Manatee County
Traffic Study Guidelines

Development Services Department

March 20, 2026

I. Traffic Study Guidelines and Procedures

A. Purpose

The purpose of these guidelines and procedures is to improve customer service by providing predictability and consistency in the County's preparation and review of studies used to evaluate transportation impacts of proposed developments.

B. Applicability and Scope

These procedures shall govern the Manatee County Development Services staff in the preparation and review of traffic studies necessary to evaluate transportation impacts of proposed developments.

C. Authorization

Section 102 of the Manatee County Land Development Code (LDC) authorizes the County Administrator to adopt administrative procedures to set forth technical and processing components of implementing the Code. This procedure establishes the administrative procedures and traffic study guidelines to complement the Alternative Transportation System requirements of the LDC.

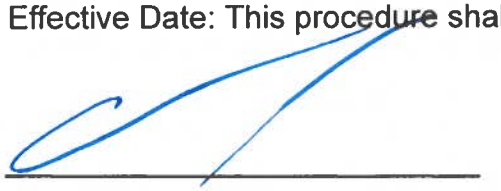
D. Amendment

The Development Services Director is hereby authorized to amend the guidelines from time-to-time as needed to reflect the latest, professionally accepted practices or to update administrative language such as filing locations, contact information, and review timelines.

E. Related Policies

Objective 5.1.2, Comprehensive Plan Objective 5.2.2, Comprehensive Plan Objective 5.2.3, Comprehensive Plan
Manatee County Public Works Standards

Effective Date: This procedure shall take effect on March 20, 2026.



Charlie Bishop
County Administrator
Manatee County

II. Table of Contents

III. Table of Abbreviations

AADT	Average Annual Daily Traffic
ADT	Annual Daily Traffic
CIE	Capital Improvement Element
CIP	Capital Improvement Plan
CPA	Comprehensive Plan Amendment
D1RPM	District 1 Regional Planning Model
EOR	Engineer of Record
FAR	Floor Area Ratio
FDOT	Florida Department of Transportation
FDM	Florida Design Manual
FHWA	Federal Highway Administration
FLUM	Future Land Use Map
FP	Final Plat
FSP	Final Site Plan
FSUTMS	Florida Standard Urban Transportation Model Structure
GDP	General Development Plan
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
ITE	Institute of Transportation Engineers
KSI	Killed or Seriously Injured
LDA	Local Development Agreement
LDC	Land Development Code
LOS	Level of Service
LUC	Land Use Code
LUEM	Land Use Equivalency Matrix
MCAT	Manatee County Area Transit
MPO	Metropolitan Planning Organization
MUTCD	Manual on Uniform Traffic Control Devices
MSASA	Multimodal Site Access and Safety Analysis
NCHRP	National Cooperative Highway Research Program
OA	Operational Analysis
OP	Off-Street Parking Plan
PE	Professional Engineer- Registered in Florida
PLN	Planning Number from Accela
PP	Preliminary Plat
PSP	Preliminary Site Plan
PSP-Z	Preliminary Site Plan with Rezone
SP	Special Permit
SSP	School Site Plan
TAZ	Traffic Analysis Zone
TEM	FDOT Traffic Engineering Manual
TGC	Trip Generation Comparison
TRB	Transportation Research Board
TRR	Trip Reservation Report
V/C	Volume/Capacity
Z	Euclidian (Straight) Rezone

IV. Introduction

This document presents the general methodology and procedure guidelines for traffic studies to be submitted with Manatee County Future Land Use Map (FLUM) amendments, zoning, and land development applications. These procedures are established to provide a consistent basis for evaluating the extent to which FLUM amendments and rezoning applications are consistent with the County's Comprehensive Plan and provide processes for assessing and addressing the Multimodal Site Access and Safety (MSASA) needs of new developments.

The authority for these guidelines includes the following:

- Community Planning Act, Sections 163.3161-163.3248, Florida Statutes
- Policies of Traffic Objective 5.1.2, 5.2.2, and 5.2.3, Manatee County Comprehensive Plan
- Development Review Criteria, Sections 340-343, Manatee County Land Development Code
- Manatee County Public Works Standards

V. Traffic Study Requirements

A. Overview

All traffic studies shall be signed and sealed by a Professional Engineer (PE) registered in Florida. The studies shall address the following major concerns related to new development traffic:

- Ensuring safe and efficient ingress and egress of motorized and non-motorized traffic to/from the development site.
- Monitoring the impact of new development traffic on the transportation system performance measures (i.e. Roadway Level of Service) to assist with County planning purposes.
- Evaluating whether increased entitlements resulting from changes to the County's Future Land Use Plan Map or Zoning Atlas are likely to adversely impact transportation system performance and, if so, what modifications to the Capital Improvements Element or transportation system performance measures are necessary to ensure consistency with the County's Comprehensive Plan to assist in County's long-range planning.

