

Hillsborough County's New Transportation Design Manual

Presentation to the ITS Committee

Presenter

- Larry Josephson, PE – PW Technical Services Division

Acknowledgements

- Angelo Belluccia, PE - Florida District Director
- Karddy Rodriguez - Project Manager
- Linda Wu – Traffic Engineering, PhD, PE

Transportation Planning Organization Briefings

August 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
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 - Completed Context Based Planning Documents



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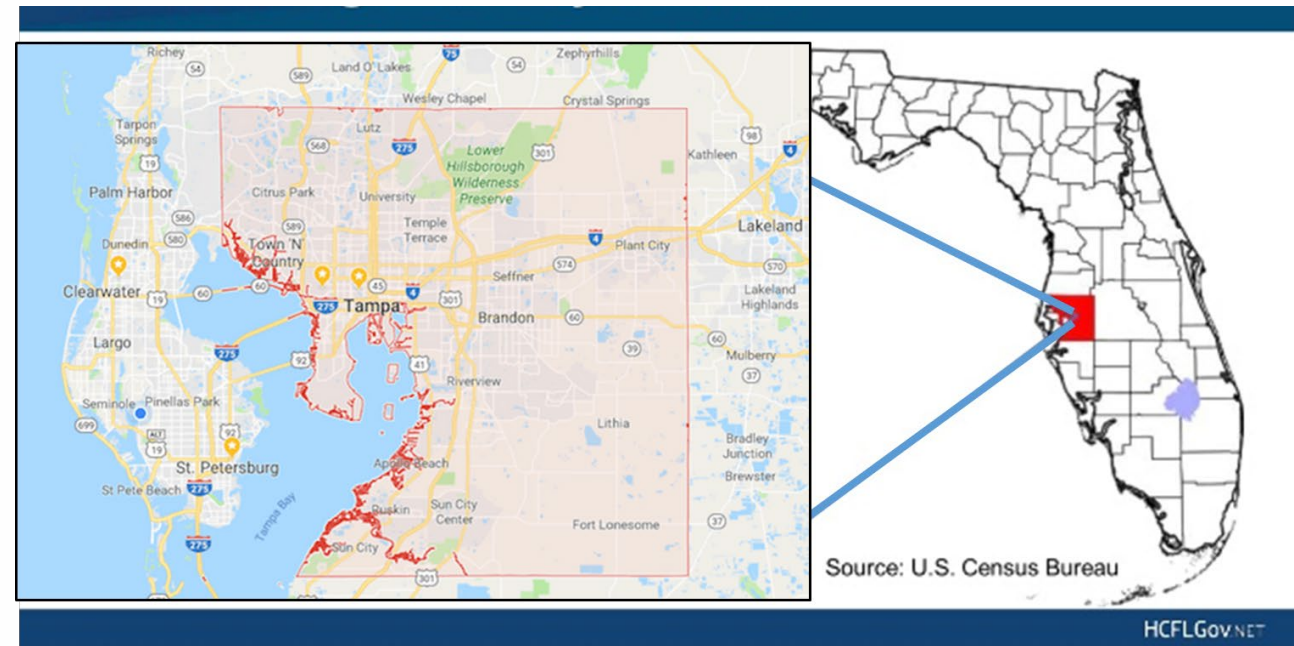
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Agenda

The Hillsborough County Transportation Design Manual (HCTDM)

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

- What's Inside?
- Part 1 Introduction and Processes
 - Safety Analysis
- Part 2 Design Guidelines
 - Design Bulletins
 - Context Classification
 - Typical Sections
 - Speed Management Strategy
- Project Schedule



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Part 1: Introduction and Processes

- County Specific Processes
 - Adopted Design Standards and Specifications
 - Goals for Safety, Context, and Multimodal Networks
 - Plans Development Process
 - CIP Project Resources Website
 - **Multimodal Safety Analysis**
 - Plans Production and Submittal
 - Design Criteria Table Submittal
 - Typical Section Package Approval
 - Design Exception and Design Deviation Memorandum



Part 1: Introduction and Processes

Multimodal Safety Analysis:

- 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 ¹	✓	✓
PEDESTRIAN/BICYCLE CORRIDORS	✓	✓
TRAILS CROSSINGS	✓	
BRIDGES WIDENING	✓	
SCHOOL ROUTES SAFETY IMPROVEMENTS	✓	
OTHER SAFETY AND MOBILITY PROJECTS ²	✓	✓
COMPLETE STREETS	✓	✓

¹ 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.

