

Pedestrian Design

DeWayne Carver, AICP

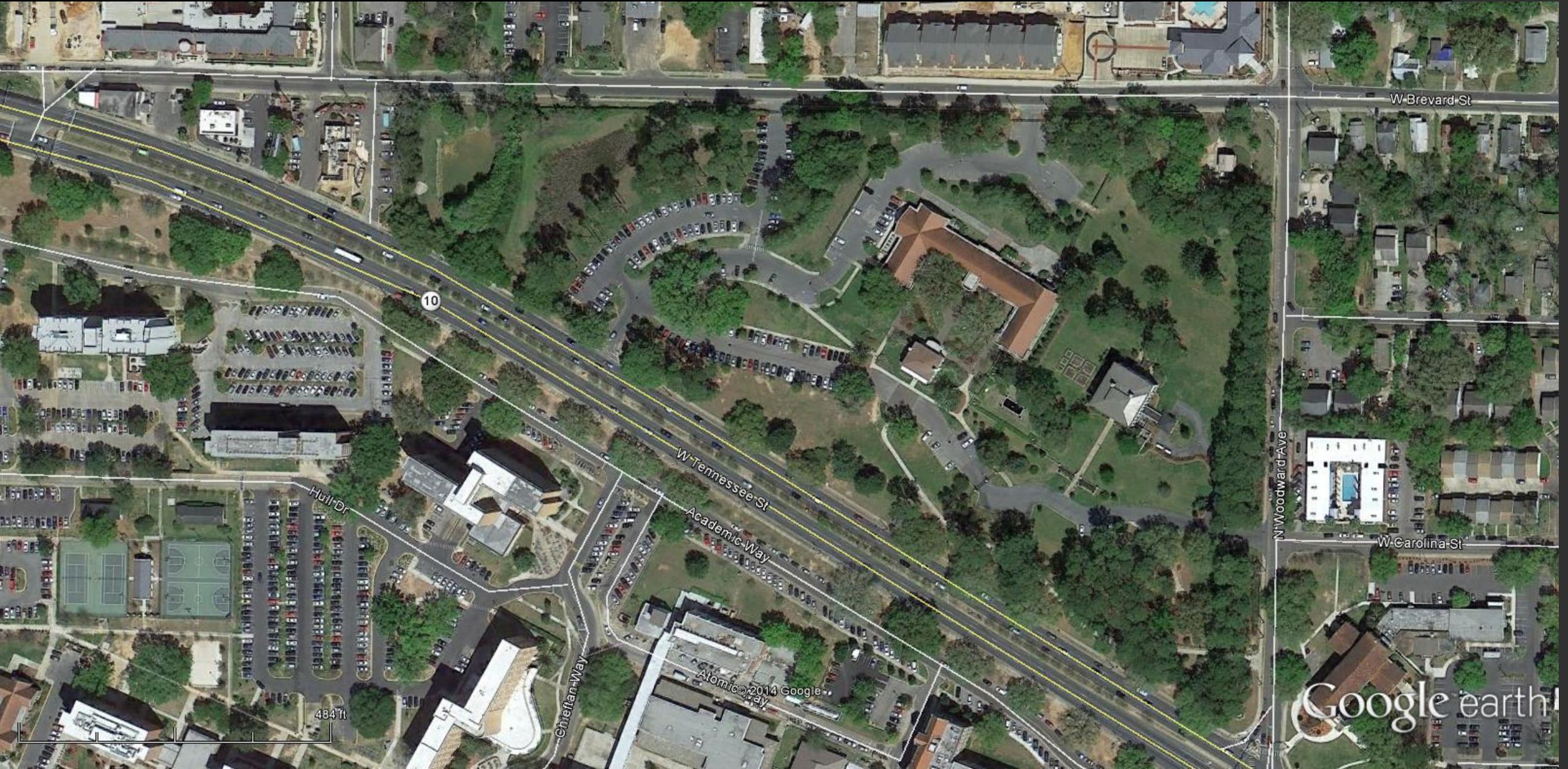
State Bicycle/Pedestrian Coordinator

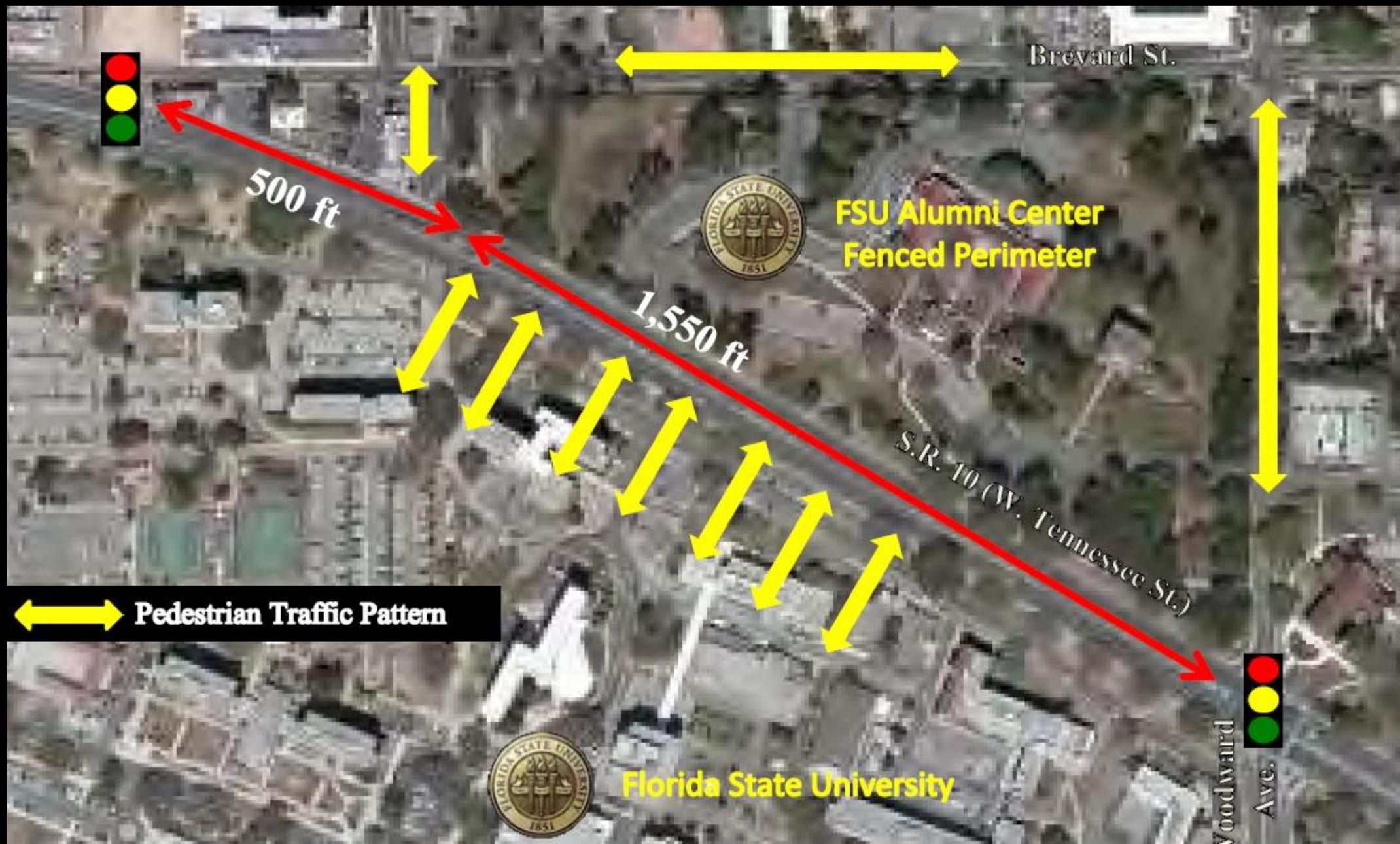
FDOT Office of Roadway Design

Topics

- **Minimizing illegal pedestrian crossing/ Use of Desire Lines**
 - why and where do pedestrians cross the street/ designer feedback
 - to what extent are you doing Pedestrian Safety Audits?
- **Pedestrian Channelization and Mid-block Crossings/** use of landscape
- **Mid-block crossings/ RRFB/ HAWK**
 - Full Ped Signal x-ing within coordinated signal systems
 - feedback from designers on experience using warrants
- **LCD Bulletin/ Designer feedback TCP Guidelines**
 - what designer's need for standards and guidelines to prepare TCPs to accommodate pedestrians
 - What situations do you encounter most often that lend itself to a design standard
- **Designing for Walkability**