These concerns are addressed by the following traffic study types:

- Comprehensive Plan Amendment Traffic Study (CPA-TS)
- Multimodal Site Access and Safety Analysis (MSASA)
- Trip Reservation Report (TRR)

- Operational Analysis (OA)

The applicability of these study types is determined by the development application type and scale of the proposed development. The specific requirements of each general study type are determined by development characteristics, such as land use(s), size, geographical location, and number and location of access points. Table 1 provides the general study type required for each application type and development scale. In any case, all traffic studies must be signed and sealed by a Professional Engineer (PE) registered in Florida.

Application Type	Approval Type	Transportation Analysis
CPA	Legislative	CPA TS
GDP, PSP-Z, Z, SP	Quasi-Judicial	MSASA
PSP, FSP	Administrative	TRR / OA
SSP	Quasi-Judicial	MSASA/TRR/OA
Amendment to an Approved Application	To Be Determined	See Below
PP, Final Plat	Administrative	MSASA/TRR/OA

Table 1: Study Type Requirements

Amendments must meet the requirements of their respective plans (GDP or PSP). An amendment to an approved application must include a Trip Generation Comparison (TGC). If the TGC shows no increase in new trips, no further study is needed. If an amendment changes the land use schedule or codes per the latest Trip Generation Manual by the Institute of Transportation Engineers, causing an increase of over 100 trips during the PM Peak Hour, it triggers an MSASA. If the amendments result in trip differential less than 100 PM peak hour trips, compared to the most recently approved traffic study where an exemption pursuant to LDC 343.3 was not applied, then a TRR/OA is required.

B. Trip Generation Comparison for Traffic Study Waiver

A traffic study waiver should be supported by a trip generation comparison. When an application is submitted for a change of land use (e.g., future land use change, zoning amendment), a trip generation comparison is required to determine if the number of trips changes between the current and proposed use. A traffic study waiver is applicable if the generation comparison is less than 100 PM Peak hour trips.

- For change of potential land uses (example: for changes of Euclidian zoning or Future Land Use), the comparison should be done between the proposed most probable worst case land use and the existing most intense allowable land use.

- For changes in approved land uses, a comparison of the approved trips against the proposed trips should be completed. The originally approved trips should not be updated to the latest edition of the ITE Trip Generation Manual; however, the proposed trips should be calculated with the currently accepted methodologies based on the current edition of the ITE Trip Generation Manual.
- Pursuant to Section 343.3. of the LDC, if a development application's transportation impacts are projected to increase anticipated gross trips by 100 or fewer trips during the PM Peak Hour, a Vehicular Site Access review under the operational analysis is required.

C. Analysis Type

There are two different types of analysis:

1) System Analysis
   The system analysis evaluates the roadway capacity of the first impacted thoroughfare(s) including its intersections (termini). First Impacted Thoroughfare(s) shall mean thoroughfare roadway(s) to which the project takes access, or if access is via a local roadway, thoroughfare roadway(s) connected to the local roadway network in which the project takes access. This analysis should identify mitigation strategies from the capacity perspective including a multimodal and safety component.
2) Site-Related Analysis
   The site related analysis is a detailed analysis of the site accesses. It evaluates location, spacing, and configuration of each proposed access. Operational Analysis (OA) is part of the site related analysis.

D. Mandatory Analysis

The following components, that are described in the appendix, shall be part of the Mandatory Analysis:

1) Trip Generation (Appendix VIII-C)
2) Generation Comparison (Appendix VIII-D)
3) Trip Assignment (Appendix VIII-E)
4) Study Area Determination (significance test) with FDOT Context Classification for Future County Planning (Appendix VIII-F)
5) Access Location (Appendix VIII-H)
6) Multimodal Analysis (Appendix VIII-L)

E. Scenarios

As described in the Appendix G and indicated in Table 1, there are 5 different scenario analysis as follows:

1) Existing
2) Short-Term Background: 5-Year time frame under background traffic conditions
3) Short-Term: 5-Year time frame under total traffic conditions
4) Long-Term Background: 20-Year time frame under background traffic conditions
5) Long-Term Total: 20-Year time frame under total traffic conditions