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



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Part 2: Design Guidelines

- Design Bulletin Development
 - Identify County Preferred Criteria
 - Introduction of County Procedures
 - Conflicting FDOT Criteria
- Posted on the Public Works CIP Project Resources Website
- Incorporated into the Design Manual During the Biannual Update



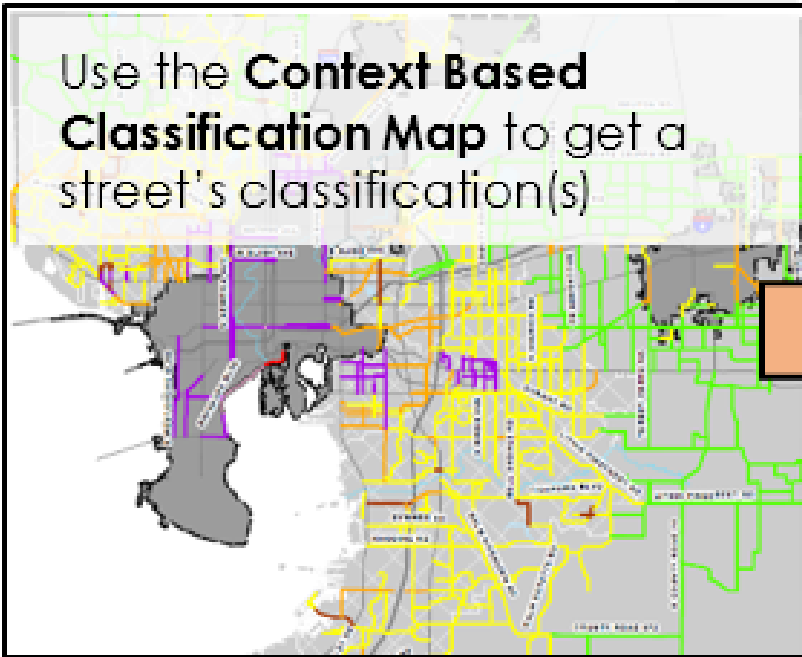
Transportation Bulletins for Hillsborough County Design Manual (HCTDM)