Pedestrian Channelization/Desire Lines







Pope St

Raven St

Dewey St

N Woodward Ave

Antarctic Way

Territory Way

Academic Way

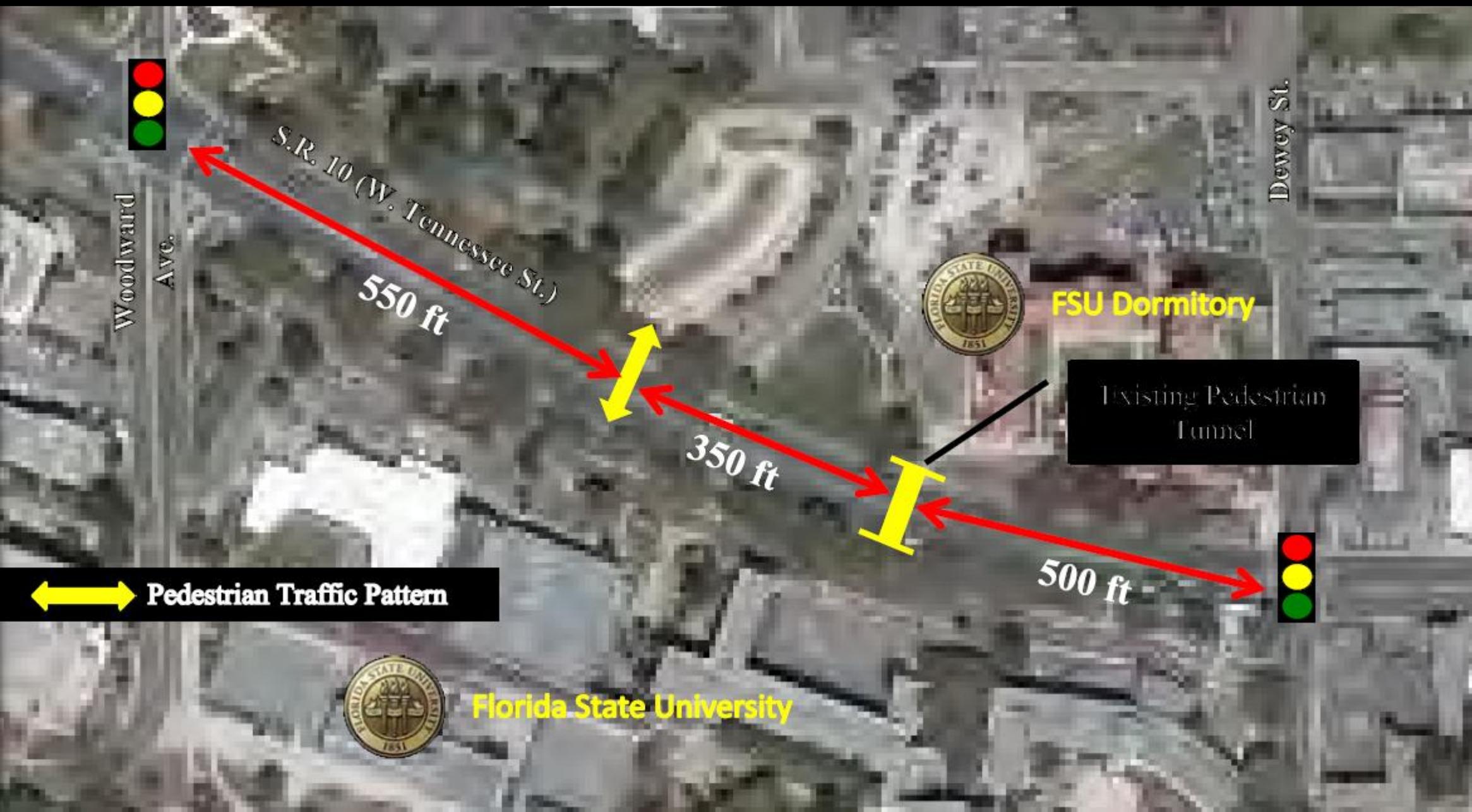
W Tennessee St

10

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Google earth

487 ft



Woodward
Ave.

S.R. 10 (W. Tennessee St.)
550 ft

Dewey St.