F. Comprehensive Plan Amendment Traffic Study (CPA-TS)

A CPA-TS typically involves an increase in the density or intensity of future land use. It is important to gauge the impacts on those proposed land use changes on the transportation system. The study will be using the short-term and long-term scenarios with the following components:

1) Methodology statement (Appendix VIII-B)
2) Trip Generation (Appendix VIII-C)
3) Trip Generation Comparison (Appendix VIII-D, if applicable)
4) Trip Distribution and Assignment (Appendix VIII-E)
5) Study Area Determination (Appendix VIII-F)
6) Scenario Analysis (short and long terms) (Appendix VIII-G)

G. Multimodal Site Access and Safety Analysis (MSASA)

The MSASA shall follow the latest version of FDOT Multimodal Transportation Site Impact Handbook, Pedestrian /Bicycle Transit Impact Analysis, and the ITE Multimodal Transportation Impact Analysis for Site Development. The analysis should identify the impacts not only on the first thoroughfare(s) but also on the study area (significance test) with context classification and propose mitigation strategies for those impacts on the first thoroughfare(s). The analysis should also identify the location of accesses. Access configuration will be determined with the operational analysis.

The MSASA should contain the following items:

1) Methodology Statement (Appendix VIII-B)
2) Trip Generation (Appendix VIII-C)
3) Trip Generation Comparison (Appendix VIII-D, if applicable)
4) Trip Distribution and Assignment (Appendix VIII-E)
5) Study Area Determination (Appendix VIII-F)
6) Scenario Analysis (Appendix VIII-G)
7) Multimodal Analysis (Appendix VIII-C)

Regarding size of the proposed development:

1) De Minimis

   The development impacts of a transportation application shall be deemed De Minimis if one of the following conditions is met:

   a. Fewer than 50 gross trips during the PM Peak Hour or,
   b. Fewer than 300 gross daily trips.

   For projects located along segments with 40 mph posted speed, design standards should follow the Manatee County Public Works Standards for turn lanes and access spacing.

2) Large Project

   As defined in the Comprehensive Plan, a large project contains eight hundred (800) or more residential units, or commercial equivalent in terms of gross of PM Peak Hour trips.

H. Trip Reservation Report/Operational Analysis (TRR/OA)

Similarly to the MSASA, the TRR shall follow the latest version of FDOT Multimodal Transportation Site Impact Handbook, Pedestrian /Bicycle Transit Impact Analysis, and the ITE Multimodal Transportation Impact Analysis for Site Development. The TRR should contain the following items (see Appendix):

1) Trip Generation (Appendix VIII-C)
2) Trip Distribution and Assignment (Appendix VIII-E)
3) Operational Analysis at Accesses
4) Trips generated by the project listed by link and land use type
5) Miscellaneous as discussed in Methodology.

In addition to the requirements stipulated in LDC 342.5 (D)(3), the PM peak hour trip summary is required for all approved and active FSP for multiphase and/or multiuse applications.

The PM peak hour trip summary provides technical evidence to:

1) Assess whether the total FSP trips are within the total PM peak hour trips approved from the MSASA.
2) Assess whether the total FSP trips are within the trips from the Operational Analysis (Access Analysis).

In the case that the PM peak hour trips summary exceeds the previously approved total PM peak hour trips, a revised traffic study will be required.

In addition to the requirements stipulated in LDC 343.4 (A) (B), an OA should be conducted for each final site plan for multiphase and/or multiuse applications. The access and safety related improvements derived for each OA should be constructed and accepted by Manatee County within five (5) years of the accepted OA. Otherwise, a revised OA will be required.

VI. Report Submittal and Review Process

A. Methodology

The applicant shall initially set a mandatory methodology statement based on discussion with Transportation Planning and Traffic Engineering staff.

After the pre-application meeting, applicants shall submit a methodology statement to the Development Services department through Accela. Transportation Planning and Traffic Engineering Division will conduct a methodology meeting to discuss and obtain consensus on the methodology statement based on County standards, requirements and regulations within 10 working days.

The project application will not be routed for completeness review until all required information has been submitted to Accela in accordance with the approved methodology and these guidelines.

