Appropriate access management standards for median openings, connection spacing, corner clearance and signal spacing identified?					
C. If exceptions to standards proposed, detailed supporting documentation provided?					
D. Reviewer evaluated effect of number and location of proposed driveways/access points on adjacent SHS roadway segment(s) operation?					
1. Sufficient information on number of lanes, geometric conditions and internal site circulation provided for evaluation?					
E. Benefit of turn lanes at project driveways/ access points on adjacent SHS roadway segment operations examined?					
F. All pertinent issues considered in the access management evaluation?					
1. Queues?					
2. Restricted driveway turning movements?					
3. Stopping sight distance?					
4. Intersection sight distance?					
5. Channelization?					
6. Driveway width and turn radii?					
7. Pedestrian conflicts?					
8. Sidewalk location on driveways?					
9. Driveway locations?					

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
10. Driveway/Roadway transitions (grade changes)?					
11. Vehicular conflict points?					
12. Delineation of Roadways?					
13. Width of Roadways?					
14. Potential for high speeds especially in close proximity to buildings?					
15. Relationship of internal circulation facilities to public street classifications?					
16. Sufficiency of driveway throat length?					
17. On-site circulation?					
18. Pedestrian concerns?					
19. Placement of fire lanes, loading docks, waste removal?					
20. Access treatments for out parcels?					
21. Driveway corner clearance?					
22. Shared access among commercial developments, including alternate access roads sometimes referred to as “fringe roads” or “backage roads”?					
23. Internal circulation designed around access points?					

Approval of the Conceptual Agency Access Review Submittal does not constitute permit approval.

Project: _____ Date of Review: _____

Reviewer: _____ Due Date for Comments: _____

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
A. Proposed changes result in transportation impact reductions from original approved DRI?					
B. Background traffic increased beyond original analysis projections for phase(s) or buildout years?					
1. Increase sufficient for classification of application as Substantial Deviation?					
2. Increases raise LOS issues on these links?					
a. Willing to consider mitigation on LOS-deficient links to avoid Substantial Deviation classification?					
C. Time extensions for application cumulatively exceed seven years extension for project?					
D. Reductions in land use densities proposed?					
1. Reductions in densities result in less internal capture and lower pass-by capture rates, offsetting reductions in transportation impacts?					
E. Same methodologies and assumptions used in analyzing transportation, noise and air quality impacts as used in initial ADA submittal?					
F. Proposed changes constitute new development?					
1. Proposed changes constitute minor changes only?					
G. Original ADA authorization data shown?					
1. Original ADA authorized after January 20, 1987 and prior to March 23, 1994?					
a. Opted to utilize the mitigation options in Rule 9J-2.0255, FAC?					

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
2. Authorized after March 23, 1994 or one with significant amounts of new development?					
(G)(2) a. Mitigation consistent with local concurrency management system regulations and mitigation provisions in 9J-5.045 FAC?					
H. Qualifies as a substantial deviation and involves new or modified interchange?					
1. Re-evaluation of IJR/IMR per *Interchange Request Development and Review Manual* criteria?					
2. Need to adhere to IJR/IMR methodology and review process as detailed in *Interchange Request Development and Review Manual* acknowledged?					
I. Reviewer consultation with RPC and/or DCA to reach consensus on specific methodologies to be applied during the review of the NOPC performed?					

CHAPTER 2. INSTRUCTIONS FOR LOCAL GOVERNMENT COMPREHENSIVE PLAN (LGCP) AMENDMENT REVIEWS

Site impact analyses and reviews at the local government level are normally limited to Local Government Comprehensive Plan (LGCP) amendments. The Department Reviewer should pay particular attention to Future Land Use Map (FLUM), including DRI-related Comprehensive Plan Amendments.

2.1. Local Government Comprehensive Plan (LGCP) FLUM Based Amendments

It should be noted at the outset that FLUM-based amendments vary from standard site impact assessments in one very important respect: they do not entail analysis of specifically defined land uses. While a FLUM amendment may be initiated to enable a particular development to occur, the LGCP FLUM uses broadly defined land use categories. Primary and secondary land uses permitted within a given FLUM land use category vary among different LGCPs.

For an applicant to perform required impact analyses for a proposed FLUM amendment, it may become necessary to convert the broad land use descriptions into manageable units. This is most often true for commercial and office land uses where square footages are calculated from gross acreages using Floor Area Ratios (FARs). The FAR provides an estimate of building square footage, recognizing that most of the site is used for parking other green space requirements. The LGCP Future Land Use Element often provides maximum FARs for the affected general land use categories. A typical range for FARs is 0.25 to 0.35. Maximum densities and intensities for permitted land uses within each land use category are also usually adopted as part of the LGCP Future Land Use Element. The maximum FARs, densities and intensities permitted for a given land use category should form the basis of all analyses.

By rule, the Department Reviewer is normally given less than 30 days to review LGCP amendments. The Department Reviewer should focus on the general issues, outlined in the LGCP Amendment Review Checklist 1, when conducting a FLUM amendment impact evaluation process. Checklist responses and the Reviewer's comments should then form the basis of the Department's formal Objections, Recommendations and Comments (ORC) Report response.

2.2 Other LGCP Amendments

While not a specific site impact review, the Department Reviewer should note that text amendments to an LGCP can and often do result in future site impacts. Of particular importance are text changes to the Future Land Use Element, the various transportation-related elements, Intergovernmental Coordination Element (ICE) and the Capital Improvements Element (CIE). Checklists for text amendment reviews are not included in this Handbook because of the very wide range of changes these amendments may encompass. However, the Reviewer should pay specific attention to new or amended language which may affect the following Department interests:

- Level of Service standards.
- Projects listed in the most recent Department-adopted Work Program.
- Department traffic characteristics standards (K-factors, D-factor, Peak-to-Daily ratio, seasonal conversion factors, etc.).
- Changes or increases in allowable development densities or land uses not consistent with those originally adopted in the Future Land Use Element.
- Changes to the CIE which would result in removing planned transportation improvements already incorporated into LGCP Transportation Element(s) analyses, local FSUTMS based model assumptions or Concurrency Management System.

Project: _____ Date of Review: _____

Reviewer: _____ Due Date for Comments: _____

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
A. Study area boundaries established to include all significantly impacted SHS segments under proposed FLUM amendment land use scenario, including those located outside the jurisdiction of entity pursuing amendment?	34				
1. All FIHS segments identified?	34				
B. Transportation impacts for Existing FLUM adequately defined for comparison use in review?	147				
1. Land use scenario defined for existing FLUM category which has mix, densities and intensities of primary and secondary permitted land uses representing a worst-case scenario?	147				
a. Assumptions fully documented?	147				
b. Trip-generating characteristics of the Existing FLUM Land Use Scenario shown?	47				
2. Acceptable method employed to determine distribution of trips for Existing FLUM Land Use Scenario?	61				
a. All internal capture and internal/ external split assumptions properly documented?	53 54				
3. Existing SHS segments' LOS shown?	77				
a. Department-approved methods used to perform the LOS analysis?	80				
b. Department and LGCP LOS standards used to determine LOS?	78				
4. LOS determined for SHS segments for existing FLUM Land Use Scenario?	77				
C. Maximum potential land uses permitted under the proposed FLUM Amendment identified?	147				

Evaluation Criteria	Pg. Ref.	Y	N	N/A	Comment
D. Future land use scenario defined with reasonable mix, densities and intensities of permitted land uses representing a worst-case scenario?	147				
1. Assumptions used in defining FLUM Amendment Land Use Scenario fully documented?	147				
E. Department-approved methods used for trip generation, distribution and assignment based on FLUM Amendment Land Use Scenario?	47 75				
1. Adequate documentation provided to permit review of the analyses?	53 54				
F. LOS been determined for SHS segments under FLUM Amendment Land Use Scenario?	77				
1. Additional improvements to SHS segments required, beyond those identified in adopted long-range plans?	87				
2. Commitments to providing additional improvements made as a condition of FLUM Amendment approval?	91				
G. FLUM Amendment and transportation impacts consistent with the Florida Transportation Plan and other Department-adopted approval plans, policies, standards and guidelines, rules and procedures?	40 7				
H. FLUM Amendment provide for sufficient additional local transportation infrastructure to preserve functional integrity of impacted SHS segments, preventing a shift to their serving local trip needs?	88				
I. Proposed FLUM Amendment impact existing or proposed public transit service, as set forth in local agency's Transit Development Plan?	89				

CHAPTER 3. INSTRUCTIONS FOR OTHER TYPES OF REVIEWS

There are several types of site impact reviews which the Department undertakes on a more infrequent basis than the reviews described in Chapters 1 through 3, yet are equally important. This chapter discusses five of these review types for which there are special considerations.

- Campus Master Plans (CMPs)
- Statewide Hazardous Waste Facility Siting Act Applications
- Military Base Reuse Plans
- Interchange Justification and Modification Reports (IJR/IMR)
- Expedited Permitting Process

3.1 Campus Master Plans

Campus Master Plans (CMPs) are administered by the Board of Regents (BOR) and, at the present time, are a statutory requirement for each of the ten state universities. The Department maintains a statutory review position on CMPs. A CMP review is not a true site impact review. Rather, it is comparable to an LGCP or EAR review since each CMP contains a Transportation Element and associated goals, objectives and policies. However, the Department Reviewer may be asked to participate in the subsequent creation and execution of a Campus Development Agreement (CDA). The CDA, and not the CMP, represents the Department's opportunity to evaluate and mitigate for potential off site impacts created by campus development.

The Statute which mandates the CMP/CDA process recognizes only the host community (e.g., the local government jurisdiction) and the affected State University as parties to the CDA. The Department Reviewer will often become involved through intergovernmental coordination with the local government, particularly when the impact context area is defined to include a SHS or FIHS facility.

The CDA review is similar to that undertaken for a DRI. The Department Reviewer should refer to the instructions for DRI-ADA reviews provided in Chapter 2 of this Unit for clarification of the general issues to be considered. For a number of reasons, there are special circumstances particular to CDAs which do not directly correlate to the DRI review process. These special circumstances are noted below.

- The CMPs and CDAs, particularly the level of detail related to the site impact analysis, are somewhat general since the plans and enabling legislation (e.g., both Statute and Administrative Rule) are relatively new.
- The Transportation Impact Area and the Context Area used in determining all other impacts represented in the plan are not usually the same. The Department Reviewer should work with the local government and the University/BOR to establish a proper and equitable Transportation Impact Area prior to CMP review.
- To adequately assess potential CMP transportation impacts, information on numbers of on-campus residential units, employment numbers and full-time student equivalency (FTE) rates will need to be acquired from other elements of the CMP.
- To adequately assess potential transportation impacts, CMP provisions for future increases in parking accommodations should be reviewed.
- Peak-hour trips vary by campus and should be supported by data from the University if not consistent with ITE *Trip Generation* rates. The same is true for alternative trip generation rates, peak hour to daily ratios and mode split factors which are normally supplied by the university.
- The CDA will normally cover a period of not less than five years and more likely ten years.
- The authorizing statute for CDAs only mandates that the Universities pay for and or mitigate for what are deemed significant impacts. A threshold of ten percent of adopted LOS maximum service volumes is stated in the Statute but this does not necessarily mean that the impact analysis is limited to this. The threshold for impact mitigation has not yet been consistently upheld or applied on the CDAs and should be negotiated.
- Mitigation alternatives are flexible and do not preclude the local government from pipelining improvements. The Department Reviewer is encouraged to provide recommendations to the local government, particularly with regard to SHS and FIHS facilities impact mitigation.

Because the Department has no formal role in CDA review, the Department Reviewer should take advantage of every opportunity, whether for courtesy or

formal review, to express all transportation issues which the Department feels should be addressed by the BOR through the CMP and subsequent CDA.

In short, the Department Reviewer is encouraged to seek involvement though the local government on CDA issues such as the assessment of impacts and the mitigation alternatives being explored.

3.2 Statewide Multipurpose Hazardous Waste Facility Sitings

This is not a site impact analysis review. The hazardous waste facility siting application should be reviewed for potential impacts on Department-owned rights-of-way. The Department Reviewer should consider those items outlined in Chapter 3 of this Unit. Coordination with other Department divisions, such as EMO, safety and materials and soils, is encouraged for this review.

3.3 Military Base Reuse Plans Site Impact Analysis Review

The Department Reviewer should review Military Base Reuse Plans as they would comprehensive plan amendments, a process detailed in Chapter 3 of this Unit. The FLUM-based amendment checklist is appropriate for use in this review. In the event that a reuse plan constitutes or mandates a DRI type review, the Department Reviewer should consult the review procedures outlined in Chapter 2 of this Unit.

3.4 Interchange Justification and Modification Reports (IJR/IMR)

IJR/IMR issues are discussed in detail in the Department's *Interchange Request Development and Review Manual* (IRDEM). When proposed DRIs or other major site developments are located at or near major, there is the potential for an IMR or IJR to become necessary. The Department Reviewer should not consider these reports to be a site impact analysis or review but should have some familiarity with their importance and place in the overall transportation planning process.

The first effort to be undertaken by the Department Reviewer involves a determination as to whether or not an IJR/IMR report is required. The following should be considered when making this assessment.

- Number of Interchange Entrance/Exit Points. Are the total number of interchange entrance and exit points at any interchange changed?
- Location of Entrance/Exit Points. Did the location of one or more interchange entrance or exit points change significantly?
- Ramp Segment Laneage. Is the ramp segment laneage increased at the ramp termini with the mainline?

If the answer to these questions is in the affirmative, the Department Reviewer should initiate the IJR/IMR process, adhering to the procedures set forth in the Department's RDRM.