FSU Dormitory

Existing Pedestrian
Tunnel

350 ft

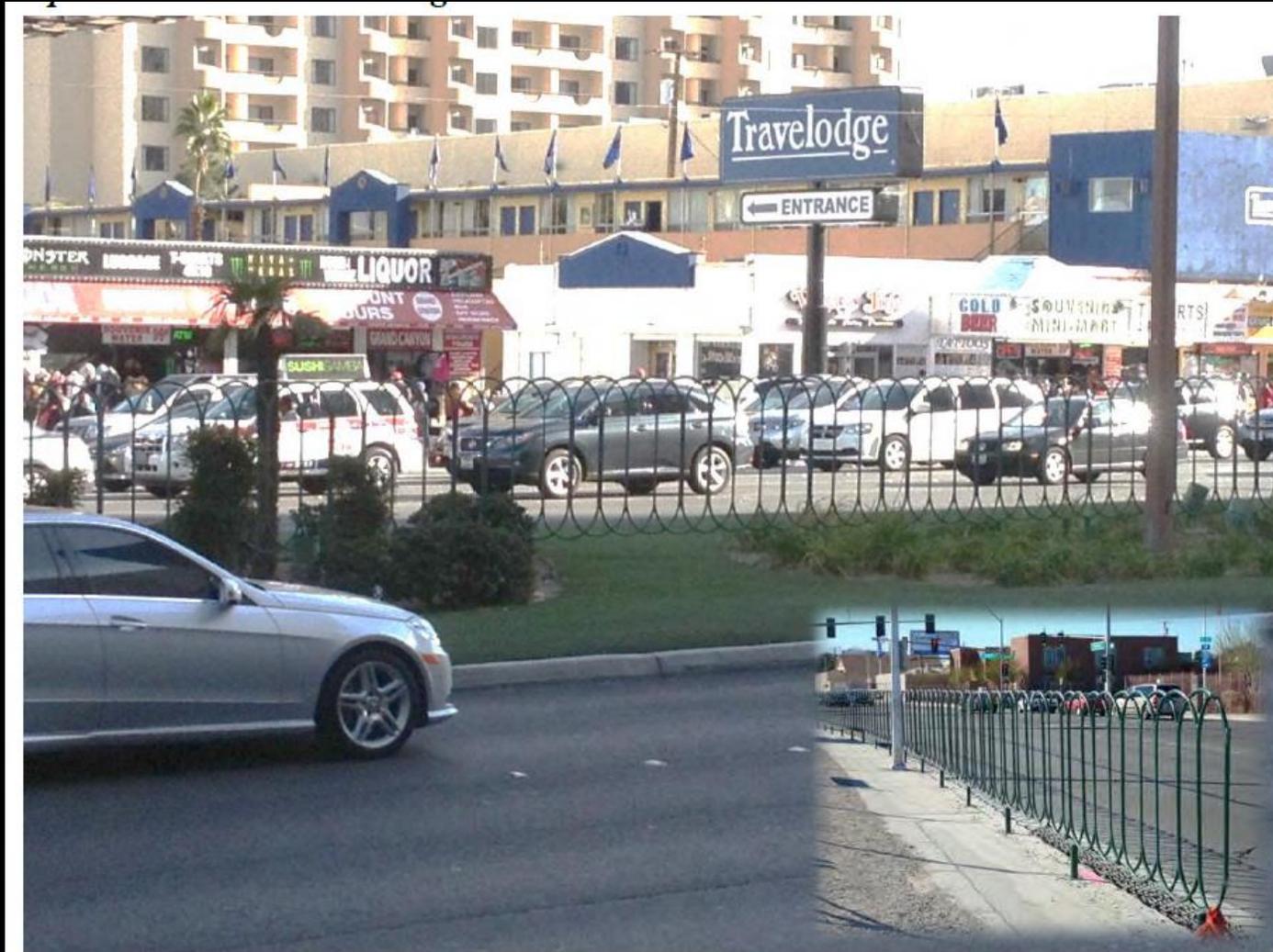
500 ft

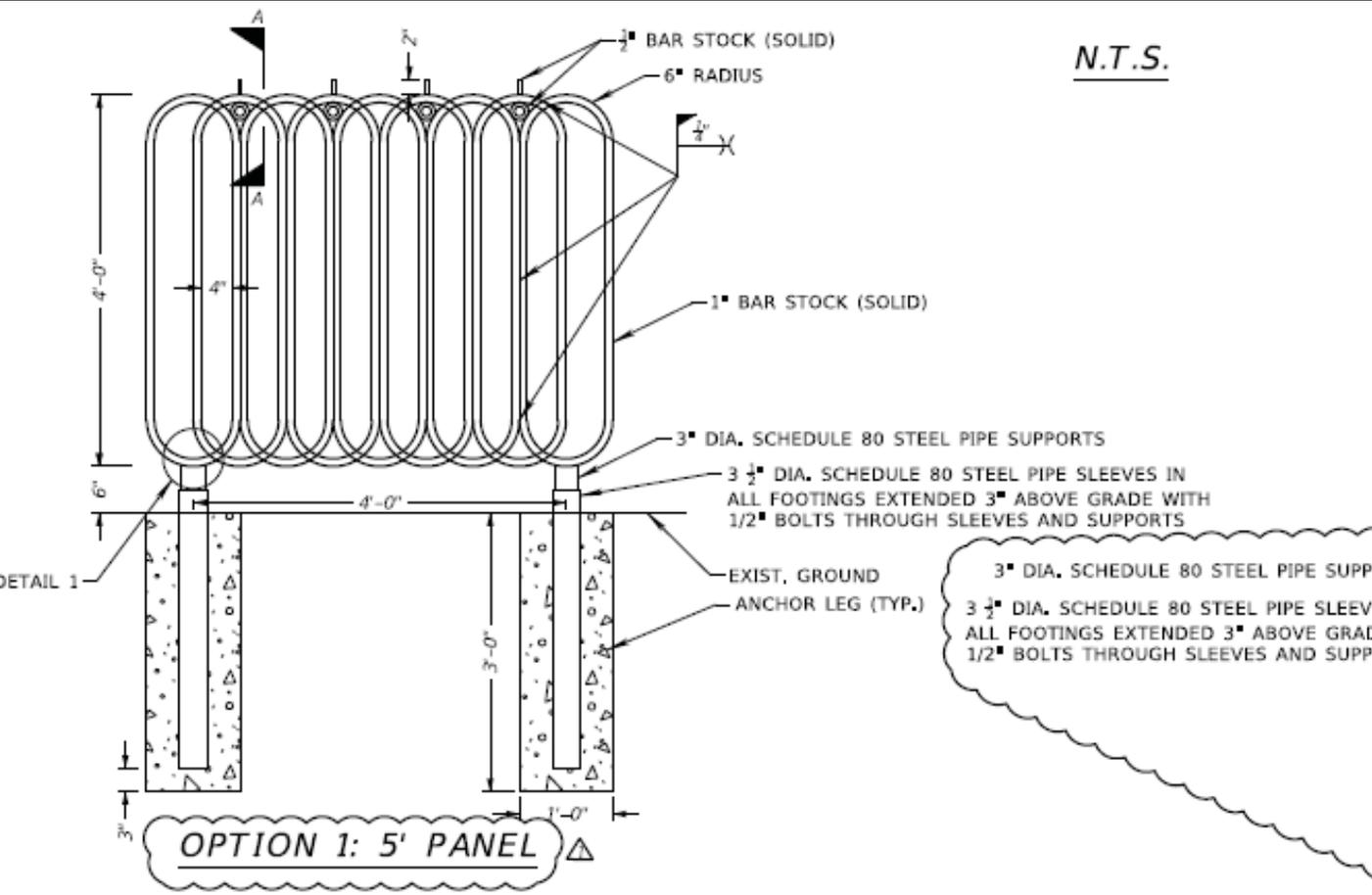
Pedestrian Traffic Pattern



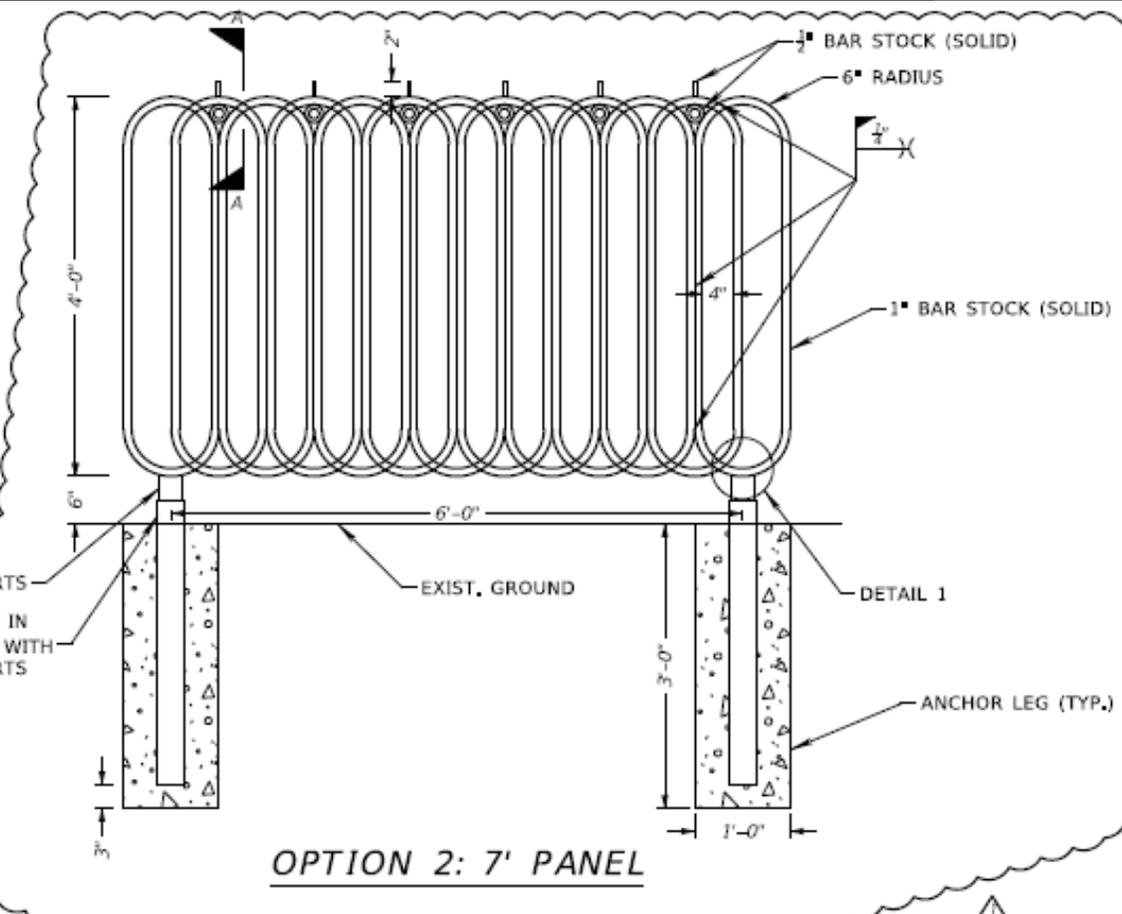
Florida State University

Pedestrian Channelization



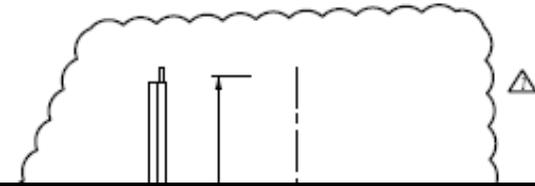


N.T.S.



PEDESTRIAN BARRIER DETAIL

STA. 190+00.00 TO STA. 194+00.00
 STA. 194+40.00 TO STA. 208+50.00
 STA. 211+50.00 TO STA. 220+00.00
 STA. 228+00.00 TO STA. 230+55.00



Other Options

- Landscaping
- Chain link
- Tensioned cable (exploratory)