B. Land Development Application Package

The applicant shall submit the following:

1) Approved methodology statement
2) Appropriate study (PDF) per Table 1 with supporting files (e.g., SYNCHRO, D1RPM, Sidra, etc.)
3) The report will then be routed to the Transportation Planning and Traffic Engineering Division for review. At the discretion of the Transportation Planning and Traffic Engineering Division Manager, the report may be reviewed by a County's Traffic Review Consultant. If a Traffic Review Consultant is assigned for the review, the Applicant will be required to coordinate only with Transportation Planning and Traffic Engineering staff. According to the adopted Development Services Fee Schedule, the Applicant (property owner or assigned agent) is responsible for the actual cost the County incurs when contracted Traffic Review Consultant services are used during the review process. In these circumstances, the County will invoice the Applicant upon receipt of the project submittal. The review process will not begin until the invoice is paid in full.

VII. Approval Process

After Transportation Planning and Traffic Engineering staff have completed study review, staff will provide approval/acceptance correspondence to the applicant. This correspondence will include any conditions, stipulations and/or mitigation

related to the approval of the project. For projects where improvements are required, those required improvements are subject to a Payment in Lieu of Required Improvements (PILORI) agreement or Local Development Agreement (LDA). Additional review and coordination may be necessary prior to the Transportation Planning staff's final determination of sufficiency which permits the Planning Division's scheduling of the public hearing, if applicable.

VIII. Appendix

A. Basic submittal information for all types of submittals

1) Applicant contact information
2) Traffic Engineer contact information
3) PLN and project numbers
4) Location (maps, parcel number, address and other ways to determine where the project is located)
5) Project description: existing and proposed uses, square foot/dwelling units in the location and what is proposed to be done in the location (build, change uses, rezone, etc.)
6) Type of application

B. Methodology

A methodology statement in transportation planning is a detailed document outlining the specific methods, tools, and procedures that will be used to conduct a transportation study explaining how data will be collected, analyzed, and interpreted to reach conclusions and inform decision-making; essentially serving as a roadmap for the entire planning process, ensuring consistency and transparency in the approach taken. A methodology meeting will provide the following benefits:

1) Clarity and Transparency: Provides a clear understanding of the research process, allowing stakeholders to evaluate the validity and reliability of the findings.
2) Quality Assurance: Helps to ensure that the study is conducted using rigorous and appropriate methods, leading to reliable results.
3) Credibility Enhancement: Demonstrates a well-thought-out approach, building confidence in the project among decision-makers and the public.
4) Efficient Project Management: Facilitates project planning by identifying key steps, timelines, and resource requirements.

5) Identification of Potential Issues: Enables early identification of potential challenges or limitations in the study design (including safety, capacity, etc.) allowing for proactive mitigation strategies.
6) Reproducibility: Allows for replication of the study by other researchers, enhancing the validity of findings.

The review will focus on key elements stated in these guidelines, including study limits, derivation of traffic volumes, project trip generation, distribution, assignment, and associated components, as described herein.

Once all aspects of the methodology are agreed upon and approved by Transportation Planning Division, the applicant will receive confirmation to proceed with the traffic study. It is crucial that all aspects of the methodology are thoroughly addressed to avoid undesirable delays in later stages. A methodology statement is mandatory for all types of traffic studies. For efficiency purposes, the County will implement a procedure for submittal and review under in Accela.

C. Trip Generation

1) Using ITE's most recent Trip Generation Manual, calculate the daily, AM, and PM peak hour gross trip generation:
    a. Use equation when available (the number of trips generated must be greater than 0, if the equation doesn't generate a value greater than 0, use average rate) otherwise use average rate.
    b. Other time periods may be required for special traffic generators.
2) Size, variables and type of use:
    a. When more than one variable as to a specific land use determines the number of trips, use the set of variables that generate the highest number of trips (example ITE 945 with number of pumps/fueling positions and square footage).
    b. Use the specific land use and size for applications that have a clear idea of the use.
    c. Use the most probable worst case land use scenario for applications that would permit a wide range of land uses, FAR, maximum number of units per acre and area.
3) If land uses do not match existing ITE categories, or the applicant wishes to use a different trip generation rate, an independent trip generation study can be submitted. This type of study must be consistent with ITE methodologies and guidelines and be approved by Transportation Planning and Traffic Engineering staff before submittal.

4) Internal trip capture can be considered when there are mixed land use developments. The internal capture rates and limits need to be agreed with Transportation Planning and Traffic Engineering staff in the methodology statement.
5) Pass by reductions can be applied using the latest edition of ITE Trip Generation Handbook and the total reduction should not be more than 10% of the adjacent street traffic (FDOT Multimodal Transportation Impact Analysis -10% rule).

