

# Hillsborough County's New Transportation Design Manual

## Presentation to the ITS Committee

### Presenter

- Larry Josephson, PE – Technical Services

### Acknowledgements

- Angelo Belluccia, PE - Florida District Director
- Karddy Rodriguez - Project Manager

Transportation Planning Organization Briefing  
July 2023



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# Acknowledgements

- Hillsborough County's "Design Manual" Team
  - Leland Dicus
  - Mike Williams
  - Robert Campbell
  - Abigail Flores
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  - Glenn Morris
  - Burgess & Niple Planners and Engineers
  - Completed Context Based Planning Documents



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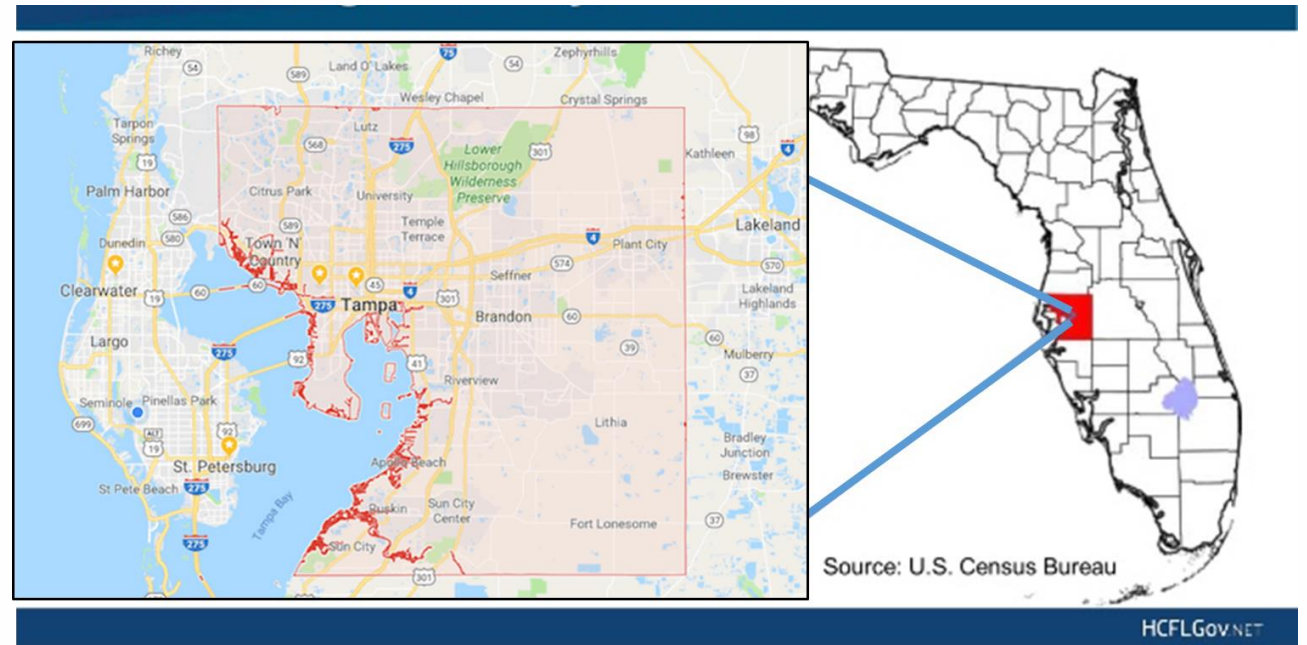
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# Agenda

## The Hillsborough County Transportation Design Manual (HCTDM)

*Part of a Context Based, Complete Street Approach to Planning and Designing our County Roadways*

- Statistics
- Overall Implementation Plan
- HCTDM Details
- Project Schedule



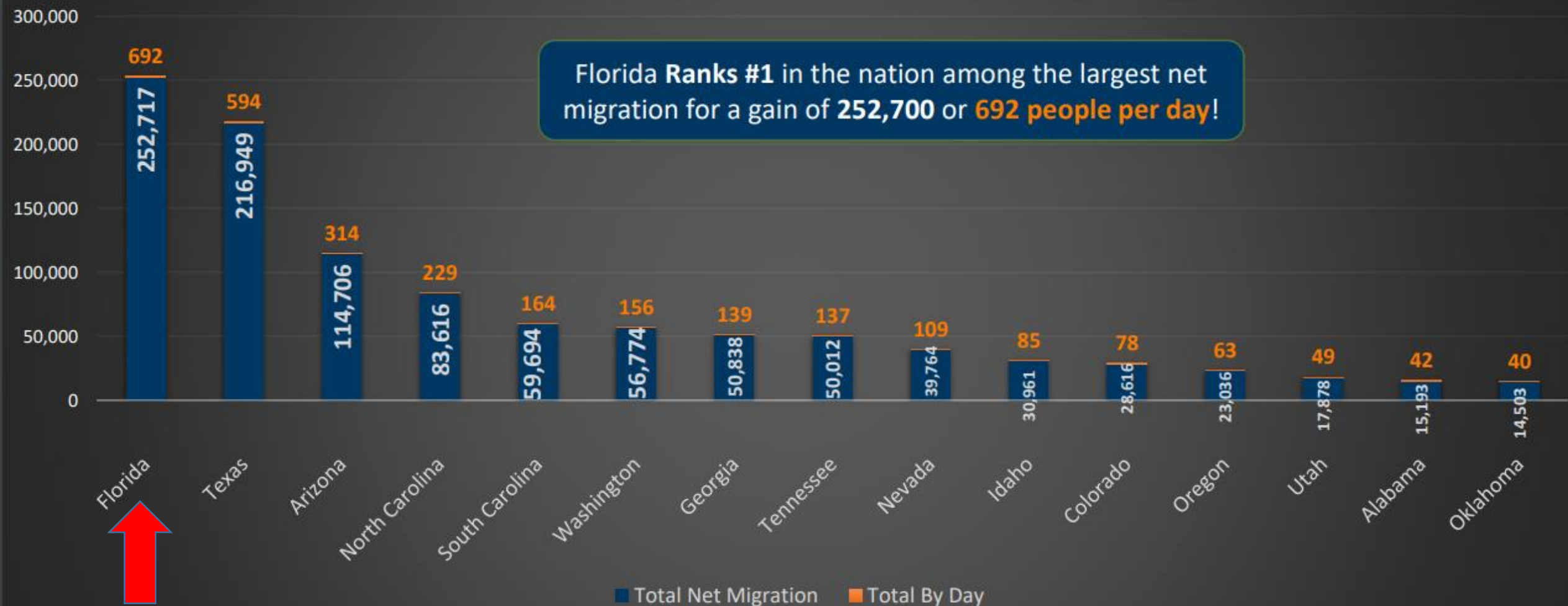
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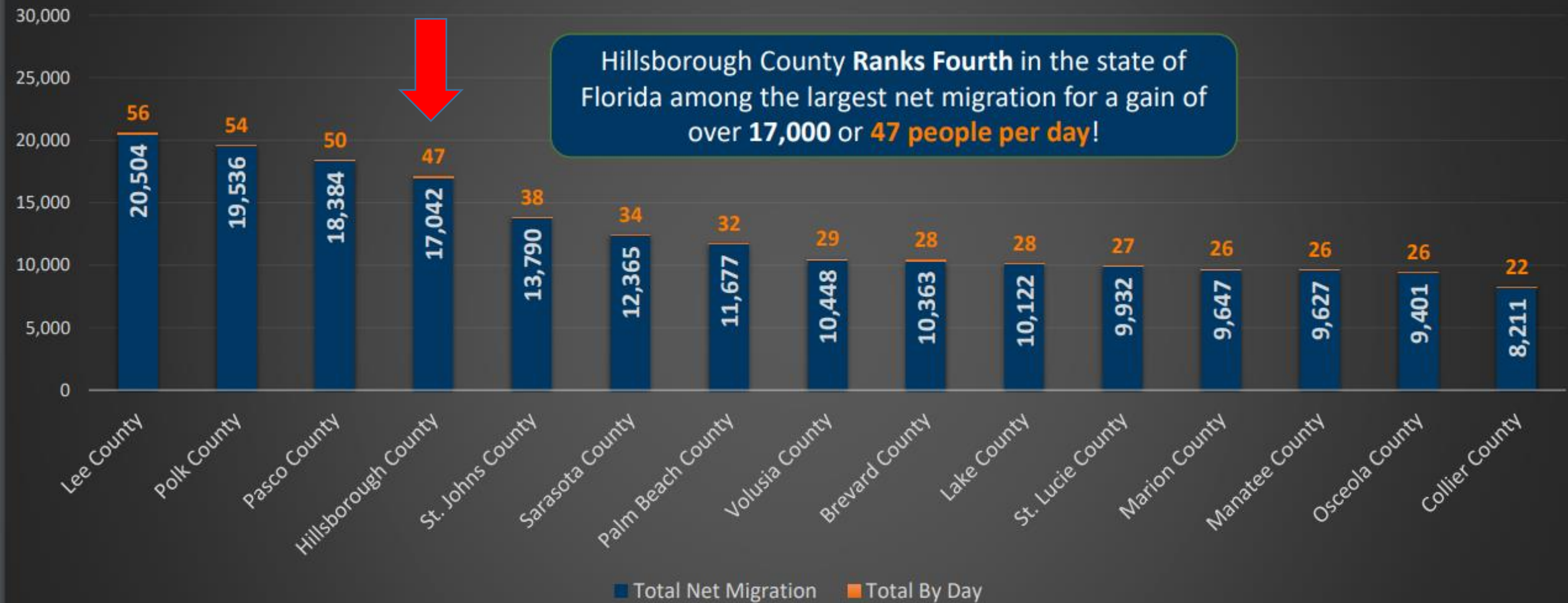
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# State Net Migration Trend