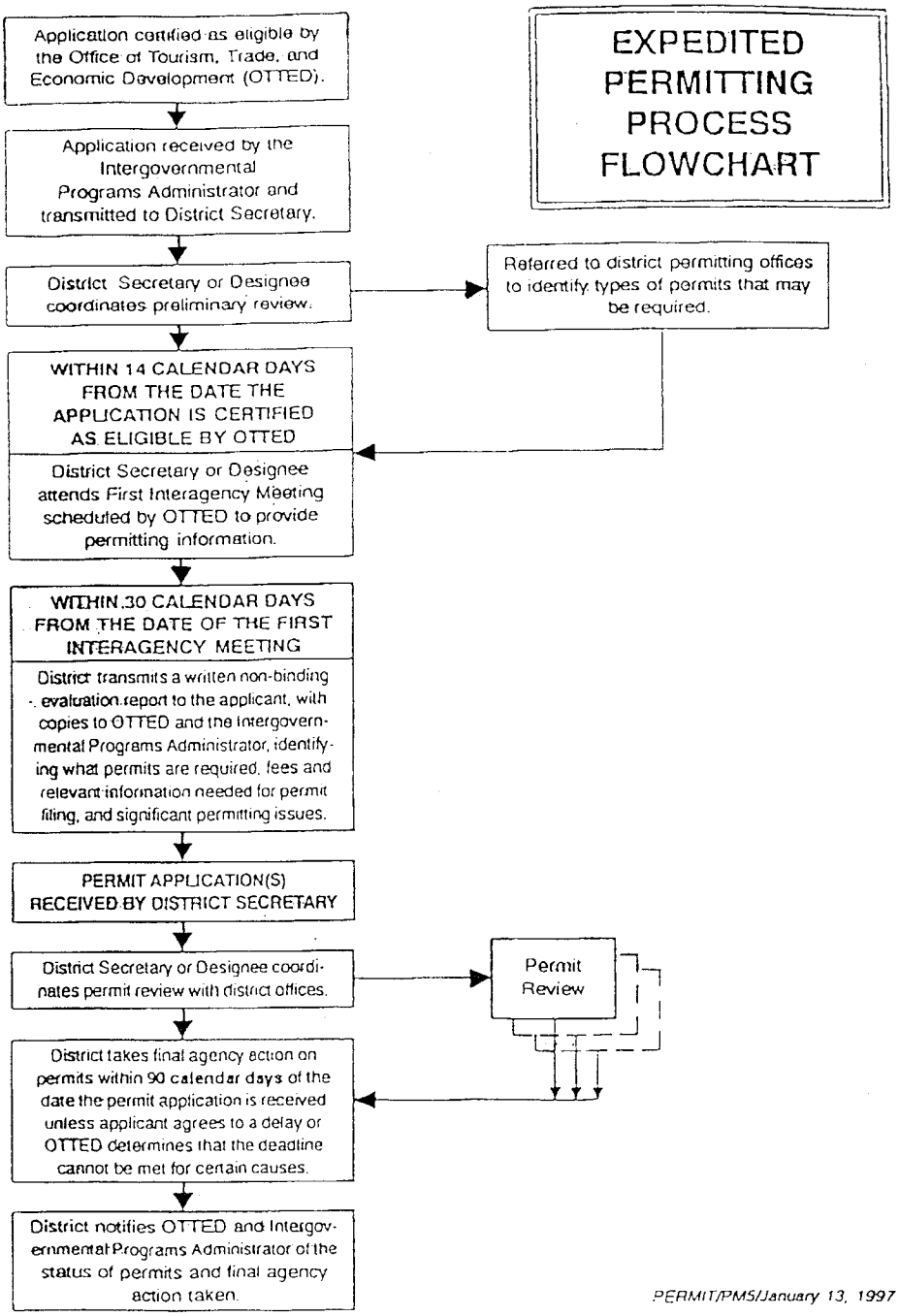
The checklists for review of IMR- and IJR-related submittals contained in the IRDEM are an excellent reference for the Reviewer. They should be utilized for all IJR/IMR reviews.

3.5 Expedited Permit Process

During 1996, the State of Florida enacted legislation which is intended to promote employment development, in part, through a coordinated, expedited permit review and approval process. All state agencies must adhere to this process. A flow chart of the proposed process is shown on the next page.

At the present time, the Department has not established the policies and procedures which will govern the Department's participation in this process. Appropriate information will be distributed to District personnel once these policies and procedures have been determined.

Figure 49. Proposed Process Flow Chart



APPENDIX A - DEFINITIONS AND ABBREVIATIONS

DEFINITIONS

The following definitions apply to those terms referenced in this Handbook. It is intended to provide the reader with a clearer description of the terminology that may be utilized when conducting an analysis or review of site impacts and transportation planning principles in general.

ACCELERATION LANE is a speed-change lane, including taper, for the purpose of enabling a vehicle entering a roadway to increase its speed to a rate at which it can safely merge with through traffic.

ACCESS is the ability to enter or leave a public street or highway from an abutting private property or another public street.

ACCESS MANAGEMENT is the control and regulation of the spacing and design of driveways, ramps, medians, median openings, traffic signals and intersections on arterial roads to improve safe and efficient traffic flow on the road system.

ACTION PLAN is a multimodal study of techniques for providing mobility solutions in non-interstate corridors on the Florida Intrastate Highway System (FIHS). These are more general in scope than interstate master plans, but serve a similar role in providing guidance for decision-makers when considering alternatives.

ADJUSTED SATURATION FLOW RATE is the saturation flow rate multiplied by factors that adjusts a capacity or service flow rate from one representing an ideal or base condition to a prevailing one. In Florida, an adjusted saturation flow rate of 1,850 passenger cars per hour of green per lane (pcpghpl) was used in developing the statewide Level of Service (LOS) tables.

ALTERNATIVES ANALYSIS is the evaluation of transportation strategies intended to serve as viable alternatives to satisfy transportation needs.

AMERICANS WITH DISABILITIES ACT (ADA) AND FLORIDA AMERICANS WITH DISABILITIES ACCESSIBILITY IMPLEMENTATION ACT (FLADA), Public Law 101-336 and s. 553.501-513, FS, respectively, is a comprehensive endeavor to address the problem of discrimination against individuals with disabilities. The Florida act incorporates the accessibility requirements of the federal act. Both acts relate to transportation in terms of access for disabled persons.

ANNUAL AVERAGE DAILY TRAFFIC (AADT) is the total volume passing a point or segment of a highway facility, in both directions, for one year, divided by the number of days in the year.

ANNUAL AVERAGE WEEKDAY TRAFFIC (AAWDT) is the total volume passing a point or segment of a highway facility, in both directions, for weekdays only for one year, divided by the number of weekdays in the year.

"A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS" (text) is the design guidance on the criteria determining highway design, vertical and horizontal alignment, cross section elements, at-grade and grade intersections, and interchanges, published by the American Association of State Highway and Transportation Officials (AASHTO), 1994. Commonly known as the "Green Book".

APPLICATION FOR DEVELOPMENT APPROVAL (DRI-ADA) means the analyses required to be prepared and submitted by a developer, property owner, or applicant for Development of Regional Impact (DRI) Review, pursuant to s. 380.06, FS. The ADA is a form adopted by rule by the Florida Department of Community Affairs (DCA) to implement Rule 9J2-.045, FAC, the Transportation Uniform Standard Rule. Question 21 of the ADA consists of transportation analysis; Question 22 is air quality analysis. (Note: not to be confused with Americans With Disabilities Act, ADA).

AREA OF INFLUENCE means the geographical transportation network of state and regionally significant roadway segments on which the proposed project would impact a given standard for percentage of maximum service volume (MSV) or more of the adopted peak-hour LOS maximum service volume of the roadway, and the roadway is, or projected to be,

operating below the adopted LOS in the future. For Interchange Modification Reports (IMR), these areas must include one interchange upstream and downstream of the proposed interchange and the area of influence defined in the DRI, as applicable.

AREAWIDE LOS means a standard that may be established for facilities with similar functions serving common origins and destinations within one or more designated transportation concurrency management areas, pursuant to Rule 9J-5.0055(5), FAC, and must be maintained as a basis for the issuance of development orders and permits.

ARRIVAL TYPE (AT) is a general categorization representing the quality of signal progression in an approximate manner. The *Highway Capacity Manual* (Chapter 9) defines six arrival types for the dominant arrival flow ranging from AT-1 (worst) to AT-6 (ideal).

AVERAGE DAILY TRAFFIC (ADT) is the average number of vehicles crossing a specific point on a roadway on any given day.

AVERAGE TRAVEL SPEED means the average speed of a traffic stream computed as the length of a highway segment divided by the average travel time of vehicles traversing the segment, in miles per hour.

BACKGROUND TRAFFIC refers to an estimate of future traffic within the vicinity of the proposed development, without the site development traffic, but with existing traffic adjusted for expected growth, and addition of traffic from major vested projects.

BICYCLE PATH is any road, path, or way that is open to bicycle travel, which road, path, or way is physically separated from motorized vehicular traffic by an open space or by a barrier and is located either within the highway right-of-way or within an independent right-of-way.

CAMPUS MASTER PLAN is the plan to be developed by each university under the Board of Regents pursuant to s. 240.155, FS, and implemented by Rule 6C-21, FAC. The purpose of the plan is to assess the potential impact of campus development on public facilities and services and natural resources, of host local governments. Each plan must address the need for, and plans for provisions of, roads, parking, public transportation, solid waste, drainage, sewer, potable water and recreation and open space during the coming ten to 20 years.

CAPACITY means the maximum rate of flow at which persons or vehicles can be reasonably expected to traverse a point or uniform segment of a lane or roadway during a specified time period under prevailing roadway, traffic, and control conditions; usually expressed as VPH or persons per hour.

CATEGORICAL EXCLUSION (CE) is one of three classes of actions available for determining the type of environmental documentation required for a transportation project under the National Environmental Policy Act (NEPA). A project may be eligible for a CE if it has no significant impact on planned growth or land use, does not require the relocation of a significant number of people, no significant impact on natural, cultural, recreational, historic, or other resources, minimal impact on travel patterns, and does not have a significant noise, air, or water quality impacts.

CHANNELIZATION is the separation or regulation of conflicting traffic movements into definite paths of travel by traffic islands or pavement marking to facilitate safe and orderly movements of both vehicles and pedestrians.

CLASS OF ACTION DETERMINATION is the process required by the rules promulgated by the Council of Environmental Quality to implement the National Environmental Policy Act of 1969 (NEPA) for the determination of the type of environmental documentation needed for project development and whether a project could be categorically excluded from NEPA requirements.

CLEAN AIR ACT is 42 USC 7401 *et seq.*

CONCURRENCY, as used in growth management, is the requirement of s. 163.3180, FS, that public facilities and services needed to support development shall be available at the same time the impacts of such development will occur. Transportation facilities needed to serve new development shall be in place or under actual construction no more than three years after issuance of a certificate of occupancy or its functional equivalent.

CONCURRENCY MANAGEMENT SYSTEM (CMS) means the adopted procedures and/or process that the local government of jurisdiction for the development utilizes to assure that development orders and permits are not issued unless the necessary transportation facilities and services are available

concurrent with the impacts of development, consistent with Chapter 163, FS and Rule 9J-5, FAC.

CONSTRAINED ROADWAYS are roads on the SHS which the Department has determined will not be expanded by the addition of two or more through-lanes because of physical, environmental or policy constraints.

CONTROLLED-ACCESS FACILITY means a street or highway to which the right of access is highly regulated to maximize the operational efficiency and safety of the through traffic utilizing the facility. Owners or occupants of abutting lands and other persons have a right of access to or from such facilities, only where limited-access rights have not been acquired, and at such points and in such manner as determined by the Department.

CORRIDOR ACTION PLAN refers to a comprehensive planning process, detailing conceptual proposals illustrating and defining the development and improvement of new and existing multimodal transportation facilities and services to increase the capacity of a controlled-access roadway corridor to carry long-distance, high-speed through trips, and to improve urban mobility.

$\mathbf{D_{30}}$ is the proportion of traffic in the 30th highest hour of the design year traveling in the peak direction.

$\mathbf{D_{100}}$ is the proportion of traffic in the 100th highest hour of the design year traveling in the peak direction.

DEMAND VOLUME means the traffic volume expected to desire service past a point or segment of the highway system at some future time, or the traffic currently arriving or desiring service past such a point, usually expressed as VPH.

DEPARTMENT means the Florida Department of Transportation.

DESIGN CONCEPT means the type of facility identified by the project, e.g., freeway, expressway, arterial highway, grade-separated highway, reserved right-of-way rail transit, mixed-traffic rail transit, exclusive busway, etc.

DESIGN CONCEPT AND SCOPE as used in the description of planning activities means general agreement on the overall corridor alternative to be implemented, as compared to the detailed engineering and environmental analyses and design of specific alignment alternatives. The latter activities are covered in the Department's Project Development and Environmental (PD&E) process.

DESIGN SPEED is the maximum safe speed that can be maintained over a specified segment of highway when conditions are so favorable that the design features of the highway govern.

DESIGN HOUR is the 30th highest hour of the design year.

DESIGN HOUR FACTOR is the proportion of 24-hour volume occurring during the design hour for a given location or area.

DESIGN HOUR VOLUME (DHV) means the traffic volume expected to use a highway segment during the 30th highest hour of the design year, related to AADT by the K-factor, using the formula DHV = AADT x K_{30}.

DESIGN YEAR is the year for which the roadway is designed.

DEVELOPMENT OF REGIONAL IMPACT (DRI) means any development, which because of its character, magnitude or location, would have a substantial effect on the health, safety or welfare of citizens of more than one county, created by s. 380.06, FS, and implemented by Rule Chapter 9J-2, FAC. In order to determine which types of development are subject to DRI review, thresholds are established in Rule 28-24, FAC.

DIRECTIONAL DESIGN HOUR VOLUME (DDHV) is the traffic volume expected to use a highway segment during the 30th highest hour of the design year in the peak direction.

DIVERTED TRIP is a trip not new to a study area but utilizes a segment of the transportation system previously not being used to access a development site.

ENVIRONMENTAL ASSESSMENT (EA) is one of three class of action determinations available for determining the type of environmental documentation required for a transportation project under NEPA. An EA is required on a project when the significance of the environmental impact is not clearly established, when neither a Categorical Exclusion (CE) or EIS is appropriate, or when there is a need to determine the appropriate class of environmental document. The report documents the need for the action, the

alternatives considered, the preferred alternatives, and the impacts associated with the proposed action.

ENVIRONMENTAL IMPACT STATEMENT (EIS) is one of three class of action determinations available for determining the type of environmental documentation required for a transportation project under NEPA. The EIS documents the need for the project, the alternatives considered, the recommended alternatives and the impacts associated with th proposed action.

EVALUATION AND APPRAISAL REPORT (EAR) is the report of the local government to assess the success or failure of its adopted Local Government Comprehensive Plan (LGCP), including the validity of its projections, the realization of the goals and objectives and the implementation of the plan's policies, as required by s. 163.3191, FS, and implemented by Rule 9J-5.0053, FAC. The schedule for EAR submittals is detailed in Rule 9J-33, FAC.

EXCLUSIVE THROUGH LANES means highway lanes on controlled- or limited-access facilities which are physically separated by means of a barrier restricting random movements between these lanes and from other highway lanes and which provide for the high-speed movement of vehicles traveling through an urban or urbanized area.

FINDING OF NO SIGNIFICANT IMPACT (FONSI) is the document prepared by the Department's District Environmental Management Office upon completion of the EA (which see) process and appended to the EA, that summarizes all environmental impacts associated with the project, renders a statement of findings on all relevant impact categories, summarizes all environmental impacts associated with the project and summarizes the mitigation of impacts.