D. Trip Generation Comparison

1) When an application is submitted for a change of land use, square footage or dwelling units, a trip generation comparison is required to determine if the number of trips changes between the current and proposed situation:
    a. For change of potential land uses the comparison should be done between the proposed most probable worst case land use and the existing most intense allowable land use.
    b. For changes in approved land uses, a comparison of the approved trips against the proposed trips should be completed. The originally approved trips should not be updated to the latest edition of the ITE Trip Generation Manual, however, the proposed should be calculated with currently accepted methodologies based on the latest edition of the ITE Trip Generation Manual.

E. Trip Distribution and Assignment

1) For projects that generate over 100 PM Peak hour gross trips, the use of the D1RPM-FSUTMS model is required to determine the trip distribution of the project. Network and socioeconomic data will be determined during the methodology meeting.
2) For projects classified as De Minimis or generating fewer gross trips, the D1RPM-FSUTMS model is preferred, however other methods like travel patterns based on traffic counts or historical data from Manatee County or FDOT can be used.
3) For projects under the legislative planning process (Comprehensive Plan Amendment), and independent of the number of trips generated, the use of the D1RPM-FSUTMS model with a short- and long- range analysis is required for trip distribution and assignment.
4) For reporting purposes, trips on links inside the study area should be classified by land use (residential, commercial, and others).

F. Study Area Determination (Significance Test)

1) All first impacted thoroughfare segment(s) are part of the study area determination. A first impacted thoroughfare segment is considered as the first thoroughfare segment that a trip related to the project can access when going to/from another location with the segment bordered on each end by the first throughfare roadway. A project can have multiple first impacted thoroughfare segments. A first impacted thoroughfare should also include its termini intersections. All signalized intersections within the limit of the first impacted thoroughfare(s) should be analyzed.
2) All thoroughfare segments inside of the study area will be included as part of the trip reservation report.
3) For projects having access to local roads, the first thoroughfare(s) intersecting the local roads be analyzed.
4) All segments that consume 5% or more of the roadway maximum service volume should be included in the study impact determination. These segments are considered passing the significance test. The way to calculate the significance test is by dividing the PM peak hour project trips in the segment (bi-directional) by the maximum 2-way service volume of the segment. For the ratio to be considered “not significant”, it cannot be higher than 5 percent.

G. Scenario Analysis

1) Existing Conditions
   An analysis (impact identification) of current year peak hour peak season traffic conditions for all access points and for the first thoroughfare(s) with its intersections included in the study area:
   a. Traffic counts can be used for this analysis. The traffic counts need to be collected less than 12 months prior to the time/date of the project application.
   b. If traffic counts are not collected, only data provided from Manatee County sources can be used to determine existing conditions. However, growth rates (calculated with historical traffic data with accepted procedures) will need to be developed to reflect current year conditions if traffic counts are older than 12 months. This situation needs to be stated in the methodology statement.

      As part of this analysis, adopted LOS standards and associated service volumes (for thoroughfare roadways in the Study Area) will need to be provided. In addition, the source and type of analysis software to be used in this scenario will need to be identified.

The latest version of the FDOT Multimodal Quality Level of Service Handbook shall be used to calculate the generalized Level of Service (LOS).

2) Background Conditions (Non-Project Trips + Programmed/Planned Improvements) (CIP and committed)
   Background (non-project related) traffic shall be estimated using procedures set forth in the approved methodology pursuant to review and discussion during the methodology meeting with Transportation Planning and Traffic Engineering staff.
   Potential methods include the application of historical growth rates, model-derived growth rates, and reserved trips from the County capacity management database (aka capacity reservation system).
   a. For short range analysis, the general approach is to use 100 percent of reserved trips with the updated link sheet table. During the transition time (from transportation concurrency to repealing transportation concurrency), the reserved trips will be estimated and agreed during the methodology meeting. When using reserved trips, a justified growth trend may also be applied if the proposed development is in an area with potential for additional traffic from sources that are not tracked in the capacity management database.
   b. For projects with a projected build-out of five (5) years or less, the Background scenario may include any scheduled and fully funded transportation improvements programmed in the currently adopted Manatee County Capital Improvement Program (CIP) or FDOT adopted Work Program. Capital projects undertaken by other agencies or private entities shall not be included unless identified in the approved methodology. Inclusion of any improvement planned by other parties may result in the improvement being stipulated as a required improvement for the project under review.
   c. For projects with a build-out of more than five (5) years, capital improvements shown in the Sarasota-Manatee MPO Cost Feasible Long Range Transportation Plan, and “Projects of Record” shown in the Manatee County CIP may also be included provided when those projects are planned for buildout within the timeframe of the project buildout condition.
3) Future Conditions
   An analysis at buildout year of peak hour peak season traffic conditions for all access points and for the intersections included in the mandatory analysis should be submitted by the applicant. The segments include their

termini as well as all signalized and roundabout intersections included along those segments. The analysis should include the background conditions plus the site-related trips generated.