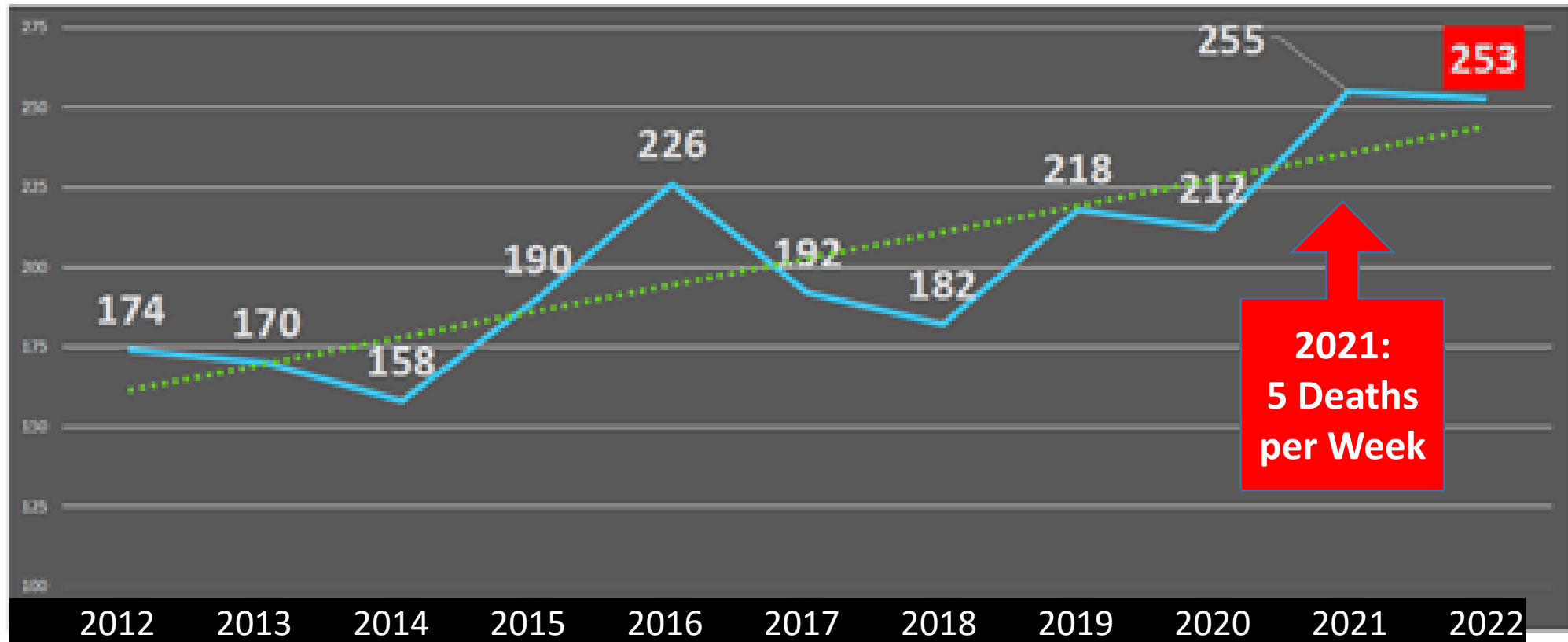


# Florida County Net Migration Trend



# All Roads in Hillsborough County

## Annual Actual Fatalities, projected through 2022

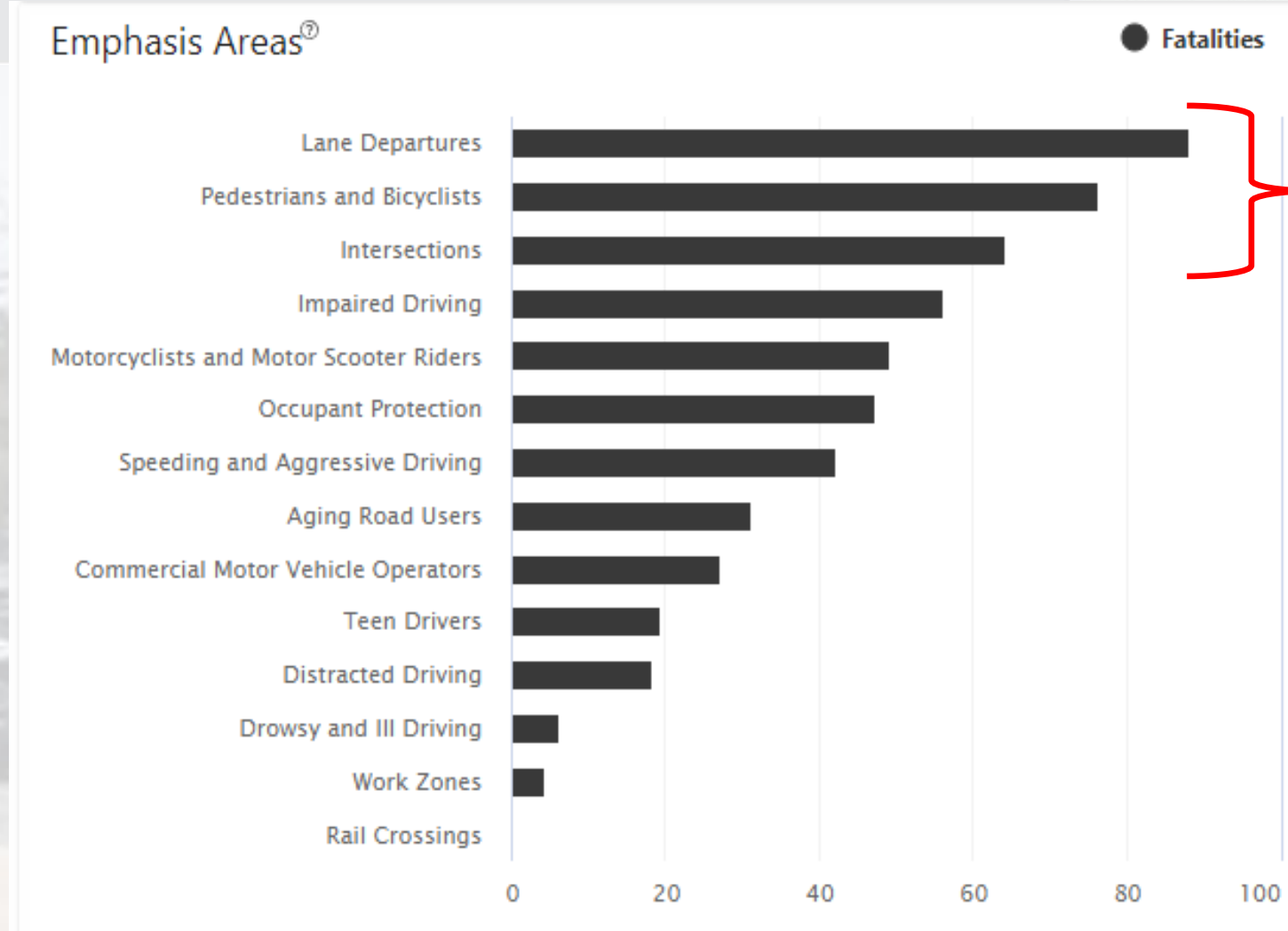


Source: Transportation Planning Organization Board Meeting, Feb 9, 2022



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# All Roads in Hillsborough County



