FDOT
Context **Classification** Guide

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Completing FLORIDA'S STREETS

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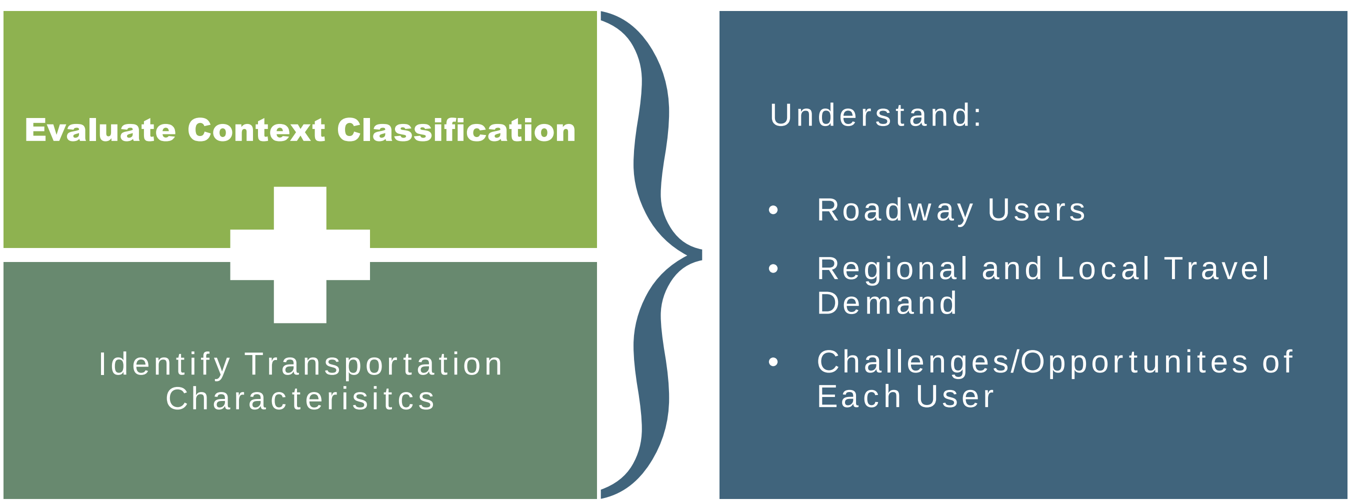
Chapter 1: FDOT Context Classification

It is the policy of the Florida Department of Transportation (FDOT) to routinely plan, design, construct, reconstruct, and operate a context-sensitive system of streets in support of safety and mobility. To this end, FDOT uses a context-based approach to planning, designing, and operating the state transportation network. FDOT has adopted a roadway classification system comprised of eight context classifications for all non-limited-access state roadways. The context classification of a roadway must be considered, along with its transportation characteristics and the built form to understand who the users are, what the regional and local travel demand of the roadway is, and the challenges and opportunities of each roadway user (see Figure 1). The context classification and transportation characteristics of a roadway will determine key design criteria for all non-limited- access state roadways. This Context Classification Guide provides guidance on how context classification can be used, describes the measures used to determine the context classification of a roadway, and describes the relationship of context classification with the ***FDOT Design Manual (FDM)*** and other FDOT guidance.

FIGURE 1 STEPS TO UNDERSTANDING USES AND USERS OF THE CORRIDOR PRIOR TO DESIGN



INTRODUCTION TO CONTEXT CLASSIFICATION

The context classification system broadly identifies the various built environments existing in Florida, as illustrated in Figure 2. State roadways extend through a variety of context classifications. FDOT's context classification system describes the general characteristics of the land use, development patterns, and roadway connectivity along a roadway, providing cues as to the types of uses and user groups that will likely utilize the roadway. Figure 2 should not be taken literally to imply all roadways will have every context classification or that context classifications occur in the sequence shown. Identifying the context classification is a step in the planning and design processes, as different context classifications will have different design criteria and standards.

The use of context classifications to determine criteria for roadway design elements is consistent with national best practices and direction, including the ***2018 American Association of State Highway and Transportation Officials (AASHTO) Greenbook*** and the ***National Cooperative Highway Research Program (NCHRP) Report 855: An Expanded Functional Classification System for Highways and Streets.*** These documents propose a similar context-based approach to design that incorporates context, user needs, and transportation functions into

FIGURE 2 FDOT CONTEXT CLASSIFICATIONS

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

C2-Rural
Sparsely settled lands; may include agricultural land, grassland, woodland, and wetlands.

C2T-Rural Town
Small concentrations of developed areas immediately surrounded by rural and natural areas; includes many historic towns.

C3R-Suburban Residential
Mostly residential uses within large blocks and a disconnected or sparse roadway network.

the design process. This research was born out of a need to better define contexts beyond urban and rural classifications, and to incorporate multimodal needs into the existing functional classification system.

This chapter outlines the steps to determine a roadway's context classification. Measures used to determine the context classification are presented, and a process to define the context classification is outlined for:

- All projects on existing roadways and for projects that propose new roadways and are in the Project Development and Environment (PD&E) or design phases; and
- Projects evaluating new roadways in the planning and Efficient Transportation Decision Making (ETDM) screening phases

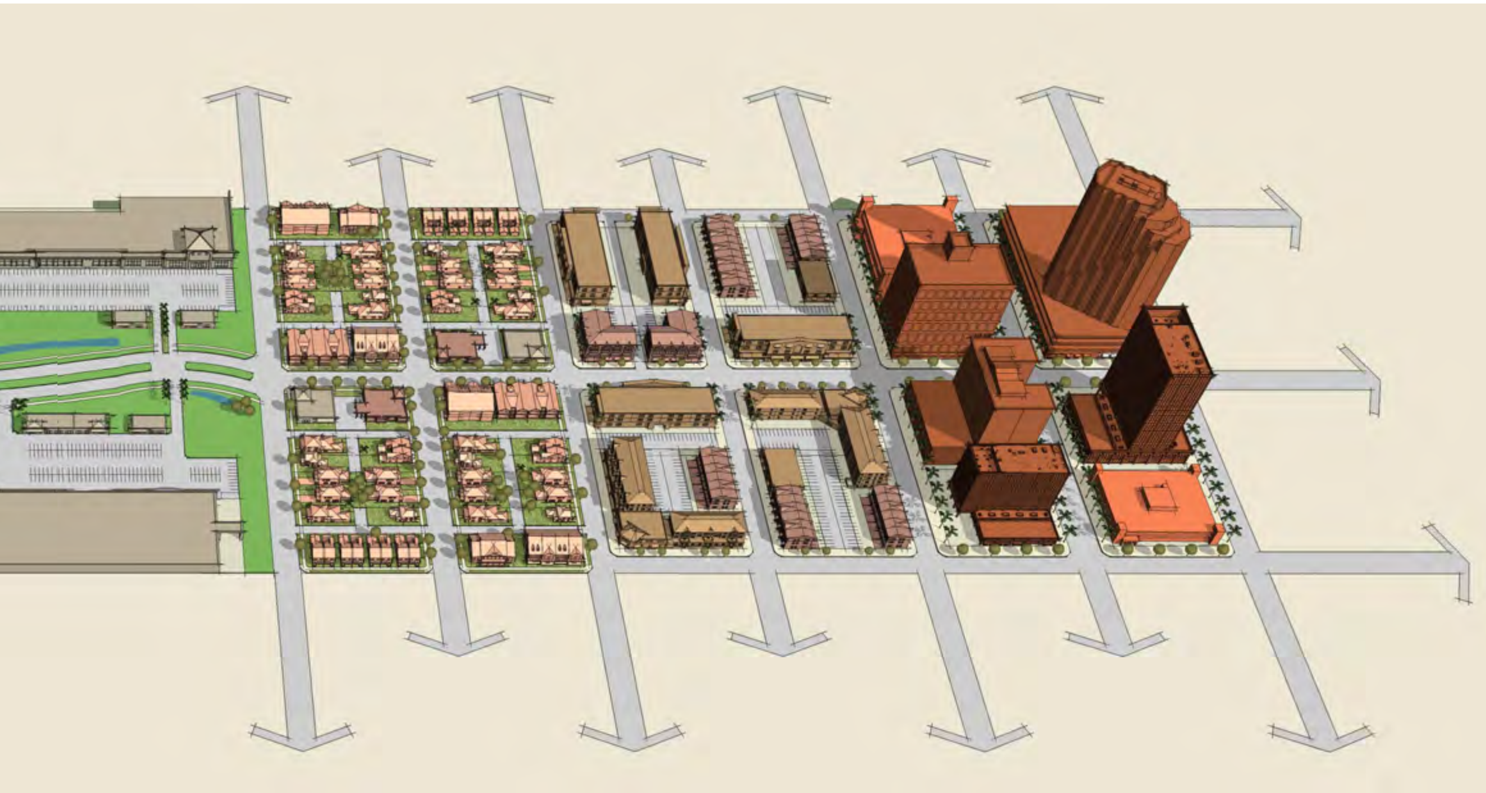
RELATIONSHIP TO THE FDM

The determination of a roadway's context classification is required to identify the appropriate design criteria in the ***FDM***. For non-limited-access roadways, the ***FDM*** provides design criteria and standards based on context classification.

For implementation of context-based planning and design, the ***FDM*** and other FDOT documents provide a range of design controls based on FDOT's context classification and functional classification. The key context-based design controls are:

- Design users
- Design vehicle
- Design speed
- Traffic characteristics

An overview of these design controls is described in Chapter 2 of this Guide.



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

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

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

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

HOW CONTEXT CLASSIFICATION INFORMS PROJECTS

The context classification of a roadway informs decisions made during FDOT's various project development phases, so that state roadways are planned, designed, constructed, and maintained to support safe and comfortable travel for their anticipated users. Context classification helps identify the anticipated users of the roadway. It is important that the users and their respective needs are understood early in the life of a project:

- Prior to the development of the design scope of services, for resurfacing, restoration and rehabilitation (RRR), traffic operations, safety, and other projects that do not qualify for an ETDM screening; and
- During the planning phase, for projects that have a planning phase and/or qualify for EDTM screening.

Understanding the needs of all users at these early phases assures that the project scope of services defines all necessary improvements and that the budget is adequate for design, right-of-way, and construction. The context classification and users inform key design elements, such as the design speeds, lane widths, and types of pedestrian, bicycle, transit, and freight facilities to be included in the design concept. The context classification should be determined and/or confirmed at the beginning of each project phase, including planning, PD&E, and design.

Preliminary Context Classification Designations

Preliminary existing context classification designations have been developed for the state roadway system by each FDOT district. These districtwide assessments serve as the foundation for understanding the context classification for state roadways from a system perspective and are intended to be refined on a project-by-project basis.

These context classifications are *preliminary* and rely on available GIS data. The preliminary context classification captures some of the measures specified in the Context Classification Matrix, but does not include all measures. Before the design criteria are applied to a project, the preliminary context classification should be evaluated based on the most recent data available using the steps outlined in the following sections. A project-level evaluation confirms the most appropriate context classification for a roadway reflecting up-to-date existing and/or future conditions as precisely as possible. The context classification resulting from this evaluation is called the "project-level" context classification of a roadway segment (see Figure 3). Depending on the complexity or sophistication of the area, districts may sometimes find it necessary to modify the approach or apply additional levels of classification. To ensure statewide consistency, contact the State Complete Streets Program Manager if this is anticipated.

How Context Classification is Stored in RCI

The Roadway Characteristics Inventory (RCI) is a database of information related to the roadway environment maintained by FDOT. The database includes information on a roadway's features and characteristics*. The preliminary context classification is stored in the RCI as Feature 126 – Preliminary context classification. This feature includes two characteristics:

- **Preliminary context classification** – This feature was initially populated with the preliminary context classification from each districtwide evaluation. Each district will update this dataset with the project-level context classification as project-level evaluations are completed.

- **Future context classification** – This characteristic contains the future context classification. It is populated by the district, as applicable, when project-level future context classifications are completed. Not all roadway segments will have a future context classification assigned.

RCI information may be a starting point for research and planning purposes in evaluating a roadway's context classification. However, as this dataset is dynamic and constantly being updated, project-level context classification information must be confirmed with the District Complete Streets Coordinator.

*Feature 124-Urban Classification, Feature 125-Adjacent Land Classification, Feature 145-LOS Input Data, and Feature 481-Highway Maintenance Classification may describe land use contexts in different ways but do not contain context classification.

FIGURE 3 CONTEXT CLASSIFICATION DESIGNATIONS

TIME PERIODS	METHODS: Preliminary	METHODS: Project-Level
Existing	Districtwide evaluation based on existing conditions, using readily available GIS data	Project specific evaluation based on existing conditions, using the most recent data available
Future	Districtwide evaluation based on future conditions, using readily available GIS data	Project specific evaluation based on future conditions, using the most recent data available

DETERMINING PROJECT-SPECIFIC CONTEXT CLASSIFICATION

CONTEXT CLASSIFICATION MATRIX

Table 1 Context Classification Matrix presents a framework to determine the context classifications along state roadways. This Context Classification Matrix outlines (1) distinguishing characteristics, (2A/B) primary measures, and (2C) secondary measures. The distinguishing characteristics give a broad description of the land use types and street patterns found within each context classification. The primary and secondary measures provide more detailed assessments of the existing or future conditions along the roadway. The primary measures can be evaluated through a combination of a field visit, internet-based aerial, and street view imagery. The secondary measures require map analysis and review of future land use or zoning information, which may not be readily available on every project. The Context Classification Matrix presents the thresholds for the primary and secondary measures for the eight context classifications.

Appendix A illustrates the eight FDOT context classifications through case studies. These case studies illustrate real-world values for the primary and secondary measures that determine a roadway's context classification.

When to Use Existing and Future Context Classifications

The measures in Table 1 can be evaluated based on existing or future conditions.

Project types that qualify for ETDM screening, per the ETDM Manual Section 2.3.1, are considered qualifying projects (see Figure 4). Qualifying projects in all phases for existing roadways will be evaluated using the future conditions of the measures. See page 16 for more discussion on evaluating context classification for new roadways.

Non-qualifying projects, or projects that do not go through ETDM screening, may be evaluated based on existing conditions. However, Districts may choose to use future context classification based on a longer project timeline. See page 10 for more information about determining Future Context Classification.

Figure 4 lists a sample of qualifying and non-qualifying projects. In general, the horizon year for the context classification should match the horizon year for the traffic analysis being conducted on projects. This is not a complete list of qualifying and non-qualifying projects. Please review the ETDM Manual for a complete list: www.fdot.gov/environment/pubs/etdm/etdmmanual.shtm.

FIGURE 4 QUALIFYING AND NON-QUALIFYING PROJECTS

Qualifying Projects:

- A highway which provides new access to an area
- New roadway
- New or reconstructed arterial highway (e.g. realignment)
- New circumferential highway that bypasses a community
- New bridge which provides access to an area/bridge replacements

Conduct a future context classification evaluation

Non-qualifying Projects:

- Projects that do not go through ETDM screening
- RRR
- Lighting
- Intersection Improvement
- New or reconstruction of bicycle and pedestrian facilities

Conduct an existing context classification evaluation

TABLE 1 CONTEXT CLASSIFICATION MATRIX

Context Classification	(1) Distinguishing Characteristics	(2 A/B) Primary Measures: Roadway Connectivity – Intersection Density (Intersections/Square Mile)	Block Perimeters (Feet)	Block Length (Feet)	Land Use (Description)
C1-Natural	Lands preserved in a natural or wilderness condition, including lands unsuitable for settlement due to natural conditions.	N/A	N/A	N/A	Conservation Land, Open Space, and/or Park
C2-Rural	Sparsely settled lands; may include agricultural land, grassland, woodland, and wetlands.	<20	N/A	N/A	Agricultural and/or Single-Family Residential
C2T-Rural Town	Small concentrations of developed areas immediately surrounded by rural and natural areas; includes many historic towns.	>100	<3,000	<500	Retail, Office, Single-Family Residential, Multi-Family Residential, Institutional, and/or Industrial
C3R-Suburban Residential	Mostly residential uses within large blocks and a disconnected or sparse roadway network.	<100	N/A	N/A	Single-Family and/or Multi-Family Residential
C3C-Suburban Commercial	Mostly non-residential uses with large building footprints and large parking lots within large blocks and a disconnected or sparse roadway network.	<100	>3,000	>660	Retail, Office, Multi-Family Residential, Institutional, and/or Industrial
C4-Urban General	Mix of uses set within small blocks with a well-connected roadway network. May extend long distances. The roadway network usually connects to residential neighborhoods immediately along the corridor or behind the uses fronting the roadway.	>100	<3,000	<500	Single-Family or Multi-Family Residential, Institutional, Neighborhood Scale Retail, and/or Office
C5-Urban Center	Mix of uses set within small blocks with a well-connected roadway network. Typically concentrated around a few blocks and identified as part of a civic or economic center of a community, town, or city.	>100	<2,500	<500	Retail, Office, Single-Family or Multi-Family Residential, Institutional, and/or Light Industrial
C6-Urban Core	Areas with the highest densities and building heights, and within FDOT classified Large Urbanized Areas (population >1,000,000). Many are regional centers and destinations. Buildings have mixed uses, are built up to the roadway, and are within a well-connected roadway network.	>100	<2,500	<660	Retail, Office, Institutional, and/or Multi-Family Residential

The thresholds presented in Table 1 are based on the following sources, with modifications made based on Florida case studies:
1) *2008 Smart Transportation Guidebook: Planning and Designing Highways and Streets that Support Sustainable and Livable Communities*, New Jersey Department of Transportation and Pennsylvania Department of Transportation;
2) *2012 Florida TOD Guidebook*, Florida Department of Transportation;

(2 C) Secondary Measures

Building Height	Building Placement	Fronting Uses	Location of Off-street Parking	Allowed Residential Density	Allowed Office/ Retail Density	Population Density	Employment Density
Floor Levels	Description	Yes/No	Description	Dwelling Units/ Acre	Floor-Area Ratio (FAR)	Persons/Acre	Jobs/Acre
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1 to 2	Detached buildings with no consistent pattern of setbacks	No	N/A	<1	N/A	<2	N/A
1 to 2	Both detached and attached buildings with no or shallow (<20') front setbacks	Yes	Mostly on side or rear; occasionally in front	>4	>0.25	N/A	>2
1 to 2, with some 3	Detached buildings with medium (20' to 75') front setbacks	No	Mostly in front; occasionally in rear or side	1 to 8	N/A	N/A	N/A
1 (retail uses) and 1 to 4 (office uses)	Detached buildings with large (>75') setbacks on all sides	No	Mostly in front; occasionally in rear or side	N/A	<0.75	N/A	N/A
1 to 3, with some taller buildings	Both detached and attached buildings with no setbacks or up to medium (<75') front setbacks	Yes	Mostly on side or rear; occasionally in front	>4	N/A	>5	>5
1 to 5, with some taller buildings	Both detached and attached buildings with no or shallow (<20') front setbacks	Yes	Mostly on side or rear; occasionally in front, or in shared off-site parking facilities	>8	>0.75	>10	>20
>4, with some shorter buildings	Mostly attached buildings with no or minimal (<10') front setbacks	Yes	Side or rear; often in shared off-site garage parking	>16	>2	>20	>45

3) *2009 SmartCode Version 9.2.*, Duany, Andres, Sandy Sorlien, and William Wright; and
4) *2010 Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*, Institute of Transportation Engineers and Congress for the New Urbanism.
5) Colors correspond to flowchart in Figure 5.

STEP-BY-STEP GUIDE FOR DETERMINING CONTEXT CLASSIFICATION

This page and Figure 5 outline a step-by-step process on how to evaluate context classification at the project level. Detailed methodology for each measure and common sources to access the data needed to identify measures are described on the following pages.

In general, not all measures need to be evaluated to determine a roadway's context classification and a subset of the primary measures is enough in many cases. Figure 5 illustrates the process to evaluate context classification, focusing on the most important measures that can distinguish between context classifications.