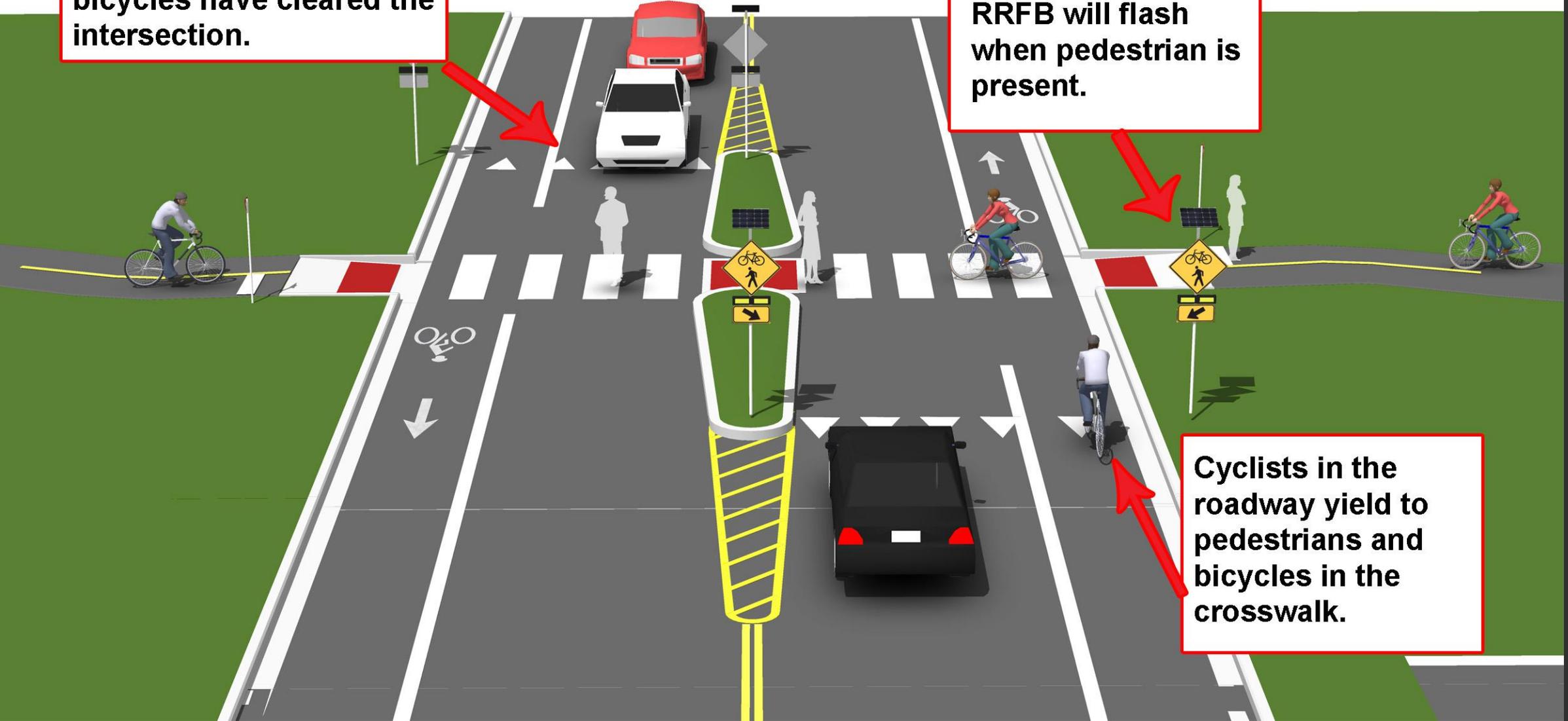
Mid-block Crossing

- TEM 3.8.5
- RRFB
- HAWK
- Full stop signal

Motorists stop behind the advance yield markings until pedestrians and bicycles have cleared the intersection.

RRFB will flash when pedestrian is present.

Cyclists in the roadway yield to pedestrians and bicycles in the crosswalk.