**Account  
for 44% of  
Crashes**

# Pedestrian Fatality Rates by Metro Areas

Rank	Metro area	Average ped deaths/100k people per year	Pedestrian deaths (2016 - 2020)
1	Deltona-Daytona Beach-Ormond Beach, FL	4.25	140
2	Albuquerque, NM	4.19	192
3	Memphis, TN-MS-AR	3.93	264
4	Tampa-St. Petersburg-Clearwater, FL	3.55	559
5	Charleston-North Charleston, SC	3.54	140
6	Jacksonville, FL	3.44	264
7	Bakersfield, CA	3.41	152
8	Orlando-Kissimmee-Sanford, FL	3.37	431
9	Stockton, CA	3.35	126
10	Fresno, CA	3.25	161



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Source: 2022 Dangerous By Design, Smart Growth America



# 2021 Fatalities in Hillsborough County

- ***92 percent occurred on roads with posted speed limits >40 mph***
- 71 percent involved speeding or aggressive driving
- 2/3 of the people involved were younger than 35
- Why is this happening?
  - Roads designed for moving vehicles
  - Communities, land uses & people have no relationship with the road
- *How can we think, plan and design differently?*



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# First Step: Vision Zero Action Plan

## **THE FUTURE WILL NOT BE LIKE THE PAST**



### **1**

#### **GOAL 1:**

#### **UPDATE POLICIES, STANDARDS AND PROCEDURES TO FOSTER A CULTURE OF SAFETY IN THE PLANNING AND DESIGN OF THE TRANSPORTATION SYSTEM**

A culture of transportation safety is evolving in Hillsborough County. State and local policies and procedures are an important aspect of and foundation for this cultural shift. New and re-constructed roads will be built by state and local government, and in many cases, private developers. The actions and initiatives below provide strategies to provide safer travel conditions through enhanced policies, standards, programs and procedures.

### **How We Measure Success...**

**1**

Transportation manuals and local government LDCs routinely reviewed and amended

**2**

FDOT Design Standard Index 600 Series updated to include bicycle considerations in MOT plans

**3**

Training program and curriculum developed and training sessions conducted

**4**

Establish context classifications for major roads



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# Next Steps: Policies and Guidelines

- **Transition Towards Safe and Complete Streets**
  - Policies and Guidance for Transportation and Land Development Projects
    - **Safety**
      - Invest in a safe environment for all users and more reliable roads
    - **Context Sensitive Design**
      - Satisfy the purpose and need of each community
    - **Multi-Modal**
      - Provide accessible and comfortable facilities for ALL users to link people to all destinations
- **Interdepartmental Coordination**



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# Implementation

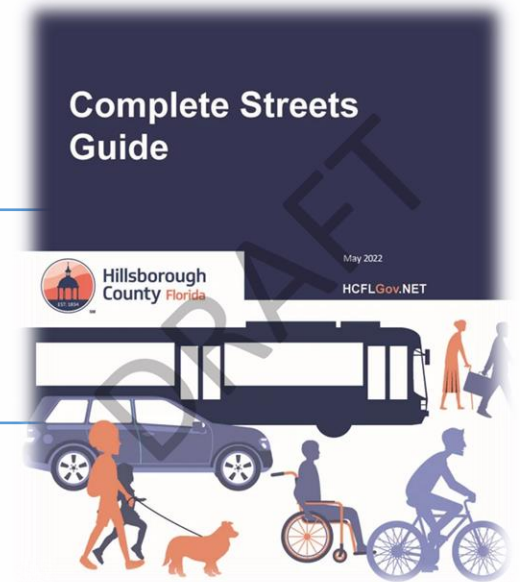
1 - Comprehensive Plan Mobility Element – *updated & adopted*

2 - Context Classification Map – *new adopted*

3 - Complete Street Guidebook – *new draft*

4 - Transportation Design Manual (HCTDM) – *new draft*

5 - Sub-Components: Context Based Access Management Standards  
and Target and Design Speed Tool

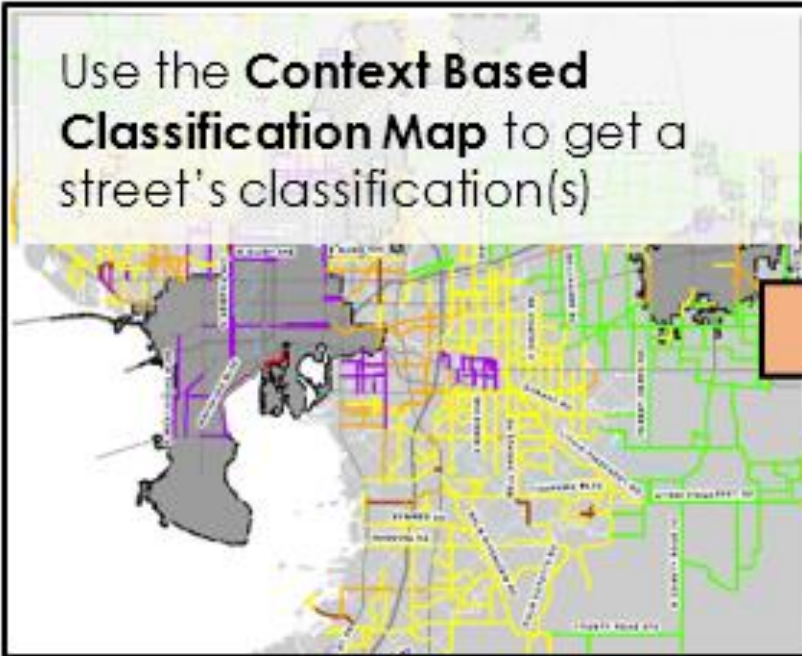




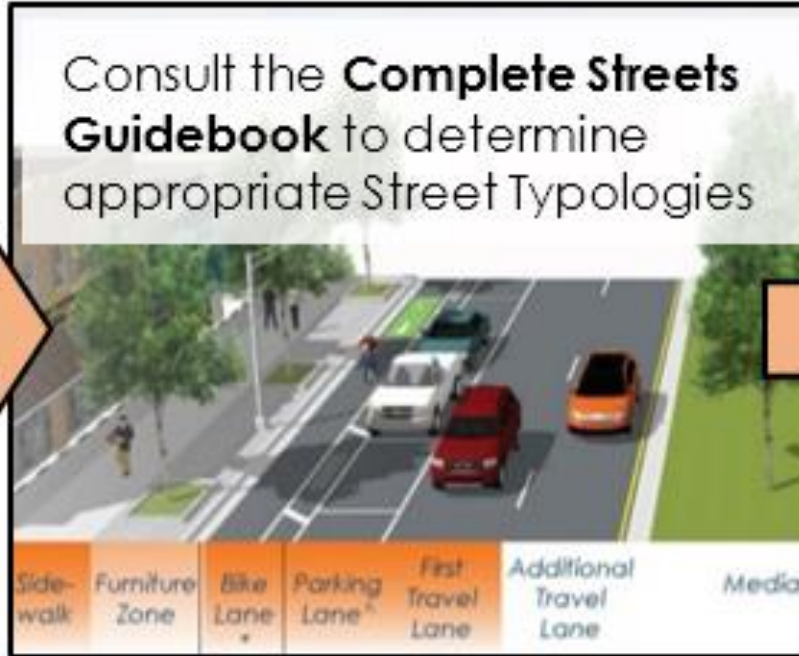
# Implementation

## Three Resources Working Together

Use the **Context Based Classification Map** to get a street's classification(s)



Consult the **Complete Streets Guidebook** to determine appropriate Street Typologies



Consult **Design Manual** for Specific Design Details

Table 4 Design Elements by Context

DESIGN ELEMENTS	Urbic (Rural)	Urbic (Suburban)	Urbic (Suburban Town)	Urbic (Urban General)
Posted Speed (mph)	40-55 mph	25-40 mph	≤ 35	20-30 mph
Travel Lane Width*	11 ft - 12 ft	10 ft - 11 ft	10 ft - 11 ft	10 ft - 11 ft
Shoulder Width	-	8 ft	8 ft	8 ft
Bicycle Lane Width*	-	-	7 ft*	7 ft*
Shoulder Width	10 ft	-	-	-
Skated Use Path (SUP)	12 ft	10 ft - 12 ft	-	-
Median Width	40-45 mph: 22 ft 50-55 mph: 40 ft	22 ft	22 ft	22 ft

\*The minimum desired median is as wide as (L) + 10 ft; the posted speed could be 40 mph. This will require approval through the design exception and duration process.  
\*Minimum 11 ft travel lane width with a minimum width of 10 ft.  
\*The median with grade < 3% and a 10 ft + 10 ft, median can be integrated within the median.