Step 1: *Review distinguishing characteristics as described in Table 1 to identify major changes in land use types and street patterns. Where a major change happens, a new context classification segment should be defined and evaluated.*

Step 2A: Once segments are defined, utilize the roadway connectivity measures to determine if a roadway segment is in one of these three context classification groupings:

- C2T, C4, C5, or C6
- C3R or C3C
- C1 or C2

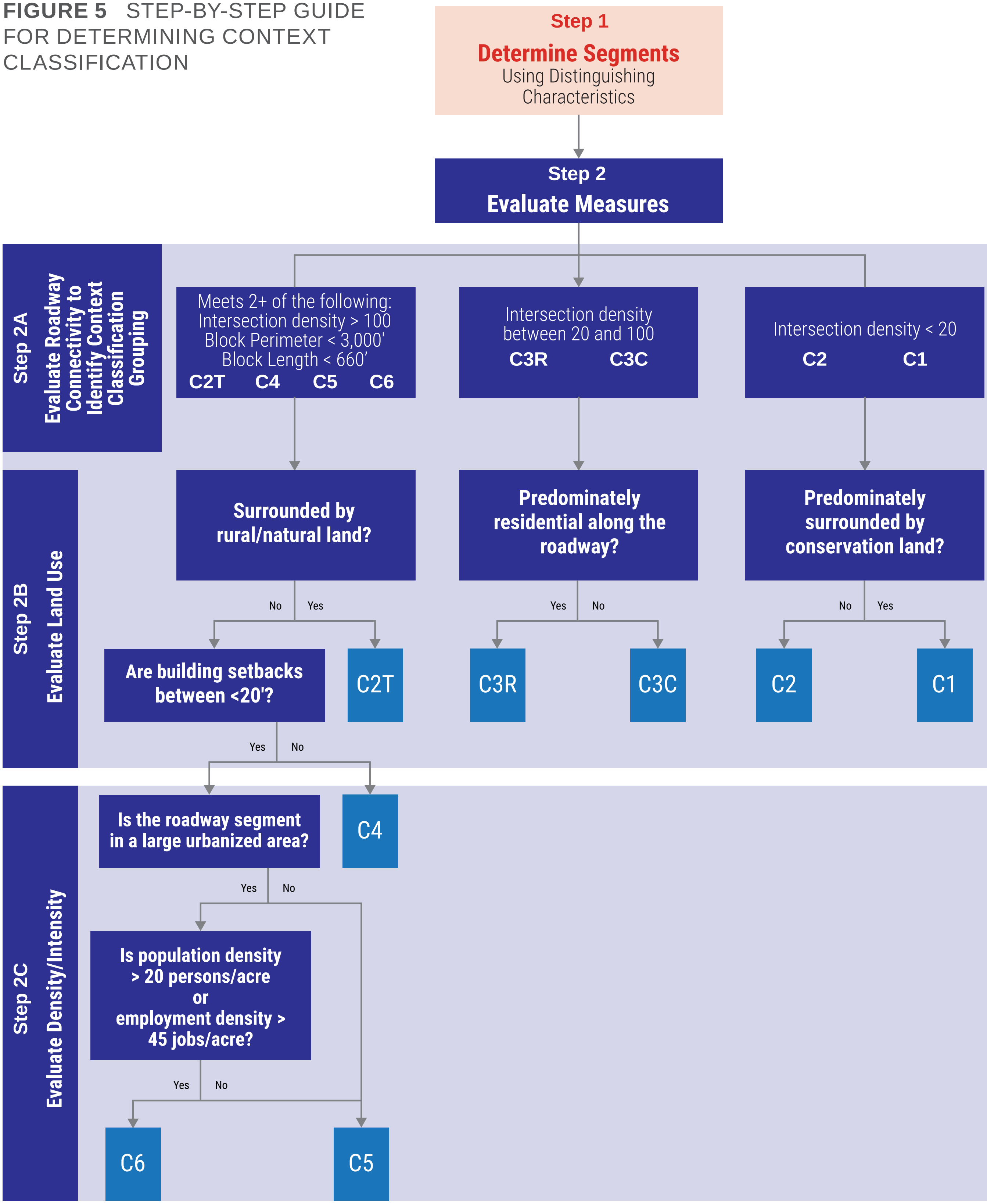
Step 2B and 2C: Utilize the land use measures to further refine the evaluation:

- If in the C2T, C4, C5, or C6 grouping:
  - Determine if the land uses along the roadway segment are surrounded by rural or natural land. If yes, this segment has a C2T context classification. If not, then further evaluate using building setback measure.
  - For non-C2T segments with larger than 20' setback the segment can be classified as a C4 context classification.
  - Population and employment density can be used to distinguish between the remaining C5 and C6 context classifications in Large Urbanized Areas. Segments outside of a Large Urbanized Area can be classified as C5.
    - A roadway segment needs to meet only one of the two criteria, either population density or employment density, to be classified within a context classification.

Note: Large urbanized refers to an MPO urbanized area greater than 1,000,000 in population. The population threshold refers to the MPO urbanized area not the individual city or town. For example, parts of Tampa could be considered a C6 because the MSA population is greater than 1,000,000, even though the population of the City of Tampa is not 1,000,000.

- If in the C3R and C3C grouping:
  - Review the land use along the roadway. If the land uses are primarily commercial and/or industrial, the segment can be classified as a C3C context classification. Many C3C segments have residential land use one or more blocks off the segment, but the primary land use along the segment is commercial and/or industrial.
  - If the land use along the roadway is primarily residential, the segment can be classified as a C3R context classification. Many C3R segments have fences, walls or landscaping immediately along the state road with residential uses behind the barrier.
- If in the C1 or C2 grouping:
  - Determine if the roadway segment is surrounded by conservation land, such as a park or wildlife refuge. If yes, this segment has a C1 context classification. If not, this segment has a C2 context classification.

FIGURE 5 STEP-BY-STEP GUIDE FOR DETERMINING CONTEXT CLASSIFICATION



CONTEXT CLASSIFICATION DETAILED METHODOLOGY

The distinguishing characteristics, primary measures, and secondary measures provide analytical measurements to evaluate land use characteristics, development patterns, and roadway connectivity to determine context classification. The data available to characterize existing and future context classifications will vary depending on the specificity of the roadway alignments being considered. Many projects conducted by FDOT occur along existing corridors where a single alignment is being considered. The range of alternatives for new roadways also narrows to a single alignment alternative as projects proceed from planning through PD&E and design. In planning and ETDM screening for existing roadways, and in PD&E and design for new roadways, it is possible to analyze both the existing and future conditions to determine the context classification of a roadway. For projects involving new roadways in planning and ETDM screening, multiple alternative alignments may be considered over larger areas. For these latter types of projects, a broader understanding of the context classification will be used to inform the planning process and development of alternatives.

The context classification will be updated or confirmed at the beginning of each project phase, including planning, PD&E, and design. Each district can assign staff to oversee the determination of context classification. It is recommended that an interdisciplinary team within each district help determine the context classification. For projects where FDOT currently coordinates with local governments, FDOT will coordinate with those local governments to confirm context classification. The final determination of context classification will be made by FDOT district staff. For smaller projects, such as traffic operations push-button projects, the context classification may be determined without additional local coordination. Refer to the ***Public Involvement Handbook, FDM, and PD&E Manual*** for guidance on local government coordination.

The following are the two key steps for determining context classification at the project level:

1. Define Segments by Identifying Major Changes in Context

Context classification segments are based on land development pattern changes, as characterized by land use, development density, and roadway connectivity changes. A new segment starts where the land development patterns change. Project-limits do not define the segmentation for context classification. Like access classification, there may be several context classification segments within a single project, and the limits of those segments may extend beyond the project limits.

Use the distinguishing characteristics described in the Context Classification Matrix to identify if multiple context classifications are present along a project roadway and if a long roadway network needs to be segmented. *Where a block structure, or grid network, is present, a context classification segment may be as short as two blocks in length. Where there is no defined block structure, a context classification segment may be as short as a quarter mile in length.*

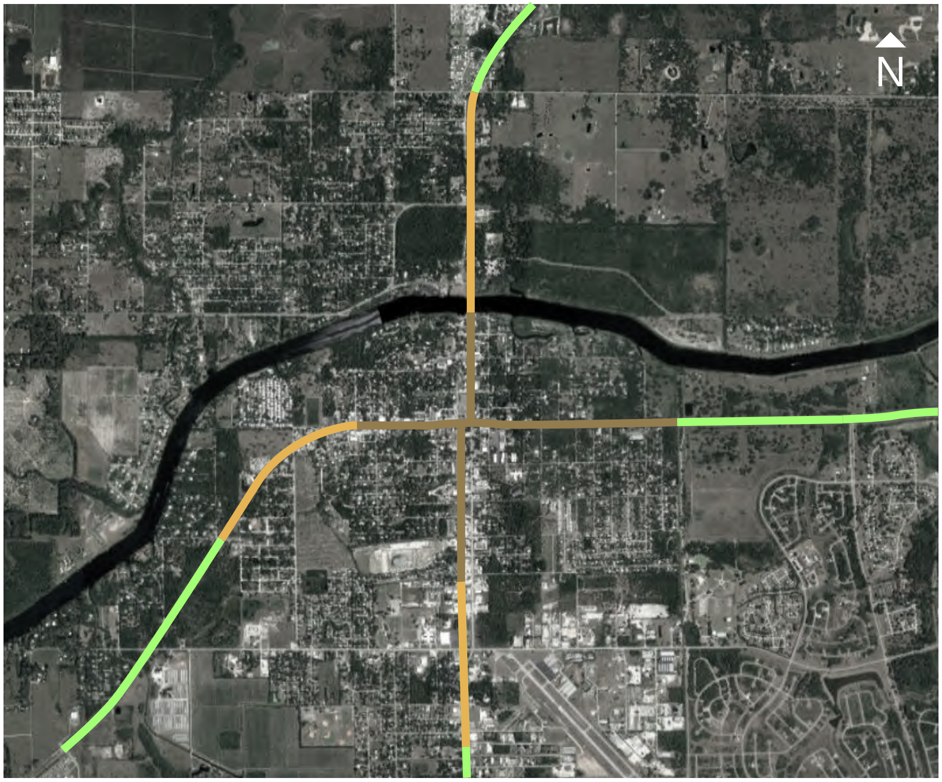
Figure 6 and **Figure 7** demonstrate cases where roadway segmentation can change based on major changes in land use and roadway connectivity.

2. Evaluate the Measures

A roadway segment must meet most of the measures defined for a context classification in order to be assigned that context classification.

Table 2 and **Table 3** describe the methodology and data sources associated with the primary and secondary measures, respectively. Two measurement areas — the block and the parcel — are used, as explained in **Figures 8** and **9**. **Figures 10** through **14** provide guidance for evaluating some of the primary measures.

FIGURE 6 DISTINGUISHING CONTEXT CLASSIFICATION SEGMENTS BY DEVELOPMENT INTENSITY AND ROADWAY NETWORK



C2T
C3C
C2

A context classification change occurs where the development patterns change between the natural land and the concentrated developed land and again when the roadway network changes from a sparse, disconnected network to a well-connected grid network.

FIGURE 7 DISTINGUISHING CONTEXT CLASSIFICATION SEGMENTS BY TYPE OF LAND USE

C3R
C3C
C4

There is a context classification change in the suburban environment where the land use changes from predominantly residential to commercial and the block structure changes.

The distinction between primary and secondary measures is based on the availability of data and does not imply intended sequence of evaluation or relative importance. The primary measures can be evaluated through a combination of a field visit, internet-based aerial, and street view imagery. The secondary measures require map analysis and review of zoning information, which may not be available on every project.

Evaluation of the measures for each segment can be done based on existing conditions or updated with future conditions, if needed. For existing context classification, consider existing plus committed roadway network when evaluating roadway connectivity and existing land use plus permitted development when evaluating land use measures.

For future context classification, consider the adopted future cost-feasible metropolitan transportation plan (MTP), also known as the long range transportation plan (LRTP), and programmed local roadway network projects when evaluating roadway connectivity. Future land use should be clearly documented in a well-defined, community-supported and implementation-focused plan or in policies such as zoning overlays, form-based codes, or community redevelopment plans. These plans detail short- and mid-term changes to the roadway and built form using established mechanisms for implementation.

The future desired conditions should be consistently documented across all appropriate local policies and should be well-understood and accepted by local stakeholders. In short, the future conditions should be those that are predictable and that will occur over an anticipated timeframe rather than visionary plans or broad goals and ideas that do not have a clear timeline for actual implementation. Use of a form-based code is one indicator that significant community discussion occurred on a future vision and that future development is more likely to result based on the adopted form-based code. See page 21 for more discussion on evaluating future context classification for new roadways.

Applicability of Context Classification Process to Local Roadways

The FDOT Context Classification Guide was developed for state roadways. Local governments seeking to apply context classification to their roadways should see the 2018 Florida Greenbook for design criteria and further information on how to use these or other locally developed context classifications to implement context based design.

TABLE 2 PRIMARY MEASURES TO DEFINE CONTEXT CLASSIFICATION

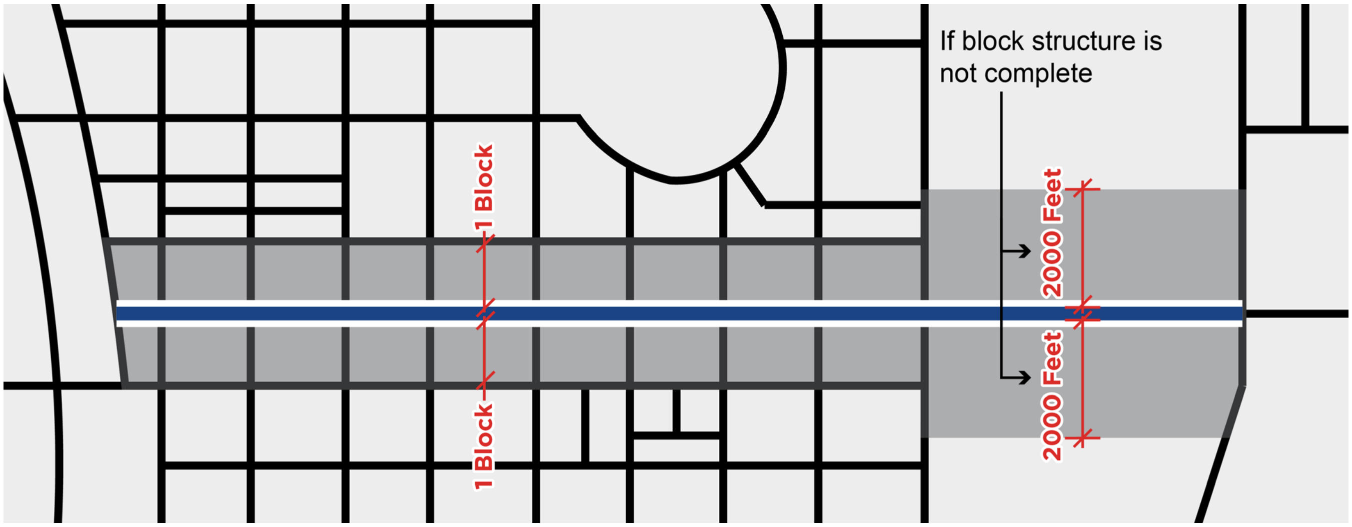
	Measure	Description	Methodology	Measurement Area*	Data Source**
Roadway Connectivity	Intersection Density	Number of intersections per square mile	Calculate by dividing the total number of intersections by the area of the blocks along both sides of the street, excluding natural features and public parks; consider future roadway connectivity if an approved or permitted development plan is in place (see Figure 8).	The block on either side of the roadway; if the roadway and block structure is not complete, the evaluation area should extend 2000' on either side of the roadway	Street centerline GIS files or physical map, internet-based maps, plans showing programmed roadway projects, and permitted development plans
Roadway Connectivity	Block Perimeter	Average perimeter of the blocks adjacent to the roadway on either side	Measure the block perimeter for the blocks adjacent to the roadway on either side and take the average; consider future roadway connectivity if an approved - permitted development plan is in place (see Figure 9).	The block on either side of the roadway; if the roadway and block structure are not complete, the evaluation area should extend 2000' on either side of the roadway	Street centerline GIS files or physical map, internet-based maps, plans showing programmed roadway projects, and permitted development plans
Roadway Connectivity	Block Length	Average distance between intersections	Measure the distance along the roadway between intersections with a public roadway, on either side, and take the average; consider future roadway connectivity if an approved or permitted development plan is in place (see Figure 9).	Roadway	Street centerline GIS files or physical map, internet-based maps, plans showing programmed roadway projects, and permitted development plans
	Land Use	Land use mix for more than 50% of the fronting uses	Record based on existing or future adopted land uses.	Fronting parcels on either side of the roadway	Field review, GIS files, existing land use, or future land use clearly documented in a well-defined, community-supported and implementation-focused plan or in policies such as zoning overlays, form-based codes, or community redevelopment plans.
	Building Height	The range in height of the buildings for more than 50% of the properties	Record based on existing buildings or future permitted building height requirements based on land development regulations.	Fronting parcels on either side of the roadway	Field review, internet-based aerial and street view imagery, or land development regulations
	Building Placement	Location of buildings in terms of setbacks for more than 50% of the parcels	Measure the distance from the building to the property line or future required building placement based on land development regulations (see Figure 5).	Fronting parcels on either side of the roadway	Field review, internet-based aerial and street view imagery, building footprint and parcel GIS files, or land development regulations
	Fronting Uses	Buildings that have front doors that can be accessed from the sidewalks along a pedestrian path for more than 50% of the parcels	Record the percentage of buildings that provide fronting uses or site design and lot layout requirements in land development regulations that require fronting uses (see Figure 6).	Fronting parcels on either side of the roadway	Field review or internet-based aerial and street view imagery, or land development regulations
	Location of Off-Street Parking	Location of parking in relation to the building: between the building and the roadway (in front); on the side of the building; or behind the building	Record location of off-street parking for majority of parcels or parking requirements based on land development regulations (see Figure 7).	Fronting parcels on either side of the roadway	Field review or internet-based aerial and street view imagery, or land development regulations

** The measurement area applies to each context classification segment. Evaluate each measure for each context classification segment. Where characteristics differ for each side of the street, use the characteristics for the side that would yield the higher context classification.*
*** Land use, zoning, streets, and other GIS data and maps are available from local government agencies, FDOT Efficient Transportation Decision Making (ETDM) Database, and regional agencies.*

TABLE 3 SECONDARY MEASURES TO DEFINE CONTEXT CLASSIFICATION

Measure	Description	Methodology	Measurement Area	Data Source
Allowed Residential Density	Maximum allowed residential density by adopted zoning	Identify which zoning district the context classification segment is within, and record maximum allowed residential density for that particular zoning district by dwelling units per acre.	Parcels along either side of the roadway	Zoning code, land development regulations
Allowed **Office/** Retail Density	Maximum allowed office or retail density in terms of Floor Area Ratio (FAR), or the ratio of the total building floor area to the size of the property on which it is built	Identify which zoning district the context classification segment is within, and record allowed commercial density for that particular zoning district. In some jurisdictions, allowed commercial density might be stated based on specific regulations limiting building height and minimum setbacks. Jurisdictions also regulate minimum parcel size and building area allowed in each zoning district. Maximum allowable FAR for an area can be calculated using site design and height standards (see Appendix B for more details).	Parcels along either side of the roadway	Zoning code, land development regulations
Population Density (existing)	Population per acre based on the census block group	Download census information at the block group level. Divide the population of the census block group by the area of the block group. This area should exclude large natural features and public parks. If the roadway segment is the boundary between two block groups, average the population density of the block groups on either side of the roadway. If the roadway runs through multiple block groups, calculate the population density by the weighted average of roadway within each block group.	Census block group(s) that encompasses the roadway	US Census Bureau decennial data. If the census data is more than 5 years old, the latest American Community Survey data can be used.
Population Density (future)	Projected population per acre based on the regional travel demand model traffic analysis zone (TAZ)	Divide the population of the TAZ by the area of the TAZ. If the roadway segment is the boundary between two TAZs, average the population density of the TAZs on either side of the roadway. If the roadway runs through multiple TAZs, calculate the population density by the weighted average of roadway within each TAZ. Use 20-year forecast number from the regional travel demand model. If a regional travel demand model is not available, use University of Florida Bureau of Economic Research (BEBR) population projections.	TAZ(s) that encompasses the roadway. If TAZ population density is not available, use smallest geographic area available from BEBR projections.	Regional travel demand model from MPO, BEBR
Employment Density (existing)	Total number of jobs per acre	Use GIS to map the number of jobs within the blocks adjacent to the roadway utilizing the U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) website. Sum the number of jobs within the blocks along either side of the roadway, and divide by the area of the blocks. This area should exclude large natural features and public parks. Blocks can be imported as a shapefile or can be manually drawn on the census website.	One block area adjacent to either side of the roadway. If the block structure is not complete, the evaluation area should extend 500 feet from the property line along the roadway.	U.S. Census Bureau LEHD website
Employment Density (future)	Total number of jobs per acre	Divide the number of jobs of the TAZ by the area of the TAZ. If the roadway is the boundary between two TAZs, average the employment density of the TAZs on either side of the roadway. If the roadway runs through multiple TAZs, calculate the employment density by the weighted average of roadway within each TAZ. Use 20-year forecast number from the regional travel demand model. If a regional travel demand model is not available, use BEBR employment projections.	TAZ(s) that encompasses the roadway. If TAZ employment density is not available, use smallest geographic area available from BEBR projections.	Regional travel demand model from MPO, BEBR

FIGURE 8 MEASUREMENT AREA: THE BLOCK ON EITHER SIDE OF THE ROADWAY



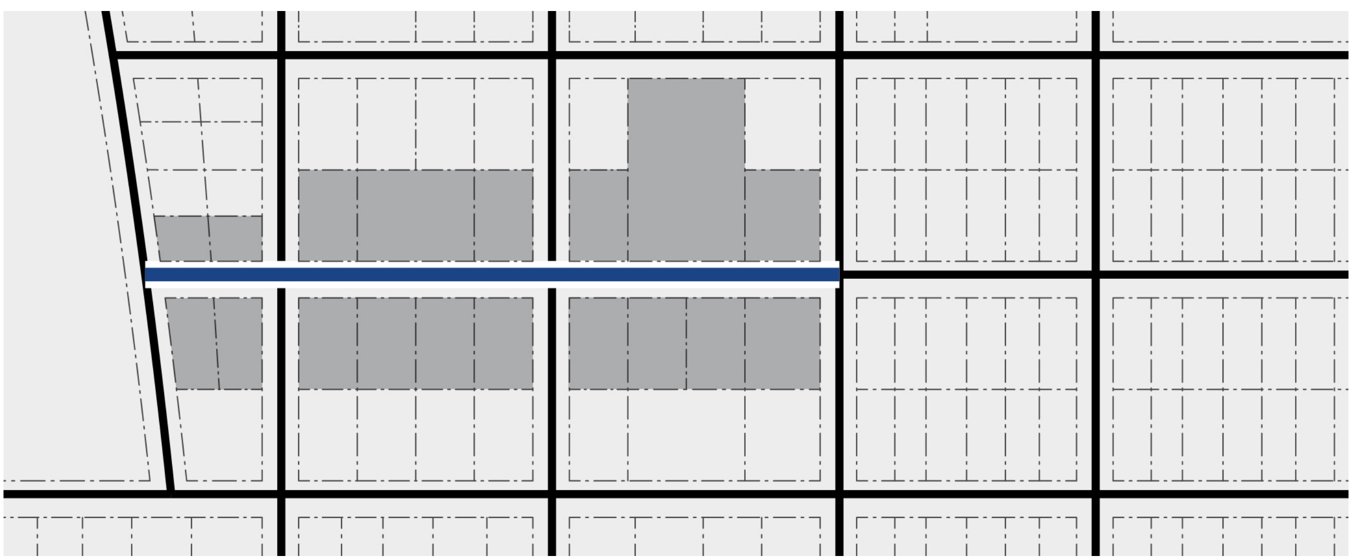
Measurement area = one block on either side of project roadway or 2000 feet, if block structure is not complete. A block is defined as the smallest area that is surrounded by public roadways on all sides. Alleys are not considered public roadways for the purposes of defining blocks.