H. Access

1) Pedestrian Access:
    a. The project must provide a direct accessible convenient pedestrian access from the entrance of the site to the public sidewalk.
    b. The project must provide a sidewalk along the frontage of the development site and the public street right of way consistent with County's design standards. If a right of way easement is necessary to construct the necessary sidewalk(s), the applicant shall grant said easement or an equivalent compensatory strategy unless it can be demonstrated that doing so would create a safety concern on the development site.
2) Bicycle Access:
    a. Consistent with the County's Comprehensive Plan (5.4.1.), the developer shall provide sufficient publicly accessible, safe and with shelter parking possibilities for bicycles (bicycle racks) and/or other bike storage facilities to meet the demands of the site.
    b. If a shared use path, or other off-street bicycle facility is shown adjacent to the development site, the developer shall construct that portion of the planned facility that abuts the site.
3) Vehicular Site Access:
    a. Access improvements are operational improvements at the development's access connection(s) to public roadways. Based on the context classification, type, volume, and speed of traffic, the applicant shall assess each access location and identify any improvement necessary for the access to operate safely and efficiently for pedestrians, bicyclists, and drivers.
4) Auxiliary Lanes

    Auxiliary lanes are left-turn and right-turn lanes that are constructed at a development's access to enhance safety for pedestrians, bicyclists, and motorists. The need for auxiliary lanes at a proposed project access shall be determined using the latest version of the Manatee County Public Works Standards for County-maintained roadways and the FDOT Multimodal Access Management Guidebook for state-maintained roadways or as directed by the County Administrator or his/her designee. For de minimis applications, NCHRP 279 and 745 turn lane warrant analysis should be satisfied. As far as capacity, the auxiliary turn lane requirements can be

waived by the County Administrator or his/her designee. However, safety criteria must be considered as stated in section K.4 (Safety Analysis).

a. Any required auxiliary lane analysis will be identified at the time of the Methodology meeting and may be updated based on the outcomes of the trip distribution/assignment analysis.
b. To perform these analyses, the applicant must collect existing turning movement counts at the proposed access locations during the worst-case peak hour for all study intersections and forecast these counts to be consistent with the future traffic conditions scenario.
c. The total length of a left-turn lane is the sum of the deceleration length and the queue length. The latest version of FDOT FDM 212.1 shall dictate the deceleration length of a left-turn lane for a design speed equal to the posted speed limit plus five (5) miles per hour. Back-of-queue calculations from traffic analysis software that are based on the latest edition of the Highway Capacity Manual (such as Highway Capacity in the last five (5) years Software or Synchro) shall determine the queue length of a recommended left-turn lane for each proposed access. A 50-foot minimum queue length will be required. Unsignalized intersection vehicle queue length will be calculated per Manatee County Public Works Standards.
d. Depending on the results of the analysis from the latest version of the Manatee County Public Works Standards, one of these three right-turn conditions shall apply:
    i. Full-width right-turn lane – This 12-foot-wide right-turn lane shall have a deceleration length determined by applying the latest version of FDOT FDM 212.1 for a design speed equal to the posted speed limit plus five miles per hour.
    ii. Taper – The taper provides a 12-foot width for right-turns at the curb radius and ends at a 0-foot width upstream of the curb radius at a taper length prescribed by Figure 3-21 of the Florida Greenbook for a design speed equal to the posted speed limit plus five (5) miles per hour.
    iii. Radius Only – All proposed auxiliary lanes and site-related improvements must be listed in applicable MSASA acceptance/approval letters. All site-related access improvements shall be shown on the FSP/Construction Plans, including those for pedestrian, bicycle and transit. Both the traffic consultant and the Engineer-of-Record for the design plans must propose auxiliary lane designs and site-related improvements that are integrated into the existing roadway

signing design, pavement marking design, and any driveway access locations, sidewalks, bicycle lanes, or transit amenities.

e. All site-related access improvements shall be shown on the FSP/Construction Plans, including those for pedestrians, bicycle, and transit, both graphically and in text. Both the traffic consultant and the Engineer-of-Record for the design plans must propose auxiliary lane designs and site-related improvements that are integrated into the existing roadway signing design, pavement marking design, and any driveway access locations, sidewalks, bicycle lanes, or transit amenities.