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# 1 - Mobility Elements to Achieve Context Design

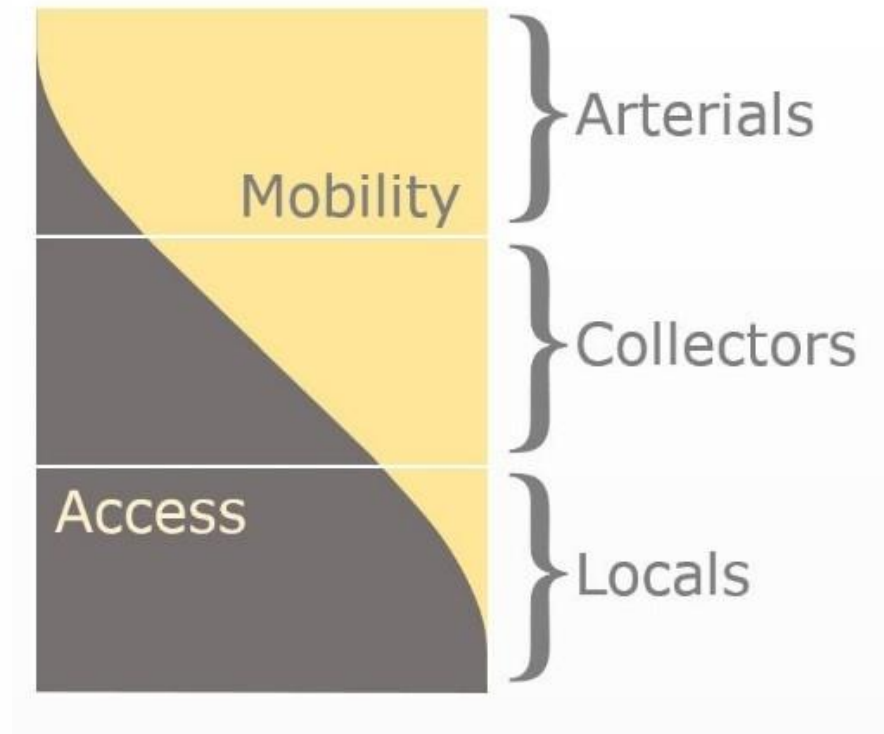
- Vision Zero
- Incorporate Context-Based Roadway Planning & Design Principles
- Incorporate Transit with Land Use
- Advanced Traffic Management Systems
- Emerging Technology
- Resiliency
- Choices





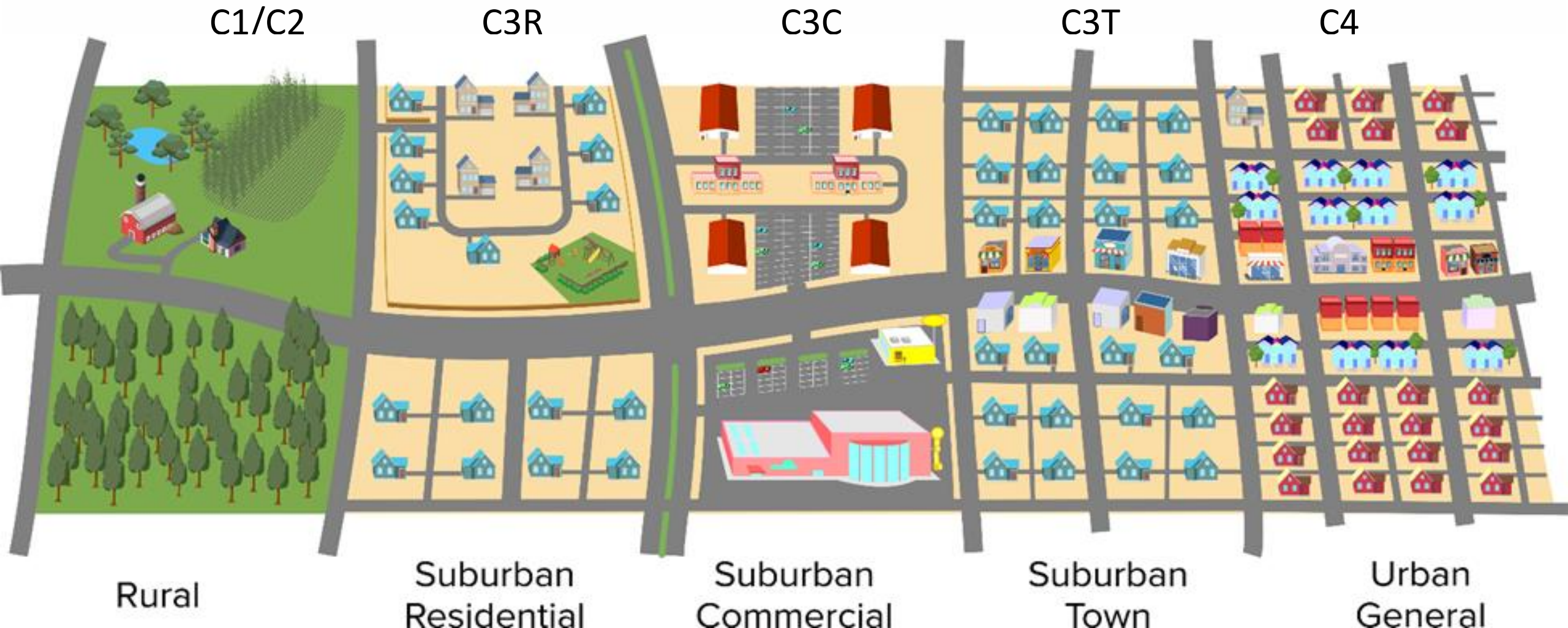
## 2 - Context Classification

- How do we Classify a Road?
- *Old way*: Functional Classification
  - Hierarchy status based on service provided
    - Arterial
    - Collector
    - Local
- *New Way*: Context Classification
  - Surrounding environment
    - Nature
    - Rural
    - Town
    - Suburban
    - Urban