Roadway centerline

Project roadway

One block on either side of project roadway

FIGURE 9 MEASUREMENT AREA: FRONTING PARCELS ON EITHER SIDE OF THE ROADWAY



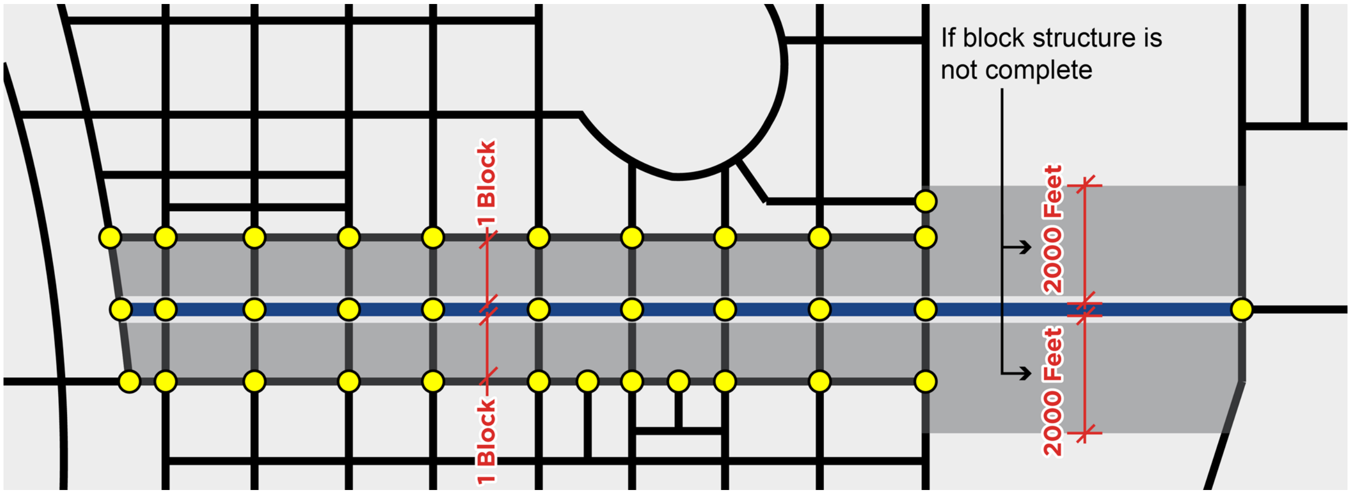
Measurement area = fronting parcels on either sides of the project roadway.

Roadway centerline

Project roadway

One parcel on either side of project roadway

FIGURE 10 INTERSECTION DENSITY

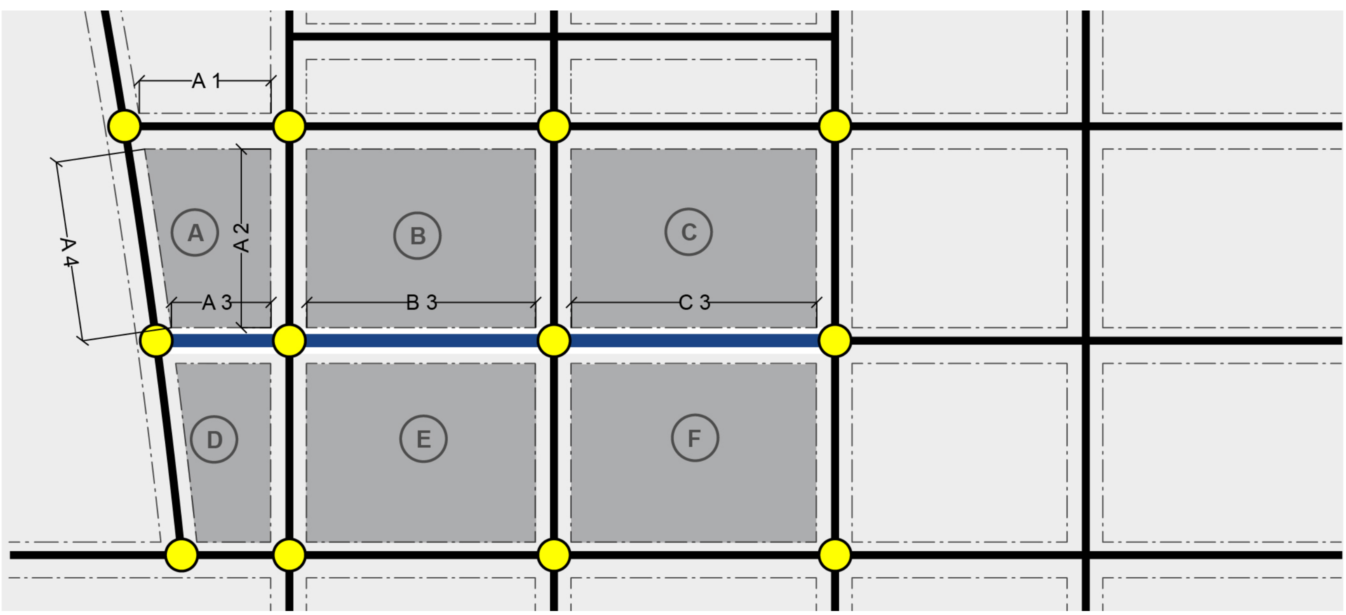


$$\textbf{Intersection Density} = \frac{\text{Number of Intersections}}{\text{Total Area* of Blocks Along Both Sides of the Project Roadway}}$$

** To calculate intersection density where the block structure is not complete, the block length will be assumed to extend 2,000 feet from the right of way line of the project roadway.*

- *Roadway centerline*
- *Project roadway*
- *One block on either side of project roadway*
- *Intersection*

FIGURE 11 BLOCK PERIMETER AND BLOCK LENGTH



Perimeter of Block A = A1 + A2 + A3+ A4

$$\textbf{Average Perimeter of Blocks A to F} = \frac{\sum_{A}^{F} \text{Perimeter of Each Block}}{\text{Total Number of Blocks}}$$

$$\textbf{Average Block Length along the Roadway} = \frac{A3 + B3 + C3}{\text{Total Number of Intersections Along the Roadway} - 1}$$

- *Roadway centerline*
- *Project roadway*
- *One block on either side of project roadway*
- *Intersection*

FIGURE 12 BUILDING PLACEMENT

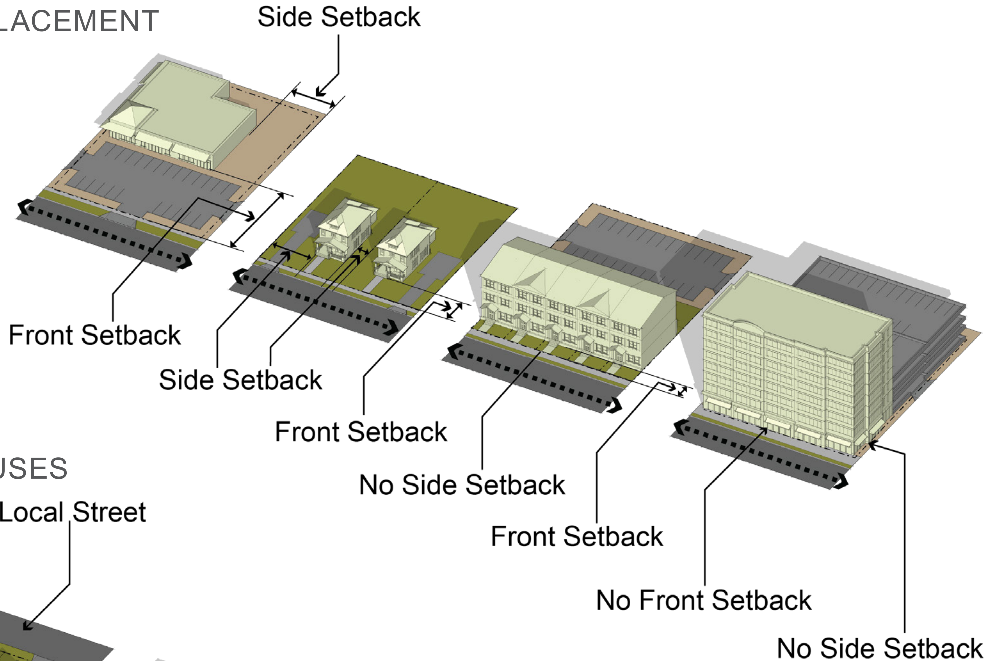


FIGURE 13 FRONTING USES

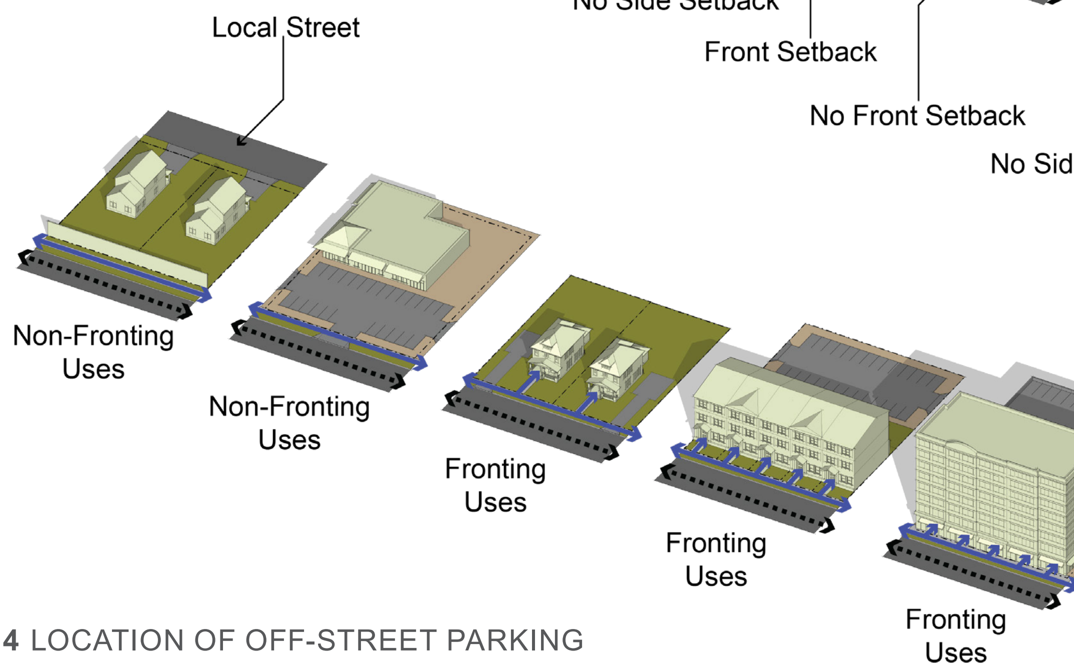
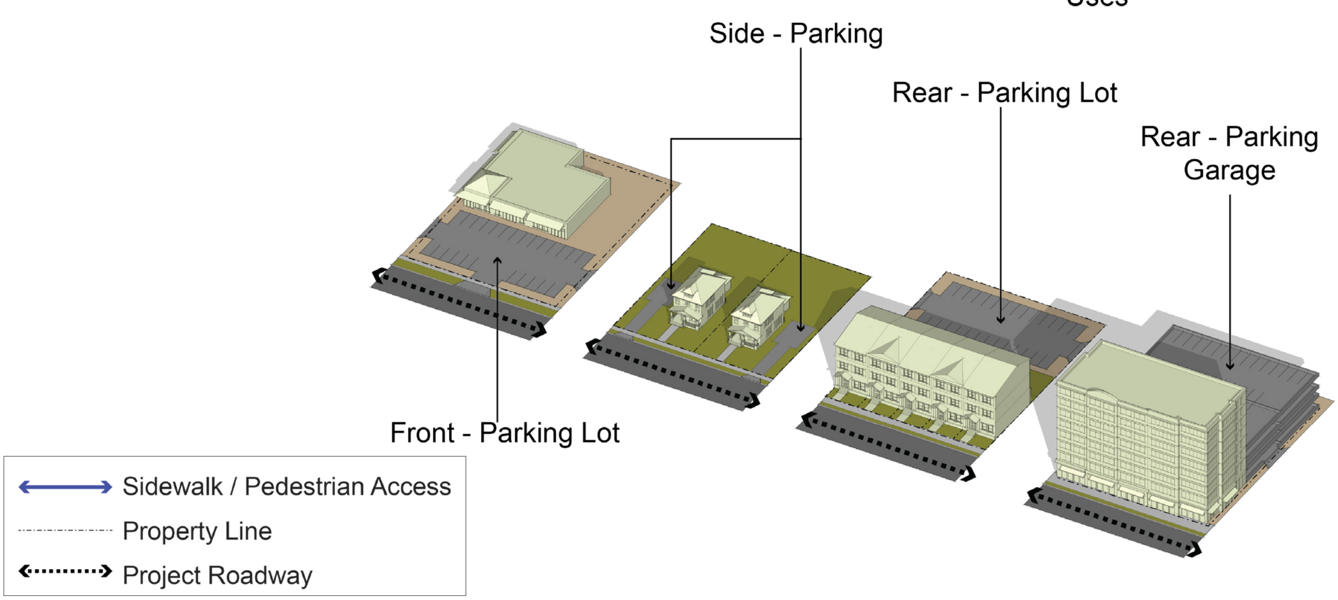


FIGURE 14 LOCATION OF OFF-STREET PARKING



DISTINGUISHING BETWEEN C3R AND C3C SUBURBAN CONTEXT CLASSIFICATIONS

The distinction between Suburban Residential (C3R) and Suburban Commercial (C3C) is an important one because the different land uses result in different roadway users and usage patterns.

C3R corridors are characterized by low-density residential land uses and typically do not have any land uses directly fronting or accessed from the state road. Buildings are often set back from the state road with fences, walls and/or heavy landscaping between the roadway and the residences. C3R development tends to be static and less likely to change over time. Where a roadway is more consistent with a C3C on one side and a C3R on the other, default to the higher context classification which is C3C.

In C3C corridors, the development fronting the roadway (immediately adjacent) is commercial uses, typically with large building footprints and large surface parking lots in front of buildings. C3C environments generally attract trips to and from retail and commercial establishments and have relatively higher transit ridership and transit service. As a result of transit activity and the commercial uses, C3C corridors also experience higher bicycle and pedestrian activity compared to C3R environments. Some C3C corridors also have intermittent multi-family apartments generating trips to and from the commercial uses. C3C development tends to be more dynamic, with commercial and retail uses changing over time.

With different user types (all modes), trip types (short and long trips), and vehicle speeds (through trips and local trips accessing establishments) in C3C context classifications, crashes between motorists and bicyclists/pedestrians are more prevalent than in C3R areas. In these corridors, the combination of frequent vehicle turning movements, commercial driveways, differing operating speeds, and large blocks with long distances between crosswalks contribute to increased exposure for bicyclists and pedestrians. Large blocks, a disconnected roadway network, and the location of transit stops encourage pedestrians to cross at mid-block crossing locations.

In C3C environments, commercial land uses are the most prevalent and front the roadway, with residential land uses behind these.

In C3C environments, bicycle, pedestrian, and transit users are expected.

C3C corridors experience more bicycle and pedestrian activity compared to C3R environments.

OTHER CONDITIONS

Bridges and Tunnels

The context classification of a bridge or tunnel should be based on the higher context classification of the segments on either end of the bridge or tunnel.

Constrained Corridors/Barrier Islands

Geographic constraints, such as water or railroad lines, may naturally limit a roadway's ability to meet the roadway connectivity measures characteristic of more urban context classifications. However, some of these constrained roadway networks still experience development density, intensity, and user types commonly found in urban context classifications. These conditions often occur on barrier islands where beach access and amenities on the inland side of the roadway create high pedestrian and bicycle demand, like that found in the urban contexts. In these conditions, the mix of land uses, built form, and population and job density thresholds should be the key measures used to identify the context classification. Even if the roadway connectivity measures are not met, it may be appropriate to classify roadways on barrier islands and similarly constrained corridors as a C2T, C4, C5 or C6 context classification based on the mix of land uses, built form, and population or employment density.

Special Districts

Special Districts (SD) are areas that, due to their unique characteristics and function, do not adhere to standard measures identified in the Context Classification Matrix. Examples of SDs include military bases, university campuses, airports, seaports, rail yards, theme parks and tourist districts, sports complexes, hospitals, and freight distribution centers. Due to their size, function, or configuration, SDs will attract a unique mix of users and create unique travel patterns.

Planning and engineering judgment must be used to understand users and travel patterns, and to determine the appropriate design controls and criteria for streets serving an SD on a case-by-case basis. If an FDOT district believes that an area does not fit within a context classification and an SD designation is required, the district should coordinate that with the State Complete Streets Program Manager. The most appropriate context classification will be determined and applied to the segment and indicated as "SD" with the appropriate context classification in RCI (e.g. SD-C4). The district will internally record both the original classification and the Special District Classification, in the event there are questions about the designation at a later time.

Proposed New Roadways

Proposed new roadways are qualifying projects for which future context classification is determined, as seen in the flowchart of Figure 5. During planning phases and ETDM screening for new roadway alignments, a broad understanding of the context classification will be used to inform the planning process.

For new roadways in planning and ETDM screening that include multiple alternative alignments, future land use conditions should be used to determine the context classification. The steps for determining the context classification for new roadways in planning or ETDM screening include:

1. Identify Major Changes in Context

Utilize the distinguishing characteristics to determine if multiple context classifications exist due to significant changes in the type or intensity of future land uses located along the roadway. The segment lengths should be based on the change in land use, change in density of the roadway network, or other distinguishing features. Segment lengths can vary and may be as short as two blocks or, where there is no defined block structure, longer than a mile.