FLORIDA INTRASTATE HIGHWAY SYSTEM (FIHS) means an interconnected statewide system of limited-access facilities and controlled-access facilities developed and managed by the Department to meet special criteria and standards established for the FIHS. The system, is part of the SHS and is developed for high-speed and high-volume traffic movements. The system also accommodates HOVs, express bus transit and in some corridors, interregional and high-speed intercity passenger rail service.

FLORIDA QUALITY DEVELOPMENT (FQD) is the program created by s. 380.061, FS, and implemented by Rule 9J-28, FAC, to provide an alternative, expeditious, and timely review process for those DRIs that have been thoughtfully planned, that take into consideration the protection of Florida's natural amenities, that consider the cost to local government of providing services to a growing community, and that address the high quality of life Floridians desire.

FLORIDA STANDARD URBAN TRANSPORTATION MODEL STRUCTURE (FSUTMS) means the software developed by the Department for long-range urban area transportation modeling that is used in performing the required analyses to reach a conformity determination.

FLORIDA TRANSPORTATION PLAN (FTP) is the statewide, comprehensive transportation plan, required by s. 339.155, FS, to be updated annually. The FTP consists of a long-range component designed to establish long range goals to be accomplished over a 20- to 25-year period and to define the relationships between the long-range goals and short-range objectives and policies implemented through the work program.

FREE FLOW SPEED is (1) the theoretical speed of traffic when density is zero; or (2) the average speed of vehicles over an arterial segment not close to signalized intersections under conditions of low volume.

FUTURE LAND USE MAP (FLUM) represents those maps contained within each Local Government Comprehensive Plan (LGCP) depicting the future land use designations for all parcels within said jurisdiction. A request to amend this portion of the LGCP is referred to as a FLUM change request.

g/C is the effective green time to the signal's cycle length for a specific movement. The weighted g/C of an arterial is the average of the critical intersection through g/C and the average of the other intersections' through g/C. The weighted g/C takes into account the adverse impact of the critical intersection and the overall quality of flow for the arterial length.

GRAVITY MODEL is a trip distribution model which represents trip exchanges as a product of attractions and productions divided by an exponential function of travel costs, usually measured only by travel times.

HIGH-OCCUPANCY VEHICLE LANE (HOV) means highway or street lanes reserved for the use of HOV, commonly defined as vehicle occupancies of two or three persons.

HIGHLY REGULATED RIGHT OF ACCESS means strict access standards consistent with Department Rule Chapter 14-97 FAC assigned to a controlled-access facility of the FIHS by the Department in cooperation with the appropriate local government(s).

HIGHWAY CAPACITY MANUAL (HCM), Special Report 209, Third Edition, 1994, Transportation Research Board, is the authoritative source for the methodology for analyzing capacity and service volume for various types of highways and elements under differing conditions and is the standard for highway planning and design.

HIGHWAY CAPACITY SOFTWARE (HCS) analyzes signalized intersection and nonsignalized intersection capacity based on the *Highway Capacity Manual* as released by FHWA.

INTELLIGENT TRANSPORTATION SYSTEMS (ITS) (formerly IVHS - "Intelligent Vehicle Highway Systems") is a term meaning a system of technological innovations that develop or apply electronics, communications and information processing technologies to improve the efficiency and safety of surface transportation systems.

INTERCHANGE JUSTIFICATION REPORT (IJR) is the documentation submitted through the Department to FHWA to determine if a new interchange on an interstate is allowed.

INTERCHANGE MODIFICATION REPORT (IMR) is the documentation submitted through the Department to FHWA to determine if modification to an existing interchange on an interstate is allowed. A Turnpike IMR is known as "TIMR."

INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT (ISTEA) of 1991 means federal legislation authorizing funding for highways, highway safety, and mass transportation through fiscal year 1997. The ISTEA's stated purpose is "to develop a National Intermodal Transportation System that is economically efficient, environmentally sound, provides the foundation for the Nation to compete in the global economy and will move people and goods in an energy efficient manner."

INTERNAL CAPTURE RATE is the percentage of the total number of trips from a site that are contained within on-site circulation systems only.

INTERRUPTED FLOW is a category of traffic facilities having traffic signals, STOP or YIELD signs, or other fixed causes of periodic delay or interruption to the traffic stream.

ITE TRIP GENERATION is the most widely use reference source published by the Institute of Transportation Engineers (ITE) since 1976 for trip generation data by traffic engineers and transportation planners for site level planning and analysis.

JOB SITING ACT is the process created under s. 403.951 et seq., FS, to provide high-quality job opportunities through a consolidated and expedited permit review process for selected types of new and expanded business enterprises. The act is implemented by Rule 8E-7, FAC.

JOINT USE CONNECTION is a single connection point that serves as a connection to more than one property or development, including those in different ownerships or in which access rights are provided in legal descriptions.

K_{30} is the proportion of AADT occurring during the 30th highest hour of the design hour.

K_{100} is the proportion of AADT occurring during the 100th highest hour of the design hour.

K-FACTOR is the ratio of the demand traffic volume in the 30th highest hour of the year to AADT.

LANE FACTOR (L_f) is a lane distribution factor expressed as a ratio that accounts for the distribution of equivalent single axle load (ESAL) units by direction, i.e., one-way or two-way.

LEVEL OF SERVICE means a qualitative assessment within a traffic stream, generally described in terms of such factors as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety.

LIMITED-ACCESS FACILITY means a street or highway especially designed for through traffic that owners or occupants of abutting land or other persons have no right or easement of access.

LINEAR REGRESSION is a type of analysis in which the functional relationship between two or more variables is described by a straight line as opposed to a curve.

LINK means an element of a transportation network terminating in a node at either end.

LOCAL GOVERNMENT COMPREHENSIVE PLANS are plans adopted by cities and counties pursuant to Chapter 163, FS, which consist of several elements designed to preserve, promote and protect the public health, safety and welfare. Each plan includes plans for the adequate and efficient provision of land, transportation, water, sewer, schools, parks, recreational facilities and housing as well as the conservation, development utilization and protection of natural resources within their jurisdictions.

LOCATION AND DESIGN ACCEPTANCE (LDA) means approval from the Federal Highway Administration (FHWA) of the environmental document. This approval is for the proposed improvements identified in the final environmental document. This approval allows the Department to proceed to subsequent phases using federal funds.

LONG-RANGE PLAN means the plan, with a planning horizon of at least 20 years, developed by the Metropolitan Planning Organization (MPO) that identifies facilities that should function as an integrated metropolitan transportation system and is developed pursuant to Title 23 USC and the Federal Transit Act.

MAJOR INVESTMENT STUDY is a comprehensive analysis of various transportation alternatives at the corridor or sub-area level. The process within which transportation officials plan and develop projects through five phases of activity: system planning, alternatives analysis, preliminary engineering, final design and construction.

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) is the authoritative source for uniform traffic control devices applicable to different classes of road and street systems originally published by the American Association of State Highway Officials (AASHTO) in 1935 and periodically updated.

MASTER PLAN means department-adopted multimodal transportation plan identifying proposed improvements, operations management actions and investments to limited-access facilities (interstate, Turnpike, and other expressways) consistent with both the interstate and Turnpike policies and priorities, to increase mobility in a particular limited-access highway corridor. Phasing, facilities management and financing plans are included. Master plans serve as Major Investment Studies (MIS) for the corridor. Master plans also identify potential new or modifications to existing interchanges.

METROPOLITAN PLANNING ORGANIZATION (MPO) is that organization designated as being responsible, together with the state, for conducting the continuing, cooperative, and comprehensive planning process under 23 USC 134 and 49 USC 1607. It is the forum for cooperative transportation decision-making. Florida follows federal requirements, see s. 339.175, FS.

MITIGATION is that collective process whereby a developer of land makes adequate provisions for the public transportation facilities needed to accommodate the impacts of the proposed development.

MIXED-USE DEVELOPMENT (as defined by the Urban Land Institute) means land development that includes two or more different types of land uses; for example residential, commercial and industrial.

MOBILITY MANAGEMENT PROCESS/CONGESTION MANAGEMENT SYSTEM (MMP/CMS) is Florida's response to the Congestion Management System (CMS) undertaken in Florida and required as part of the metropolitan planning process in urbanized areas of 200,000 and more population by 23 CFR 450, described in the FHWA/FTA interim final rule on management and monitoring systems (23 CFR Part 500). See also s. 339.175(5)(c)(1), FS.

MODAL SYSTEMS PLANS means the Department's statewide plans including the Aviation System Plan (s. 332.006(1), FS), FIHS Plan (s. 338.001(1), FS), the Florida Seaport Mission Plan (s. 311.09(3), FS), the Rail System Plan (s. 341.302(3), FS), the Public Transit Plan (s. 341.041(1), FS), and provisions for bicycles and pedestrians (s. 335.065, FS), all of which are to be consistent with the goals and policies of the Florida Transportation Plan.

MODE CHOICE means the process by which an individual selects a transportation mode for use on a trip or trip chain, given the trip's purpose, origin and destination; characteristics of the individual; and

characteristics of travel by the realistically available modes.

MODE SPLIT is the process of estimating the number of travelers between zones that are anticipated to use modes other than automobiles in site impact analysis

NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) are standards established pursuant to Section 109 of the Clean Air Act and include standards for carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM-10), and sulphur dioxide (SO_2). Proposed transportation improvements within areas classified as maintenance or nonattainment must be included within the area's Transportation Improvement Program (TIP) and be in conformance with the State Implementation Plan (SIP).

NEPA means the National Environmental Policy Act of 1969, as amended (42 U.S.C. 4321 et. seq.). NEPA declared the prevention and elimination of damage to the environment a national policy, required an EIS to be prepared for all federal legislation and major federal actions, and created the Council on Environmental Quality (CEQ).

NODE is a point where two links join in a network, usually representing a decision point for route choice but sometimes indicating only a change in some important link attribute.

NOTICE OF PROPOSED CHANGE (NOPC) is the document filed by the developer of a DRI when proposed changes to a previously approved development might create the reasonable likelihood of additional regional impact, or indicates any type of regional impact created by the change not previously reviewed by the regional planning agency, that may lead to a determination that the change in the DRI constitutes a substantial deviation, as provided in s. 380.06(19), FS.

OBJECTION, for the purpose of the review of LGCPs and plan amendments by the DCA, means a statement which identifies a portion of a comprehensive plan or plan amendment that fails to meet one or more of the criteria in sections 163.3177, 163.3178, and 163.3191, FS, the state comprehensive plan (Chapter 187, FS), the appropriate strategic regional policy plan required by Chapter 186, FS or Chapters 9J-5 and 9J-11, FAC.

PASS-BY TRIPS are trips made as intermediate stops on the way from an origin to a primary destination.

PATH means a route through a network; a series of links and nodes connecting an origin and a destination.

PEAK-HOUR FACTOR (PHF) is the ratio of the hourly volume to four times the peak 15-minute volume.

PEAK SEASON consists of the 13 consecutive weeks of the year with the highest traffic volume.

PEAK SEASON WEEKDAY AVERAGE DAILY TRAFFIC (PSWADT) is the average weekday traffic during the peak season measured as the highest 13 consecutive weeks during the year.

PEAK TO DAILY RATIO is the highest hourly volume of a day divided by the daily volume.

PLANNED UNIT DEVELOPMENTS (PUDs) typically represents a mixture of land uses, primarily residential, that are combined into one cohesively planned project that merge or simplify the development review process and controls into one uniform planning and permitting effort. In many cases, traditional lot by lot control regulations are waived in exchange for other site planning considerations.

PLANNING ANALYSIS means a use of capacity analysis procedures to estimate the number of lanes required by a facility in order to provide for a specified LOS based on approximate and general planning data in the early stages of project development.

PLANNING ANALYSIS HOUR FACTOR is the K_{100} factor and is the ratio of the 100th highest volume hour of the year to the AADT.

PROGRAMMATIC CATEGORICAL EXCLUSION (CE) is a class of action determination that a project, similar in type and impact to one of the 20 categorical exclusions listed at 23 CFR 771.117(c), but not specifically listed, may not require further environmental documentation. The programmatic CE is a one-time determination made by agreement between the Department and the FHWA, designed to expedite minor projects.

PROJECT DEVELOPMENT & ENVIRONMENTAL (PD&E) STUDY means the process by which the Department develops preliminary engineering and environmental alternatives leading to conceptual location and environmental approval. This

effort is accomplished as part of meeting federal NEPA and state environmental requirements.

PROJECT PHASE is a major element in the development of a project such as: feasibility studies; planning; preliminary engineering; design; right-of-way acquisition; and relocation of traffic signals, traffic signs or other similar devices.

PROPORTIONATE SHARE CONTRIBUTION means, only in the context of Rule 9J-2.045, FAC, a contribution from a developer or owner of a DRI to the local government or the governmental agency having maintenance responsibility for those facilities, which makes adequate financial provision for the public transportation facilities needed to accommodate the impacts of the proposed development on roadways outside the local government of jurisdiction's CMS area, calculated according to the requirements of Rule 9J-2.045(2)(h), FAC.

REGIONAL ACTIVITY CENTERS are areas designated in local government comprehensive plans for the purposes of promoting high-density, multiuse development to serve significant number of citizens from more than one county.

REGIONAL PLANNING COUNCIL means, pursuant to s. 186.503(4), FS, the organization composed of representatives of local governments and appointed representatives from the geographic area covered by the council and designated as the primary organization to address problems and plan solutions that are of greater than local concern or scope. The Regional Planning Council (RPC) shall be recognized by local governments as one of the means to provide input into state policy development.

REGIONALLY SIGNIFICANT ROADWAY means a paved roadway that crosses county boundaries, is a component of the SHS, connects components of the SHS, provides access to a regional activity center, or is a hurricane evacuation route.

REGIONAL TRAVEL DEMAND ANALYSIS typically consists of four steps: (1) trip generation, i.e., the number of trips originating in and destined for each geographic zone in the region; (2) trip distribution, i.e., linking the numbers of trip origins and destinations predicted for each zone into a specific geographic pattern of travel volumes or origin-destination flows; (3) mode split, i.e., the split of interzonal traffic flows for each trip purpose among travel modes using information of the personal characteristics of travelers, costs, and performance of the modes to produce a total daily travel matrix by mode; and (4) traffic assignment, i.e., the assignment of trip flows made by each travel mode to routes or paths through a regional network of transportation facilities.

REGIONALLY SIGNIFICANT PROJECT means a project that is on a facility which serves regional transportation needs and would normally be included in the modeling of a metropolitan area's transportation network, including, at a minimum, all principal arterial highways and all fixed guideway transit facilities that offer a significant alternative to regional highway travel.