## 2 - Context Classifications

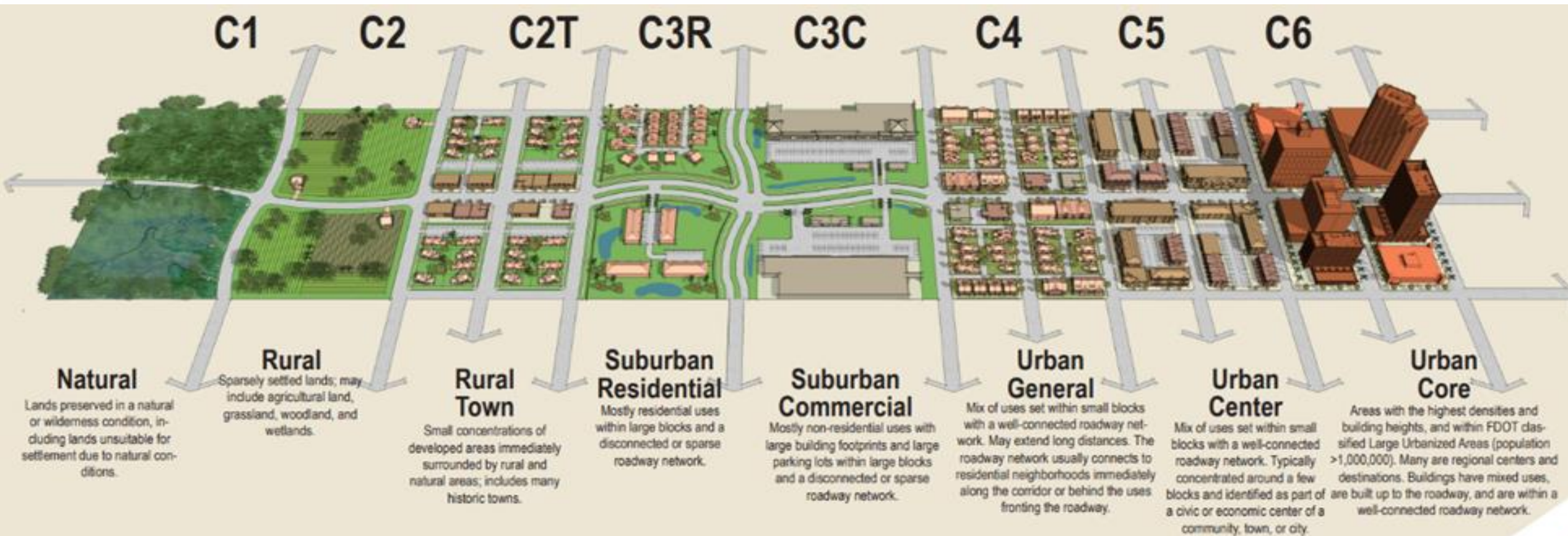
- Hillsborough County's Classifications





# 2 - Context Classifications

## ■ FDOT's Context Classification



## 2 - Context Classifications: FDOT to County

FDOT System Classifications	→	County System Classifications	Rationale
<b>C1</b> Natural  <b>C2</b> Rural	→	<b>C1 &amp; C2</b> Rural	These contexts are very similar. The County has very few <i>natural</i> areas.
<b>C2T</b> Rural Town	→	<b>C3T*</b> Suburban Town	Most small towns in unincorporated Hillsborough County are suburban communities, some with well-defined town centers.
<b>C3R</b> Suburban Residential	→	<b>C3R</b> Suburban Residential	No change, unless located outside of the Urban Service Area Boundary (USAB).
<b>C3C</b> Suburban Commercial	→	<b>C3C</b> Suburban Commercial	No change, unless located outside of the Urban Service Area Boundary (USAB).
<b>C4</b> Urban General	→	<b>C4</b> Urban General	No change
<b>C5</b> Urban Center  <b>C6</b> Urban Core	→	Omitted	C5 and C6 contexts are not currently planned for any unincorporated areas in Hillsborough County.
	→	Omitted	



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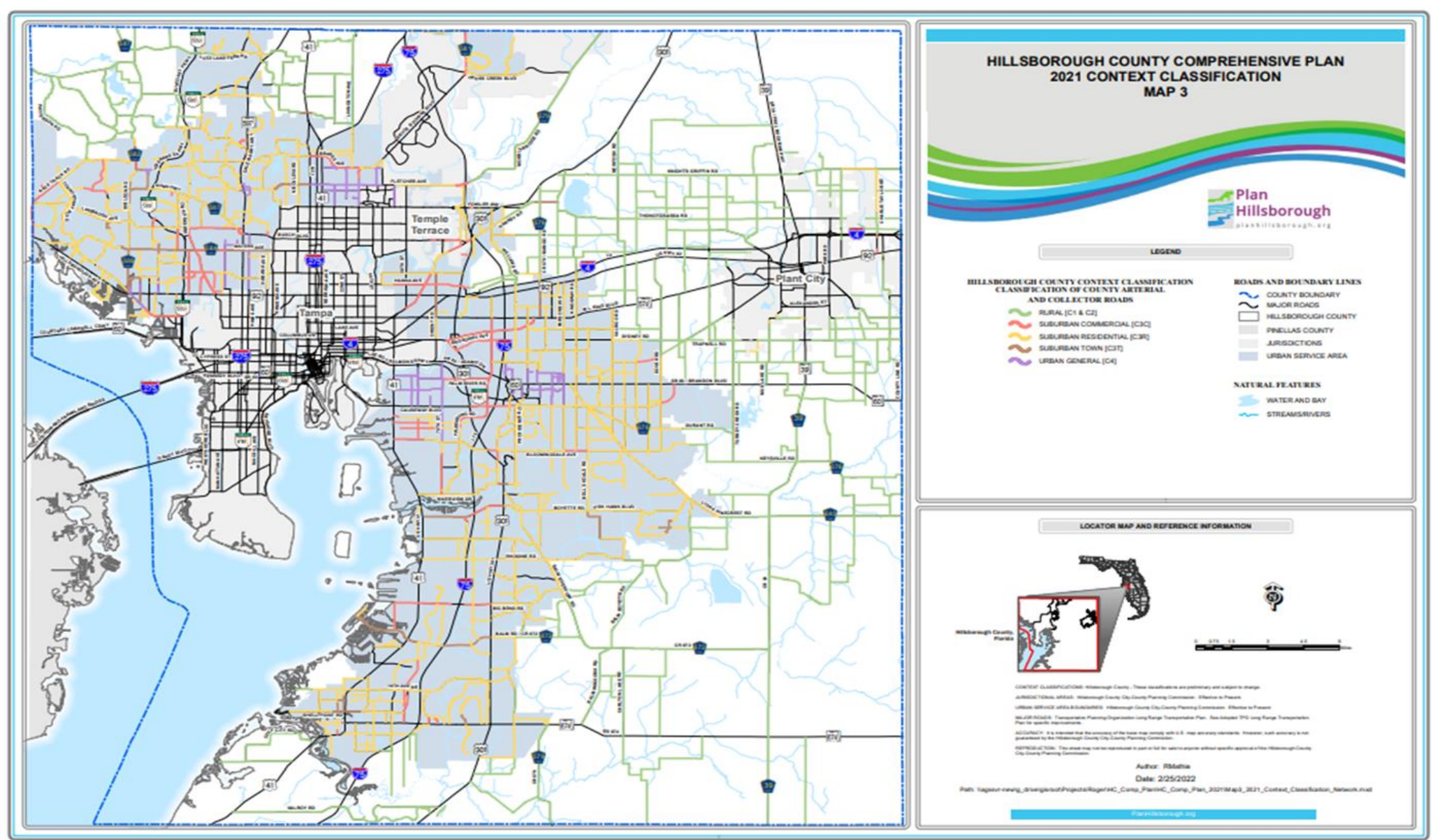


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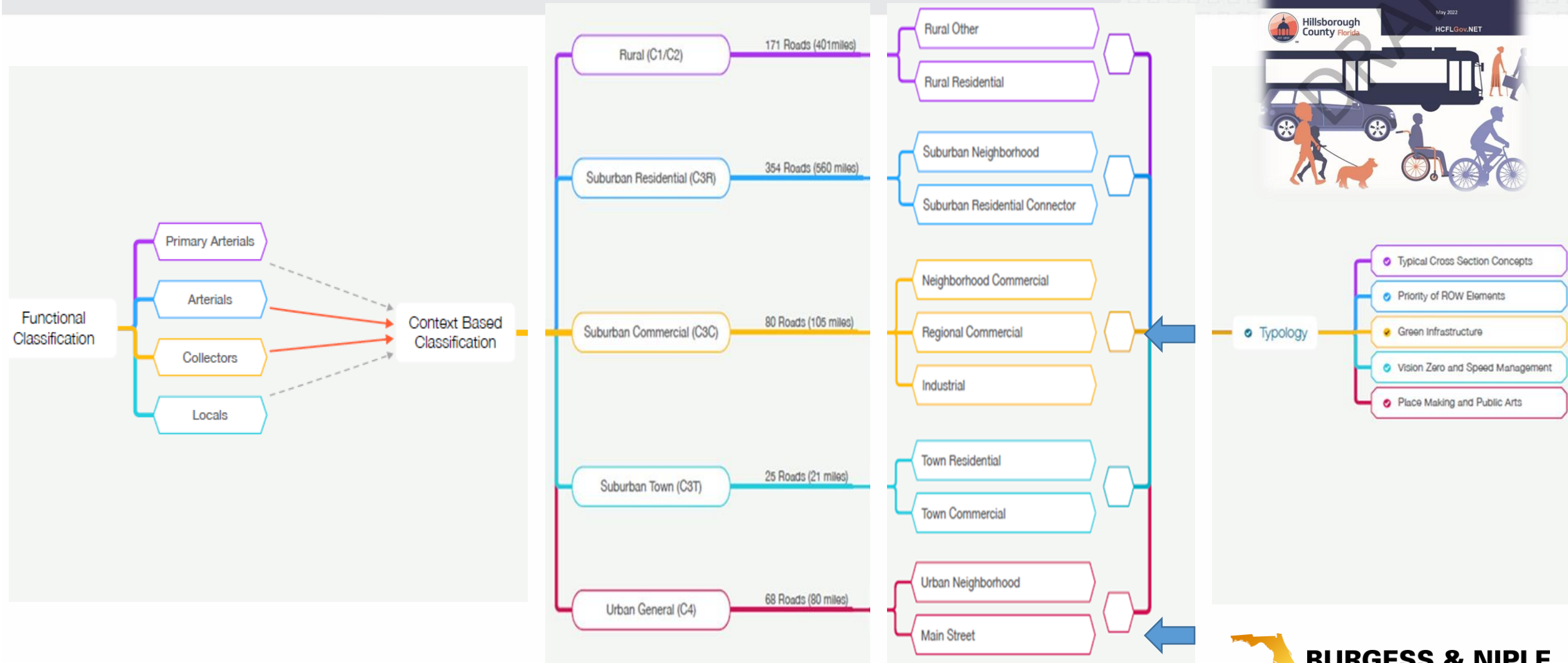