2. Evaluate the Future Land Use

Evaluate the land use along the roadway based on a clearly documented, well-defined, community-supported and implementation-focused plan such as zoning overlays, form-based codes, community redevelopment plans, or permitted development plans. These plans detail short- and mid-term changes to the roadway and built form using established mechanisms for implementation. For example, minimum block sizes indicated in a form-based code will determine the level of network connectivity in new development, which in turn will help bracket, if not determine outright, the future context classification of the area at build-out. Requirements for building orientation and setbacks in a form based code also provide important information about the future context classification. Where well-defined, implementation-focused plans are not available, review the future land use element of the adopted local comprehensive plan using the land use description provided in Table 1.

3. Evaluate the Secondary Measures

Table 3 describes the secondary measures and the methodology and data sources associated with each measure. Future population and employment densities can be quantified based on the data in the regional travel demand model. If no regional model is available, utilize Bureau of Economic and Business Research (BEBR) estimates for future population and employment projections. A segment only needs to meet one of the two criteria, either population density or employment density, to be classified within a context classification. For the C3C-Suburban Commercial and C3R-Suburban Residential Context Classifications, population and employment densities vary widely from one community to another. Use the allowed residential and office/retail densities, the distinguishing characteristics, and the future land uses listed in the Context Classification Matrix to determine if a roadway is within the C3C-Suburban Commercial or CR3- Suburban Residential Context Classification.

Trails

According to the ***FDM***, shared use paths, or trails, are appropriate in C1 and C2 context classifications as it is anticipated there will be a lower volume of non-motorists than there are in other contexts, and in C3 where higher vehicle speeds are anticipated. A simplified context classification evaluation may be determined for trails and shared use paths moving into the design phase to determine their level of appropriateness. In cases where the shared use path or trail is not running along a roadway, assume that the trail or shared use path segment being evaluated is the corridor. Engineers and planners can follow Figure 5 to identify the context classification grouping. In most cases, knowing the grouping provides enough information to inform trail design and an official context classification determination may not be needed.

RELATIONSHIP BETWEEN CONTEXT CLASSIFICATIONS AND CNU/SMARTCODE™ TRANSECT SYSTEM

The SmartCode™ is a form-based land development code that incorporates Smart Growth and New Urbanist principles formed by the Congress for the New Urbanism (CNU). It is a unified development ordinance, addressing development at all scales of design, from regional planning to building signage. It is based on rural-to-urban transects, rather than separated-use zoning.

FDOT's context classifications generally align with the SmartCode™, with some critical distinctions. The SmartCode™ was developed to describe and codify desired future visions of development form by local jurisdictions. The key implementation tool for form-based codes is a regulating plan that clearly identifies different transect zones that would guide how future land use development should occur. In contrast, FDOT's context classifications are descriptive, rather than visionary or regulatory, and therefore include all land areas and types found within the State of Florida, with less local specificity.

The general relationship between the zones used by the transect system and FDOT's context classification is outlined in Table 4.

TABLE 4 RELATIONSHIP BETWEEN FDOT CONTEXT CLASSIFICATIONS AND THE SMARTCODE™ TRANSECT SYSTEM

FDOT Context Classification	SmartCode™ Transect Zone	Description of SmartCode™ Transect Zone
C1 – Natural	T1 - Natural Zone	Lands approximating wilderness conditions
C2 – Rural	T2 - Rural Zone	Sparsely settled lands in open or cultivated states
C2T – Rural Town		No corresponding transect zone; may sometimes be coded as a small T5 or T4 hamlet or village
C3R – Suburban Residential C3C – Suburban Commercial	Coded as Conventional Suburban Development (CSD)	The SmartCode™ does not provide for this type of development pattern
FDOT Context Classification does not address this SmartCode™ Transect Zone	T3 - Sub-urban Zone	Lower density, primarily single-family residential with very limited non-residential uses, in a limited dispersion and directly within walking distance of a higher transect. Transect Zone T3 will be considered C4-Urban General
C4 – Urban General	T4 - General Urban Zone	Mixed use but primarily residential urban fabric in a variety of housing types and densities
C5 – Urban Center	T5 - Urban Center Zone	Higher density mixed use buildings that accommodate retail, offices, rowhouses, and apartments
C6 – Urban Core	T6 - Urban Core Zone	Highest density and height, with the greatest variety of uses, and civic buildings of regional importance; some T6 areas may belong to FDOT C5 because of FDOT population requirement
SD – Special District	Special Districts	Areas that, by their intrinsic size, function, or configuration, cannot conform to the requirements of any transect zone or combination of zones

TRANSPORTATION CHARACTERISTICS

The transportation characteristics define the role of a particular non-limited-access roadway in the transportation system, including the type of access the roadway provides, the types of trips served, and the users served. The transportation characteristics take into consideration regional travel patterns, freight movement, transit operations, and SIS designation. Together with context classification, they can provide information about who the users are along the roadway, the regional and local travel demand of the roadway, and the challenges and opportunities of each roadway user.

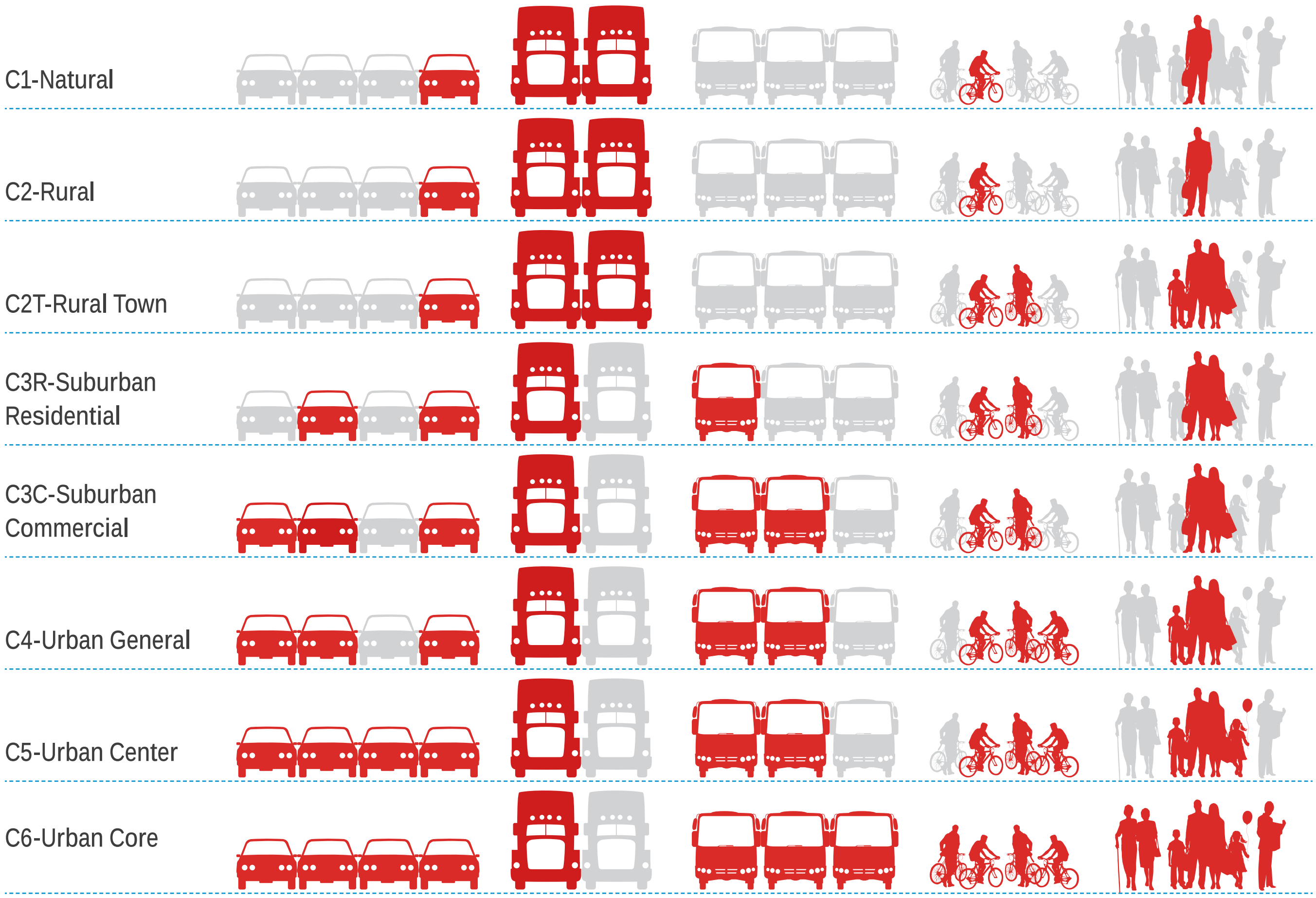
The context classification designations affect more than the appropriate design criteria for roadways. For example, roadways with the same context classification may have very different transportation characteristics. For example, a C3C with frequent transit service will have more multimodal activity than a similar corridor without transit. Corridors with frequent transit service should be planned, designed, and operated for pedestrians and bicyclists, in addition to transit vehicles. Both the context classification and transportation characteristics must be considered to understand users' needs.

CONTEXT CLASSIFICATION AND STREET USERS

The context classification of a roadway informs planners and engineers of the types of users and the intensity of use expected along the roadway. Figure 15 illustrates the user types and intensities expected in each context classification. For example, in the C6-Urban Core Context Classification, it is anticipated to have more pedestrians, bicyclists, and transit users than in a C2-Rural Context Classification. Therefore, design and posted speeds towards the lower end of the speed range, signal spacing, crossing distances, lane widths, and other design elements such as bicycle facilities, on-street parking, and wide sidewalks should be provided to increase the safety and comfort of bicyclists, pedestrians, and transit users. For the C2-Rural Context Classification, vehicles and freight are primary users; and the infrequent bicyclists and pedestrians are accommodated with paved shoulders or sidepaths. A state roadway in C2-Rural Context Classification is expected to have higher speeds, wider lanes, and fewer pedestrian and bicycle crossings. Additional guidance on modal emphasis is included in Section 3.8 of the ***2019 FDOT Access Management Guidebook.***

When determining the roadway typical section, give appropriate consideration for all users of the roadway and include necessary elements associated with users based on its context classification. The ***FDOT Design Manual, Traffic Engineering Manual, and Access Management Guide*** contain standards, criteria, and guidance to be used for planning, designing, and operating roadways in each context classification.

FIGURE 15 EXPECTED USER TYPES IN DIFFERENT CONTEXT CLASSIFICATIONS



FUNCTIONAL CLASSIFICATION

Functional classification defines the role that a particular roadway plays in serving the flow of vehicular traffic through the network. Roadways are assigned to one of several possible functional classifications within a hierarchy, according to the character of travel service each roadway provides (see Table 5).[1]

The ***AASHTO A Policy on Geometric Design of Highways and Streets, 5th Edition (2011)*** presents a discussion of highway functional classifications. ***Florida Statutes, Title XXVI, Chapters 334, 335,*** and ***336,*** give similar definitions and establish classifications for roadway design in Florida.

Functional classification and context classification should be considered together when determining the role and function of a roadway. For example, the relationship between functional classification and access needs may be less consistent in more urban context classifications where roadways serve a wider variety of purposes beyond moving motor vehicle traffic. In evolving suburban areas, retail and commercial business tend to locate along arterial roadways, requiring access and creating demands for short-distance and local trips that include vehicular trips as well as walking and bicycling trips. Transit service is also often located along arterial roadways, due to retail and commercial uses generating high demands for transit trips. At the same time, many state roadways travel through large and small (often historic) town centers that require multimodal mobility and access in order to thrive. Therefore, the context classification provides an important layer of information that complements functional classification in determining the transportation demand characteristics along a roadway, including typical users, trip length, access needs, and appropriate vehicular travel speeds.

TABLE 5 ROADWAY FUNCTIONAL CLASSIFICATION AND ROLE IN THE TRANSPORTATION SYSTEM

Roadway Classification	Role in the Transportation System
Principal Arterial	Serves a large percentage of travel between cities and other activity centers, especially when minimizing travel time and distance is important.
Minor Arterial	Provides service for trips of moderate length, serves geographic areas that are smaller than their higher arterial counterparts, and offers connectivity to the higher arterial system.
Collector	Collects traffic from local streets and connects them with arterials; more access to adjacent properties compared to arterials.
Local	Any road not defined as an arterial or a collector; primarily provides access to land with little or no through movement.

** Context Classification is not applied to limited-access facilities.*

Context classification is not applied to limited-access facilities. For non-limited-access roadways, the ***FDM*** provides design criteria and standards based on both context classification and functional classification.

1 Federal Highway Administration, "Highway Functional Classification Concepts, Criteria and Procedures."

HOW TO IDENTIFY PROJECT-SPECIFIC TRANSPORTATION DEMANDS

While context classification and functional classification can provide a general understanding of the type and activity level of different users, additional data related to travel patterns and user demographics can help identify the needs of users and inform the solutions to be considered to meet users' needs. The anticipated users of a roadway and the travel patterns of those users should be determined well before the design phase of a project and are best explored during the planning and prior to the design scoping phase. In addition, context classification often has implications for transportation and land use planning decisions, and not just roadway design decisions. For instance, C3C and C3R have the same design speed ranges and minimum lane width requirements, however, corridors with either of the designations will differ in terms of land development, site design, access management, or transit considerations, among other decisions.

The anticipated users of a roadway and the travel patterns of those users should inform the needs and the alternatives developed for a project. Location: Fletcher Avenue, Tampa, FL Source: FDOT

The ***Traffic Forecasting Handbook*** outlines data collection efforts that can help planners and designers understand vehicular travel patterns. Table 6 provides a menu of data sources that could be useful in identifying different needs for different users. Not all the data presented in Table 6 will be required for all projects. The data collected for a project should be tailored to the scale of the project and the users the project needs to serve.

TABLE 6 EXAMPLES OF POTENTIAL DATA TO DETERMINE USER NEEDS BY MODE

Mode	Data	
Pedestrian	• Location of signalized pedestrian crossings • Location of marked or signed pedestrian crossings • Posted and operating speeds • Vehicular traffic volumes • Existing sidewalk characteristics (location, width, condition, obstacles or pinch points, gaps, separation from vehicles) • Intersection ramps and alignment/Americans with Disabilities Act (ADA) compliance • Utilities location	• Existing landscape buffer and shade trees • Pedestrian counts • Crash data • Lighting levels • Existing and future land use, building form and site layout, development scale and pattern • Existing and future pedestrian generators (e.g. schools, parks, transit stops)
Bicyclist	• Local and regional bicycle network • Posted and operating speeds • Vehicular traffic volumes • Number of vehicular travel lanes • Location and availability of bicycle parking • Bicycle user type • Existing bicycle facility characteristics (location, width, obstacles or pinch points, separation from vehicles) • Bicyclist counts	• Crash data • Location of destinations • Lighting levels • Pavement condition • Existing and future land use, building form and site layout, development scale and pattern
Automobile	• Design Traffic [existing and projected Average Annual Daily Traffic (AADT), K-factor (K), directional distribution (D), and traffic growth projections] • Trip lengths; origin/destination patterns • Turning movement counts • Posted and operating speeds • Signal timing	• Location and availability of parking • Crash data • Lighting levels • Pavement condition • Existing and future land use, building form and site layout, development scale and pattern
Transit	• Existing and future transit routes and stops • Transit service headways • Location and infrastructure at transit stops • Sidewalk and bicycle facility connection to transit stops • ADA compliant transit stops • Existing and projected ridership (route or stop level)	• Existing and future transit generators and attractors • Type of transit technology • Trip lengths, origin/destination patterns
Freight	• Designated truck routes • Truck volumes • Vehicle classification counts	• Existing and future location of industrial land uses or other generators of freight trips • Freight loading areas/truck parking

As micromobility services continue to evolve, consider how their needs may reflect those of pedestrians and bicyclists. FDOT is working on guidance on how to more specifically address micromobility services.

Depending on the scale, purpose, and needs of the project, the following are some examples of questions that could augment the analysis to better understand transportation travel demand and needs for all users:

- Land uses: What pedestrian, bicycle, or transit generators are located along the roadway? Are there large shopping destinations? Large employers? Public facilities? Are there visitor destinations? How might existing land use patterns change based on approved or planned development? Is there a redevelopment plan for the area? What land use changes are planned or anticipated to occur?
- Demographics: Based on census data, are there indicators that people living near the corridor will want or need to travel by walking, biking and/or transit? These include areas overrepresented, when compared to the general population, by elderly or low-income residents, or households without access to automobiles.
- Vehicular trip characteristics: What percentage of the vehicular trips are local? What is the average trip length? Is the roadway part of the SIS?
- Travel patterns: Are there unique travel patterns or modes served by the corridor? Will new or emerging transportation services or technologies influence trip-making characteristics (e.g., rideshares, scooters, interregional bus service, bikeshare)?
- Safety data: How many and what types of crashes are occurring along the roadway?
- Types of pedestrians: Are there generators or attractors that would suggest that younger or older pedestrians, or other special user groups, will be using the roadway (e.g., schools, parks, elderly care facilities, assisted living centers)?
- Types of bicyclists: Is the roadway a critical link for the local or regional bicycle network? Does the roadway connect to or cross trails or bicycle facilities? Are bicyclists using the roadway to access shopping, employment, or recreational destinations?
- Transit: What type of transit service exists or is planned for the area? Where are transit stops located? Can pedestrians reach these stops from either side of the street without out of direction travel and delays? What amount of out of direction travel is required? Are transit stops accessible using the network of existing bicycle and pedestrian facilities?
- Freight: What is the percentage and volume of heavy trucks using the roadway? Are there destinations that require regular access by heavy trucks or vehicles with wide wheelbases? Is the roadway part of a designated freight corridor? Where does loading and unloading occur along the roadway?

The two photos above are from the same roadway and illustrate an example of a high-volume roadway that balances the needs of freight traffic, transit, and pedestrians and bicyclists of varying abilities. The corridor includes a shared use path, bicycle lanes, bus pull-outs, bus shelters with benches, and other amenities. Location: US 98, Polk County, FL Source: KAI

ENVIRONMENTAL CHARACTERISTICS

Environmental characteristics, including the social, cultural, natural, and physical aspects of an area, play a role in the planning, design, and maintenance of transportation projects. FDOT is focused on responsible stewardship of Florida's environmental resources. The FDOT Mission states that FDOT will provide a safe transportation system that "enhances economic prosperity and preserves the quality of our environment and communities." Aligning with this mission, FDOT considers the social, cultural, natural, and physical impacts of its investments throughout the planning and design process.

Transportation projects that utilize federal transportation dollars (or that require a federal environmental permit such as wetlands or water quality) are subject to review under the ***National Environmental Policy Act of 1969 (NEPA)***. FDOT developed the PD&E process to address NEPA for federally funded transportation projects in Florida, including the identification and assessment of environmental characteristics for all projects.

Public involvement and agency coordination are required by NEPA and are part of the PD&E process. Detailed information on FDOT procedures for environmental review can be found in the following documents:

- PD&E Manual
- ETDM Manual
- Public Involvement Handbook
- Sociocultural Effects Evaluation Process
- Cultural Resource Management Handbook

STRATEGIC INTERMODAL SYSTEM AND CONTEXT CLASSIFICATION

The SIS was established in 2003 to enhance Florida's economic competitiveness by focusing state resources on the transportation facilities most critical for statewide and interregional travel. The three SIS objectives identified in the ***SIS Policy Plan*** are:

- Interregional connectivity: Ensure the efficiency and reliability of multimodal transportation connectivity between Florida's economic regions and between Florida and other states and nations.
- Intermodal connectivity: Expand transportation choices and integrate modes for interregional trips.
- Economic development: Provide transportation systems to support Florida as a global hub for trade, tourism, talent, innovation, business, and investment.

The SIS includes Florida's largest and most significant commercial service and general aviation airports, spaceports, public seaports, intermodal freight terminals including intermodal logistics centers, interregional passenger terminals, urban fixed guideway transit corridors, rail corridors, waterways, military access facilities, and highways. The SIS includes three types of facilities: hubs, corridors, and connectors.