REGRESSION is a mathematical technique for exploring relationships between sets of observations on two or more variables. A functional relationship between the variables is postulated, and a line or curve fit between the plotted observations so as to minimize some function (usually the square) of the deviations between the plotted points and the line of the curve. If the postulated relationship is a line, the technique is called "linear regression."

ROADWAY CHARACTERISTICS INVENTORY (RCI) is a database maintained by the Department's Transportation Statistics Office containing roadway and traffic characteristics data for the SHS including current year traffic count information such as AADT and the traffic adjustment factors K_{30}, D_{30} and T.

RURAL AREAS are areas not included in an urbanized area, a transitioning urbanized area, an urban area or a community.

SATURATION FLOW RATE is the equivalent hourly rate at which vehicles can traverse an intersection approach under prevailing conditions, assuming that the green signal was available at all times, and no lost times are experienced, in VPH of green or of green per lane.

SERVICE FLOW RATE is the maximum hourly rate at which persons or vehicles can be reasonably expected to traverse a point of uniform section of a lane or roadway during a given time period (usually 15 minutes) under prevailing roadway, traffic and control conditions while maintaining a designated LOS, expressed as vehicles per hour or vehicles per hour per lane.

SIGNIFICANT DEGRADATION (of LOS) means an average annual daily increase in two-way traffic

volume of five percent or a reduction in operating speed for the peak direction in the 100th highest hour of five percent applicable to roadways in rural, transitioning urbanized areas, urban areas or communities; and for roadways in urbanized areas, for roadways parallel to exclusive transit facilities, or for intrastate roadways in transportation concurrency management areas, an average annual daily traffic increase in two-way traffic volume of ten percent or a reduction in operating speed for the peak direction in the 100th highest hour of ten percent.

SKETCH PLANNING consists of simple, approximate methods of analysis used to provide initial estimates or impact (to "screen" projects) for which more detailed analysis would be worthwhile.

SMALL CITY OR DEVELOPED AREA means an incorporated city or unincorporated area of less than 5,000 persons in population having urban characteristics.

STATE COMPREHENSIVE PLAN (SCP) means the plan, enacted in Florida law, that provides long-range guidance for the orderly social, economic and physical growth of the state. The plan is composed of goals, objectives and policies that are statewide in scope. It is contained in Chapter 187, FS.

STATE ENVIRONMENTAL IMPACT REPORT (SEIR) is the environmental document prepared by the Department for major transportation projects within the state-funded using state, bond or local funds, but not federal funds, to evaluate the environmental impacts of the proposed improvement.

STATE HIGHWAY SYSTEM (SHS) means the network of highways that are under the jurisdiction of the State of Florida, as defined in s. 334.03(25), FS.

STATE IMPLEMENTATION PLAN (SIP) means that plan developed pursuant to the federal Clean Air Act indicating how each state will meet federal requirements.

STATEWIDE TRANSPORTATION SYSTEM means an interconnected system of statewide transportation facilities and services, the primary function of which is to serve international, interstate and interregional customers. Elements include the FIHS, air carrier airports, seaports, multicounty railroad passenger and freight services, interstate and interregional intermodal terminals and facilities, etc.

STRATEGIC REGIONAL POLICY PLAN (SRPP) is the plan required by s. 186.507, FS, to be developed by each of Florida's 11 Regional Planning Councils, created by law, that serves as the regional long-range guide for the physical, economic and social development of the comprehensive planning district and identifies regional goals and policies.

T FACTOR (T_t) is the truck factor, or the percentage of truck traffic during the peak hours. T_{24} is the percentage of truck traffic for 24 hours.

TRAFFIC (TRIP) ASSIGNMENT is the final step in the typically four-step regional travel demand analysis process that assigns the trip flows made by each travel mode to routes or paths through a regional network of transportation facilities.

TRAFFIC VOLUME is the number of vehicles passing a point on a highway during a specific time period used synonymously with "traffic demand" in Florida's statewide LOS table calculations.

TRANSITIONING URBANIZED AREAS are the areas outside urbanized areas that are planned to be included within the urbanized areas within the next 20 years based primarily on the U.S. Bureau of Census urbanized criteria of a population density of at least 1,000 people per square mile.

TRANSPORTATION CONCURRENCY EXCEPTION AREA (TCEA) means a flexible transportation concurrency option in urban areas to encourage the application of a range of planning strategies that correspond with local circumstances of a specific geographic area applicable to urban infill development authorized by s.163.3164(27), FS, urban redevelopment pursuant to s. 163.3164(26), FS, and downtown revitalization pursuant to s. 164.3164(25), FS In such designated areas, the local government must specifically consider the impacts of the exception area on the FIHS.

TRANSPORTATION DEMAND MANAGEMENT includes strategies designed to reduce the number of trips made by single occupant vehicles and enhance the regional mobility of all citizens. These strategies include, but are not limited to, encouragement and enhancement of traditional ridesharing (carpooling and vanpooling), public transportation, alternative work hours (flextime, compressed work week, etc.), nonmotorized transportation (bicycle and pedestrian modes), priority or preferential parking for ridesharers, and development and implementation of shuttle

services. Also included is the fostering of telecommuting programs.

TRANSPORTATION IMPROVEMENT PROGRAM (TIP) means the staged, multiyear, intermodal program of transportation improvement projects covering a metropolitan planning area which is consistent with the metropolitan transportation plan, and developed pursuant to 23 U.S.C. 134, the Federal Transit Act, and 23 CFR part 450.

TRANSPORTATION MANAGEMENT AREA (TMA) means an urbanized area (UZA) over 200,000 population, as determined by the 1990 census, or other areas when TMA designation is requested by the Governor and MPO (or affected local officials) and officially designated by the Administrators of the FHWA and the FTA.

TRANSPORTATION SYSTEM MANAGEMENT means strategies to improve the efficiency of the transportation system through operational improvements such as transit lane dedication, signalization, access management, turn restrictions, etc.

TRIP is a single or one way directional movement. Transportation planners refer to trips as “internal,” “external,” or “through.” Internal have both origin and destination within a particular projects area. External trips have only one end within the project area. Through trips neither originate or end within the analysis area, but pass through it.

TRIP DISTRIBUTION is the second step in the typically four-step regional travel demand modeling process that links the number of trip origins and designations predicted for each zone into a specific geographic pattern of traffic volumes or origin-destination flows.

TRIP END is a term denoting the origin or the destination end of the trip in question.

TRIP GENERATION is the process used to estimate the amount of travel associated with a specific land use.

TRIP GENERATION RATES are average rates of vehicular travel to and from a development, usually cited per square foot, per housing unit or per acre. The rates published by the ITE are often used to establish ridership standards and establishing Transportation Demand Management (TDM) goals.

TRIP PRODUCTION means the process of producing trips from a zone and is usually a function of residential land uses in a zone. A trip originating or terminating in a zone whose existence is due to the traveler's residence in the zone is said to be "produced" there.

TRIP PURPOSE is the classification trips such as home-work, home-shop, home-other, and non-home-based.

TRIP RATE is the number of trips per unit of time for a given type of land use or geographic area.

TURNING RADIUS is the radius of an arc which approximates the turning path of a vehicle.

TURNPIKE INTERCHANGE JUSTIFICATION REPORT (TIJR) means an IJR developed for a Turnpike project. Such a report would meet all IJR requirements and would also contain a preliminary bond feasibility analysis.

TURNPIKE SYSTEM means, according to Florida law, "those limited-access toll highways and associated feeder roads and other structures, appurtenances, or rights previously designated, acquired or constructed pursuant to the Florida Turnpike Law and such other additional turnpike projects as may be acquired or constructed as approved by the Legislature."

UNINTERRUPTED FLOW means a category of facilities having no fixed causes of delay or interruption external to the traffic stream.

URBAN AREAS are places with a population of at least 5,000 persons and which are not included in urbanized areas. The applicable boundary encompasses the 1990 urban boundary as well as the surrounding geographical area as agreed to by the Department, the local government, and FHWA. The boundaries are expected to have medium-density development before the next decennial census.

URBAN INFILL is the development of vacant land in otherwise built-up areas where public facilities such as sewer systems, roads, schools and recreation areas are already in place. To be considered urban infill, the built-up area must have a residential density of at least five dwelling units per acre, a nonresidential intensity of at least a floor ratio of 1.0 and vacant, developable land constituting no more than ten percent of the area.

URBANIZED AREA (UZA) means an area with a population of 50,000 or more as designated by the U.S. Bureau of the Census. FHWA **ADJUSTED URBANIZED AREA BOUNDARY** includes the census defined urban areas plus transportation centers, shopping centers, major places of employment, satellite communities and other major trip generators near the edge of the urbanized area, including those expected to be in place shortly.

VALIDATION is the process of determining the relative accuracy and sensitivity of the model as a forecasting tool and may involve a comparison of the data from a previous year to actual data collected in the field.

V/C RATIO is the ratio of demand flow rate to capacity for a traffic facility.

VEHICLE MILES TRAVELED or VEHICLE MILES OF TRAVEL (VMT) means a measurement of the total miles traveled in a given area for a specified time period.

VOLUME means the number of persons or vehicles passing a point on a lane, roadway, or other trafficway during some time interval, often taken to be one hour, expressed in vehicles.

ZONE (or TRAFFIC ANALYSIS ZONE, TAZ) is the basic geographical unit for conventional travel demand analysis. A study area is divided into zones, the number and size of which depend on the size and land use patterns of the area, the geometry of the roadway network, the nature of the problem, the computing resources available, census boundaries, and political boundaries.

ABBREVIATIONS

AADT:	Annual Average Daily Traffic
AAWDT:	Annual Average Weekday Traffic
ADA:	Americans with Disabilities Act or Application for Development Approval
ADT:	Average Daily Traffic
AIS:	Arterial Investment Study
ART_PLAN:	Arterial planning software
ART_TAB:	Arterial analysis software
AS:	Average Speed
ATS:	Average Travel Speed
AVO:	Average Vehicle Occupancy
AVR:	Average Vehicle Ridership
BMP:	Best Management Practice
BOR:	Board of Requests
C:	Traffic signal cycle length stated in seconds
CAA:	Clean Air Act
CBD:	Central Business District
CDA:	Campus Development Agreement
CE:	Categorical Exclusion
CEQ:	Council on Environmental Quality
CFR:	Code of Federal Regulations
CIE:	Capital Improvement Element
CMP:	Congestion Management Plan -or- Campus Master Plan
CMS:	Congestion Management System
CMSA:	Consolidated Metropolitan Statistical Area
CO:	Carbon monoxide
D:	Directional traffic split; directional distribution factor
$\mathbf{D_{30}}$**:**	Proportion of traffic in the 30th highest hour of the design year traveling in the peak direction
$\mathbf{D_{100}}$**:**	Proportion of traffic in the 100th highest hour of the design year traveling in the peak direction
DCA:	Department of Community Affairs
DDHV:	Directional Design Hour Volume
DEIS:	Draft Environmental Impact Statement
DEP:	Department of Environmental Protection
DHT:	Design Hour Truck Percentage
DHV:	Design Hour Volume
DO:	Development Order
DRI:	Development of Regional Impact
DRI-ADA:	Application for Development Approval (DRI process). (Note: not to be confused with Americans With Disabilities Act, ADA).
EA:	Environmental Assessment (NEPA process)
EAR:	Evaluation and Appraisal Report (LGCP assessment)
EB:	East Bound
EDT	Economic Development Transportation Fund
EIS:	Environmental Impact Statement (NEPA process)
EJA:	Environmental Justice Act

EMFAC: Vehicle emission estimation model factor
EMIS: A Department custom utility program used in the regional emissions analysis for the conformity determination
EMO: Environmental Management Office (Department)
EOG: Executive Office of the Governor
EPA: United States Environmental Protection Agency
ESAL: Equivalent Single-Axle Load

FAC: Florida Administrative Code
FAR: Floor Area Ratio
FDOT: Florida Department of Transportation
FEIS: Final Environmental Impact Statement
FHWA: Federal Highway Administration
FIHS: Florida Intrastate Highway System
FLADA: Florida Americans with Disabilities Accessibility Implementation Act
FLAWAC: Florida Land and Water Adjudicatory Commission
FLUM: Future Land Use Map
FONSI: Finding of No Significant Impact (NEPA process)
FQD: Florida Quality Development
FR: Federal Register
FREE_TAB: Software for generalized LOS tables for freeways
FS: Florida Statutes
FSUTMS: Florida Standard Urban Transportation Model Structure
FTA: Federal Transit Administration
FTP: Florida Transportation Plan

G: Traffic signal green time
g/C: The ratio of the effective green time (g) to the traffic signal's cycle length (C)

HBW: Home-Based Work
HCM: Highway Capacity Manual
HCS: Highway Capacity Software
HOV: High Occupancy Vehicle
HPMS: Highway Performance Monitoring System

ICAR: Intergovernmental Coordination Assistance and Review
IJR: Interchange Justification Report (Department)
IMR: Interchange Modification Report (Department)
INTPLAN: Intersection planning software for signalized intersections
IRDEM: Interchange Request Development and Review Model
ISTE Intermodal Surface Transportation Efficiency Act of 1991
ITE: Institute of Transportation Engineers
ITS: Intelligent Transportation System
IVHS: Intelligent Vehicle Highway System

K_{30}: Ratio of DHV to AADT for the 30th highest hour (Department)
K_{100}: Ratio of DHV to AADT for the 100th highest hour (DRI)

LF or L_f: Lane Factor
LDR: Land Development Regulation
LGCP: Local Government Comprehensive Plan
LGDO: Local Government Development Order
LOS: Level of Service
LT: Left Turn

MIS: Major Investments Study
MLOU: Meeting Letter of Understanding
MMP/CMS: Mobility Management Process/Congestion Management System (Department)
MPO: Metropolitan Planning Organization
MSA: Metropolitan Statistical Area
MSF: Maximum Service Flow Rate
MSV: Maximum Service Volume
MUTCD: Manual on Uniform Traffic Control Devices
MUTS: Manual on Uniform Traffic Studies (Department)

NAAQS: National Ambient Air Quality Standards
NB: North Bound
NEPA: National Environmental Policy Act of 1969
NETSIM: Network traffic operations simulation model (software)
NHS: National Highway System