# 2 - Context Classification Adopted Map

[GIS Context Classification Map Link](#)

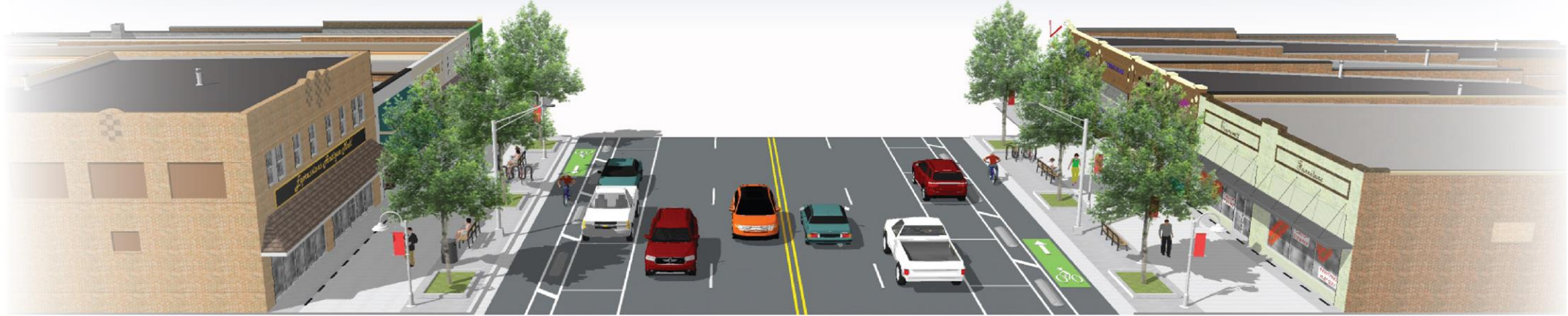


# 3 - Complete Streets Guidebook





# Typology: Main Street, C4



Ideal Width (in feet)



## Design Considerations

### Expected Users

Pedestrians  
Bicyclists  
Transit  
Auto  
Freight<sup>4</sup>



### Use of Street

Walking, Strolling, Sitting  
Riding, Parking  
High Frequency  
Traveling, On-Street Parking  
Traveling, Deliveries

### Target Speed

20-25 MPH

### Notes

- <sup>1</sup> Bicyclists may be accommodated in shared travel lanes in lieu of bike lanes if vehicle speeds and volumes meet specific thresholds.
- <sup>2</sup> When furniture zone is reduced below 8 feet or combined with another zone, street trees should be provided in accordance with chapter 4 of this guide.
- <sup>3</sup> Parking required on at least one side of the street. Parking strongly encouraged where structures are built on the right-of-way line.
- <sup>4</sup> Loading zones will need to be accommodated in business districts.

# Typology: Regional Commercial, C3C



Ideal Width (in feet)



## Design Considerations

### Expected Users

Pedestrians  
Bicyclists  
Transit  
Auto  
Freight



### Use of Street

Walking  
Riding  
Medium Frequency  
Through and Local Traffic  
Local Traffic

### Target Speed

25-35 MPH

### Notes

- <sup>1</sup> Where right-of-way is constricted, protected bike lanes and sidewalks may be acceptable in lieu of providing shared use paths.
- <sup>2</sup> When furniture zone is reduced below 8 feet or combined with another zone, street trees should be provided in accordance with chapter 4 of this guide.



# 4 – County's Design Manual (HCTDM)

- Follow Florida Design Manual Outline
- Design criteria and guidance using a Context Based Approach
- Enhanced Details:
  - County's 5 Context Classification used as defining design criteria
  - Safety & Speed Management Strategies
  - All modes of transportation considered
  - County preferred standards (documentation of Design Bulletins)

# 4 – Design Manual Outline

## Part 1: Introduction and Processes

### Section 1.1 Introduction

- 1.1.1 Purpose of Manual
- 1.1.2 Safety, Context, Multi-Modal Consideration
- 1.1.3 Design Standards and Specifications
- 1.1.4 CIP Resources
- 1.1.5 Public Involvement

### Section 1.2 Plans Development Process

- 1.2.1 Review Process
- 1.2.1 **Multimodal Safety Analysis**
- 1.2.3 Roundabout Evaluation
- 1.2.5 Design Documents for Bridge Plans

### Section 1.3 Plans Submittal and Production

- 1.3.1 Design Submittals
- 1.3.2 Design Exceptions and Deviations
- 1.3.3 Plans Requirements
- 1.3.4 Project Plan Sheet Templates
- 1.3.5 Supported CADD Platforms

## Part 2: Design Guidelines

### Section 2.1 Context Based Design

- 2.1.1 Context Based Classification
- 2.1.2 **Speed Management**
- 2.1.3 Vision Zero High Crash Corridors
- 2.1.4 **County Arterial and Collector Roads**
- 2.1.5 Green Infrastructure Guidelines
- 2.1.6 Design for Micromobility Storage Facilities

### Section 2.2 Access Management System for A&C (Reserve for future)

### Section 2.3 Road Design

- 2.3.1 Arterial and Collector Roads
- 2.3.2 County Local Roads
- 2.3.3 Roundabout
- 2.3.4 Temporary Traffic Control Permit

### Section 2.4 Traffic Design

- 2.4.1 Signing and Pavement Marking
- 2.4.2 Lighting
- 2.4.3 Signalization

### Section 2.5 Structures



# 4 – Design Manual Highlights

- All modes of transportation
- Connecting people and communities
- Heightened awareness for safety
- Opportunities to reduce speeds
- Shared Use Paths for Suburban and Rural areas
- Emergency Vehicles accommodation
- Alternative Bicycle Protection Treatments
- Right-of-way for Corridor Preservation



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# 4 - Design Manual

## Multimodal Safety Analysis Outline:

- Crash Data Collection Review
- Multimodal Safety Analysis
  - Before – During – After
- Selection of countermeasures
  - Benefit Cost Analysis
- Recommendations
  - Innovations Solutions

*Table 1 Methodology Selection*

PROJECT TYPE	CMF METHOD	HSM PREDICTIVE METHOD
CORRIDOR RECONSTRUCTION		✓
NEW CONSTRUCTION		✓
RESURFACING, RESTORATION, AND REHABILITATION (RRR)	✓	
INTERSECTION MODIFICATIONS AND SIGNALIZATION UPDATES <sup>1</sup>	✓	✓
PEDESTRIAN/BICYCLE CORRIDORS	✓	✓
TRAILS CROSSINGS	✓	
BRIDGES WIDENING	✓	
SCHOOL ROUTES SAFETY IMPROVEMENTS	✓	
OTHER SAFETY AND MOBILITY PROJECTS <sup>2</sup>	✓	✓
COMPLETE STREETS	✓	✓

<sup>1</sup> For Intersections and Signalization Projects, the HSM Predictive Method will be required where there are major differences including changes in: traffic control, number of thru lanes, exceed one additional turn lane, right-of-way needs and future land use.

<sup>2</sup> Midblock Crossings, Access Management Improvements, Safety Lighting, Safe Route to Transit, Corridor Speed Management.



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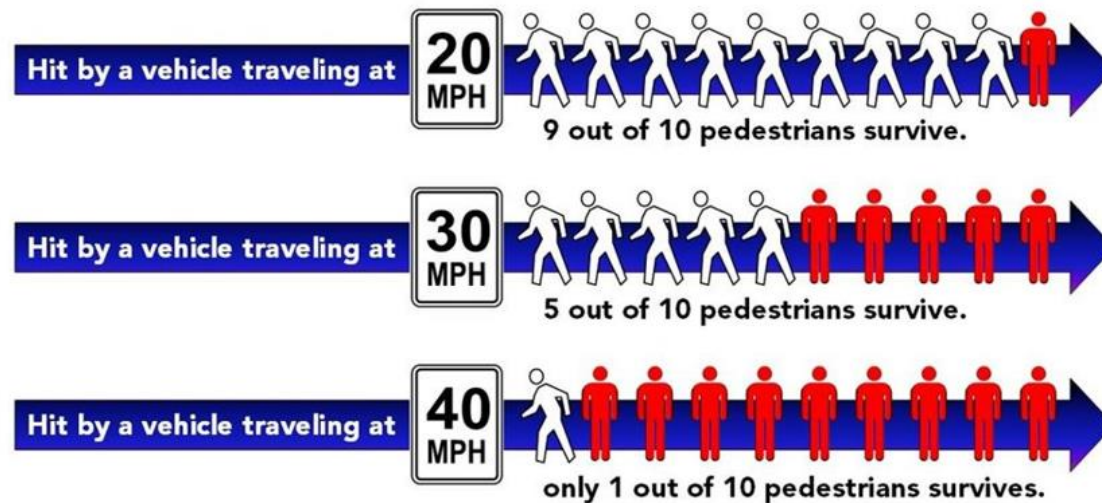


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# 4 - Design Manual

## Speed Management

- Measures that bring drivers to a safe speed, avoiding fatalities and injuries.