- **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

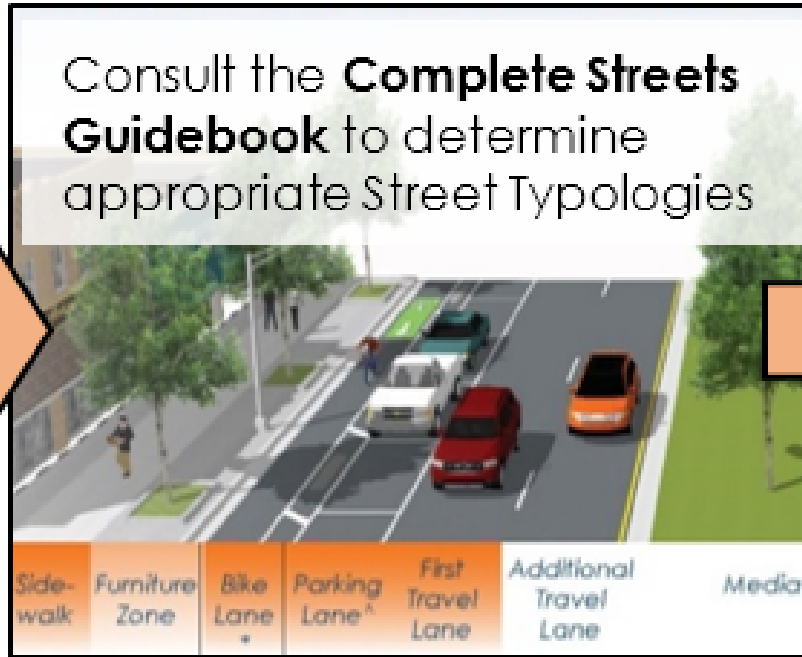
Part 2: Design Guidelines

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	C-1/C-2 (Rural)	C-3 (Suburban)	C-3A (Suburban Town)	C-4 (Urban General)
Posted Speed (mph)	40-55 mph	25-40 mph	≤ 35	25-35 mph
Lane width*	11 ft - 12 ft	10 ft - 11 ft	10 ft - 11 ft	10 ft - 11 ft
Sidewalk width	-	6 ft	6 ft	8 ft
Bicycle lane width*	-	-	7 ft†	7 ft†
Shoulder width	10 ft	-	-	-
Shared 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

* For multilane divided corridors in an urban (C-4) context, the posted speed could be 45 mph. This will require approval through the design exceptions and deviation process.

† Minimum 11 ft total lane width when peak volume exceeds 10%.

‡ For roadways with speeds ≤ 35 mph and AASHTO A 1.90B, tables can be integrated within the roadway.



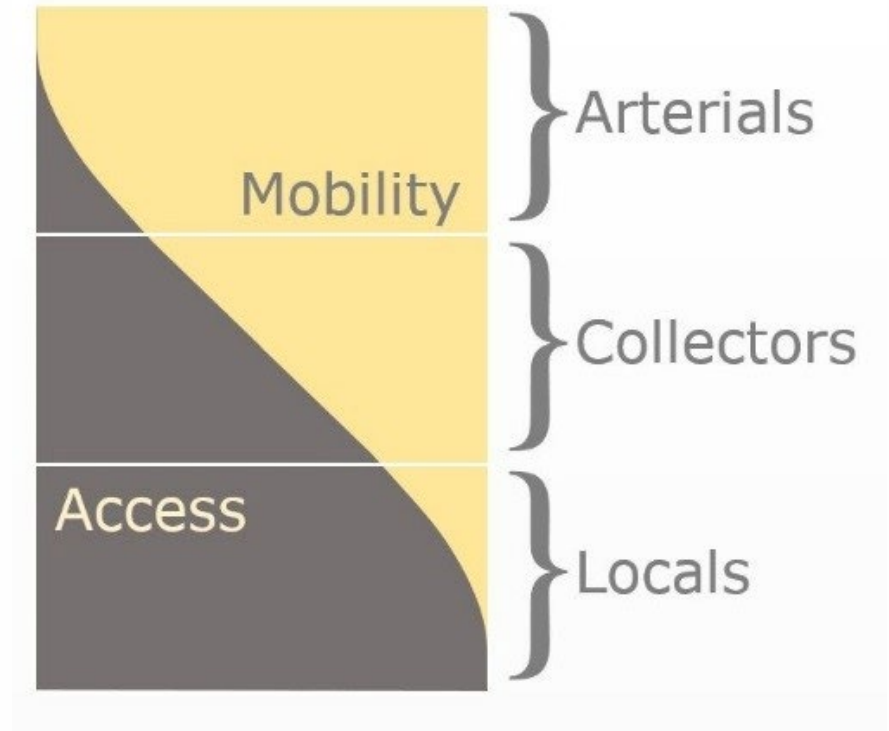
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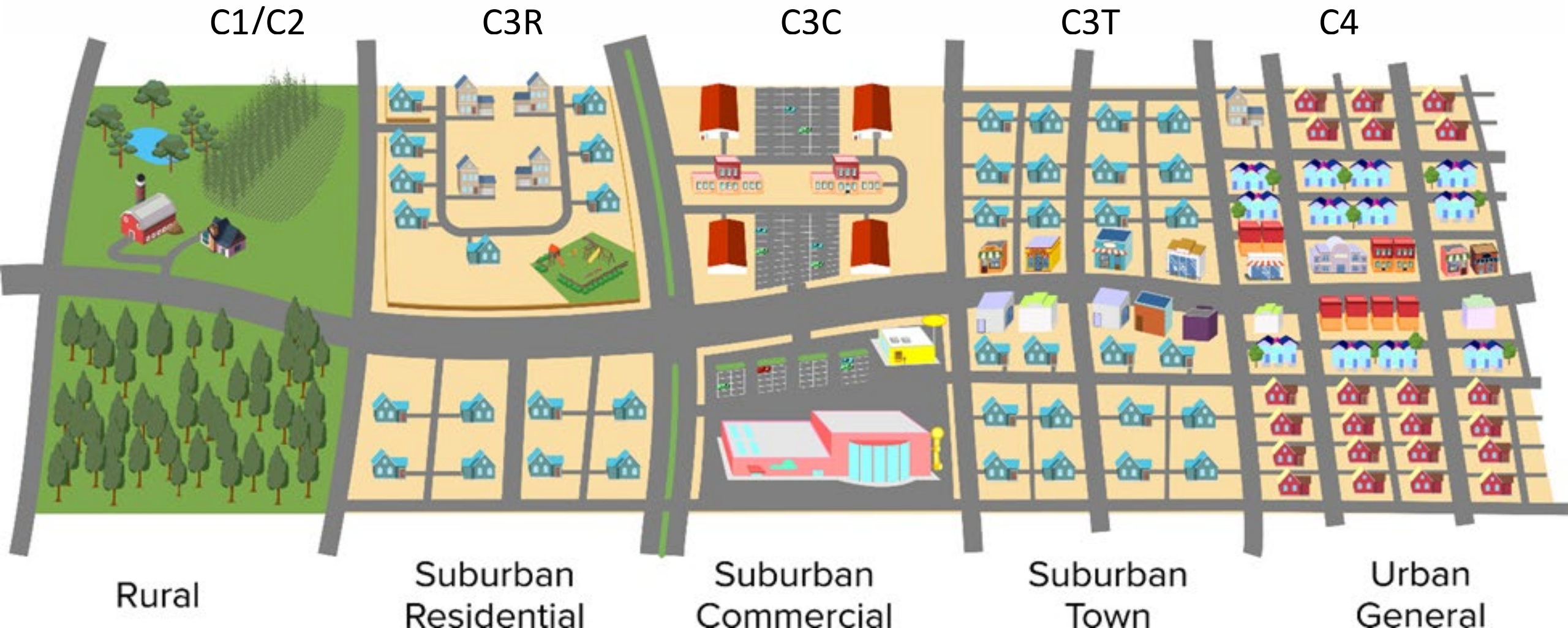
Part 2: Design Guidelines