NOPC: Notice of Proposed Change (DRI process)
NO_X: Oxides of nitrogen
O/D: Origin/Destination
ORC: Objections, Recommendations and Comments (report)
OTTED: Office of Tourism, Trade, & Economic Development
O_3: Ozone
PASSER: Progression Analysis Signal System Evaluation Routine software
PDA: Preliminary Development Agreement (DRI process)
PD&E: Project Development and Environment
PE: Professional Engineer; preliminary engineering
PHF: Peak Hour Factor
PL: Public (federal) Law
PMS: Pavement Management System
PMSA: Primary Metropolitan Statistical Area
PRD: Preliminary Review Determination
PSWADT: Peak Season Weekday Average Daily Traffic
PTO: (Department) Public Transportation Office
PUD: Planned Unit Development
RAC: Regional Activity Center
RCI: Roadway Characteristics Inventory
RMSE: Root Mean Square Error
RMUL_TAB: Software for generalized LOS tables for rural uninterrupted multi-lane highways
ROW: Right-of-Way
RPA: Regional Planning Agency
RPC: Regional Planning Council
RT: Right Turn
R2LN_TAB: Software for generalized LOS tables for rural uninterrupted two-lane highways
R/W: Right-of-Way
SAF: Seasonal Adjustment Factor
SB: South Bound
S/E: Socio-economic
SEIR: State Environmental Impact Report
SF: Seasonal Factor
SHS: State Highway System
SIG_TAB: Software for generalized LOS tables for a signalized intersection
SIP: State Implementation Plan
SLD: Straight Line Diagram
SMSA: Standard Metropolitan Statistical Area
SOAP: Signal Operations Analysis Package (software)
SOV: Single Occupant Vehicle
SRPP: Strategic Regional Policy Plan
STP: Surface Transportation Program
SV: Service Volume
T: Truck Factor
T_{24}: Percentage of truck traffic in a 24-hour period
TAZ: Traffic Analysis Zone
TCEA: Transportation Concurrency Exception Area
TCI: Traffic Characteristics Inventory
TCM: Transportation Control Measure
TCMA: Transportation Concurrency Management Area
TDM: Transportation Demand Management
TDP: Transit Development Program
30HV: Thirtieth Highest Hour Volume
TIJR: Turnpike Interchange Justification Report (Department)
TIP: Transportation Improvement Program
TMA: Transportation Management Association; Transportation Management Area (ISTEA)
TMO: Transportation Management Organization
TRAF-NETSIM: Traffic and Network Simulation (software)
TRANSYT: Traffic Network Study Tool software
TSM: Transportation System Management
UA or UZA: Urban or Urbanized Area
UATS: Urban Area Transportation Study
UMUL_TAB: Software for generalized LOS tables for uninterrupted multilane highways
USC: United States Code
U2LN_TAB: Software for generalized LOS tables for uninterrupted two-lane highways in developed (urban) areas

V:	Hourly volume in vehicles per hour
v/c:	Ratio of the demand flow rate to capacity for a traffic facility
VMT:	Vehicle Miles Traveled
VOC:	Volatile Organic Compounds
VPHPL:	Vehicles per Hour per Lane
WB:	West Bound
WHICH:	Wizard of Helpful Intersection Control Hints (software integrating SOAP, HCS, RAF_NETSIM, SIDRA, and SIGNAL85)
WPA:	Work Program Administration (Department)
WPI:	Work Program Item (Department)

APPENDIX B - DEPARTMENT PLANNING REVIEWS

BACKGROUND

There are several types of Department reviews, statutorily required or performed as a courtesy, which are not site impact reviews but do address the interaction between transportation and land use. These planning reviews are just as important and should be understood by the Department Reviewer. This Appendix has been prepared to provide an overview of these various types of reviews, specifically those that are local government planning related and various other types of reviews. Four chapters are presented and provide initial guidance to the Department Reviewer in the event that one of these types of reviews is requested.

Chapter 1. Local Government Comprehensive Plan (LGCP) Reviews

Chapter 2. Local Government Concurrency Reviews

Chapter 3. Other Local Government Reviews

Chapter 4. Other Types of Reviews

Products of these particular types of reviews may vary by subject area. Documentation for a simple review may constitute a brief letter describing the proposal, basic findings, problems or deficiencies that the Department believes should be corrected. Conversely, a review of complex requests will result in a much more involved written reporting requirement. For additional assistance on LGCP reviews, the Reviewer should refer to the Department's *Minimum Standards for Review of Local Government Comprehensive Plans,* Topic 525-010-101-b.

The following Appendix is only intended to provide initial guidance to the Department Reviewer. The Department Reviewer should coordinate their activities with the identified lead agencies particularly in the event that the individual has not performed a similar type review previously.

CHAPTER 1. LOCAL GOVERNMENT COMPREHENSIVE PLAN (LGCP) REVIEWS

1.1 Introduction

As discussed in Unit 2, an LGCP is adopted by a city or county to preserve, promote and protect the public health, safety and welfare. This is accomplished through the adequate and efficient provision of land, transportation, water, sewer, parks, recreational facilities and housing, as well as the conservation, development, utilization and protection of natural resources within their jurisdictions.

The 1985 growth management legislation required the adoption of LGCPs for every city and county in Florida. Since that time, almost all of the Comprehensive Plans have been adopted and found in compliance with Chapter 163, FS. New Comprehensive Plans will still be developed and adopted as new areas incorporate. Department site impact review activities are limited to Comprehensive Plan amendments, specifically Future Land Use Map (FLUM) changes and Development of Regional Impact (DRI) amendments, as described within Unit 2.

1.2 LGCP Adoption and Amendment Review Subject Elements

The following are some elements included in a LGCP which the Department Reviewer should be familiar with when conducting initial LGCP or text amendment reviews.

1.2.1 Capital Improvements Element (CIE)

This element considers the need, location and cost of public facilities. The element also considers the cost of such improvements, the fiscal responsibility for the fiscal capability of the local government to finance and construct the improvements and financial policies to guide the funding of improvements, and the schedule for funding and constructing the infrastructure and public facility improvements so that they are provided when required. Any improvement listed in the CIE should be consistent with the Department's five-year program and the local Metropolitan Planning Organization (MPO) Transportation Improvement Plan (TIP).

1.2.2 Future Land Use Plan Element (FLUP)

This element includes the designation of future land use patterns as reflected in the Goals, Objectives and Policies (GOPs) of the LGCP. The future land use patterns are depicted on a FLUM series.

1.2.3 Traffic Circulation Element in Nonurbanized Areas (TCE)

This element presents the types, locations and extent of existing and proposed major thoroughfares and transportation routes, including bicycle and pedestrian ways. The local governments adopted Level of Service (LOS) standards are found in this element. The Reviewer is encouraged to review all traffic analyses and the GOPs for consistency with the Department's standards.

1.2.4 Transportation Element in Urbanized Areas (TE)

Each unit of local government within an urbanized area designated as a MPO shall include a transportation element in lieu of the Traffic Circulation Element; Mass Transit Element (MTE); Ports, Aviation and Related Facilities (PARF) Element; the (optional) Recreational Traffic Circulation Element; and the (optional) Off-Street Parking Element. This requirement was adopted by the Legislature in 1993 after the majority of LGCPs were adopted. Thus, this element may not be included in adopted LGCPs unless the local government has already completed its Evaluation and Appraisal Report (EAR) and subsequent amendment process. This element will be included in the EAR amendments for all MPO areas, s. 163.3177(6)(j)1-9, FS. At a minimum, the Reviewer should review the MPO's mobility plans, the traffic analyses and the GOPs of the various elements.

1.2.5 Coastal Zone Management Element (CME)

Thirty-five local governments in Florida are required to develop CMEs in their LGCP. These communities abut the Gulf of Mexico or the Atlantic Ocean, or include or are contiguous to waters of the state where marine species of vegetation constitute the dominant plant community. Policy issues required to implement specific objectives in this element are identified in s. 163.3177(6)(g)1.-10, FS. One of the most relevant CME policy requirements for Department Reviewers is found in s. 163.3177(6)(g)7, FS. This requires the limitation of public expenditures that subsidize development in high-hazard coastal areas. Emphasis should also be placed on emergency evacuation plans and routes.

1.2.6 Mass Transit Element (MTE)

This element outlines, describes and justifies proposed methods for moving people, rights-of-way, terminals, related facilities, and the fiscal considerations necessary to implement a mass-transit system. This

element is required for local governments with populations greater than 50,000 persons. In urbanized areas designated as MPOs, it is or will be contained in the Transportation Element as discussed in 1.2.4 above, s. 163.3177(7)(a), FS. The Reviewer should coordinate these reviews with the MPO and the local transit authority.

1.2.7 Ports, Aviation and Related Facilities (PARF) Element

This element provides direction to local governments in their designation of future PARF systems. It is required for local governments with populations greater than 50,000 persons. This element may be included as part of the TCE. It is an optional element for local governments with populations of less than 50,000, s. 163.3177(7)(b), FS. It is or will be contained in the TE as discussed in 1.2.4 above, designated MPO areas. All GOPs should be reviewed for consistency with the Department's Florida Transportation Plan (FTP).

1.2.8 Optional Recreational Traffic Element

This optional element considers bicycle facilities, exercise trails, riding facilities and other such matters related to the improvement and safety of movement of all types of recreational traffic. It is or will be contained in the TE as discussed in 1.2.4 above designated MPO areas, s. 163.3177(7)(c), FS.

1.2.9 Optional Off-Street Parking Facilities Element

This optional element considers off-street parking facilities for motor vehicles. It is or will be contained in the TE as discussed in 1.2.4 above designated MPO areas, s. 163.3177(7)(d), FS.

1.2.10 Intergovernmental Coordination Element

This element considers coordination mechanisms between the local government and other jurisdictions and agencies affected by the LGCP. The GOPs may reference Department Coordination on matters such as those affecting the State Highway System (SHS), etc. To facilitate the best review of this LGCP element, the Reviewer should familiarize himself with the other elements that could impact the SHS. Most common of these elements are the CIE, the transportation-related elements and the FLUP.

1.2.11 Other Elements

The Department Reviewer may wish to consult other elements in the LGCP such as the Conservation Element and Sanitary Sewer, Solid Waste, Drainage, Potable Water and Natural Groundwater Aquifer Recharge Element for further information which may affect the implementation of transportation projects.

Additionally, an LGCP may contain several other optional elements, with potential transportation impacts. These elements include public buildings, community design, redevelopment and historic preservation.

1.3 Initial LGCP Objections, Recommendations and Comments (ORC) Report

The Department receives a copy of each LGCP or amendment in a registered package and is required to provide written objections, recommendations and comments to the Department of Community Affairs (DCA). These comments are then incorporated into the ORC Report that accompanies every new LGCP prior to adoption. The Department is given 30 days from DCA's official receipt of proposed plan.

1.4 Evaluation and Appraisal Report (EAR) of Comprehensive Plans

The EAR is a periodic assessment and update to adopted LGCPs. The EAR process is an assessment of the success or failure of the LGCP and an identification of changes in state policy on planning and growth management. The first EAR in most communities is not required until seven years after the adoption of the Comprehensive Plan and every five years thereafter, except in local governments where the 1992 population was 2,500 or less. These communities are not required to have completed an EAR until 12 years after LGCP adoption and every ten years thereafter. Chapter 9J-33, FAC, establishes the specific schedule for EAR submissions for each local government.

In certain areas, where an RPC has been delegated EAR review authority, the Department may be included in the EAR review process. In addition, local governments may request the Department's technical assistance or review in their EAR preparation. The RPCs also may hold special meetings which the Department may be requested to attend to assist local governments in their EAR development. The Department may participate in meetings and provide written comments at the request of the local government or RPC. The review times and coordination requirements may vary if the RPC is delegated review responsibility. As an example, the South Florida Regional Planning Council EAR

Delegation agreement requires a meeting to discuss review comments within 14 days of the Council's receipt of a proposed EAR.

1.5 EAR-Based LGCP Amendments

These are LGCP amendment changes which result from issues identified in the EAR process. They are subject to the twice-per-year LGCP amendment limitations. They follow a regular LGCP amendment review process and are subject to the Preliminary Review Determination (PRD) process as noted in the explanation of the LGCP Amendment Review Process (Unit 2). The Department Reviewer should initiate a formal written recommendation to DCA in the event that they would like to participate in the ORC review. The Department Reviewer is particularly encouraged to request such action when the a FLUM change is contemplated. If granted, the Department Reviewer will be given 21 calendar days from DCA's receipt of a complete amendment package to conduct a preliminary review. A preliminary review is not necessary if the local government requests formal ORC review in the submittal package. An ORC review by the Department allows for written objections, recommendations and comments for inclusion into DCA's encompassing ORC report. The Department is given 30 calendar days to review from the date that DCA receives the amendment package.

1.6 Regional Activity Centers (RAC)

RACs are areas designated in LGCPs for the purpose of promoting high-density, mixed-use development to serve significant number of citizens from more than one county. They are authorized by s. 380.06(2)(e), FS and Rule 28-24.014(10), FAC. The DRI thresholds associated with residential, office and retail uses are increased by 50 percent within these areas. Also, the DRI thresholds associated with mixed-use projects are increased by 100 percent provided that a residential land use (not less than 35 percent of the residential threshold ordinarily applicable to the jurisdiction) is included. This designation allows the development of more intensive projects within the designated area without having to undergo the DRI review process.

Rule 28-24, FAC, defines RACs as a compact, high-intensity, high-density, mixed-use area designated as appropriate for intensive growth by the local government of jurisdiction and may include retail; office; cultural, recreational and entertainment facilities; hotels and motels; or appropriate industrial activities. These areas must be proximate and accessible to interstate or major arterial roadways, be consistent with the LGCP and FLUM intensities; routinely provide service to a significant number of citizens of more than one county, and contain adequate existing public facilities.

1.7 LOS Standards for Transportation Facilities

LOS standards which have been adopted by the local government are found in the GOPs of the TCE or TE (MPO areas), and the capital improvements element in the LGCP. Local governments must adopt the Department's LOS standards on the Florida Intrastate Highway System (FIHS). The LOS standards on the SHS (for this purpose, not including the FIHS) must be "adequate," s. 163.3180(10), FS.

Comprehensive Plan amendments are necessary to change adopted LOS standards; therefore, any changes are subject to the DCA compliance review processes and will need to be supported by adequate and relevant data and analysis. The requirement that local governments adopt the Department's FIHS LOS standards was adopted by the Legislature in 1993 after the majority of LGCPs were already adopted. Any conflicting LOS issue must be addressed in the EAR process. As part of the EAR process, each local government is required to amend its LGCP to reflect changes in state policy on planning and growth management. Thus, currently adopted LOS standards may not be in compliance with this requirement if the local government has not completed the EAR amendment process.

CHAPTER 2. LOCAL GOVERNMENT CONCURRENCY REVIEWS

2.1 Introduction

Concurrency refers to the requirement that the public facilities and services necessary to maintain the adopted LOS standards are in place when the impacts of development occur. Local government concurrency provisions related to transportation facilities are found in the TCE, MTE, TE (MPO areas), the CIE and occasionally in separate concurrency management sections.