Source: Urbanist

Table 4 Guidance for Speed Management Strategies

	Speed (mph)					
	25	30	35	40	45	50-55
Applicable to All Context Classifications						
<a href="#">Centerline Curvature</a>						Speed Management Strategies are not used on high-speed roadways, transition zone is required for roadways from high-speed to low-speed facilities
<a href="#">Roundabout</a>	●	●	●	●	●	
<a href="#">Median Island</a>	●	●	●			
<a href="#">Horizontal Deflection</a>	●	●	●	●	●	
<a href="#">Speed Feedback Sign</a>	●	●	●	●	●	
<a href="#">Pedestrian/Roadway Lighting</a>						
<a href="#">Lane Narrowing</a>	●	●	●	●	●	
<a href="#">Pedestrian Crossing Treatment (e.g. RRFB and Pedestrian Signal)</a>	●	●	●	●	●	
<a href="#">Lane Repurposing</a>	●	●	●	●		
<a href="#">Corner Radius Reduction</a>						
<a href="#">Converging Chevrons/Optical Speed Bars</a>						
<a href="#">New Traffic Signal</a>						
<a href="#">Traffic Operation</a>	●	●	●	●	●	
<a href="#">Landscaping / Gateway Treatment</a>	●	●	●			
<a href="#">Chicanes</a>	●	●				
<a href="#">Vertical Deflection</a>	●					
Additional Strategies Applicable to C3T/C4 Only						
<a href="#">On-Street Parking</a>	●	●	●			
<a href="#">Street Trees</a>	●	●	●			
<a href="#">Short Blocks</a>	●	●	●			
<a href="#">Curb Extensions (Bulb-Outs)</a>	●	●	●			



# 4 - Design Manual

## ■ Vision Zero's "Top 20" and "Next 30" High Crash Corridors

### 2.1.3 VISION ZERO HIGH CRASH CORRIDORS

The Hillsborough County Board of County Commissioners committed the goal of Vision Zero - that no loss of life is acceptable on County roads. The Vision Zero resolution establishes a commitment to the continued support of the Vision Zero effort to reduce traffic fatalities and serious injuries ([Vision Zero Hillsborough](#)). Corridors with the greatest occurrences of severe crashes per mile are identified as the Top 20 Vision Zero Severe Crash Corridors. The full list of Top 20 Severe Crash Corridors and the Next 30 High Injury Corridors were identified by the Hillsborough Transportation Planning Organization (TPO), with the list provided in [TPO High Injury Network Highlights](#).

COUNTY ROADWAYS CAN BE DESIGNED IN WAYS THAT  
ENCOURAGE SAFER BEHAVIOR IN  
DRIVERS, PEOPLE WALKING, AND PEOPLE BIKING.

Each Transportation Project must identify if the road is included in the Top 20 Severe Crash Corridors or the Next 30 High Injury Corridors. Once identified, effective design countermeasures and strategies must be provided for reducing fatalities and severe crashes and improving the safety of all users.

Any updates to the Severe Crash Corridors, the High Injury Corridors or other newly defined Vision Zero documents should be referenced.

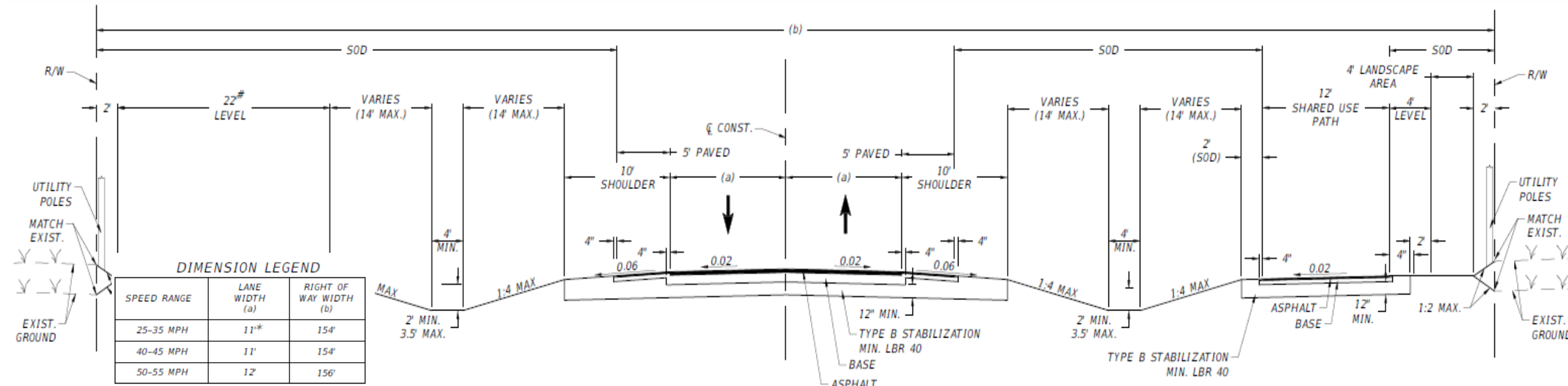


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# C1&C2. Rural – CSG to HCTDM



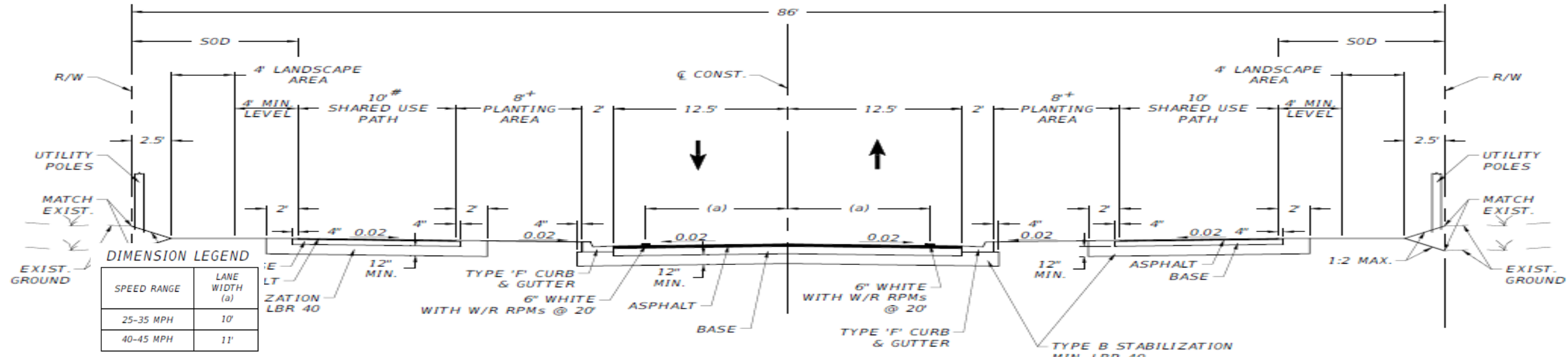
Ideal Width (in feet)