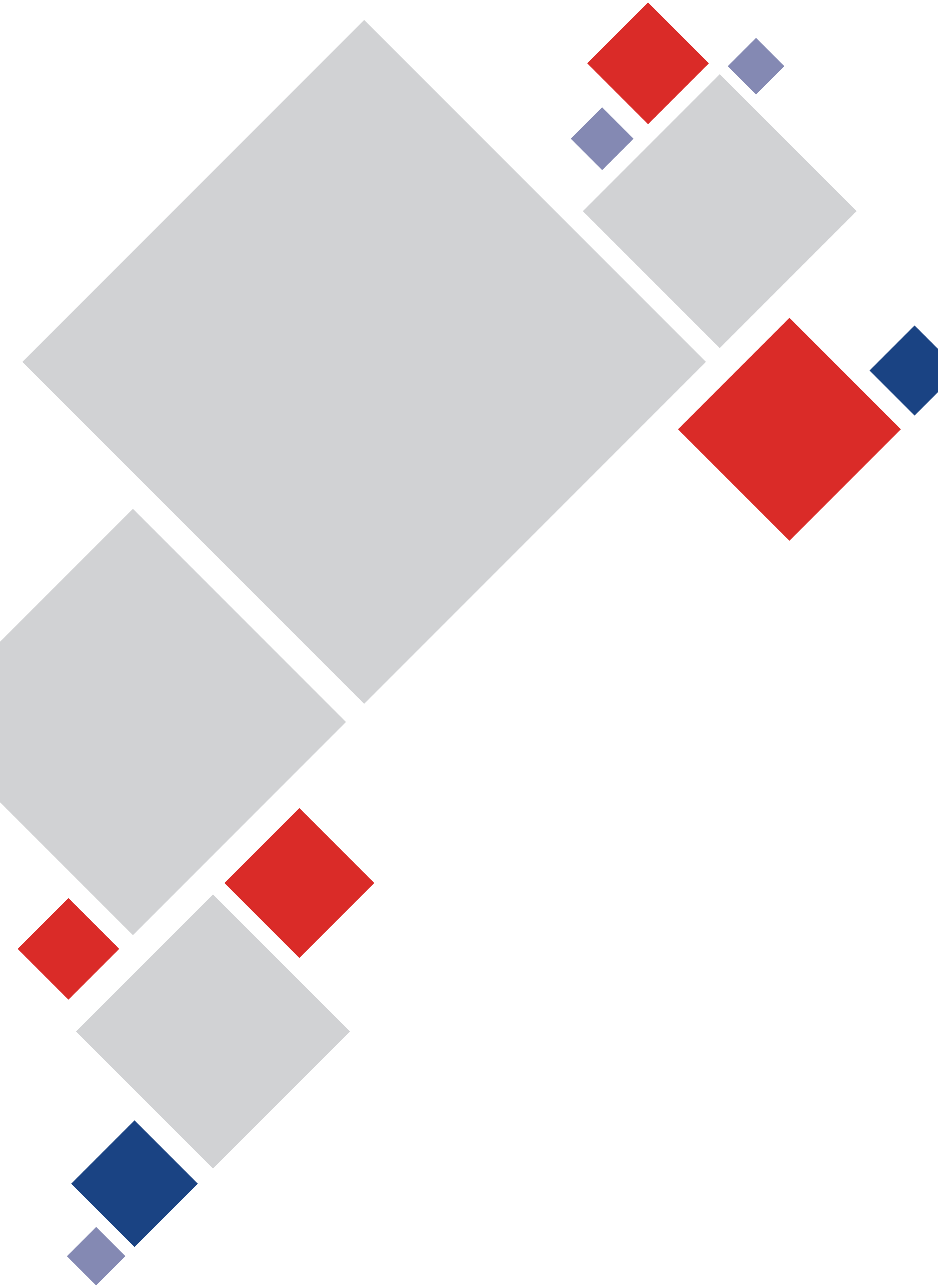
SIS Highway corridors and connectors traverse varying context classifications. Given the purpose and intent of the SIS, the requirements of a particular context classification may not always align with the function of the SIS highway. In the case of interstates and limited-access facilities, the function of the roadway is considered complete. For all others, there is a need to balance the safety and comfort of users who live and work along the SIS facility with interregional and interstate freight and people trips through the area. This is consistent with the intent of the ***SIS Policy Plan***, which specifically calls for the need to improve coordination with regional and local transportation and land use decisions by:

- Better reflecting the context of the human and natural environment;
- Balancing the need for efficient and reliable interregional travel with support for regional and community visions;
- Developing multimodal corridor plans that coordinate SIS investments with regional and local investments; and
- Leveraging and strengthening funding programs for regional and local mobility needs such as the Transportation Regional Incentive Program, Small County Outreach Program, and Small County Road Assistance Program.

The ***SIS Policy Plan*** outlines that SIS improvements should consider the context, needs, and values of the communities serviced by the SIS, which may include flexibility in design and operational standards. Most importantly, communication with all parties involved is key to determining the best solution to realize the intent of both the SIS and a context-based approach within a community.

The ***FDM*** provides design standards for facilities on the SIS. Roadways located on the SIS require coordination with the District SIS Coordinator during the determination, update, or confirmation of the facility's context classification.

Accommodation of freight vehicles is an important part of context-based design. Location: Estero Boulevard, Fort Myers Beach, FL Source: Rick Hall



Chapter 2: Linking Context Classification to the FDM and Other Documents

The FDOT context-based design approach is compatible with and supported by national guidance documents. The following section describes the relationship between FDOT context classification and other FDOT and national manuals and handbooks.

AASHTO'S A POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS

AASHTO recognizes that different places have different characteristics regarding density and type of land use, density of street and highway networks, nature of travel patterns, and the ways in which these elements are related. The AASHTO A Policy on Geometric Design of Highways and Streets (Green Book), 7th Edition (2018) presents a discussion of highway functional classifications. Florida Statutes, Title XXVI, Chapters 334, 335, and 336, give similar definitions, and establish classifications for roadway design in Florida. AASHTO's ***Guide for the Planning, Design and Operation of Pedestrian Facilities*** (2004c) and ***Guide for the Development of Bicycle Facilities*** (1999) expand significantly on the AASHTO ***Green Book***, presenting factors, criteria, and design controls.

FDOT DESIGN MANUAL (FDM)

In order to design the various elements of a roadway, including its alignment and cross section, the designer must understand the basic design controls associated with the roadway to implement context-based planning and design. The ***FDM*** provides a range of design controls based on FDOT's context classification and functional classification.

The key context-based design controls are:

- Design users
- Design speed
- Design vehicle

Target Speed, while not a Design Control, is a critical design consideration used to determine the appropriate Design Speed, which is a Design Control. Target Speed is addressed in FDM 202.

THE DESIGN USER

Roadway users' varying skills and abilities should influence roadway design. The physical characteristics of the young, the aging, and people with different physical abilities introduce a variety of human factors that can influence driving, walking, and cycling abilities. Design users should be taken into consideration when determining design details such as sidewalk widths, type of bicycle facility, design speed, signal timing and spacing, location of pedestrian crossings, number of vehicular travel lanes, intersection width, and lighting.

Driver performance informs roadway design.

FDOT has identified teen drivers (age 15 to 19) and aging drivers (age 65 and up) as at-risk drivers. The 2010 census reports that 6.5 percent of Florida's population was 15 to 19 years old, and 17.3 percent of Florida's population was 65 years old or older. Historically, fatalities involving teen drivers and aging drivers typically account for around one-quarter of all Florida traffic fatalities. As compared to younger drivers, older drivers tend to process information slower, and have a slower reaction time, deteriorated vision and hearing, and limited depth perception.[1] For additional information, refer to FHWA publications ***Highway Design Handbook for Older Drivers and Pedestrians and Guidelines and Recommendations to Accommodate Older Drivers and Pedestrians***.

Consider the pedestrian design user.

Pedestrians are among the most vulnerable roadway users. In 2019, Florida led the state rankings in annual pedestrian fatalities per 100,000 people, with a recorded 5,433 pedestrian fatalities between 2008 and 2017.[2] Pedestrian characteristics that serve as design controls include walking speed, walkway capacity, and the needs of persons with disabilities. The 2010 census reports that 19 percent of the population in the United States had a disability in 2010.[3] Age has an important role in how pedestrians use a facility, as older adults are the most vulnerable pedestrians.[4]

Context-based design considers the pedestrian design user to represent people with a range of abilities, including the elderly, children, and persons with disabilities. This is especially true in context classifications C2T-Rural Town, C3C-Suburban Commercial, C4-Urban General, C5-Urban Center, and C6-Urban Core where a higher level of pedestrian activity is expected. People with varying abilities require a continuously paved level surface on both sides of the roadway, a network that allows multiple and direct routes to destinations, short crossing distances, and protection from the weather. Several design elements have been found to assist elderly pedestrians, including accommodation for slower walking speeds and adequate median refuge islands at wide intersections. For additional information, refer to FHWA publications ***Highway Design Handbook for Older Drivers and Pedestrians*** and ***Guidelines and Recommendations to Accommodate Older Drivers and Pedestrians***.

Bicyclists pose different safety and geometric considerations and must also be considered in roadway design.

Bicyclist characteristics vary by user skill level, which varies by age, experience, and trip purpose. Bicycling trip purposes are broadly categorized into utilitarian trips and recreational trips:

- Utilitarian trips are non-discretionary trips needed as part of a person's daily activity, such as commuting to work, school, or shopping.
- Recreational trips include trips for exercise or social interaction. Experienced riders or those who travel regularly, and casual riders or infrequent users both make recreational trips.

1 American Association of State Highways and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*, 6th Edition, 2011, pp. 2-43.
2 *Smart Growth America, Dangerous by Design 2019*

3 United States Census Bureau, "Nearly 1 in 5 People Have a Disability in the U.S., Census Bureau Reports," July 25, 2012, https://www.census.gov/newsroom/releases/archives/miscellaneous/cb12-134.html
4 "Aging Road User," accessed September 22, 2016, http://www.safeandmobileseniors.org/AgingRoadUser.htm#Bicyclists

Data on trip purpose and experience level provide some information on bicyclist characteristics and preferences. Experienced adult riders tend to:

- Be more comfortable riding with vehicles on streets. Some will prefer to ride in mixed traffic on lower speed streets, while others will prefer dedicated bicycle facilities; and
- Ride at speeds up to 25 mph on level ground.[5]

Casual and younger riders tend to:

- Prefer a physical separation from vehicular traffic;
- Ride on the sidewalk;
- Achieve travel speeds of around 8 to 12 mph; and
- Bicycle shorter distances.

For bicyclists, the design user should reflect the casual and younger rider in most cases. Data that may indicate the need to accommodate casual and younger riders include:

- Origins and destinations that generate bicycle trips along or within proximity to a roadway, such as schools, parks, high-density residential housing, shopping centers, and transit stops;
- Data that indicate propensity of bicycle crashes;
- Roadways within well-connected street networks;
- Roadways that connect to local or regional dedicated bicycle facilities;
- Data that indicate bicyclists are currently riding on the sidewalk; and
- Public input.

See the FDM for current FDOT criteria related to bicycle and pedestrian facilities.

DESIGN VEHICLE

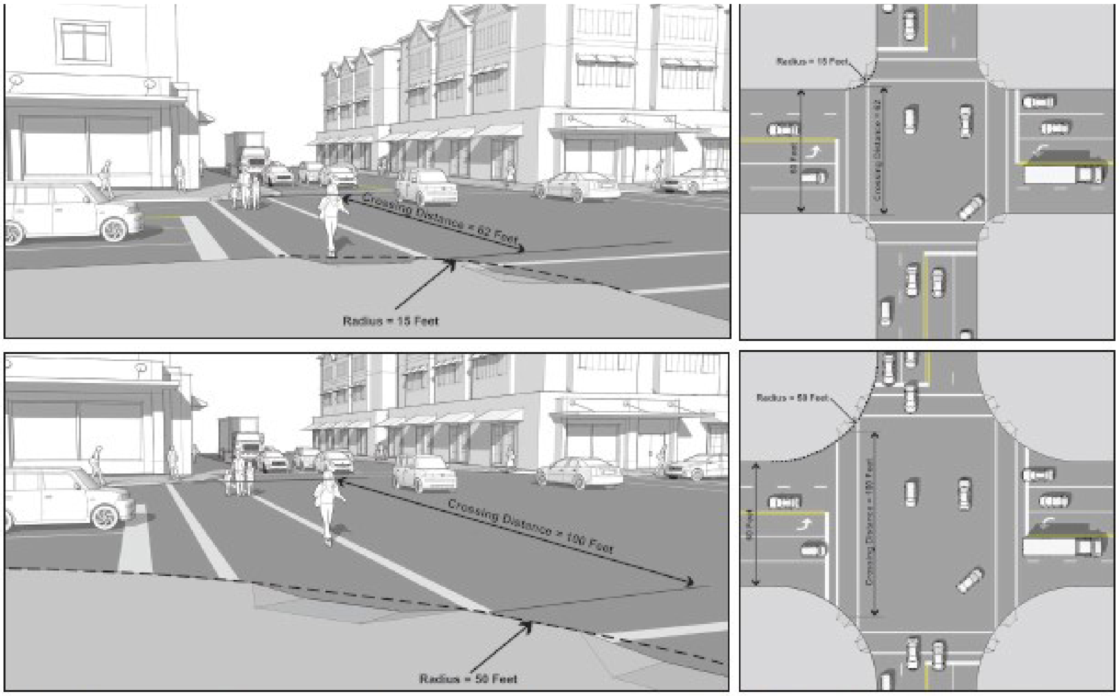
This Guide builds on existing guidance from the FDM and the ***FDOT District 7 Draft Freight Roadway Design Considerations*** in determining the design vehicle based on context and users. The type of design vehicle is influenced by the functional and context classification of a roadway, the role of the roadway in the network, and the land uses served. The design vehicle is the largest vehicle that is accommodated without encroachment on to curbs (when present) or into adjacent travel lanes. The WB-62FL is often used as the design vehicle on state roadways. In areas where the context classification suggests a need for multimodal travel, a smaller vehicle turning template may be more appropriate for turning movements at intersections where cross streets will not be expected to have significant levels of heavy truck traffic.

Assuming a WB-62FL design vehicle for all movements at all intersections results in designs that reduce the comfort and convenience for pedestrians (Figure 16). Because WB-62FL turning movements are rare in urban contexts and at intersections with local or collector streets, designs that accommodate a WB-62FL without encroachment for all turning movements may result in more pavement and longer pedestrian crossing distances than are necessary for most turning maneuvers, and are difficult to achieve in the constrained conditions that exist in many of the most urban contexts. Such designs also encourage higher speeds for turning vehicles of all sizes. The increased pavement increases the capital cost and right-of-way costs of an improvement, particularly where urban development densities contribute to high property values.

The consideration of a smaller vehicle for turning movements between designated freight roadways and lower-classified urban streets can help balance goods movement with access for and comfort of other users. The FDM addresses this by introducing the concept of both a design vehicle and a control vehicle in designing roadways.

5 American Association of State Highways and Transportation Officials, *Guide for the Development of Bicycle Facilities Fourth Edition*, 2012, p. 15.

FIGURE 16 RELATIONSHIP BETWEEN CURB RADII AND PEDESTRIAN CROSSING DISTANCE

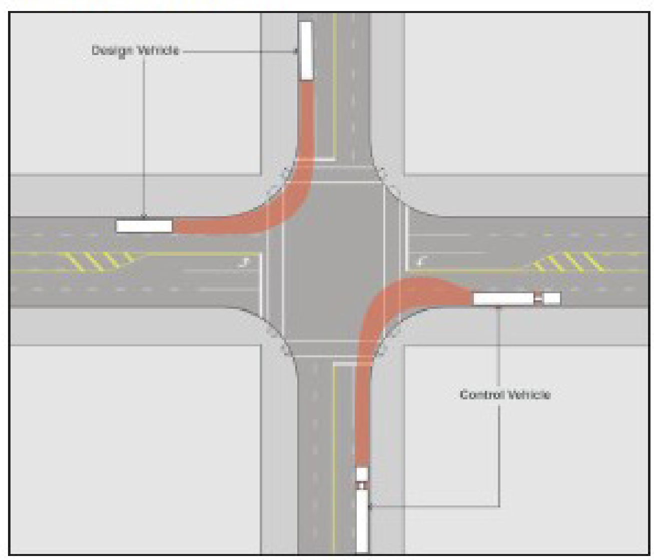


Curb radii has significant influence on the pedestrian crossing distance at intersections. Top and bottom illustrations compare the crossing distances between an intersection with 50 feet and 15 feet curb radius.

The control vehicle is the largest vehicle that can be expected to make use of the roadway. In this approach, the current FDOT design vehicle could be used as the control vehicle in certain contexts. For the purposes of turning movements, the control vehicle is expected to make a turn only rarely. A smaller vehicle, expected to make frequent turns to lower-class side streets, is designated the design vehicle. The intersection turning movement considers both the design vehicle and the control vehicle (see **Figure 17**):

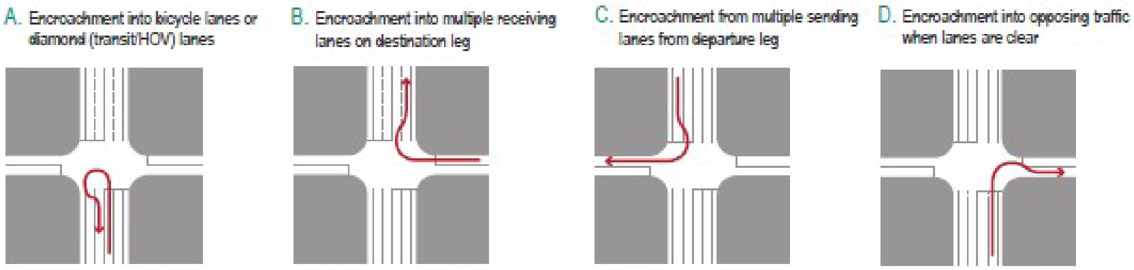
- The **design vehicle** is the vehicle that must be accommodated without encroachment onto curbs (where present) or into opposing traffic lanes.
- The **control vehicle** is the vehicle that is infrequent and is accommodated by allowing:
    - Encroachment into opposing lanes if no raised median is present (see **Figure 18**).
    - Minor encroachment into the street side area if no critical infrastructure (traffic signal, poles, etc.) is present.[6]

FIGURE 17 INTERSECTION DESIGN SHOULD CONSIDER BOTH DESIGN VEHICLE AND CONTROL VEHICLE



6 Florida Department of Transportation District 7, *Freight Roadway Design Considerations*, 2015.

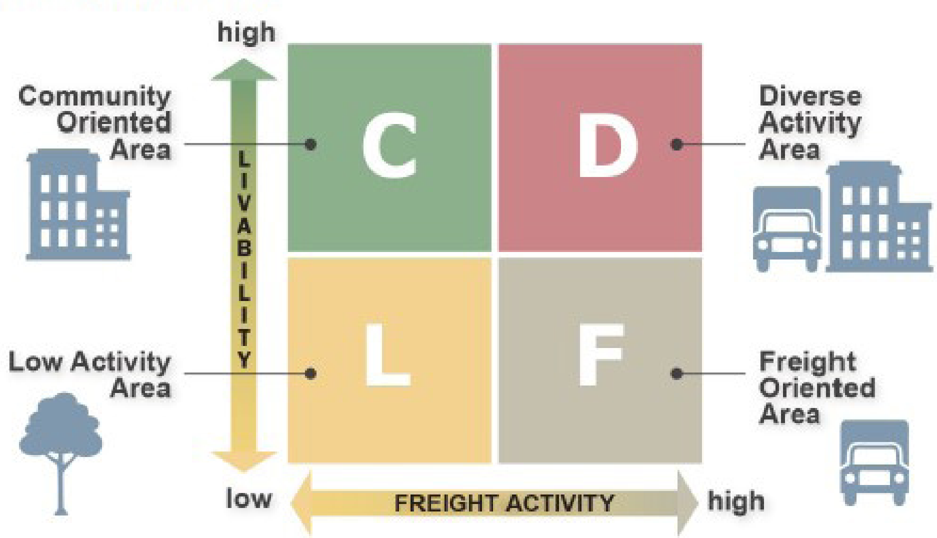
FIGURE 18 AN INFREQUENT CONTROL VEHICLE ENCROACHMENT INTO OPPOSING AND ADJACENT LANES



Source: FDOT District 7 Draft Freight Roadway Design Considerations

FDOT District 7 Draft Freight Roadway Design Considerations outlines a context-sensitive design approach and strategies for freight accommodations. The report identifies four general area types characterized by the land uses and activities that exist or are anticipated in areas throughout the Tampa Bay region (see **Figure 19**). The report defines four freight roadway facility types and seven cross-street facility types. **Figure 20** presents the recommended design vehicle and control vehicle for the intersection of each freight roadway facility type with each cross-street facility type within four different area types. For more information on the District 7 design vehicle and control vehicle recommendations and the type of encroachment permissible in different contexts, refer to the ***FDOT District 7 Draft Freight Roadway Design Considerations***.