- 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



Part 2: Design Guidelines

- Hillsborough County's Classifications



Part 2: Design Guidelines

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



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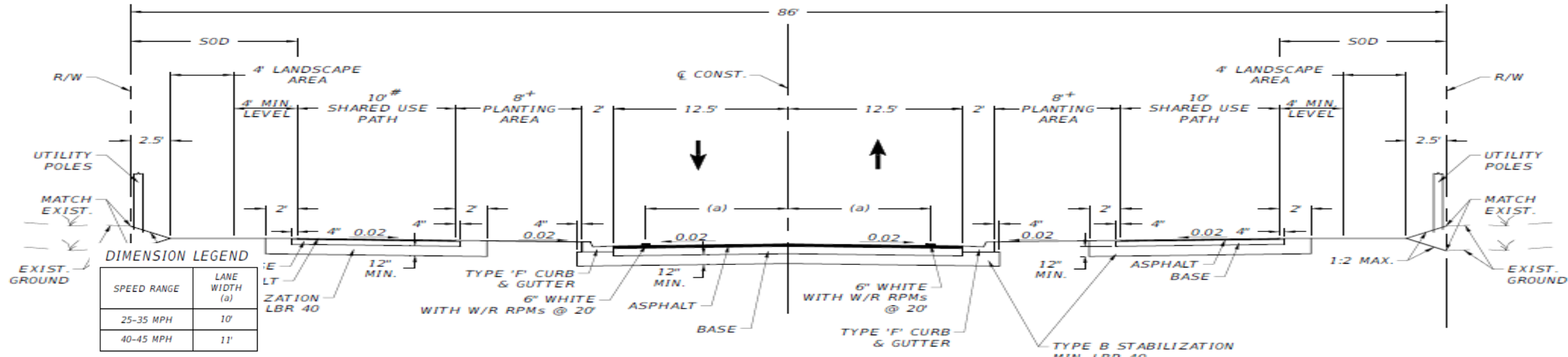