# C3. Suburban

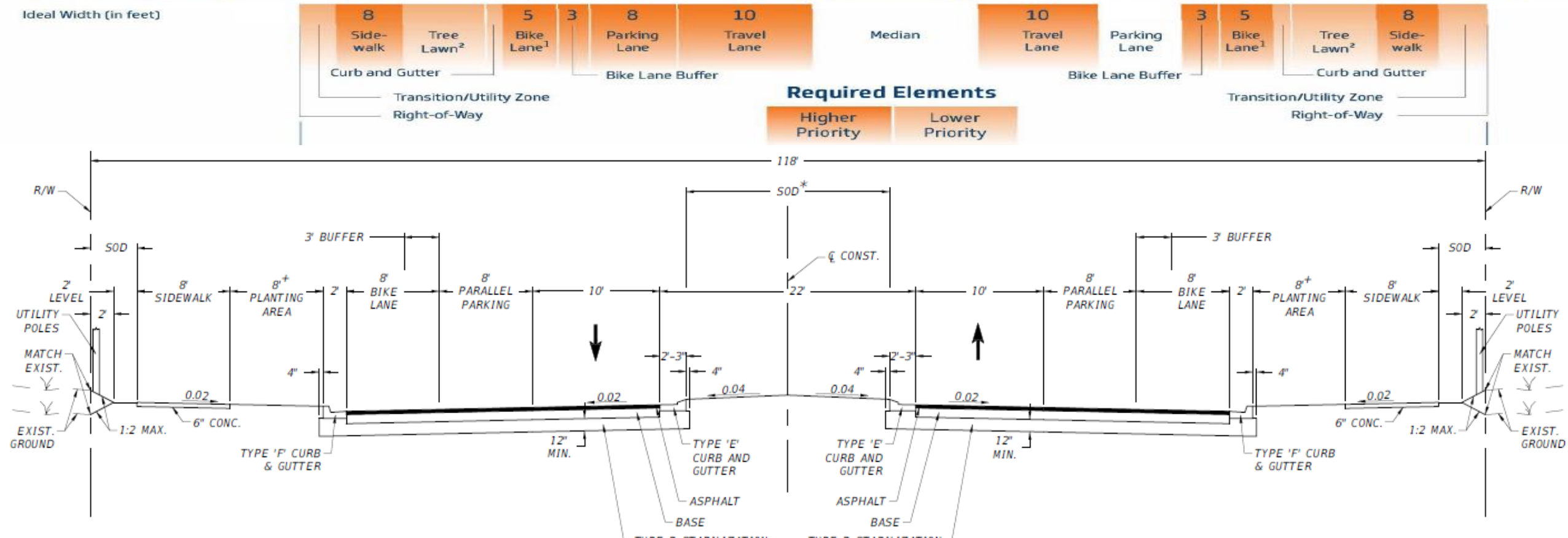


Ideal Width (in feet)





## C4. Urban and C3T. Suburban Town



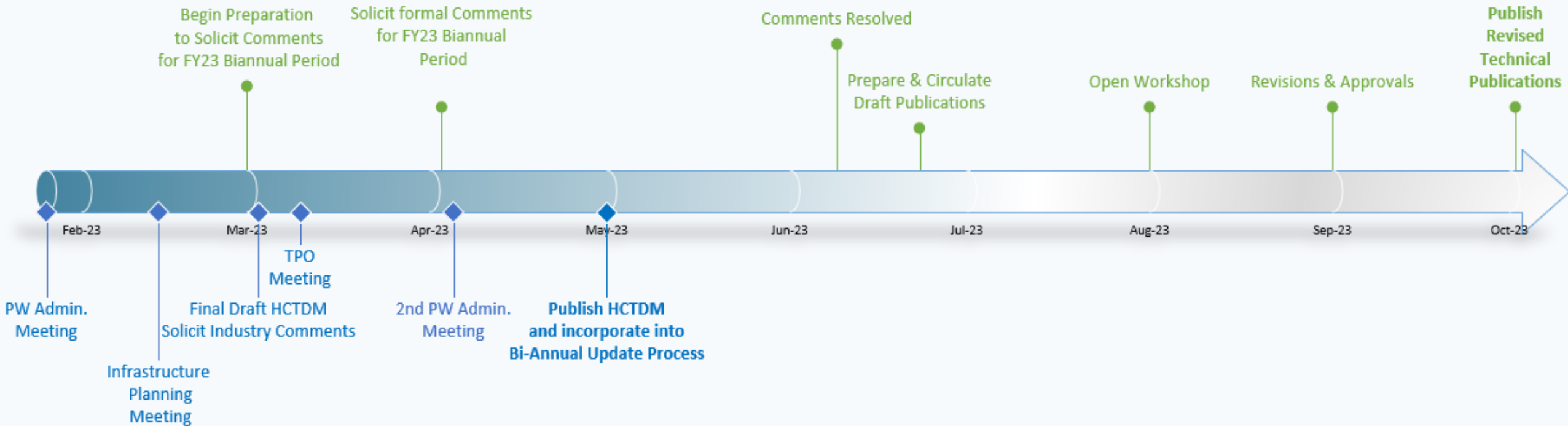
# 4 – Design Manual

- Development of Design Bulletins
- Posted in the Public Works CIP Resources Website
- Ultimately incorporated into the Design Manual

- **PW - HCDM 20-01.** Hillsborough County Capital Improvement Program Resources
- **PW - HCDM 20-02.** Adoption of Design Criteria for County Arterial Collectors and Local Roads
- **PW - HCDM 20-03.** Hierarchy of Contract Documents
- **PW - HCDM 20-04.** Notes to Reviewers
- **PW - HCDM 20-05.** No Passing Zones Within the County's Urban Service Area Boundary
- **PW - HCDM 20-06.** Six-Inch Thick Concrete Sidewalk Required on all Arterial and Collector Roadways
- **PW - HCDM 20-07.** Determination if Bicycle Lanes Can Be Added to Resurfacing Projects
- **PW - HCDM 20-08.** Signalization Plans to Show a Clear Area at Pushbutton Locations
- **PW - HCDM 20-09.** Approach Slabs Length is 30 Feet for All HC Bridges
- **PW - HCDM 20-10.** Hillsborough County Traffic Signal Mast Arm Policy
- **PW - HCDM 20-11.** Elimination of Acceleration Lanes at Right Turn Movements
- **PW - HCDM 21-01** - HC Adoption of Design Speed to be set to equal Posted Speed
- **PW - HCDM 21-02** - Typical Section Sheet Requirements
- **PW - HCDM 21-03** - Temporary Lighting During Construction
- **PW - HCDM 21-04** - Green Colored Contrast Block for Bicyclist Symbol and Bike Lane Arrow
- **PW - HCDM 21-05** - Speed Hump Replacement Policy
- **PW - HCDM 21-06** - Pavement Markings Removal by Grinding or Water Blasting
- **PW - HCDM 21-07** - Requirement of Marked xwalks and ped equip. on signalized intersections
- **PW - HCDM 21-08** - Shoulder Pavement Structure for School Shoulder Queueing Locations
- **PW - HCDM 21-09** - Roundabout Truck Apron Pavement Design
- **PW - HCDM 21-10** - Friction Course Layer Thickness Policy
- **PW - HCDM 21-11** - Proposed Elevations for Overhead Signs & Signals To Be Incorporated in Plans
- **PW - HCDM 21-12** - Design Documents Required for Signalization Plans
- **PW - HCDM 21-13** - Design Exception and Deviation Methodology
- **PW - HCDM 21-13S** - Signature Page for Design Exceptions and Deviation Methodology
- **PW - HCDM 21-14** - Design Documents Required for Bridge Plans
- **PW - HCDM 21-15** - SPM for Roundabouts in Preliminary Stage
- **PW - HCDM 21-16** - Prohibition of Phosphogypsum in Road Construction
- **PW - HCTDM 22-01** - Pavement Marking Removal
- **PW - HCTDM 22-02** - HC 2021 Context Classification Map for Arterials and Collectors Roads
- **PW - HCTDM 22-03** - Submit Approved Warrant analysis prior to signal construction plans
- **PW - HCTDM 22-04** - Hillsborough County Standard Details
- **PW - HCTDM 22-05** - Typical Section Package Approval Process
- **PW - HCTDM 22-06** - Minimum Lane Widths Preference for Undivided 2lane 2way Roadways
- **PW - HCTDM 22-07** - Advance Street Name Signs for Signalized Intersections
- **PW - HCTDM 22-08** - Requirements for School Zone
- **PW - HCTDM 22-09** - Overhead Street Name Sign Panel Details
- **PW - HCTDM 22-10** - Design Criteria Table Submittal Requirements
- **PW - HCTDM 23-01** - Pavement Marking Removal
- **PW - HCTDM 23-02** - Sidewalk Configuration for Local Roads

# Schedule

## Hillsborough County Transportation Technical Manuals Schedule Hillsborough County Transportation Design Manuals (HCTDM) Schedule





# What will this do for our communities?

- Save lives
- Roads will benefit all users
- Roads will benefit our communities
- Goes beyond Transportation
  - Better Economy
  - Healthy Environment

***We will think, plan and design differently  
to make our roads SAFER  
for all users and for our communities!***



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# Discussion

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