FIGURE 19 FDOT DISTRICT 7 DRAFT FREIGHT ROADWAY DESIGN CONSIDERATIONS: GENERAL AREA TYPES



Source: FDOT District 7 Draft Freight Roadway Design Considerations

FIGURE 20 DRAFT FDOT DISTRICT 7 FREIGHT DESIGN CONSIDERATIONS FOR DESIGN VEHICLE AND CONTROL VEHICLE AT INTERSECTIONS

COMMUNITY ORIENTED

What: Turning movements at intersections with lower classification cross-streets have significantly lower Control Vehicle and Design Vehicle requirements

Why: Tractor-trailer movements for lower classified cross-streets are fairly rare occurrences

DIVERSE ACTIVITY

What: Turning movements at intersections with lower classification cross-streets have significantly lower Control Vehicle and Design Vehicle requirements

Why: Tractor-trailer movements for lower classified cross-streets are fairly rare occurrences

CROSS STREET FACILITY TYPE	DESIGNATED FREIGHT ROADWAY FACILITY TYPE			
	Limited Access Facility Ramps	Freight Mobility Corridors	Other Freight Distribution Routes	FAC Streets
Limited Access Facility Ramps	DV = WB-67			
Freight Mobility Corridors	DV = WB-67	DV = WB-67		
Other Freight Distribution Routes	DV = WB-67	DV = WB-67	DV = WB-62	
FAC Streets	DV = WB-67	DV = WB-67	DV = WB-62	DV = WB-62
Other Major Arterials	DV = WB-40 CV = WB-62	DV = WB-40 CV = WB-62	DV = WB-40 CV = WB-62	DV = WB-40
Other Minor Arterials and Collectors	DV = WB-40 CV = WB-62	DV = WB-40 CV = WB-62	DV = WB-40 CV = WB-62	DV = WB-40
Local Roads and Streets	DV = SU CV = WB-40	DV = SU CV = WB-40	DV = SU CV = WB-40	DV = WB-40

LOW ACTIVITY

What: Turning movements at intersections with lower classification cross-streets have somewhat lower Control Vehicle and Design Vehicle requirements

Why: Even in low-intensity areas and freight-oriented areas, the extent of paving required for local street intersections can be reduced to minimize right-of-way and construction costs.

FREIGHT ORIENTED

What: Turning movements at intersections with lower classification cross-streets have somewhat lower Control Vehicle and Design Vehicle requirements

Why: Even in low-intensity areas and freight-oriented areas, the extent of paving required for local street intersections can be reduced to minimize right-of-way and construction costs.

CROSS STREET FACILITY TYPE	DESIGNATED FREIGHT ROADWAY FACILITY TYPE			
	Limited Access Facility Ramps	Freight Mobility Corridors	Other Freight Distribution Routes	FAC Streets
Limited Access Facility Ramps	DV = WB-67			
Freight Mobility Corridors	DV = WB-67	DV = WB-67		
Other Freight Distribution Routes	DV = WB-67	DV = WB-67	DV = WB-67	
FAC Streets	DV = WB-67	DV = WB-67	DV = WB-67	DV = WB-67
Other Major Arterials	DV = WB-67	DV = WB-67	DV = WB-67	DV = WB-67
Other Minor Arterials and Collectors	DV = WB-67	DV = WB-67	DV = WB-67	DV = WB-67
Local Roads and Streets	DV = WB-40 CV = WB-62	DV = WB-40 CV = WB-62	DV = WB-40 CV = WB-62	DV = WB-40 CV = WB-62

Source: FDOT District 7 Draft Freight Roadway Design Considerations

DESIGN SPEED AND TARGET SPEED

Vehicle speed concepts can be classified into four types:

- **Design speed** - the selected speed used to determine various geometric elements of the roadway.[7]
- **Operating speed** - the speed at which drivers are observed traveling during free flow conditions.[8]
- **Posted speed limit** - established by methods described in the ***Speed Zoning for Highways, Roads, and Streets in Florida Manual***. This manual is adopted by Rule 14-15.012, F.A.C.
- **Target speed** - the highest speed at which vehicles should operate in a specific context, consistent with the level of multimodal activity generated by adjacent land uses, to provide both mobility for motor vehicles and a supportive environment for pedestrians, bicyclists, and public transit users.[9]

The concept of target speed is to identify a desired operating speed and develop design strategies and elements that reinforce operating speeds consistent with the posted or proposed speed limit. When identified early in the development process, the consideration of target speed can influence the selection and establishment of the design speed. When considering a target speed, the design team should be aware that the current posted speed limit may not reflect the current operating speed.

The target speed is influenced by context classification and should be selected to provide for both the mobility and safety needs of all anticipated users.

The ***FDM*** provides a range of design speeds for each context classification. Within the range of design speeds shown in Table 7, some corridors may benefit from a target speed different from the existing design or posted speeds. For instance, a project in a C4 context classification might benefit from a target speed of 30 mph to support pedestrian movement, even if the existing design speed and/or posted speed of the road is 40 mph, if the area around the roadway has experienced increased development and thus more multimodal activity since the road was designed and constructed.

TABLE 7 FDOT DESIGN SPEEDS AND CONTEXT CLASSIFICATIONS

ARTERIALS AND COLLECTORS		
Context Classification	**Allowable Design Speed Range (mph)**	**SIS Minimum (mph)**
C1 Natural	55-70	65
C2 Rural	55-70	65
C2T Rural Town	25-45	40
C3 Suburban	35-55	50
C4 Urban General	30-45	45
C5 Urban Center	25-35	35
C6 Urban Core	25-30	30

7 American Association of State Highways and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*, 6th Edition, 2011
8 American Association of State Highways and Transportation Officials, *A Policy on Geometric Design of Highways and Streets*, 6th Edition, 2011
9 FDOT Design Manual, 2020.

During initial project planning and discussion, the following questions can help inform target speed selection.

1. What is the context classification (existing and/or future)?
2. What is the allowable design speed based on the context classification?
3. What is the current posted speed limit and, if available, current operating speed? A wide variation between these speeds and the chosen target speed may require more extensive design interventions and may require multiple projects to achieve.
4. What is the Access Management Classification and how does it affect intersection and driveway spacing and modal priority, based on the Access Management Guidebook?
5. What is the transportation role of the roadway within the rest of the transportation network? Is it generally being used to access businesses and land uses along the roadway? Is this anticipated to happen in the future?
6. Are there transit stops/transit service along the roadway? What is the relative transit service level along the corridor?
7. Are there special population groups (lower income, 0-car households, transit dependent, aging population, school age children) walking/biking along/across the roadway)?
8. Are there land uses that typically serve or require walking or bicycling trips in or near the corridor? Are there schools, parks, assisted living facilities, or community facilities within ½-mile of the corridor?
9. Does the safety data identify bicycle or pedestrian crashes along the corridor? What is the frequency and severity of auto crashes?
10. What target speed is appropriate based on the needs of our users and the role of the roadway?

Table 8 provides specific examples of how these characteristics can be used to select a target speed within the design speed range.

TABLE 8 TRANSPORTATION CHARACTERISTICS SUPPORTING TARGET SPEEDS

Target Speed	25 MPH	30 MPH	35 MPH	40-45 MPH	50-55 MPH	60-70 MPH
Context Classification	C2T, C5, and C6	C2T, C4, C5, and C6	C2T, C3R, C3C, C4, and C5	C2T (rarely) C3R, C3C, C4 (rarely)	C1 and C2 C3R, C3C (rarely)	C1 and C2
Fronting Uses	Most parcels fronting street	Most parcels fronting street	Some parcels fronting street	N/A	N/A	N/A
Population Density	High	High	Medium to High	Medium	Low	Low
Vulnerable Users	High	High	Medium to High	Medium	Low	Low
Cross Section Elements	On-street parking; sharrows	On-street parking; sharrows	Separated bicycle lanes; buffered bike lanes	Shared use path	Shared use path	Shared use path
Access Classification	6 and 7	6 and 7	5, 6, and 7	3, 4, 5, and 6	2 and 3	2 and 3
Transit Service	Highest frequency and local serving	Highest frequency and local serving	High frequency and local serving	Moderate frequency and local + regional serving	Lower frequency and regional serving	Low to None
Transit Ridership	High	High	Medium to High	Medium to High	Low	Low to None
Pedestrian and Bicycle Generators	High	High	Medium	Sporadic	Low	Low to None
Vehicular Trip Type	>75% Local	>75% Local	>50% Local	>50% Regional	>75% Regional	>90% Regional
Average Trip Length	<3 miles	3 to 5 miles	3 to 5 miles	5 to 10 miles	>10 miles	>10 miles

DESIGNING TO A TARGET SPEED

Ideally, the target speed, design speed, and posted speed would all be the same. On existing facilities, these speeds may be different from each other, which can result in inconsistent driver expectation about the preferred operating speed. A roadway may have been designed at 45 mph, have a posted speed of 40 mph, but now have a target speed of 30 mph. When the current design speed does not match the target speed, roadway design and operation changes are needed to move the design speed and posted speed toward the target speed and help the road "read" more consistently for road users.

Multiple design modifications may be necessary to achieve the target speed (see **FDM 202**.) In some cases, additional projects may be needed to reconfigure the roadway design such that the target speed is achieved over time. Traffic operations interventions, as also described in **FDM 202**, may also be required in order to achieve the target speed.

When the current posted speed is higher than the target speed, the design team may use this feedback-loop process:

1. Set the target speed
2. Using the target speed as the new design speed, make design and operations interventions to achieve target speed. Post the speed limit equal to the target speed. The Project Manager should apply as many strategies as are necessary and can be achieved under the project constraints recognizing that significant speed changes may require more than one project over time.
3. Conduct a speed study in accordance with the Speed Zoning Manual to measure the resulting operating speed and determine if the target speed has been achieved:
   a. If not achieved, go back to step 2
   b. If achieved, proceed to step 4
4. Continue to monitor the speed over time and return to step 1 if the conditions change or to step 2 if the operating speeds exceed the target speed.

If, after all feasible roadway design and operational modifications have been tried and the target speed has not been achieved, the speed limit should be posted per the **FDOT Speed Zoning Manual**. The design team should document the target speed and the roadway should be prioritized for future projects to continue to work toward the target speed. Other resources and project types may be needed to finally achieve the target speed.

SPEED ZONING MANUAL

FDOT Speed Zoning Manual provides guidelines and recommended procedures for establishing uniform speed zones on state, municipal, and county roadways throughout the Florida. The manual encourages the consideration and implementation of facilities that are designed and operated to enable safe access for all users, including pedestrians, bicyclists, motorists and transit riders of all ages and abilities. Paramount to this effort includes careful evaluation (or re-evaluation) of speed zone locations and proper selection of target speeds and appropriate posted speed limits.

This manual includes guidelines and procedures for performing traffic engineering investigations related to speed zoning in addition to information on the philosophy of speed zoning and the identification of some of the factors to be considered in establishing realistic, safe, and effective speed zones to which meaningful enforcement can be applied.

FDOT TRAFFIC ENGINEERING MANUAL

The ***FDOT Traffic Engineering Manual (TEM)*** provides traffic engineering standards and guidelines to be used on the State Highway System. The manual outlines the process on how traffic engineering standards and guidelines are adopted, as well as chapters devoted to roadway signs, traffic signals, markings, and specialized operational topics.

The TEM establishes context-based criteria for the consistent installation and operation of marked pedestrian crosswalks at midblock and unsignalized intersections. For instance, the 2020 TEM eliminated the requirement for minimum pedestrian volumes to establish midblock crossings and mark unsignalized crosswalks in C2T, C4, C5 and C6 context classifications, while still requiring an engineering study to provide these facilities.

The 2020 TEM also removed the requirement to conduct an engineering study in order to implement leading pedestrian intervals (LPI) at traffic signals in C4, C5, and C6 context classifications.

ACCESS MANAGEMENT

Access management classification reflects the desired access management standards to be followed for each state roadway. These are standards for restrictive medians, median opening separation, and driveway separation. The ranges are from 00 to 07 and 99. Class 01 reflects the highest amount of access management control (freeways), and Class 07 the lowest. Class 07 is usually found on urban or suburban built-out roadways. Class 99 refers to a special corridor access management plan. Refer to ***Florida Administrative Code (FAC), Rule Chapter 14-97.003***, Access Management Classification System and Standards for more information on access management classification.

Context classification indicates the characteristics and spacing of cross-street intersection spacing and driveway connections. In general, higher intensities of use, including C2T, C4, C5, and C6 may require less restrictive access management. In these context classifications, frequent intersections, smaller blocks, and a higher degree of connectivity and access support the multimodal needs of the area. More restrictive median and connection spacing is typically found in C1, C2, C3C, C3R, and in some cases, C2T. Beyond the context classification, the role of the roadway in the transportation system and safety considerations must also be considered to determine access management needs.

The ***FDOT Access Management Guidebook*** provides additional guidance on the interplay between context classification and access management and the emphasis on specific transportation modes in each context classification.

QUALITY/LEVEL OF SERVICE HANDBOOK

The ***FDOT Quality/Level of Service Handbook (Q/LOS)*** and the Generalized Service Volume Tables are intended to be used by engineers, planners, and decision makers in the development and review of street users' quality/ level of service and capacity at generalized and conceptual planning levels. The ***Q/LOS Handbook*** recognizes that motorists have different thresholds for acceptable delay in rural versus urban areas.

Four broad area-type groupings are used in ***Q/LOS Handbook*** and the Generalized Service Volume Tables:

- Urbanized Areas — Areas that meet FHWA's definition of Urbanized Areas. These consist of a densely settled core of census tracts and census blocks that meet minimum population density requirements, along with adjacent densely settled surrounding census blocks that together encompass a population of at least 50,000 people. The ***Q/LOS Handbook*** further identifies areas with population over 1,000,000 as Large Urbanized Areas.
- Urban Areas — Areas with a population between 5,000 and 49,999 (mostly used to distinguish developed areas that are not urbanized).

- Transitioning Areas — Areas generally considered as transitioning into urbanized/urban areas or areas over 5,000 population and not currently in urbanized areas. These areas can also at times be determined as areas within a Metropolitan Planning Area, but not within an urbanized area. These areas are anticipated to reach urban densities in a 20-year horizon.
- Rural Areas — Areas that are not urbanized, urban, or transitioning. Rural areas are further classified as rural developed areas and cities or developed areas with less than 5,000 population; and rural undeveloped areas in which there is no or minimal population or development.

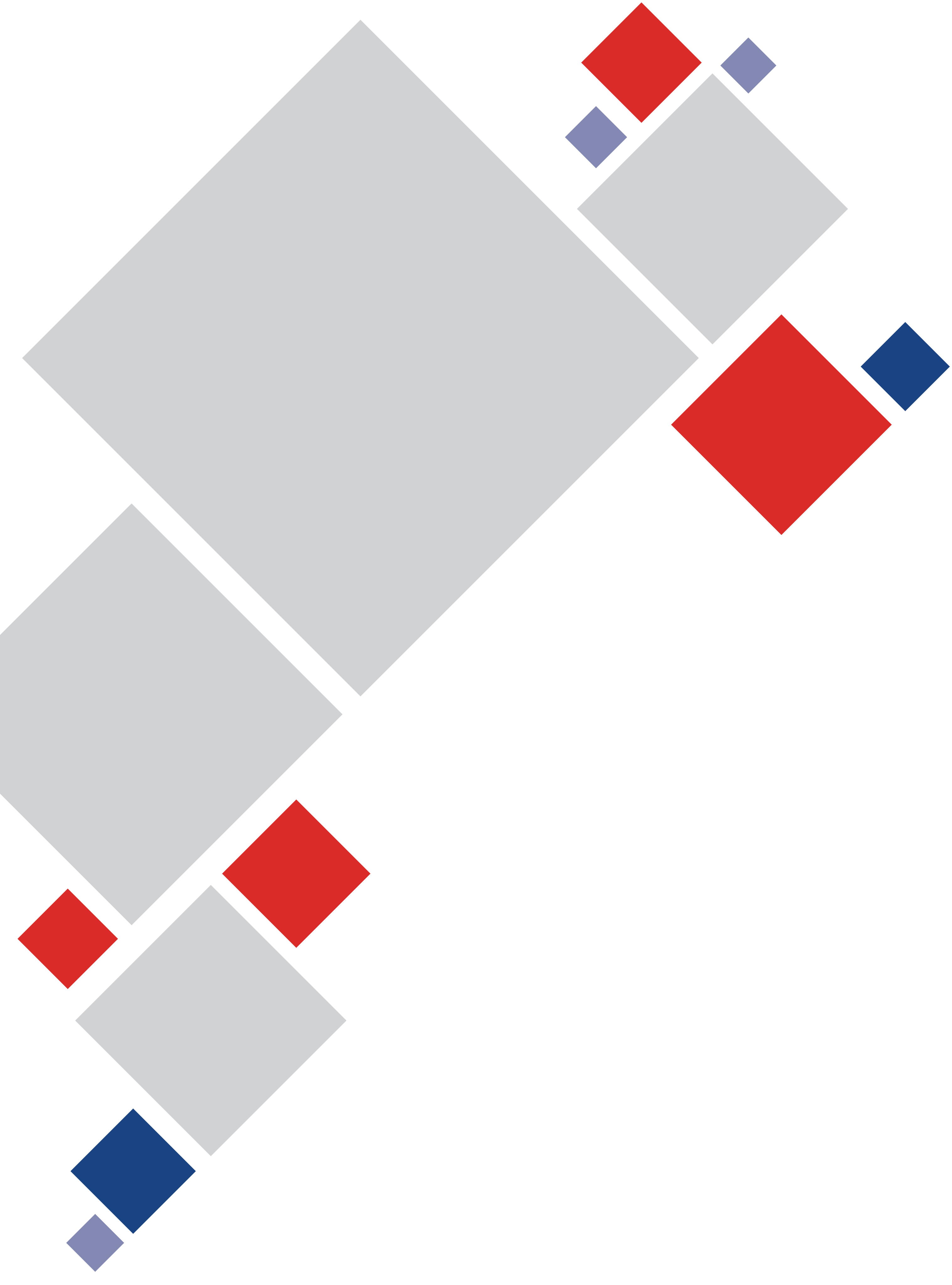
For the purpose of funding considerations and other processes and procedures, FDOT will continue to define urban and rural areas following the FHWA criteria. A direct, one-to-one relationship does not exist between the classification system used in the ***Q/LOS Handbook*** and the context classifications, but generally C1-Natural, C2-Rural, and C2T-Rural Town areas will be identified as rural areas or transitioning areas, while C4-Urban General, C5-Urban Center, and C6-Urban Core will be identified as urban. C3C-Suburban Commercial and C3R-Suburban Residential can fall into any of the Q/LOS categories.

FLORIDA GREENBOOK

The DRAFT 2018 Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highway (Florida Greenbook) encourages context-based transportation planning and design and follows the FDOT context classification system. The DRAFT 2018 Florida Greenbook's Context-Based Design policy captures three core concepts:

- Serve the needs of transportation system users of all ages and abilities, including pedestrians, bicyclists, transit riders, motorists, and freight handlers.
- Design streets and highways based on local and regional land development patterns and reflect existing and future context.
- Promote safety, quality of life, and economic development.

This context-based approach builds on flexibility and innovation to ensure that all streets and highways are developed based on their context classification, as determined by the local jurisdiction to the maximum extent feasible.



Appendix A

CONTEXT CLASSIFICATION CASE STUDIES

Context Classification System: Comprised of eight context classifications, it broadly identifies the various built environments in Florida, based on existing or future land use characteristics, development patterns, and roadway connectivity of an area. In FDOT projects, the roadway will be assigned a context classification(s). The context classification system is used to determine criteria in the *FDM*.