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C3. Suburban

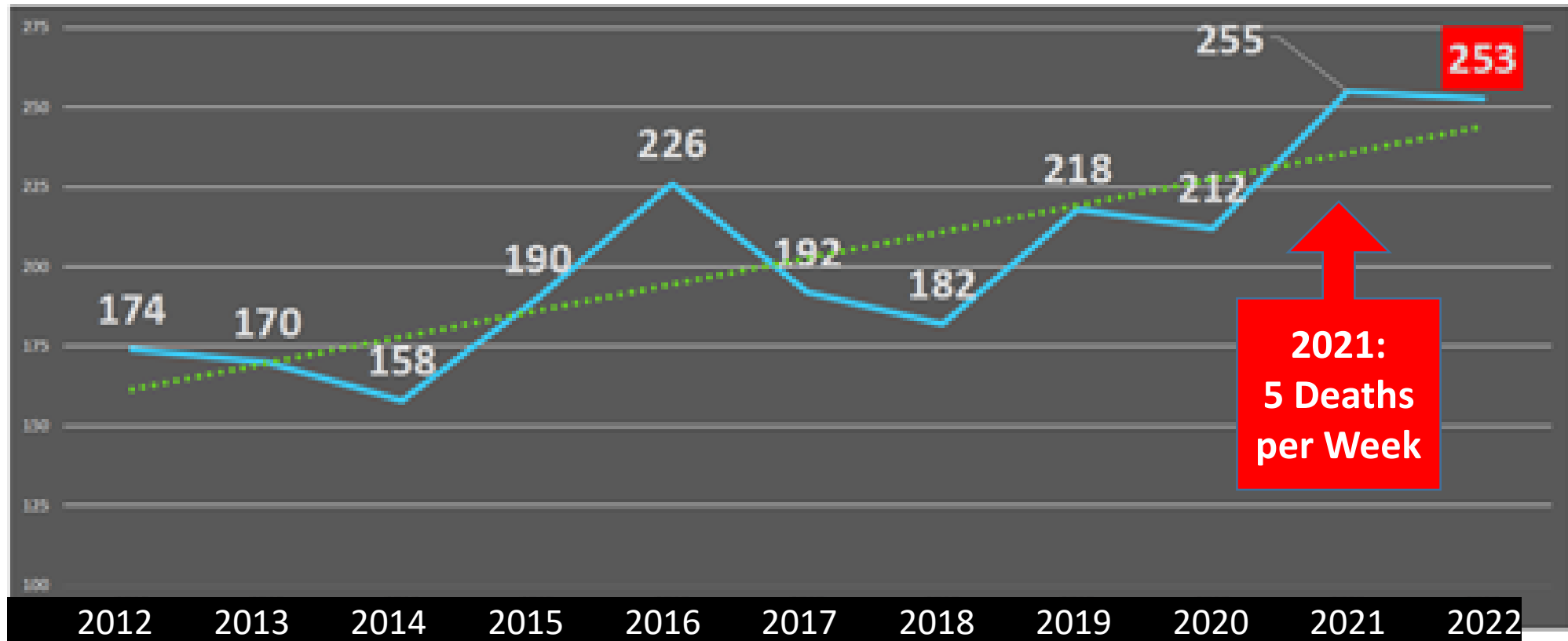


Ideal Width (in feet)