5) Intersection Control
   a. Size of the project (more than 200 PM peak hour trips),
   b. Safety conditions (1 KSI crash in the vicinity of the project) for the last 5 years,
   c. Traffic volumes (more than 5% of heavy vehicles and/or v/c ratios higher than 0.85),
   d. Intersection complexity (U-turns). Intersection control includes any option proposed for the applicant such as roundabout, signal warrant analysis of site access intersections and/or local street-thoroughfare intersections when significance site traffic accesses the major roadway network via a local street.
   e. In urban contexts, where additional cross-connectivity may benefit safety and mobility of all road users, the applicant may be required to consider the cumulative volumes at each access point for the purpose of evaluating the potential need for intersection traffic control at any single access point.
   f. If the MSASA indicates that a new traffic control device such as roundabout or traffic signal is necessary to safely accommodate the site access traffic generated by the applicant, an intersection control evaluation (ICE) or technical evidence to support these findings will be required by the County.

6) Access Location and identification:
   a. Relative information to determine where, how many and what type of accesses (motorized and non-motorized access) are proposed for the development.
   b. Location of Adjacent Driveways, with Measurements related to spacing: Show that the accesses are consistent with Manatee County Standards.

I. Local Street Impacts

When a project has access to a local street, an evaluation for traffic calming and/or non-motorized user safety improvements between the access and the first impacted thoroughfare segments is required as long as one of the following conditions are met:

1) The existing local street volume plus the projected development trip exceeds 1,000 Annual Daily Trips, or
2) The development is expected to increase volumes on the local street over 200 daily trips.

J. Adjacent Intersection Operations

1) Based on the applicant's trip generation and trip distribution, operational analysis at the intersections adjacent to the first-impacted thoroughfare, and intersections at the discretion of the County Administrator or his/her designee, may be required as part of the applicant's MSASA Methodology.
2) Operational improvements include:
    a. Control adjustments (i.e., signal timing and/or phasing changes),
    b. Turn lane additions, or lane modifications required to allow turning traffic to operate without interfering with through movement traffic or walking, bicycling and public transportation travel.
3) For each Operational Analysis Intersection Lane group with left-turning or right-turning traffic, improvements shall be identified that will allow the lane group to operate with a volume-to-capacity ratio (v/c) less than 1.0 and to create no adverse queuing effects. V/C ratios should be calculated using traffic operational software such as Synchro.
4) Unsignalized intersections delays should be determined using the criteria of the Highway Capacity Manual. Length of the turn lane should follow AASHTO standards. The operational conditions shall address the safe and convenient travel to and from the development on foot, by bicycle, by public transportation, and by motorized vehicle.

K. Safety Analysis

The applicant shall complete a safety analysis along the first impacted thoroughfare(s) and adjacent intersections. The safety analysis will include at minimum:

1) Analysis of 5 years of traffic crash (motorized and non-motorized) data provided by Manatee County (year range to be determined as part of methodology) at the area defined by the 5% significance test and/or the first impacted thoroughfare,

2) Identification of existing motorized and non-motorized user safety concerns,
3) Discussion of potential mitigating or aggravating impacts of the proposed development, and
4) Identification of appropriate safety countermeasures (see section 4.9.2 of the FDOT Multimodal Transportation Site Impact Handbook), including but not limited to low-cost short-term countermeasures, to mitigate existing safety issues likely to be caused or exacerbated by the development traffic.

L. Multimodal Site Access and Safety Improvements

1) The multimodal site access analysis and safety improvements shall follow the latest version of FDOT Multimodal Transportation Site Impact Handbook, Pedestrian/Bicycle Transit Impact Analysis, and the ITE Multimodal Transportation Impact Analysis for Site Development. The context-based assessment to review pedestrian and bicycle site impact consists of:
    a. Review for compatibility with planning documents,
    b. Internal site design bicycle and pedestrian accommodations, and
    c. Bicycle/pedestrian connections to adjacent properties and/or transit stops.
2) If the peak hour volume for non-motorized trips is higher than 20 trips, a quantitative pedestrian and bicycle analysis is needed.