Transportation facilities needed to serve new development shall be in place or under actual construction no more than three years after issuance by the local government of a certificate of occupancy or its functional equivalent as required by s. 163.3180(1) and (2)(c), FS and Rule 9J-5.003(27), FAC.

In 1993, several changes were made to the transportation concurrency requirements to provide greater flexibility. This flexibility was recognized by the legislature as necessary in instances in which planning and public policy goals such as the encouragement of urban infill development and redevelopment come into conflict with the concurrency requirement. As detailed below, flexibility is allowed through the implementation of techniques such as transportation concurrency exception areas, transportation concurrency exceptions for specific projects, transportation concurrency management areas, provisions for redevelopment (110 percent capacity reservation) and de minimis impacts as well as alternative LOS methodologies such as local or corridor specific LOS and mobility standards.

2.2 De Minimis Impact

Local governments may allow exemptions or exceptions in their concurrency management systems for developments which generate small or de minimis impacts. De minimis impacts are limited to 0.1 percent of the maximum volume of a facility at the adopted LOS standard and a cumulative total of three percent of the maximum volume of a facility at the adopted LOS standard. For additional development on nonvacant parcels, these exemptions are limited to residential densities of less than four units per acre and nonresidential densities of less than 0.1 Floor Area Ratio (FAR), s. 163.3180(6), FS.

2.3 Transportation Concurrency Management Areas (TCMAs)

TCMAs are compact geographic areas in which infill development or redevelopment is promoted within selected portions of urban areas. The implementation of a TCMA may result in utilization of an areawide LOS standard to better accommodate and manage traffic congestion. TCMAs may provide more efficient mobility alternatives such as public transportation, bicycle and pedestrian alternatives. These areas include existing or proposed multiple, viable alternative travel paths or modes for common trips, s. 163.3180(7), FS.

2.4 Long-Term Transportation Concurrency Management System

Local governments with a number of significantly backlogged facilities may adopt a long-term concurrency management system in their Comprehensive Plan. These systems are for a specific geographic district where a significant transportation backlog exists. The local government adopts interim LOS standards for a planning period of up to ten years. The plan must include implementing policies which provide for: the correction of existing deficiencies, the establishment of priorities for addressing backlogged facilities and the financial feasibility of the system as well as its consistency with other portions of the adopted Comprehensive Plan including the FLUM. In addition, a 15-year concurrency management system may be permitted by the DCA, s. 163.3180(9), FS.

2.5 Transportation Concurrency Exception Areas (TCEAs)

These are areas in which the unintended result of the concurrency requirement for transportation facilities has resulted in the discouragement of urban infill development and redevelopment. These areas are specifically defined urban areas designated in the LGCP to provide exceptions to the transportation concurrency requirement for the purposes of urban infill, urban redevelopment, downtown revitalization. The guidelines for granting exceptions in these areas are established in the LGCP, and must include consideration of the impact on the FIHS, s. 163.3180(5)(a), FS.

2.5.1 Urban Infill Transportation Concurrency Exception Area

Urban infill is the development of vacant parcels in otherwise built-up areas where public facilities such as sewer systems, roads, schools and recreation areas are already in place. These areas may not contain more

than ten percent developable vacant land. In areas where residential use comprises greater than 60 percent of the developed land, the average residential density must be at least five dwelling units per acre. In areas where nonresidential use comprises more than 60 percent of the developed land, the average nonresidential intensity must be at least a FAR of 1.0. In areas where neither residential or nonresidential uses comprise 60 percent of the developed land, both the average residential density must be 5.0 dwelling units per acre and the average nonresidential intensity must be at least a FAR of 1.0, s. 163.3164(27) and s. 163.3180(5), FS.

2.5.2 Urban Redevelopment Transportation Concurrency Exception Area

Urban redevelopment is the demolition and reconstruction or substantial renovation of existing buildings or infrastructure within urban infill areas or existing urban service areas, s. 163.3164(26) and s. 163.3180(5), FS.

2.5.3 Downtown Revitalization Transportation Concurrency Exception Area

Downtown revitalization is defined as the physical and economic renewal of a central business district of a community as designated by local government, and includes both downtown development and redevelopment, s. 163.3164(25) and s. 163.3180(5), FS.

2.6 Transportation Concurrency Exceptions

Transportation concurrency exceptions may be granted for projects that promote public transportation and developments located within specific areas (urban infill, urban redevelopment, existing urban service, or downtown revitalization areas) which have only part-time demands on the transportation system.

2.6.1 Transportation Concurrency Exceptions to Promote Public Transportation

Projects that promote public transportation are those that directly affect the provisions of public transit, including transit terminals, transit lines and routes, separate lanes for the exclusive use of public transit services, transit stops (shelters and stations) and office buildings or projects that include fixed-rail or transit terminals as part of the building, s. 163.3163(28) and s. 163.3180(5), FS.

2.6.2 Transportation Concurrency Exceptions for Special Part-Time Demands

Developments with only part-time demands are those not having more than 200 scheduled events during any calendar year and do not affect the 100 highest traffic volume hours. These developments must be located within urban infill, urban redevelopment, existing urban service, or downtown revitalization areas, s. 163.3180(5), FS.

CHAPTER 3. OTHER LOCAL GOVERNMENT REVIEWS

3.1 Introduction

Local governmental agencies have full responsibility for the regulation of land and its development within their jurisdiction. This responsibility is executed through zoning ordinances, subdivision regulations and other rules and regulations related to development permitting. At times, assistance may be requested from the Department on technical matters related to these subjects. Reviews may involve the following areas.

3.2 Community Redevelopment Plan

Community Redevelopment Plans (including downtowns) guide the redevelopment of designated slum areas, blighted areas, or areas in which there is a shortage of affordable housing for residents of low or moderate income. These plans are adopted by the local community redevelopment agency and may be adopted as part of the LGCP. The Department's review may occur as part of the review of a LGCP or LGCP amendment which would occur in accordance with those review processes as defined above. In addition, the Department may be involved in the review of Community Redevelopment Plans as an affected landowner within the redevelopment district, s. 163.360, FS.

3.3 Land Development Regulations (LDRs)

LDRs are ordinances enacted by governing bodies for the regulation of any aspect of development and includes zoning, rezoning, subdivision, building construction or signing regulations or any other regulations controlling the development of land. LDRs implement the GOPs of the LGCP, s. 163.3164(23) and s. 163.3202, FS.

Although there is no requirement that the Department review LDRs, there are several instances in which LDRs might affect a site impact analysis review issue. The following LDRs are some of the most common ones a site impact analysis reviewer might be involved or need to understand.

3.3.1 Zoning Ordinances

These are local legislative actions, derived from state law, which allow the division of the jurisdiction into smaller geographic areas for the purpose of regulating the permitted uses of land. A proposed development must be allowed within the zoning classifications which correspond to the land use designations spelled out in the LGCP FLUM series. Zoning relates to transportation in terms of the overall trip generation from the area, which may be an issue in some site development reviews. The most common of these is the Planned Urban Development (PUD).

3.3.2 Subdivision Regulations

Subdivision regulations, also a local matter, regulate the division of vacant land into individual parcels for sale and development. These regulations are designed to achieve a degree of uniformity in the creation of parcels of property and to ensure the availability of necessary public right-of-way and services. They usually contain engineering standards, such as street width, or drainage matters, which must be met by the developer of the site.

3.3.3 Planned Unit Developments (PUDs)

PUDs are developments containing a mix of land uses which are compatible, but would not ordinarily be permitted by the community's zoning code. These developments must meet certain criteria as defined in each local code in exchange for a shorter, less expensive permitting process than they would ordinarily undergo through the rezoning process.

3.4 Corridor Designation and Corridor Management Ordinances

Corridor designation refers to the local government process of identifying transportation corridors in the LGCP to ensure comprehensive planning for future development and growth, improve land use and compatibility, achieve reasonable transportation planning parameter and to enable future compliance with concurrency requirements. Corridor Management Ordinances are ordinances adopted by local governments to implement corridor protection for the corridors designated in their LGCP. These ordinances contain the criteria to manage the land uses within and adjacent to the transportation corridor, the types of restrictions on nonresidential and residential construction within the designated corridor, identification of permitted land uses within the designated corridor, a public notification process, a variance and appeal process, and an intergovernmental coordination process. They also provide for the coordinated management between adjacent jurisdictions, of transportation corridors that cross jurisdictional boundaries, s. 337.273, FS.

CHAPTER 4. OTHER TYPES OF REVIEWS

4.1 Introduction

In addition to the local government-related review activities, the Department Reviewer should also be familiar with several types of unique reviews which may from time to time originate. These reviews include Strategic Regional Policy Plans (SRPPs), Intergovernmental Coordination Assistance and Review (ICAR), those reviews consistent with the Siting Acts (e.g., natural gas, electric power plant and transmission lines), Enterprise Zones and Economic Development Transportation Funding (EDTF) applications.

4.2 Strategic Regional Policy Plan (SRPP)

SRPPs are adopted by each RPC to contain regional goals and policies for affordable housing, economic development, emergency preparedness, natural resources of regional significance and regional transportation as referenced by s. 186.507, FS and Rule 27-E, FAC.

Written comments on the SRPP are normally requested from the Department. The Executive Office of the Governor (EOG) is the official agency. In accordance with *District Review of Strategic Regional Policy Plans Procedure*, comments should be sent to the affected Department district within 30 days from when the plan was received by the EOG.

4.3 Intergovernmental Coordination Assistance and Reviews (ICARs)

ICARs are an essential function of the Department. ICARs represent the formal arrangement between the Department and the EOG for procedural interface on certain types of planning efforts. These planning efforts along with the ICAR review procedures are outlined in Topic 525-010-205-c dated April 7, 1995. As stated, ICAR reviews by the Department include the following:

1. Florida Transportation Plan
2. Adopted Work Programs
3. Transportation Improvement Plans
4. Right-of-Way Preservation and Advanced Acquisition
5. Transit Development Programs
6. MPO Comprehensive Transportation Plans and 20-Year Transportation Plans
7. Florida Rail System Plan
8. Florida Aviation System Plan
9. Local Airport Master Plans
10. Florida Seaport Mission Plan
11. Environment Commitments
12. Unified Planning Work Program
13. Level of Service
14. Access Management
15. Community Development Block Grant (CDBG) Applications

All ICAR-related reviews and comments should be routed to the State Clearinghouse Agency which is the DCA. Written comments are normally requested of the Department Reviewer with specified sample forms also provided in the topic paper. The Department Reviewer will be asked to return application reviews not constituting an impact with a statement indicating that "No impact on the Florida Department of Transportation" is anticipated. Review objections should be communicated within 30 days from the review request. Further inquiries for ICAR reviews can also be directed to the Central Office ICAR Coordinator.

4.4 Siting Acts

These acts entail expedited centralized, coordinated review processes for the purposes of siting of natural gas transmission lines, electric transmission lines and electrical plant sitings. The siting of hazardous waste facilities is suggested for site impact review as discussed in Unit 2.

4.4.1 Natural Gas Transmissions Pipeline Siting

This process addresses corridor location of natural gas transmission pipelines and the construction and maintenance of such. The centralized and coordinated permitting process is established in s. 403.9401 - 403.9425, FS and is designed to ensure, that the location of natural gas transmission pipelines produce minimal adverse effect on the environment and public health, safety and welfare.

The Department Reviewer must issue a report on the impact of the natural gas transmission pipeline or natural gas transmission pipeline corridor on matters within the Department's jurisdiction, including roadway crossings by the pipeline. This report must include:

1. A report by the applicant to the Department demonstrating that all requirements of the Department's utilities accommodation guide have been or will be met in the development of the proposed pipeline or pipeline corridor.
2. A statement by the Department of the adequacy of the applicant's report.

3. All information on matters relating to the need for variances, exceptions, exemptions or other relief which may be necessary to facilitate the location of the proposed project, as well as conditions of certification which the Department believes are necessary to meet agency nonprocedural standards.
4. The specific statute, rule, or ordinance which authorizes each proposed condition of certification.

A Department report citing preliminary application issues is required within 60 days after receipt of the complete application. This siting effort is coordinated by Department of Environmental Protection (DEP).

4.4.2 Electric Power Plant and Transmission Line Siting

This process addresses the siting of electrical generating facilities. The centrally coordinated permitting process considers the location and operation of electrical power plants to minimize adverse effects on human health, the environment, the ecology of land and wildlife, the ecology of state waters and their aquatic life and the goals established by local comprehensive plans as referenced by s. 403.501, FS.

The Department may be requested by DEP to prepare a preliminary statement of issues report. This report must contain all information on variances, exemptions, exception or other relief which may be required and any proposed conditions of certification on matters within the jurisdiction of the Department. Each of the proposed conditions must be identified by specific statute, rule or ordinance authorizing the condition.

Department Review of electric power plant siting involves issues of goods and traffic movement. Power line siting reviews should include a review for existing or planned road right-of-ways. Once again, a report on preliminary application of issues must be submitted to DEP and the applicant no later than 60 days after distribution of the completed application.

4.5 Enterprise Zone Development Plan

This is a strategic plan adopted by the local governing bodies for designation of an area as an enterprise zone. These zones are intended to induce the investment of private resources in productive business enterprises located in severely distressed areas and to create jobs for the residents of these areas. Minimum requirements for Enterprise Zone Development Plans are contained in s. 290.0057, FS.

The Department of Commerce officially administers the Florida Enterprise Zone Act s. 290, FS. Like Community Redevelopment Plans, the Department may review an Enterprise Zone Redevelopment Plan as part of an LGCP review, or as an affected landowner within the Enterprise Zone.

4.6 Economic Development Transportation Fund (EDTF)

The EDTF is a transportation fund available to local governments in need of financial assistance for transportation projects that will facilitate economic development. EDTF applications for projects affecting the state transportation system may require Department review. Funds under this program must result in an inducement to a company to locate, remain and/or expand in the local government's jurisdiction. Authorized use of these funds include: design and engineering costs, construction costs of the transportation project and traffic signalization per s. 288.063, FS.

The Department may be the contracting agency when the project is on the SHS. In addition, the Department provides other advice and technical assistance per s. 288.063 (7), FS.

APPENDIX C - FEDERAL ACTS AND POLICY PLANNING OVERVIEWS

INTRODUCTION

In addition to the general planning reviews discussed in Appendix B, there are several federal transportation planning requirements which should be understood by the Department Reviewer. These requirements do not normally impact the site impact review process since state law already reflects the most important provisions of these requirements. Still, a general understanding of the federal enactments is beneficial to the overall planning review process, particularly for those described in Appendix B.

THE INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT (ISTEA) OF 1991

The Florida Legislature formally recognized the requirements of Intermodal Surface Transportation Efficiency Act (ISTEA), Public Law 102-480, in implementing changes to the Florida Transportation Code (s.339, FS), particularly in terms of statewide planning coordination, and increased coordination between transportation and land use decisions.