Part 2: Design Guidelines

Annual Actual Fatalities, projected through 2022

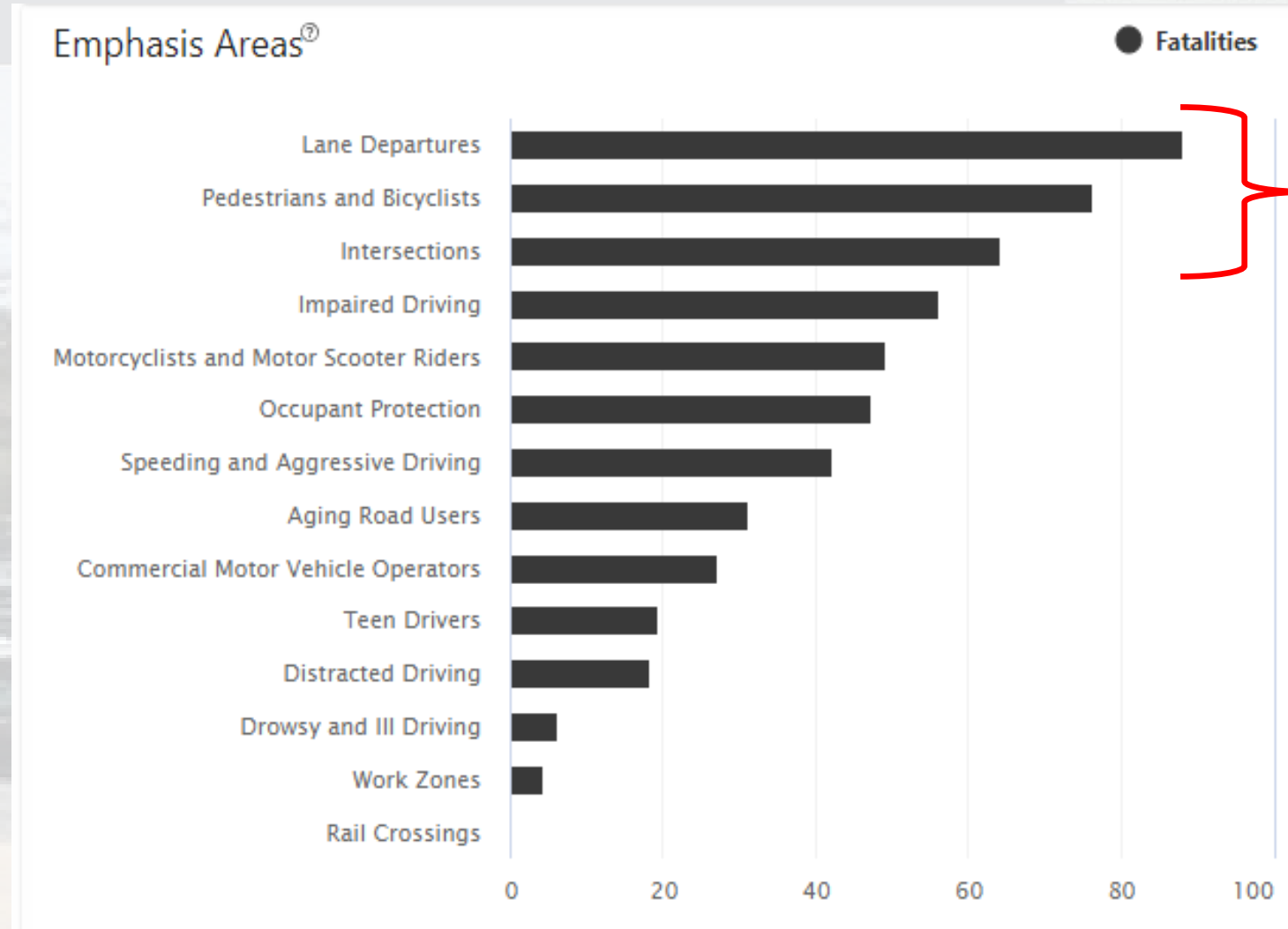


Source: Transportation Planning Organization Board Meeting, Feb 9, 2022



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Part 2: Design Guidelines



**Account
for 44% of
Crashes**

Part 2: Design Guidelines

- **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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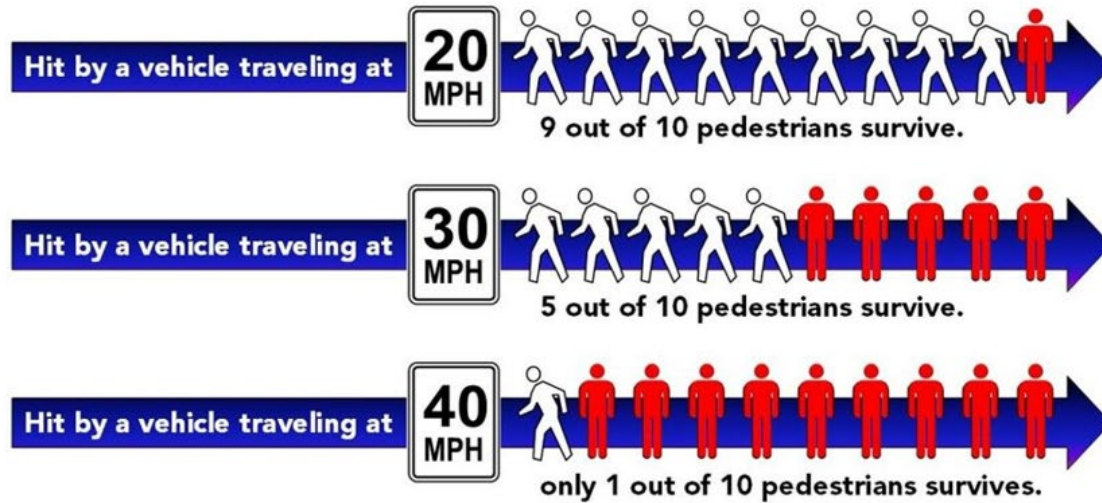


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Part 2: Design Guidelines

Speed Management

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



Source: Urbanist

Table 3: Speed Management Strategies to Achieve Desired Operating Speed¹

STRATEGIES	Context Based Classification									
	Rural (C1&C2)				Suburban (C3R, C3C)			Suburban Town, Urban General (C3T, C4)		
	Target Speed (mph)									
	25-30	35	40-45	50	25-30	35	40-45	25-30	35	40
<i>Roundabout</i>	•	•	•		•	•	•	•	•	•
<i>Median Island</i>	•	•	•	•	•	•	•	•	•	•
<i>Hardened Centerlines</i>					•	•	•	•	•	•
<i>Horizontal Deflection</i>	•	•	•		•	•	•	•	•	•
<i>Speed Feedback Sign</i>	•	•	•	•	•	•	•	•	•	•
<i>Pedestrian/Roadway Lighting</i>	•	•	•		•	•	•	•	•	•
<i>Lane Narrowing</i>	•	•	•		•	•	•	•	•	•
<i>Pedestrian Crossing Treatment</i>	•	•	•		•	•	•	•	•	•
<i>Lane Repurposing</i>					•	•	•	•	•	•
<i>Corner Radius Reduction</i>					•	•	•	•	•	•
<i>Converging Chevrons/Optical Speed Bars</i>		•	•			•	•		•	•
<i>Traffic Signal Operation</i>	•	•	•		•	•	•	•	•	•
<i>Vertical Deflection</i>	•				•			•		
<i>On-street Parking</i>					•	•		•	•	
<i>Curb Extensions (Bulb-Out)</i>					•	•		•	•	
<i>Gateway Treatment</i>	•	•			•	•		•	•	
<i>Street Trees</i>	•	•			•			•	•	
<i>Short Blocks</i>					•			•	•	
<i>Chicanes</i>	•				•			•		

Design Manual Highlights

- Considers 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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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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CIP Project Resources Website:

<https://www.hillsboroughcounty.org/en/government/county-projects/consultant-cip-project-resources>

Link to Draft HCTDM:

<https://www.hillsboroughcounty.org/en/government/county-projects/consultant-cip-project-resources/standard-details-and-project-plan-sheet-templates>



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