The eight context classifications and their general descriptions are:

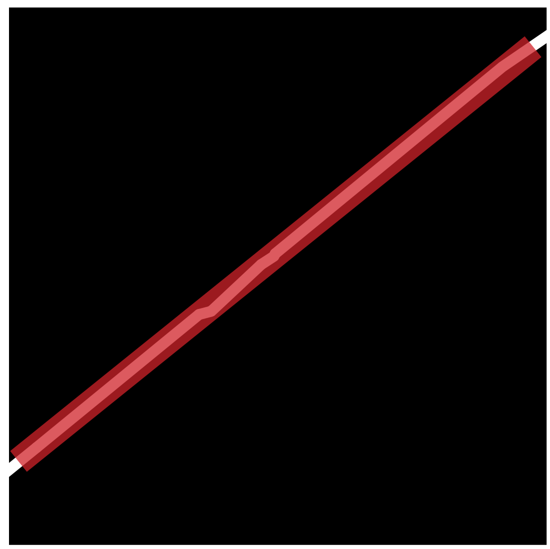
C1-Natural	Lands preserved in a natural or wilderness condition, including lands unsuitable for settlement due to natural conditions.
C2-Rural	Sparsely settled lands; may include agricultural land, grassland, woodland, and wetlands.
C2T-Rural Town	Small concentrations of developed areas immediately surrounded by rural and natural areas; includes many historic towns.
C3R-Suburban Residential	Mostly residential uses within large blocks and a disconnected/ sparse roadway network.
C3C-Suburban Commercial	Mostly non-residential uses with large building footprints and large parking lots. Buildings are within large blocks and a disconnected/ sparse roadway network.
C4-Urban General	Mix of uses set within small blocks with a well-connected roadway network. May extend long distances. The roadway network usually connects to residential neighborhoods immediately along the corridor and/or behind the uses fronting the roadway.
C5-Urban Center	Mix of uses set within small blocks with a well-connected roadway network. Typically concentrated around a few blocks and identified as part of the civic or economic center of a community, town, or city.
C6-Urban Core	Areas with the highest densities and building heights and within FDOT classified Large Urbanized Areas (population> 1,000,000). Many are regional centers and destinations. Buildings have mixed uses, are built up to the roadways, and are within a well-connected roadway network.

C1-NATURAL: FL 24, CEDAR KEY SCRUB STATE RESERVE, LEVY COUNTY

Aerial Satellite Image

Primary Measures

						Roadway Connectivity		
Distinguishing Characteristics	**Land Use**	**Building** Height	**Building** Placement	Fronting Uses	**Location of Off-street** Parking	**Intersection Density**	**Block Perimeter**	**Block** Length
Description	Description	Floor Levels	Description	Yes / No	Description	Intersections/ Sq Mile	Feet	Feet
Lands unsuitable for settlement due to natural conditions	Open space				Not developed			



Streets and Blocks Network

Secondary Measures

Allowed Residential Density	Allowed Office/Retail Density	Population Density	Employment Density
DU/Acre	Floor-Area Ratio (FAR)	Persons/Acre	Jobs/Acre
Development not allowed	Development not allowed	0	0

Street View

Bird's Eye View

Open Space

Existing Land Use

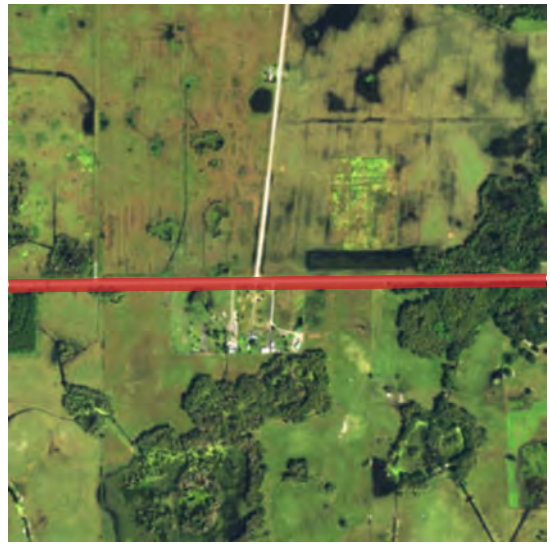
0 0.5 1 Miles

N

C2-RURAL: SR 52, WEST OF DADE CITY, PASCO COUNTY

Primary Measures

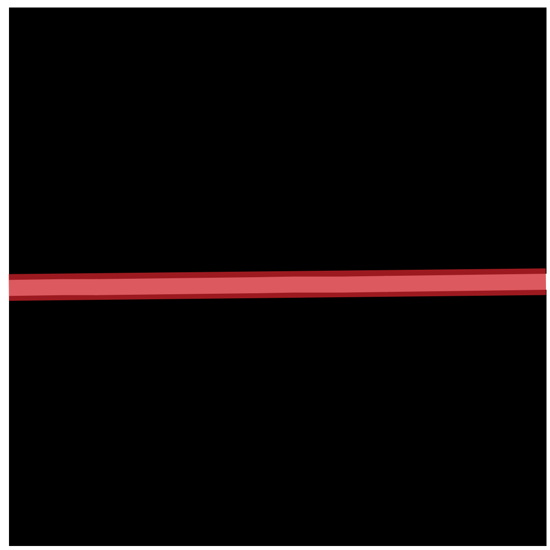
Distinguishing Characteristics	Land Use	Building Height	Building Placement	Fronting Uses	Location of Off-street Parking	Roadway Connectivity		
						Intersection Density	Block Perimeter	Block Length
Description	Description	Floor Levels	Description	Yes / No	Description	Intersections/ Sq Mile	Feet	Feet
Sparsely settled lands surrounded by agricultural lands	Agricultural	1	Detached buildings with no consistent pattern of setbacks	No	No consistent pattern	<1	No defined block pattern	



Aerial Satellite Image

Secondary Measures

Allowed Residential Density	Allowed Office/Retail Density	Population Density	Employment Density
DU/Acre	Floor-Area Ratio (FAR)	Persons/Acre	Jobs/Acre
0.1 (1 per 10 Acres)	Office and retail uses are not allowed	0.08	0

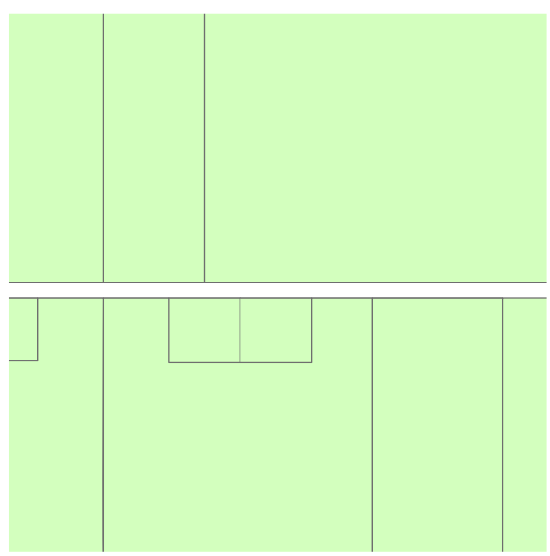


Streets and Blocks Network

Street View

Bird's Eye View

Agriculture



Existing Land Use

0 0.5 1 Miles

N

C2T-RURAL TOWN: MAIN ST, HAVANA, GADSDEN COUNTY

Primary Measures

Distinguishing Characteristics	Land Use	Building Height	Building Placement	Fronting Uses	Location of Off-street Parking	Roadway Connectivity		
						Intersection Density	Block Perimeter	Block Length
Description	Description	Floor Levels	Description	Yes / No	Description	Intersections/ Sq Mile	Feet	Feet
Small concentration of developed area immediately surrounded by rural areas	Retail and commercial	1 - 2	Mostly attached buildings with no setbacks	Yes	Mostly in rear, occasionally on side	325	1,520	330

Aerial Satellite Image

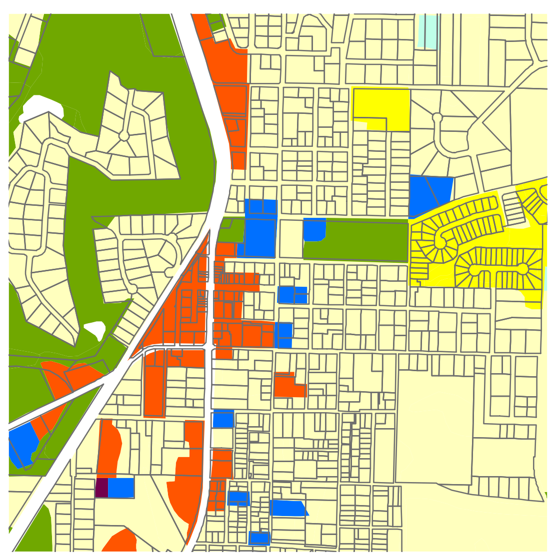
Streets and Blocks Network

Secondary Measures

Allowed Residential Density	Allowed Office/Retail Density	Population Density	Employment Density
DU/Acre	Floor-Area Ratio (FAR)	Persons/Acre	Jobs/Acre
27	1.2	0.3	4

Street View

Bird's Eye View



Future Land Use

Single-Family Residential
Multi-Family Residential
Commercial
Retail
Agriculture
Institutional/Government
Industrial
Open Space
Vacant

0 | 0.5 | 1 Miles

N

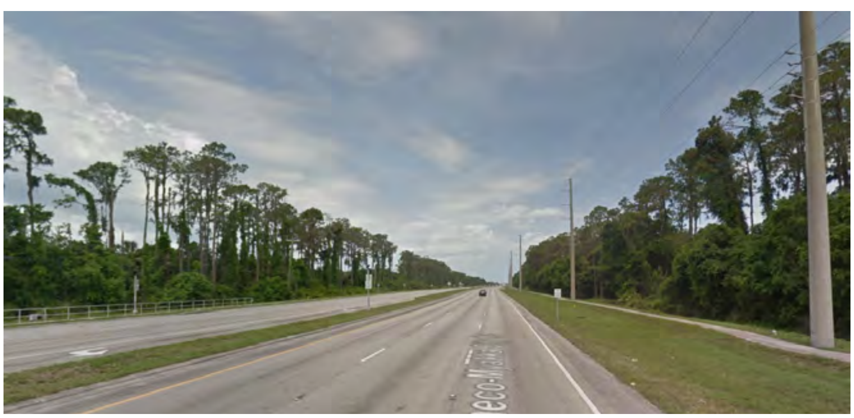
C3R-SUBURBAN RESIDENTIAL: SR 70, LAKEWOOD RANCH, MANATEE COUNTY

Primary Measures

Distinguishing Characteristics	Land Use	Building Height	Building Placement	Fronting Uses	Location of Off-street Parking	Roadway Connectivity		
						Intersection Density	Block Perimeter	Block Length
Description	Description	Floor Levels	Description	Yes / No	Description	Intersections/ Sq Mile	Feet	Feet
Mostly residential uses on both sides of the road with a disconnected roadway network	Single-family residential and institutional	1 - 2	Detached buildings with medium (20' to 75') setbacks on all sides	No	Front	40	6,040	1,140

Secondary Measures

Allowed Residential Density	Allowed Office/Retail Density	Population Density	Employment Density
DU/Acre	Floor-Area Ratio (FAR)	Persons/Acre	Jobs/Acre
1	0.23	0.4	0

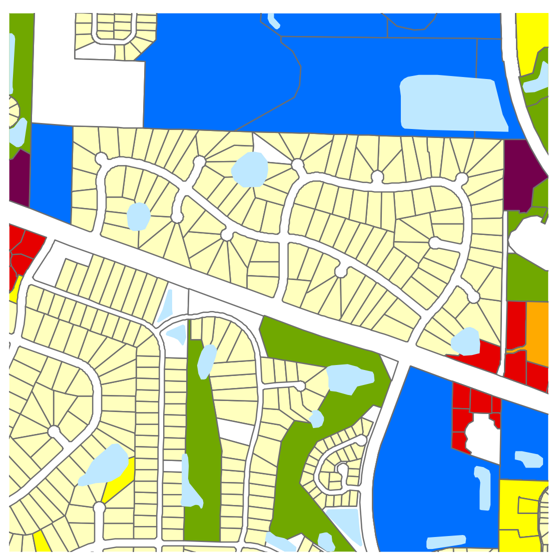


Street View

Bird's Eye View

Aerial Satellite Image

Streets and Blocks Network



Existing Land Use

Single-Family Residential
Multi-Family Residential
Commercial
Retail
Institutional/Government
Open Space
Vacant

0 0.5 1 Miles

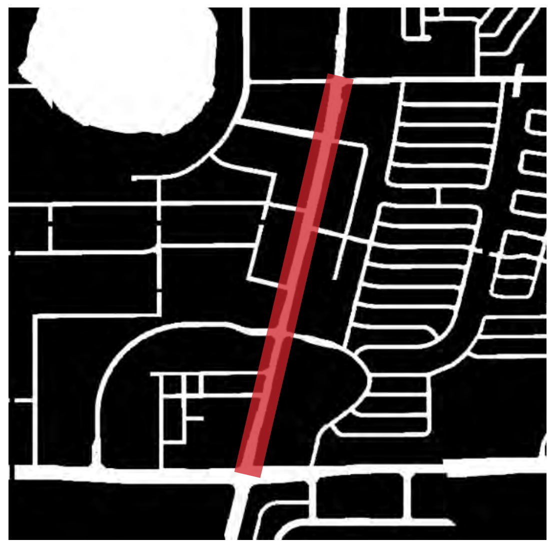
N

C3C-SUBURBAN COMMERCIAL: ORANGE BLOSSOM TRAIL, ORLANDO, ORANGE COUNTY

Aerial Satellite Image

Primary Measures

Distinguishing Characteristics	Land Use	Building Height	Building Placement	Fronting Uses	Location of Off-street Parking	Roadway Connectivity: Intersection Density	Roadway Connectivity: Block Perimeter	Roadway Connectivity: Block Length
Description	Description	Floor Levels	Description	Yes / No	Description	Intersections/ Sq Mile	Feet	Feet
Mostly non-residential uses immediately fronting the roadway, with a disconnected roadway network	Commercial and industrial	1 - 3	Detached buildings with large (> 75') setbacks on both sides	No	Mostly in front; occasionally in the rear or side	60	5,000	800



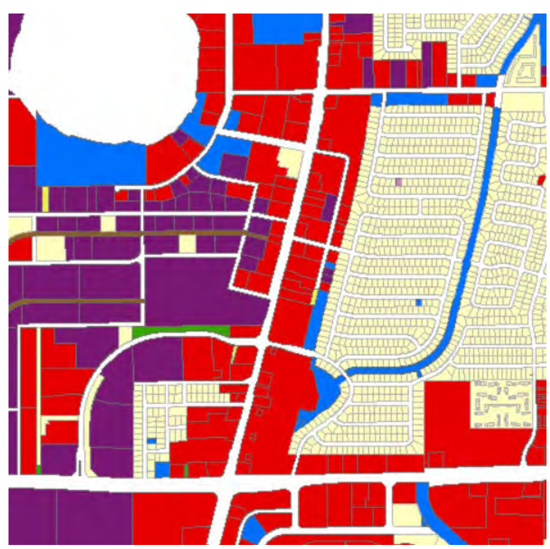
Streets and Blocks Network

Secondary Measures

Allowed Residential Density	Allowed Office/Retail Density	Population Density	Employment Density
DU/Acre	Floor-Area Ratio (FAR)	Persons/Acre	Jobs/Acre
Not Applicable	0.75	2	28

Street View

Bird's Eye View



Single-Family Residential
Commercial
Institutional/Government
Industrial
Open Space
Vacant

Existing Land Use

0 0.5 1 Miles

N

C4-URBAN GENERAL: DR. MLK JR. BLVD, EAST TAMPA, TAMPA, HILLSBOROUGH COUNTY

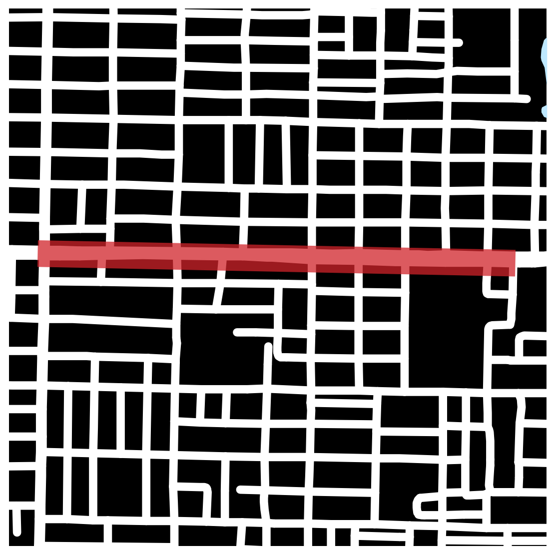
Primary Measures

Distinguishing Characteristics	Land Use	Building Height	Building Placement	Fronting Uses	Location of Off-street Parking	Roadway Connectivity: Intersection Density	Roadway Connectivity: Block Perimeter	Roadway Connectivity: Block Length
Description	Description	Floor Levels	Description	Yes / No	Description	Intersections/ Sq Mile	Feet	Feet
Mix of uses set within small blocks with a well-connected roadway network. The roadway network connects to residential neighborhoods immediately along the corridor and behind the uses fronting the roadway.	Single-family and multi-family residential, neighborhood-scale retail, and office	1 - 2	Detached buildings with minimal to shallow (10' to 20') front and side setbacks	Yes	Mostly in side, occasionally in rear or front	230	1,760	490

Secondary Measures

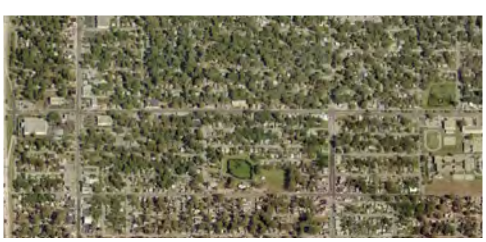
Allowed Residential Density	Allowed Office/Retail Density	Population Density	Employment Density
DU/Acre	Floor-Area Ratio (FAR)	Persons/Acre	Jobs/Acre
12	1.5	8.5	3

Aerial Satellite Image



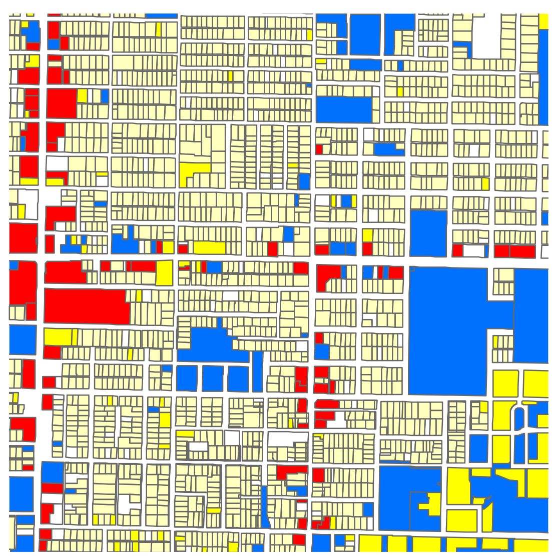
Streets and Blocks Network

Street View



Bird's Eye View

Single-Family Residential
Multi-Family Residential
Commercial
Retail
Institutional/Government
Open Space
Vacant



Existing Land Use

0 0.5 1 Miles

N

C5-URBAN CENTER: MONROE ST, DOWNTOWN TALLAHASSEE, LEON COUNTY

Primary Measures

Distinguishing Characteristics	Land Use	Building Height	Building Placement	Fronting Uses	Location of Off-street Parking	Roadway Connectivity		
						Intersection Density	Block Perimeter	Block Length
Description	Description	Floor Levels	Description	Yes / No	Description	Intersections/ Sq Mile	Feet	Feet
Mix of uses set within small blocks with a well-connected roadway network, and part of the civic and economic center of Tallahassee	Retail, office, institutional, commercial	1 - 5 with some taller buildings	Mostly attached buildings with no setbacks and a few buildings with minimal (<10') setbacks	Yes	Rear and garage	180	1,770	380

Secondary Measures

Allowed Residential Density	Allowed Office/Retail Density	Population Density	Employment Density
DU/Acre	Floor-Area Ratio (FAR)	Persons/Acre	Jobs/Acre
150	8	2.4	90

Street View

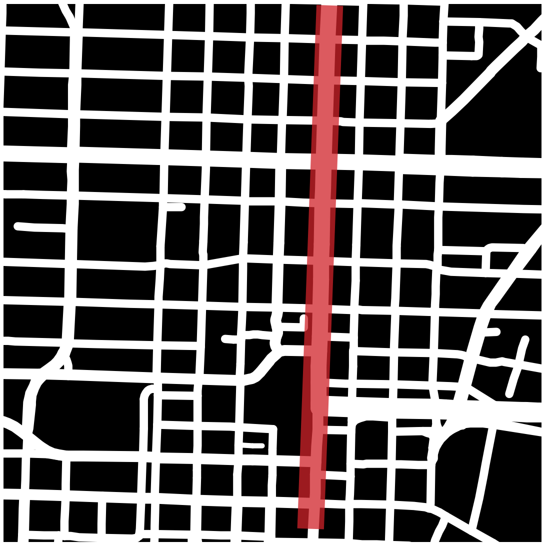
Bird's Eye View

Single-Family Residential
Multi-Family Residential
Commercial
Retail
Institutional/Government
Industrial
Open Space
Vacant