Planning Factors

Section 339.155, FS reflects the federal planning requirements for a statewide transportation plan considering 25 factors. These are identified in the Statewide and Metropolitan Planning Factors Matrix referenced as Figure C-1 located at the end of this Appendix.

Management and Monitoring Systems

ISTEA established the requirement for six transportation management systems (23 CFR 500). S. 339.177, FS, requires development and implementation of separate and distinct management systems for the following program areas:

1. Highway pavement
2. Bridges
3. Safety
4. Congestion
5. Public transportation
6. Intermodal transportation.

Although ISTEA congestion management system efforts focused on Metropolitan Planning Organization (MPOs) that are Transportation Management Association (TMAs), the Florida Legislature enacted the requirement that all MPOs develop congestion management systems.

A major undertaking of the Department and associated MPOs during 1995 was to develop a Mobility Management Process/Congestion Management System (MMP/CMS) Work Plan, implementing the requirement of s. 339.177, FS and 23 CFR 500.501, et seq.

The National Highway System Designation Act of 1995 repealed management systems requirements for CMS, PTM and IMS (P.L. 104-59, s. 205(a), November 28, 1995).

CLEAN AIR ACT AMENDMENTS OF 1990

The Clean Air Act, as amended, requires long-range plans and Transportation Improvement Programs (TIPs) of the state and MPOs to conform to the goals of the State Implementation Plan (SIP) to reduce mobile source emissions. The SIP contains the state's requirements to attain air quality standards. The MPOs must demonstrate conformance with these standards.

Relationship of the Regional Emissions (Conformity) Analysis to Development

Very large developments that may require new or expanded transportation facilities and add single occupant vehicle (SOV) capacity to the existing highway network may require assessment of the impacts of the development on regional motor vehicle emissions. The developer should coordinate with the MPO to determine if analysis is required.

NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (NEPA)

The National Environmental Policy Act (NEPA) requirements are met through the Department's various corridor planning and Project Development and Environmental (PD&E) processes.

Major Investment Studies

Major Investment Studies (MIS) (23 CFR 450.318) are comprehensive analyses of various transportation alternatives at the corridor or subarea level.

The MIS may be prepared in two options. In general, a final report can be prepared for alternative use in the NEPA documentation, or the MIS can be prepared as a draft NEPA document. The MIS is oriented to a decision on the "design concept and scope" with later consideration of more detailed design issues and completion of the NEPA process.

Under the FIHS planning requirements, Master Plans and Action Plans serve as the MIS. In addition, an Arterial Investment Study (AIS) has been designed for testing as part of the MMP/CMS process. The AIS is designed to be applied to arterial streets not on the FIHS where a MIS would not be appropriate.

Project Development and Environmental (PD&E) Process

The PD&E process is designed to ensure that Florida roadway planning will meet the NEPA requirements as well as expedite the projects from preliminary engineering to construction through sound engineering principles and decision making. The PD&E process is discussed in the Department's *Project Development and Environmental Manual* # 650-000-001.

AMERICANS WITH DISABILITIES ACT

The Americans with Disabilities Act of 1990 (ADA), Public Law 101-336, is a comprehensive endeavor to address the problem of discrimination against individuals with disabilities in such areas as employment, housing, public accommodations, education, transportation, communication and similar services.

Some confusion may result from the acronym for the Americans with Disabilities Act. In the literature, this is often referred to as the ADA, which is the same for the DRI Application for Development Approval (ADA). In this Handbook, the Americans with Disabilities Act is noted as the ADA and the DRI as the DRI-ADA.

The Florida Americans with Disabilities Accessibility Implementation Act, (Sections 553.501-553.513, FS, referred to herein as the FLADA) was adopted by the Florida Legislature in 1993. This legislation incorporates the accessibility requirements of the ADA into Florida Law, and retains provisions which are more favorable to the needs of the disabled.

Federal requirements pursuant to the ADA relate primarily to accessibility of vehicles, passenger stations and provision of services in the transportation of persons. Federal requirements provide an adequate guide, but have been superseded or added to by state law in some instances. For site review purposes, the Reviewer will primarily be interested in access considerations to the State Highway System (SHS). This can involve sidewalks, curb ramps, ramps and other aspects of pedestrian pathways. Parking for the disabled is also covered.

ENVIRONMENTAL JUSTICE ACT (EJA)

The EJA's purpose is to establish a program to assure nondiscriminatory compliance with all environmental, health, and safety laws and to assure equal protection of the public health. The EJA is especially significant in projects which utilize federal funding. The requirements of the EJA are found in the Department of Transportation Final Environmental Justice Strategy, Executive Order 12898. The following summarizes the provision of the act related to site impact analysis.

Adverse impacts include but are not limited to: air, noise, water pollution of man made or natural resources; destruction or diminution of aesthetic values; destruction or disruption of community cohesion or a community's economic vitality; destruction or disruption of the availability of public and private facilities and service; vibration; adverse employment effects; displacement of persons, businesses, farms or nonprofit organizations; increased traffic congestion; isolation, exclusion or separation of minority or low income individuals from the broader community; and the denial of, reduction in, or significant delay in the receipt of benefits of Department programs, policies, or activities.

Actions are determined to have disproportionately high and adverse effect if either of the following conditions apply:

- The adverse impact is predominantly borne by a minority population, low-income population, or
- The adverse impact that will be suffered by the minority population and/or the low-income population is more severe or greater in magnitude than the adverse impact that will be suffered by the nonminority population and/or non-low-income population.

If a disproportionately high and adverse effect on minority or low-income population has been determined, then the action may not be carried out unless mitigation measures are included.

Mitigation guidance is provided in the executive order as general approaches as follows:

- Avoiding or Minimizing Adverse Impacts--Reduce the degree or magnitude of the action or its implementation.
- Mitigation--Mitigating or eliminating adverse impacts by repairing, rehabilitating, or restoring the affected environment and/or community resource.
- Preservation and Maintenance--Reducing or eliminating adverse impacts over time by long-term preservation and maintenance operations.
- Substitutions--Compensating for adverse impacts by replacing adversely impacted resources or providing substitute resources or environments that enhance the affected area.

Figure C-1. Statewide and Metropolitan Planning Factors

STATEWIDE PLANNING FACTORS		METROPOLITAN PLANNING FACTORS
23 U.S.C. 135(c)	**§339.155(2), FS**	**23 U.S.C. 134(c)**
(1) The results of the management systems.	(a) The results of the management systems.	(9) The transportation needs identified through use of the management systems required by section 303 of this title.
(2) Any federal, state or local energy use goals, objectives, programs or requirements.	(b) Any federal, state or local energy use goals, objectives, programs or requirements.	(2) The consistency of transportation planning with applicable federal, state and local energy conservation programs, goals and objectives.
(3) Strategies for incorporating bicycle transportation facilities and pedestrian walkways in projects where appropriate throughout the state.	(c) Strategies for incorporating bicycle transportation facilities and pedestrian walkways in projects where appropriate throughout the state.	
(4) International border crossings and access to ports, airports, intermodal transportation facilities, major freight distribution routes, national parks, recreation and scenic areas, monuments and historic sites and military installations.	(d) International border crossings and access to ports, airports, intermodal transportation facilities, major freight distribution routes, national parks, recreation and scenic areas, monuments and historic sites and military installations.	(7) International border crossings and access to ports, airports, intermodal transportation facilities, major freight distribution routes, national parks, recreation areas, monuments and historic sties, and military installations.
(5) The transportation needs of nonmetropolitan areas through a process that includes consultation with local elected officials with jurisdiction over transportation.	(e) The transportation needs of nonmetropolitan areas through a process that includes consultation with local elected officials with jurisdiction over transportation.	
(6) Any metropolitan plan developed pursuant to section 134.	(f) See below	
(7) Connectivity between metropolitan areas within the state and with metropolitan areas in other states.	(g) Connectivity between metropolitan areas within the state and with metropolitan areas in other states.	(8) The need for connectivity of roads within the metropolitan area with roads outside the metropolitan area.
(8) Recreational travel and tourism.	(h) Recreational travel and tourism.	(16) Recreational travel and tourism.
(9) Any state plan developed pursuant to the Federal Water Pollution Control Act.	(i) Any state plan developed pursuant to the Federal Water Pollution Control Act.	
(10) Transportation system management and investment strategies designed to make the most efficient use of existing transportation facilities.	(j) Transportation system management and investment strategies designed to make the most efficient use of existing transportation facilities.	(1) Preservation of existing transportation facilities and, where practical, ways to meet transportation needs by using existing transportation facilities more efficiently.
(11) The overall social, economic, energy and environmental effects of transportation decisions.	(k) The total social, economic, energy and environmental effects of transportation decisions on the community and region.	(13) The overall social, economic, energy, and environmental effects of transportation decisions.
(12) Methods to reduce traffic congestions and to prevent traffic congestions from developing in areas where it does not yet occur, including methods which reduce motor vehicle travel, particularly single-occupant motor vehicle travel.	(l) Methods to reduce traffic congestions and to prevent traffic congestions from developing in areas where it does not yet occur, including methods which reduce motor vehicle travel, particularly single-occupant motor vehicle travel.	(3) The need to relieve congestion and prevent congestion from occurring where it does not yet occur.
(13) Methods to expand and enhance transit services and to increase the use of such services.	(m) Methods to expand and enhance transit services and to increase the use of such services.	(14) Methods to expand and enhance transit services and to increase the use of such services.

STATEWIDE PLANNING FACTORS		METROPOLITAN PLANNING FACTORS
23 U.S.C. 135(c)	**§339.155(2), FS**	**23 U.S.C. 134(c)**
(14) The effect of transportation decisions on land use and land development, including the need for consistency between transportation decision making and the provisions of all applicable short-range and long-range land use and development plans.	(n) The effect of transportation decisions on land use and land development, including the need for consistency between transportation decision making and the provisions of all applicable short-range and long-range land use and development plans.	(4) The likely effect of transportation policy decisions on land use and development and the consistency of transportation plans and programs with the provisions of all applicable short- and long-term land use and development plans.
(15) The transportation needs identified through use of the management systems required by section 303 of this title.	(o) The transportation needs identified through use of the management systems required by section 303 of this title.	
(16) Where appropriate, the use of innovative mechanisms for financing projects, including value capture pricing, tolls, and congestion pricing.	(p) Where appropriate, the use of innovative mechanisms for financing projects, including value capture pricing, tolls, and congestion pricing.	
(17) Preservation of rights-of-way for construction of future transportation projects, including identification of unused rights-of-way which may be needed for future transportation corridors, and identify those corridors for which action is most needed to prevent destruction or loss.	(q) Preservation of rights-of-way for construction of future transportation projects, including identification of unused rights-of-way which may be needed for future transportation corridors, and identify those corridors for which action is most needed to prevent destruction or loss.	(10) Preservation of rights-of-way for construction of future transportation projects, including identification of unused rights-of-way which may be needed for future transportation corridors and identification of those corridors for which action is most needed to prevent destruction or loss.
(18) Long-rang needs of the state transportation system.	(r) Long-rang needs of the state transportation system.	
(19) Methods to enhance the efficient movement of commercial motor vehicles.	(s) Methods to enhance the efficient movement of commercial motor vehicles.	(11) Methods to enhance the efficient movement of freight.
(20) The use of life-cycle costs in the design and engineering of bridges, tunnels, or pavement.	(t) The use of life-cycle costs in the design and engineering of bridges, tunnels, or pavement.	(12) The use of life-cycle costs in the design and engineering of bridges, tunnels, or pavement.
	(u) Investment strategies to improve adjoining state and local roads that support rural economic growth and tourism development, federal agency renewable resources management, and multipurpose land management practices, including recreation development.	
	(v) The concerns of Indian tribal governments having jurisdiction over lands within the boundaries of the state.	
	(w) A seaport or airport master plan, which has been incorporated into an approved local government comprehensive plan, and the linkage of transportation modes described in such plan which are needed to provide for the movement of goods and passengers between the seaport or airport and the other transportation facilities.	
	(x) The joint use of transportation corridors and major transportation facilities for alternate transportation and community use.	
	(y) The integration of any proposed system into all other types of transportation facilities in the community.	

STATEWIDE PLANNING FACTORS		METROPOLITAN PLANNING FACTORS
23 U.S.C. 135(c)	**§339.155(2), FS**	**23 U.S.C. 134(c)**
	(z) Consistency of the Plan, to the maximum extent feasible, with comprehensive regional policy plans, MPO plans, and approved LGCPs so as to contribute to the management of orderly and coordinated community development.	
		(5) The programming of expenditure on transportation enhancement activities as required in section 133.
		(6) The effects of all transportation projects to be undertaken within the metropolitan area, without regard to whether such projects are publicly funded.
		(15) Capital investments that would result in increased security in transit systems.

Office Of Policy Planning, February 2, 1996

INTRODUCTION

The following example shows the use of the SELECT ZONE analysis method documented in Unit III. The FTOWN network distributed with FSUTMS for testing and training was used so that analysts can replicate the results of this example problem.

D.1 Trip Generation

The proposed development consists of 75,166 square feet of shopping center (ITE Land Use No. 810). An average trip generation rate of 70.67 trips per 1,000 GLA was selected from ITE's *Trip Generation*. Application of this rate (75,166/1,000 * 70.67) results in an estimate of 5,312 tips per day from the development.

From the PROFILE.MAS file, the automobile-occupancy factor for home-based shopping trips (&AOFAC2) is 0.64 vehicles per (person) trip. The inverse of this factor is 1.5625 occupants per vehicle. Application of the automobile-occupancy factor (5,312 * 1.5625) results in 8,300 person-trips per day.

Traffic analysis zone (TAZ) six of the FTOWN network was used in this example. In actual projects, the analyst is required to place the zone centroid and connect the zone centroid to the highway network. This is most easily done using HNIS. These "centroid connectors" should be coded to be consistent with the proposed access of the development and the facility type, area type and number of lanes for other centroid connectors in the network.

Based on the number of employees and proposed uses of the development, the percentage of trips by purpose was estimated to be:

- 5 percent home-based work
- 80 percent home-based shopping
- 5 percent home-based social or recreational
- 10 percent home-based other

Since the development is a commercial land use (shopping center) all of the trips are attractions in the ZDATA3 file for zone six.

The estimated total employment (700), commercial employment (500) and service employment (30) were also coded in the ZDATA3 file for zone six.

A complete FSUTMS run was then completed. The MODE.OUT was reviewed. The model adjusted the total trips for the development zone during the modeling process. As a result, the ratio of the required vehicle trip generation based on ITE to total trips reported by the model can be used to increase (in this case) the number of attractions in the ZDATA3 file until convergence is reached.