    This analysis is limited to evaluate network connectivity with the route directness ratio as the shortest path route distance divided by the straight-line distance. This assessment shall include an analysis in qualitative terms of:
    a. Completeness of the pedestrian/bicycle network,
    b. Connectivity of the site to the pedestrian/bicycle network of the surrounding area,
    c. Accessibility to nearby shared off-street multipurpose lanes and sidewalks,
    d. Convenience of pedestrian and bicycle facilities (directness instead of circuitous routes),
    e. Gaps in the area's pedestrian and bicycle facilities that could prevent or discourage accessing the development by walking and/or bicycling,
    f. Adequate bicycle way width and sufficient secure bicycle parking areas,
    g. Physical separation with buffers and barriers from the motorized travel lanes,

h. Distance from the closest transit stop.
i. Any safety-related improvements necessary to provide development site access shall be made by the developer.

Further reference to Chapter 11 of the County's LDC and Impact Fee Administration Manual, may be necessary.

M. Mitigation Strategies (Optional at the Discretion of Applicant)

At the discretion of the applicant, the mitigation strategies are applicable to any significant impact identified in the study area.

1) If off-site improvements are identified, the applicant shall provide a project trip threshold to determine when, in terms of number of trips, an improvement will be triggered.
2) For each phase of the proposed development, the analysis should be conducted to differentiate mitigation requirements as follows:
    a. Background traffic mitigation is the minimum feasible set of improvements for background traffic conditions (total without proposed development) that allow each studied road segment to operate at or above adopted level of service and each studied intersection lane group to operate with a v/c ratio less than 1.0., which will assist with the determination of eventual proportionate share (if applicable).
    b. Consistency mitigation is a set of improvements in addition to the Background mitigation. The analysis shall be based on the study area network as if the Background mitigation is in place. For each road segment and intersection that is significantly and adversely impacted by the development under consideration, Consistency mitigation is the additional improvements for total traffic conditions that allow each studied road segment to operate at or above adopted level of service and each studied intersection lane group to operate with a v/c ratio less than 1.0.
    c. Operational improvements are control adjustments (i.e., signal timing and/or phasing changes), turn lane additions, or lane modifications required to allow turning traffic at Operational Analysis Intersections (see Study Area of Impact) to operate without interfering with through movement traffic or walking, bicycling and public transportation travel. For each Operational Analysis Intersection Lane group with left-turning or right-turning traffic, improvements shall be identified that will allow the lane group to operate with a volume-to-capacity

ratio (v/c) less than 1.0 and to create no adverse queuing effects. The operational conditions shall address the safe and convenient travel from/to the development by foot, bicycle, public transportation, and motorized vehicle.

3) Transit Access:
    a. If the development contains an affordable housing component or density bonus and the project is outside the ¼ mile radius of a bus stop, the addition of a transit facility to support transit connectivity for future residents is encouraged (bus stop pad, full bus stop or easement or right-of-way) to be included in the site plan to ensure future connectivity. It is expected that this facility will operate in short-term as a school bus stop and for long-term as an origin/destination for future transit routes.
    b. If the development is situated along an existing MCAT transit route, the development is encouraged to provide bus stop facilities based on the development's total trip generation as follows:
        i. All applicants: Provide an ADA accessible concrete pad for any existing bus shelters situated along the development site, if requested by MCAT.
        ii. Development over 500 daily vehicle trips: Provide a concrete pad for a basic bus stop shelter for a bus stop situated along the development site.
        iii. Development over 1,000 daily trips: Provide a basic bus stop shelter for a bus stop situated along the development site.
        iv. Development over 2,000 daily trips: Provide a bus bay with bus stop shelter for a bus stop situated along the development site.
        v. If provision of an ADA accessible bus shelter pad requires additional space and/or right-of-way, the developer is encouraged to grant necessary right-of-way easement(s) or adequate areas except in cases where doing so would constitute a safety concern.

N. Traffic Study Requirements

1) The last section of the report must be a clear and concise description of the study findings, including the number of trips by link and land use type.
2) This section shall include whether all intersection lane groups will operate within the v/c threshold when reviewed under total traffic conditions.

3) The applicant will provide a summary of the improvements for all users including pedestrians, bicyclists, transit riders and motorists identified pursuant to Mitigation Strategies by type.
4) The applicant will provide the significance of the mitigation strategies and/or improvements summary. All improvements and all site-related access and operational improvements shall be shown on subsequent site plan and construction plan submittals.