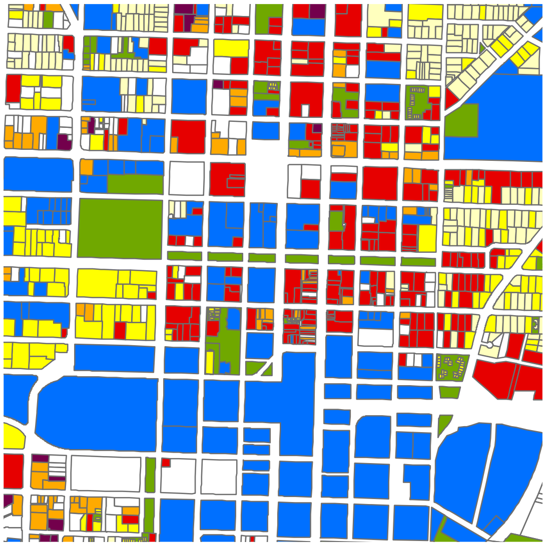
Miles
0 0.5 1

N

Aerial Satellite Image



Streets and Blocks Network



Existing Land Use

C6-URBAN CORE: ORANGE AVE, DOWNTOWN ORLANDO, ORANGE COUNTY

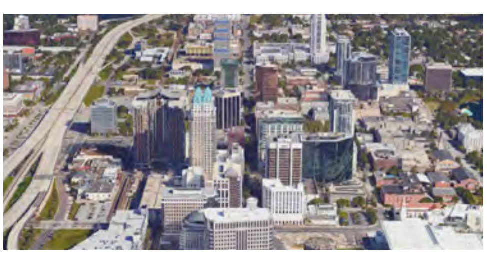
Primary Measures

Distinguishing Characteristics	Land Use	Building Height	Building Placement	Fronting Uses	Location of Off-street Parking	Roadway Connectivity		
						Intersection Density	Block Perimeter	Block Length
Description	Description	Floor Levels	Description	Yes / No	Description	Intersections/ Sq Mile	Feet	Feet
In an MPO urbanized area with population greater than 1,000,000. Multi-story buildings have mixed uses, are built up to the roadway, and are within a well-connected roadway network.	Retail, office, institutional, and multi-family residential	> 4 with some shorter buildings	Mostly attached buildings with no setbacks	Yes	Rear and garage	220	1,910	450

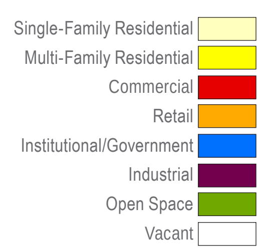
Secondary Measures

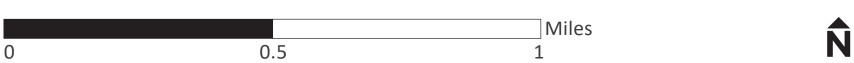
Allowed Residential Density	Allowed Office/Retail Density	Population Density	Employment Density
DU/Acre	Floor-Area Ratio (FAR)	Persons/Acre	Jobs/Acre
200	3	8.5	170

Street View

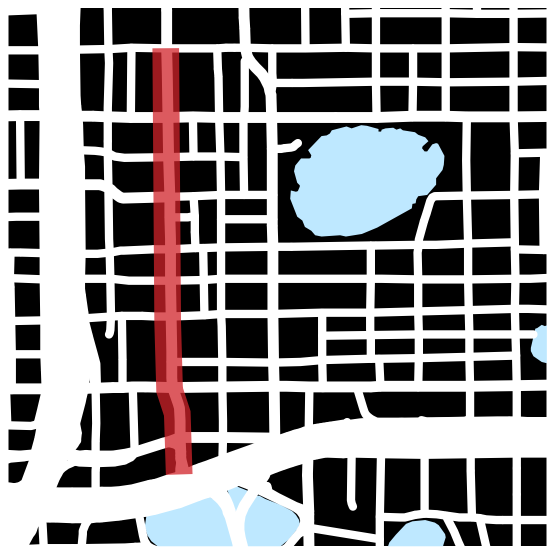


Bird's Eye View

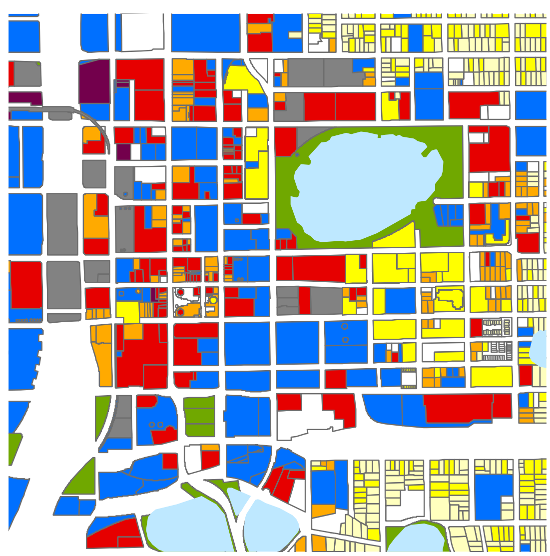




Aerial Satellite Image



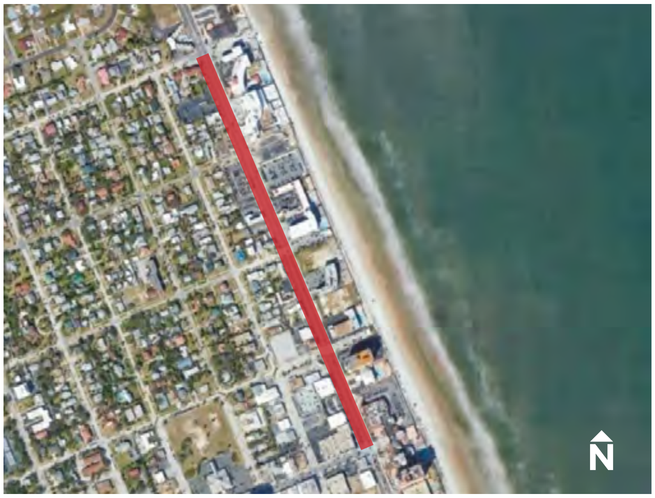
Streets and Blocks Network



Existing Land Use

CONSTRAINED CORRIDORS/ BARRIER ISLANDS

A constrained facility has a geographic barrier that can prevent roadway connectivity measures from meeting higher context classifications. This requires special attention to the land use, employment, and population densities during context classification evaluations. This example shows SR A1A in Daytona Beach, Volusia County. The corridor is along a barrier island where the segment does not meet the roadway connectivity measures for a C4 – Urban General context classification, but the building height, building placement, fronting uses, and location of off-street parking measures do. In this case, the C4 – Urban General context classification is appropriate and acknowledges the users and user needs present.

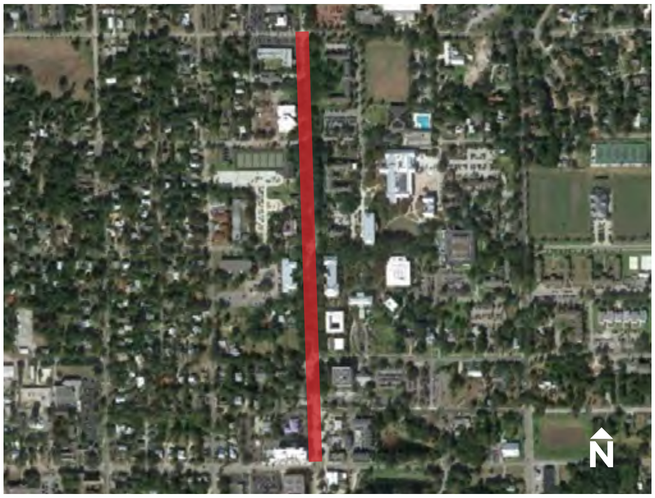


Aerial Satellite Image

Street View

SPECIAL DISTRICT

SR 15 through Stetson University in Deland, Volusia County is an example of a Special District (SD). While the measures are consistent with a C4 – Urban General context classifcation, engineering and planning judgement was used to identify this corridor as a Special District based on the University's land use, roadway users' needs, and proximity to Downtown DeLand. This segment of the roadway was designated a C5 – Urban Center because it is part of the civic or economic center for this community.



Aerial Satellite Image

Street View

POTENTIAL TARGET SPEEDS FOR CASE STUDIES

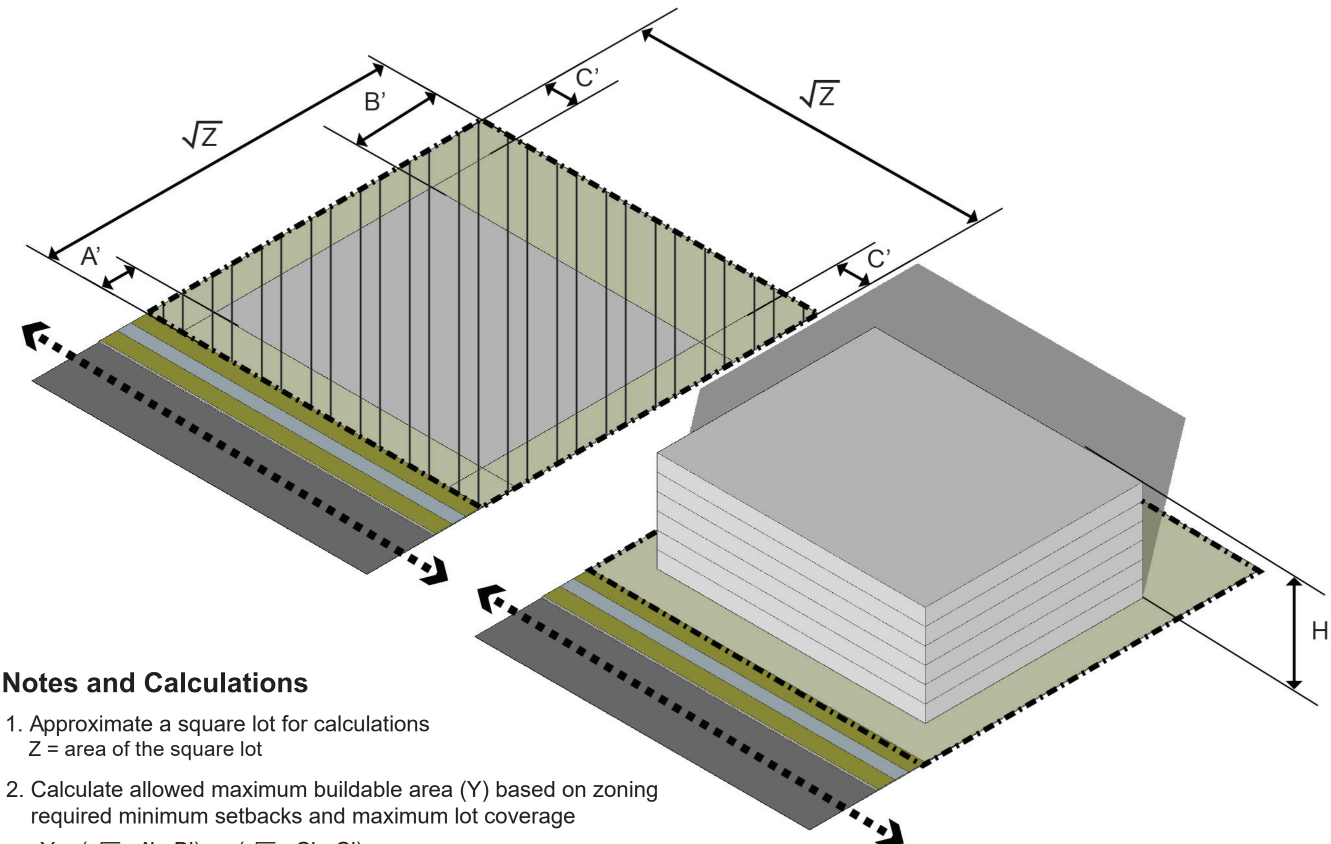
Context Classification	Location	Fronting Uses	Population Density	Vulnerable Users	Cross Section Elements	Access Classification	Transit Service	Pedestrian and Bicycle Generators	Existing Posted Speed	Target Speed
C1-NATURAL	FL 24, CEDAR KEY SCRUB STATE RESERVE, LEVY COUNTY	N/A	Low	Low N/A	Paved shoulder	4	None	None	60	60
C2-RURAL	SR 52, WEST OF DADE CITY, PASCO COUNTY	No	Low	Low N/A	Paved shoulder	3	None	None	55	55
C2T-RURAL **TOWN**	MAIN ST, HAVANA, GADSDEN COUNTY	Most parcels fronting street	Low	**Medium** Low median income	No dedicated bicycle facility (cyclists share lanes)	6	None	Downtown Havana, Havana Community Park, Public Library, Private K-High School	30	30
C3R- **SUBURBAN RESIDENTIAL**	SR 70, LAKEWOOD RANCH, MANATEE COUNTY	No	Low	**Medium** Presence of elementary and middle school students	Paved shoulder	3	None	Elementary & Middle School	50	50
C3C- **SUBURBAN COMMERCIAL**	ORANGE BLOSSOM TRAIL, ORLANDO, ORANGE COUNTY	No	Low	**Medium** Presence of high school students	No dedicated bicycle facility (cyclists share lanes)	6	High frequency local service (Three routes, 4 buses per hour)	Charter High School	40	35
C4-URBAN **GENERAL**	DR. MLK JR. BLVD, EAST TAMPA, TAMPA, HILLSBOROUGH COUNTY	Most parcels fronting street	High	**High** Low median income, high poverty rate, and presence of elementary and middle school students	No dedicated bicycle facility (cyclists share lanes)	7	Lower frequency local service (One route, hourly service)	Elementary & Middle School, Ragan Park, Community Lake, Public Pool, baseball fields, and tennis courts	40	30
C5-URBAN CENTER	MONROE ST, DOWNTOWN TALLAHASSEE, LEON COUNTY	Most parcels fronting street	Medium	Low	On-street parking, no dedicated bicycle facility (cyclists share lanes)	7	High frequency local service (Three local routes, 5 buses per hour)	Downtown Tallahassee, LeMoyne Chain of Parks, High School, Florida State Capital, University Basketball Arena	25	25
C6-URBAN **CORE**	ORANGE AVE,DOWNTOWN ORLANDO, ORANGE COUNTY	Most parcels fronting street	High	**Medium** High poverty rate	No dedicated bicycle facility (cyclists share lanes)	7	High frequency local service (Seven local routes, 9 buses per hour) and regional rail	Downtown Orlando, Lake Eola Park, Professional Basketball Arena, Private Charter School	30	25

Appendix B

FREQUENTLY ASKED QUESTIONS

How is floor area ratio calculated if not defined in zoning code?

FAR can be calculated using these various site design and height standards. For example, assuming floor height of 10 feet, total number of floors can be calculated based on maximum building height measure. Based on minimum parcel size, and minimum setbacks, maximum floor plate area can be calculated. Multiplying maximum floor plate area by total number of floors will give total building floor area. Finally, dividing total building floor area by minimum parcel size will provide FAR.



Notes and Calculations

1. Approximate a square lot for calculations
   Z = area of the square lot
2. Calculate allowed maximum buildable area (Y) based on zoning required minimum setbacks and maximum lot coverage
   $Y = (\sqrt{Z} - A' - B') \times (\sqrt{Z} - C' - C')$
   or
   Y = (Maximum lot coverage area in (%) allowed by zoning code) $\times$ (Z)
   Use the smaller of the two values as Y
3. Calculate total floor levels based on zoning allowed maximum height (J)
   $$\frac{H}{\text{Height of a floor level*}}$$
   * Assume 12' for commercial land use or 10' for residential land use
4. Calculate Floor Area Ratio (FAR)

$$\textbf{Floor Area Ratio (FAR)} = \frac{Y \times J}{Z}$$

Y = Maximum allowed buildable area in square feet

A = Minimum allowed front setback in feet based on zoning code

B = Minimum allowed rear setback in feet based on zoning code

C = Minimum allowed side setback in feet based on zoning code

H = Maximum allowed height allowed by zoning code in feet

Who makes the final context classification determination?

FDM 120.2.3.2(8) indicates the FDOT District staff determine context classification, which includes concurrence from the District Intermodal Systems Development (ISD) Manager or Environmental Management Administrator. The Typical Section Package includes a checkbox and signature block for the concurrence signatures. For state projects, the project manager (or designee, such as the Complete Streets coordinator, community planning coordinator, a scoping team member, growth management liaison, or MPO/TPO liaison) is responsible for coordinating with affected local and regional governments and agencies during the determination of the context classification. Collaboration with the local and regional agencies and governments associated with a project is the key for successful projects.

Are future conditions reviewed for existing context classification evaluations?

The existing context classification looks at the measures listed in the Context Classification Matrix. Existing context classification evaluations consider permitted developments. Qualifying projects are reviewed using planned future conditions, but the Districts have the discretion to use future context classification on other appropriate projects.

How is a context classification decided on a corridor with both suburban commercial and suburban residential land uses?

In suburban environments, the land uses fronting the roadways are the distinguishing factor to designating a C3R Suburban Residential or C3C Suburban Commercial context classification. Typically, C3R corridors are predominantly made up of residential uses only, while C3C corridors have a greater mix of residential and commercial land uses, and residential developments are fewer or found behind the commercial land uses fronting the roadway. In C3C environments, there is expected to be a greater presence of pedestrians, bicyclists, and transit users, large building footprints with surface parking lots fronting the roadway and a disconnected roadway network. If one side of the roadway is C3C and the other side is C3R, default to the highest context classification which is C3C.

Where are the districtwide context classification datasets stored?

The Roadway Characteristics Inventory (RCI) is a database of information related to the roadway environment maintained by FDOT. The preliminary existing context classification is stored in the RCI as Feature 126 – Preliminary context classification. Each district will update this characteristic with the project-level existing context classification as project-level evaluations are completed. The future context classification characteristic is populated by the district, as applicable, when future project-level context classification evaluations are conducted. Not all roadway segments will have a future context classification assigned. Each District regularly sends updated context classification datasets to the RCI system. Preliminary context classifications for planning purposes (not to be used for design projects) can seen using the ConnectPed GIS web application, found at www.FLcompletestreets.com.

Does context classification determine all the design decisions for a roadway?

Identifying context classification is the primary step in understanding the users along a roadway and will inform key design elements, such as the design speeds and lane widths. The transportation characteristics of a roadway are equally as important to understand when making design decisions such as types of pedestrian, bicycle, transit, and freight facilities to be included in the design concept.

What should we do if the roadway network indicates a certain context classification, but land uses and development indicate another?

As shown in **Figure 5**, roadway connectivity measures should be reviewed first to understand the subset of context classifications that may be applied. Land use characteristics should then be used to identify the particular context classification within that subset.

Can we apply context classification on local roadways?

The context classification system was created to describe the state roadway network. Local governments may choose to adapt the context classification system to apply a similar evaluation to local roads, with roadway connectivity and land use measures calibrated to their roadway systems. Local governments findings should be shared with the District to improve the context classification network. Local governments must also recognize that their local roadway networks will have a greater variety of roadway types compared to the State Highway System and be prepared to incorporate this diversity within their Context Classification-based criteria. For instance, Yield Streets, nine-foot travel lanes, and culs-de-sac are all appropriate within a local network but would not be applied to the State Highway System. Local governments should avoid, therefore, simply replacing their local roadway standards with the FDOT Design Manual critieria. Local governments should consult the latest edition Florida Greenbook for additional guidance on the use of context classification.

Why do some measures have undefined thresholds in the context classification matrix?

Context Classification	Building Height, Building Placement, Fronting Uses	Location of Off-street Parking	Roadway Connectivity			Allowed Residential Density	Allowed Office/ Retail Density	Population Density	Employment Density
			Intersection Density	Block Perimeters	Block Length				
C1-Natural	No development along roadway		Sparse roadway network			No development along roadway			
C2-Rural		No consistent pattern of parking		Sparse roadway network			No consistent pattern of allowed office/ retail density		Some office/ retail may be present along the roadway
C2T-Rural Town								Population will vary based on mix of single- and multi-family residential	
C3R-Suburban Residential				No consistent block pattern			No consistent pattern of allowed office/ retail density	Population will vary based on mix of single- and multi-family residential	Some office/ retail may be present along the roadway
C3C-Suburban Commercial						No consistent pattern of allowed residential density		Population will vary based on presence of multi-family residential	Varies based on intensity of commercial development along the roadway
C4-Urban General							No consistent pattern of allowed office/ retail density		

FDOT

Completing FLORIDA'S STREETS