When 8,396 attractions are input in the ZDATA3 and the model was rerun, the model estimated 5,308 vehicle trips from zone six which is within 1 percent of the desired output.

D.2 Trip Distribution and Mode Split

No modifications to the model results of distribution or mode split were made.

D.3 Traffic Assignment

The selected zone analysis was performed by modifying the FSUTMS HASSIGN.ALL file. This file was copied into the working directory. The PROFILE.MAS file was modified by making the &FSUTMS parameter blank so that the modified HASSIGN.ALL file located in the working directory will be used rather than the default. A copy of the output file showing the job control language used is shown on the following pages.

The results of the use of this method are summarized in the selected sheets provided that summarize the link loadings by purpose for each link on the network. The HPLOT09.HWY (annotated two-way link volumes in hundreds) control file can be modified by using the "SELECTED PURPOSE = " parameter to specify total trips (purpose 1) or development trips (purpose 2).

```
$MATRIX UPDATE
$FILE
   INPUT FILE = UPDIN, USER ID = $HTTAB.A95$
   OUTPUT FILE = UPDOUT, USER ID = $HTTABSL.A95$
$HEADER
          ZEROS OUT HTTAB EXCEPT FOR SELECTED ZONE 6
$DATA
   T1,1 - 5          ,1 - 5          ,RO
   T1,1 - 5          ,7          - 24      ,RO
   T1,7          - 24      ,1 - 5          ,RO
   T1,7          - 24      , 7          - 24      ,RO
$END TP FUNCTION
```

```
$MATRIX MANIPULATE
$FILES
   INPUT FILE = TMAN1, USER ID = $HTTAB.A95$
   INPUT FILE = TMAN2, USER ID = $HTTABSL.A95$
   OUTPUT FILE = TMAN3, USER ID = $HTTAB2.A95$
$HEADERS
$DATA
   TMAN3,T1 = TMAN1,T1
   TMAN3,T2 = TMAN2,T1
$END TP  FUNCTION
```

```
$REPORT MATRIX
WILES
   INPUT FILE = RTABIN, USER I D =$HTTAB2.A95$
$HEADER
         SELECTED ZONE ANALYSIS (INPUTTRIP TABLE)
   Purpose 1 =TotalNetwork Trips Purpose 2 = Trips for Zone 6        only
$OPTION
   PRINTTRIP ENDS
$PARAMETERS
   SELECTED ZONES =6
   SELECTED PURPOSES = 1-2
$END TP FUNCTION
```

FLORIDA D.O.T.
FSUTMS
VER 5.20

SELECTED ZONE ANALYSIS (INPUT TRIP TABLE)
Purpose 1 = Total Network Trips Purpose 2 = Trips for Zone 6 only

PAGE NO. 1
DATE 25MAR97
TIME 13:50:11

TRIP END SUMMARY --- PURPOSE 1

ZONE/DIST	ORIG/PROD	DEST/ATTR	TOTAL	INTRATRIPS	ZONE/DIST	ORIG/PROD	DEST/ATTR	TOTAL	INTRATRIPS
1	65422	65422	130844	42728					
2	3344	3344	6688	288					
3	2738	2738	5476	664					
4	1822	1822	3644	524					
5	3569	3569	7138	960					
6	2654	2654	5308	82					
7	9639	9639	19278	3608					
8	5059	5059	10118	1826					
9	5942	5942	11884	2194					
10	13226	13226	26452						
11	13962	13962	27924	6826					
12	2987	2987	5974	982					
13	4079	4079	8158	lb48					
14	138	138	276	8					
15	45	45	90	0					
lb	6860	6860	13720	0					
17	2040	2040	4080	0					
18	2290	2290	4580	0					
19	2430	2430	4860	0					
20	2260	2260	4520	0					
21	10820	10820	21640	0					
22	2200	2200	4400	0					
23	2490	2490	4980	0					
24	2180	2180	4360	0					
	---	---	---	---					
TOTALS	168196	168196	336392	68238					

FLORIDA D.O.T.
FSUTMS
VER 5.20

SELECTED ZONE ANALYSIS (INPUT TRIP TABLE)
Purpose 1 = Total Network Trips Purpose 2 = Trips for Zone 6 only

PAGE NO. 2
DATE 25MAR97
TIME 13:50:11

TRIP END SUMMARY --- PURPOSE 2

ZONE/DIST	ORIG/PROD	DEST/ATTR	TOTAL	INTRATRIPS	ZONE/DIST	ORIG/PROD	DEST/ATTR	TOTAL	INTRATRIPS
1	347	347	694	0					
2	15	15	30	0					
3	215	215	430	0					
4	19	19	38	0					
5	48	48	96	0					
b	2654	2654	5308	82					
7	254	254	508	0					
8	103	103	206	0					
9	86	86	172	0					
10	205	205	410	0					
11	156	156	312	0					
12	56	56	112	0					
13	97	97	194	0					
14	1	1	2	0					
15	1	1	2	0					
lb	291	291	582	0					
17	54	54	108	0					
18	38	38	76	0					
19	66	bb	132	0					
20	66	66	132	0					
21	297	297	594	0					
22	30	30	60	0					
23	82	82	lb4	0					
24	45	45	90	0					
	---	---	---	---					
TOTALS	5226	5226	10452	82					

```
$EQUILIBRIUM HIGHWAY LOAD
$FILES
   INPUT FILE = HWYNET, USER ID = $HNET.A95$
   INPUT FILE = HWYTRIP, USER ID = $HTTAB2.A95$
   INPUT FILE = TOLDATA, USER ID = $TOLLLINK.95A$
   OUTPUT FILE = LODHIST, USER ID = $HRLDXY.A95$
$HEADERS
$OPTIONS
 ~ TOLL FACILITIES MODEL
 ~ MULTIPLE SERVER QUEUES
$PARAMETERS
   EQUILIBRIUM ITERATIONS = 10
   DAMPING FACTOR = 0.5
 ~ HOV LINKS, LINK GROUP2 = 80
   CONFAC = 0.10
   SELECTED PURPOSES = 1-2
   "ROAD FACTOR = 0.75
   CTOLL = 0.04
   TOLLS = 0.10
           0.20
           0.30
           0.40
           0.50
           0.60
           0.70
           0.80
           0.90
           1.00
           1.10
           1.20
           1.30
           1.40
           1.50
           1.60
           1.70
           1.80
           1.90
           2.00
   SERVT= 0.10
           0.20
           0.30
           0.40
           0.50
           0.60
           0.70
           0.80
           0.90
           1.00
           1.10
           1.20
           1.30
           1.40
           1.50
           1.60
           1.70
           1.80
           1.90
           2.00
$END TP FUNCTION
```

FLORIDA D.O.T.
FSUTMS
VER 5.20

PAGE NO. 3
DATE 25MAR97
TIME 13:50:13

TRIP ASSIGNMENT SUMMARY ---

	PURPOSE 1	PURPOSE 2	TOTAL
ASSIGNED INTERZONAL TRIPS =	99958	5144	105102
UNASSIGNED INTERZONAL TRIPS =	0	0	0
INTRAZONAL TRIPS =	68238	82	68320
TOTAL TRIPS =	168196	5226	173422
TOTAL VEHICLE-MILES =	1160345.	0.	1160345.
TOTAL VEHICLE-HOURS =	40966.	0.	40966.
AVERAGE SPEED =	28.32	.00	28.32

INFO THE ABOVE SUMMARIES ARE "SYSTEM-WIDE" AND SHOULD BE USED FOR GENERAL REFERENCE ONLY
FOR MORE DETAILED SUMMARIES USE THE TRANPLAN MODULE "REPORT HIGHWAY NETWORK SUMMARY"
WITH THE OPTION "SPEED DETAIL REPORT"

```
$REPORT HIGHWAY LOAD
$FILES
   INPUT FILE = LODHIST, USER ID = $HRLDXY.A95$
$HEADER
          Purpose 1 = Total Network Trips
          Purpose 2 = Trips for Selected Zone 6
$OPTION
   VC REPORT
$PARAMETER
   CONFAC = 0.1333
   SELECTED PURPOSES = 1,2
$END TP FUNCTION
```

FLORIDA D.O.T.
FSUTMS
VER 5.20

Purpose 1= *Total* Network Trips
Purpose 2 = Trips for Selected Zone 6

PAGE No. 1
DATE 25MAR97
TIME 13:50:15

ASSIGNED VOLUMES -- EQUILIBRIUM LOAD --- PURPOSE 1

		------ A-B DIRECTION ------			------ 8-A DIRECTION ------			----- BOTH DIRECTIONS -----		
ANODE	BNODE	VOLUME	CAPACITY	V/C	VOLUME	CAPACITY	V/C	VOLUME	CAPACITY	V/C
1	1280	1,921	70518	.17	11921	70518	.17	23842	141036	.17
	1350	10773	70518	.15	10773	70518	.15	21546	141036	.15
2	1280	3056	70518	.04	3056	70518	.04	6112	141036	.04
3	1220	1729	70518	.02		70518	.02	3065	141036	.02
	1265	345	70518	.00	738	70518	.01	1083	141036	.01
4	1205	627	70518	.01	627	70518	.01	1254	141036	.01
	1255	671	70518	.01	671	70518	.01	1342	141036	.01
5	1255	1564	70518	.02	1564	70518	.02	3128	141036	.02
	1325	1045	70518	.01	1045	70518	.01	2090	141036	.01
6	1265	1622	70518	.02	962	70518	.01	2584	141036	.02
	1285	254	70518	.00	660	70518	.01	914	141036	.01
	1290	0	70518	.00	0	70518	.00	0	141036	.00
	1335	696	70518	.01	950	70518	.01	1646	141036	.01
7	1335	0	70518	.00	0	70518	.00	0	141036	.00
	1355	5441	70518	.08	5441	70518	.08	10882	141036	.08
	1360	590	70518	.01	590	70518	.01	1180	14,036	.01
	1395	0	70518	.00	0	70518	.00	0	141036	.00
a	1325	1053	70518	.01	1072	70518	.02	2125	141036	.02
	1360	1824	70518	.03	1805	70518	.03	3629	141036	.03
	1385	356	70518	.01	356	70518	.01	712	141036	.01
9	1310	3496	70518	.05	3496	70518	.05	6992	141036	.05
	1365	252	70518	.00	252	70518	.00	504	141036	.00
10	1240	4960	70518	.07	4960	70518	.07	9920	141036	.07
	1295	0	70518	.00	0	70518	.00	0	141036	.00
	1300	0	70518	.00	0	70518	.00	0	141036	.00
	1310	2366	70518	.03	2366	70518	.03	4732	141036	.03
11	1190	634	70518	.01	634	70518	.01	1268	141036	.01
	1225	2345	70518	.03	3962	70518	.06	6307	141036	.04
	1230	0	70518	.00	0	70518	.00	0	141036	.00
	1240	4157	70518	.06	2540	70518	.04	M97	141036	.05
12	1120	30	70518	.00	30	70518	.00	60	141036	.00
	1170	0	70518	.00	1003	70518	.01	1003	141036	.01
	1180	671	70518	.01	671	70518	.01	1342	141036	.01
	1190	1304	70518	.02	301	70518	.00	1605	141036	.01
13	1100	2431	70518	.03	2431	70518	.03	4862	141036	.03
	1130	0	70518	.00	0	70518	.00	0	141036	.00
14	1140	24	70518	.00	24	70518	.00	48	141036	.00
	1160	106	70518	.00	106	70518	.00	212	141036	.00

FLORIDA D.O.T.
ESUTMS
VER 5.20

Purpose 1 = Total Network Trips
Purpose 2 = Trips for Selected Zone 6

PAGE NO. 10
DATE 25MAR97
TIME 13:50:15

ASSIGNED VOLUMES -- EQUILIBRIUM LOAD --- PURPOSE 2

		------ A-B DIRECTION ------			------ B-A DIRECTION ------			----- BOTH DIRECTIONS -----		
ANODE	BNODE	VOLUME	CAPACITY	V/C	VOLUME	CAPACITY	V/C	VOLUME	CAPACITY	V/C
1	1280	347	70518	.00	347	70518	.00	694	141036	.00
	1350	0	70518	.00	0	70518	.00	0	141036	.00
2	1280	15	70518	.00	15	70518	.00	30	141036	.00
3	1220	215	70518	.00	0	70518	.00	215	141036	.00
	1265	0	70518	.00	215	70518	.00	215	141036	.00
4	1205	0	70518	.00	0	70518	.00	0	141036	.00
	1255	19	70518	.00	19	70518	.00	38	141036	.00
5	1255	0	70518	.00	0	70518	.00	0	141036	.00
	1325	48	70518	.00	48	70518	.00	96	141036	.00
6	1265	1b22	70518	.02	962	70518	.01	2584	141036	.02
	1285		70518	.00		70518	.01	914	141036	.01
	1290	0	70518	.00	0	70518	.00	0	141036	.00
	1335	696	70518	.01	950	70518	.01	1646	141036	.01
7	1335	0	70518	.00	0	70518	.00	0	141036	.00
	1355	254	70518	.00	254	70518	.00	508	141036	.00
	1360	0	70518	.00	0	70518	.00	0	141036	.00
	1395	0	70518	.00	0	70518	.00	0	141036	.00
a	1325	0	70518	.00	0	70518	.00	0	141036	.00
	1360	103	70518	.00	103	70518	.00	206	141036	.00
	1385	0	70518	.00	0	70518	.00	0	141036	.00
9	1310	ab	70518	.00	86	70518	.00	172	141036	.00
	1365	0	70518	.00	0	70518	.00	0	141036	.00
10	1240	205	70518	.00	205	70518	.00	410	141036	.00
	1295	0	70518	.00	0	70518	.00	0	141036	.00
	1300	0	70518	.00	0	70518	.00	0	141036	.00
	1310	0	70518	.00	0	70518	.00	0	141036	.00
11	1190	0	70518	.00	0	70518	.00	0	141036	.00
	1225	0	70518	.00	156	70518	.00	156	141036	.00
	1230	0	70518	.00	0	70518	.00	0	141036	.00
	1240	156	70518	.00	0	70518	.00	156	141036	.00
12	1120	0	70518	.00	0	70518	.00	0	141036	.00
	1170	0	70518	.00	56	70518	.00	56	141036	.00
	1180	0	70518	.00	0	70518	.00	0	141036	.00
	1190	56	70518	.00	0	70518	.00	56	141036	.00
13	1100	97	70518	.00	97	70518	.00	194	141036	.00
	1130	0	70518	.00	0	70518	.00	0	141036	.00
14	1140	0	70518	.00	0	70518	.00	0	141036	.00
	1160	1	70518	.00	1	70518	.00	2	141036	.00