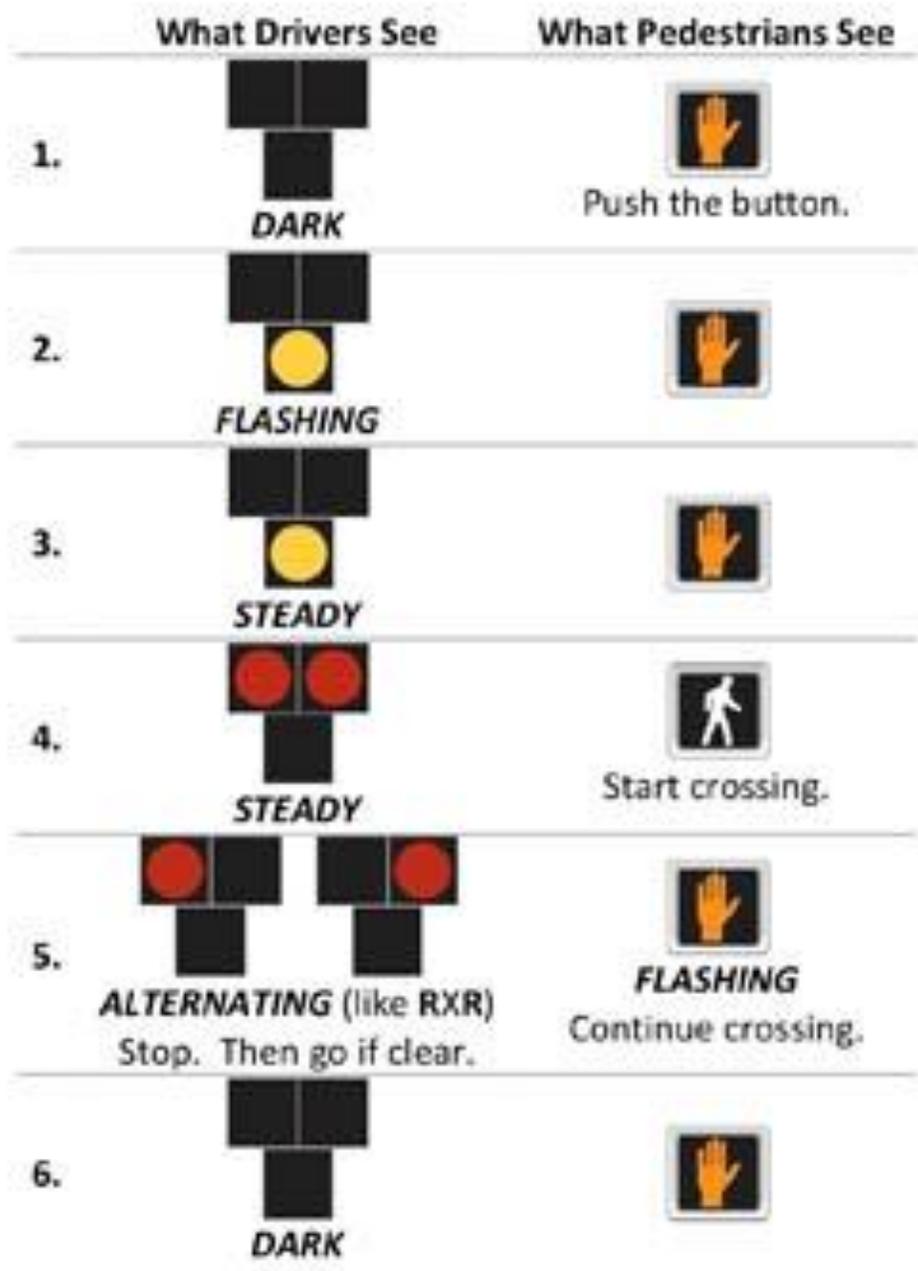
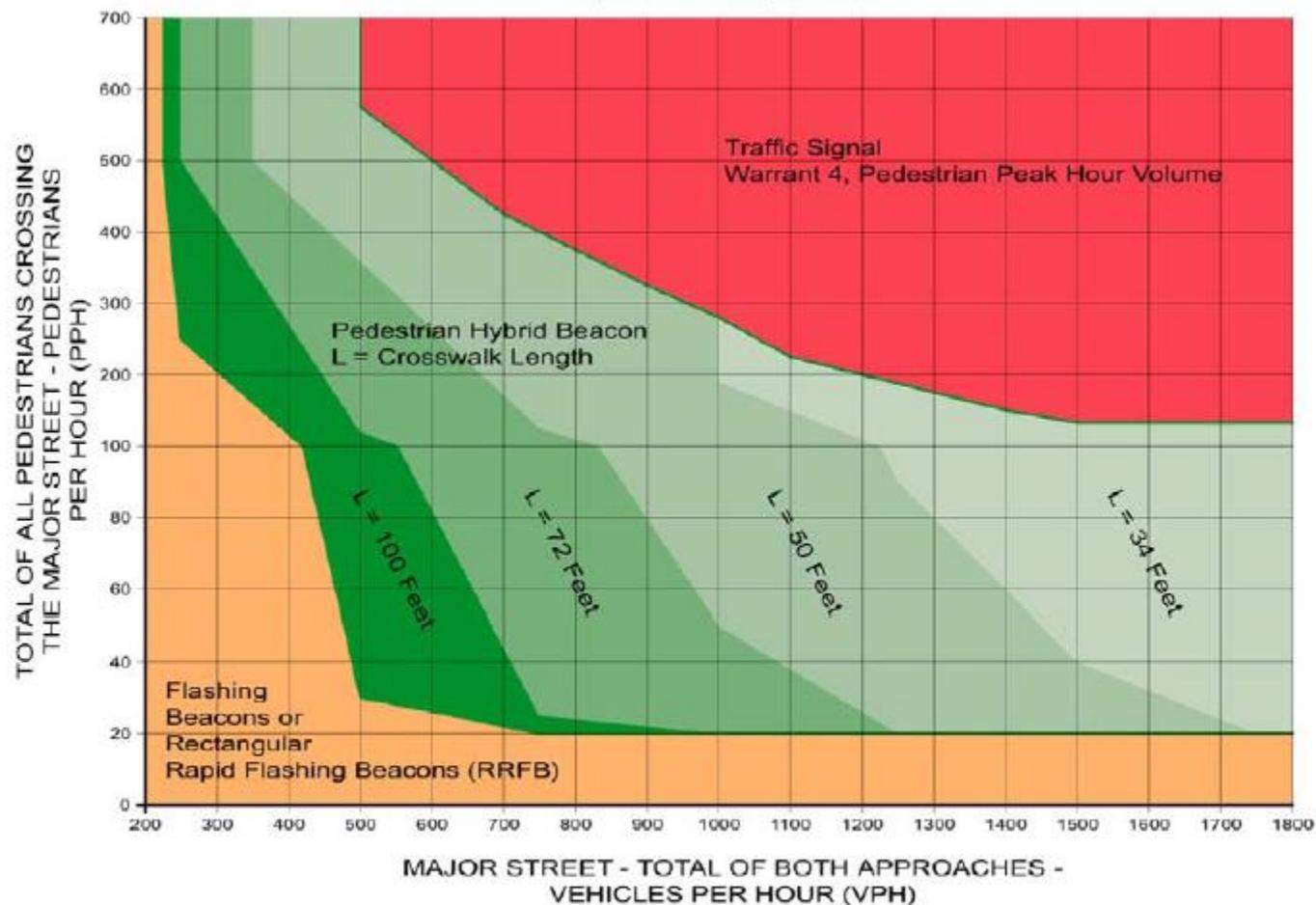


Figure 3.8.4

Guidelines for the Installation of Pedestrian Treatments on Low-Speed Roadways

Speeds of 35 mph or less

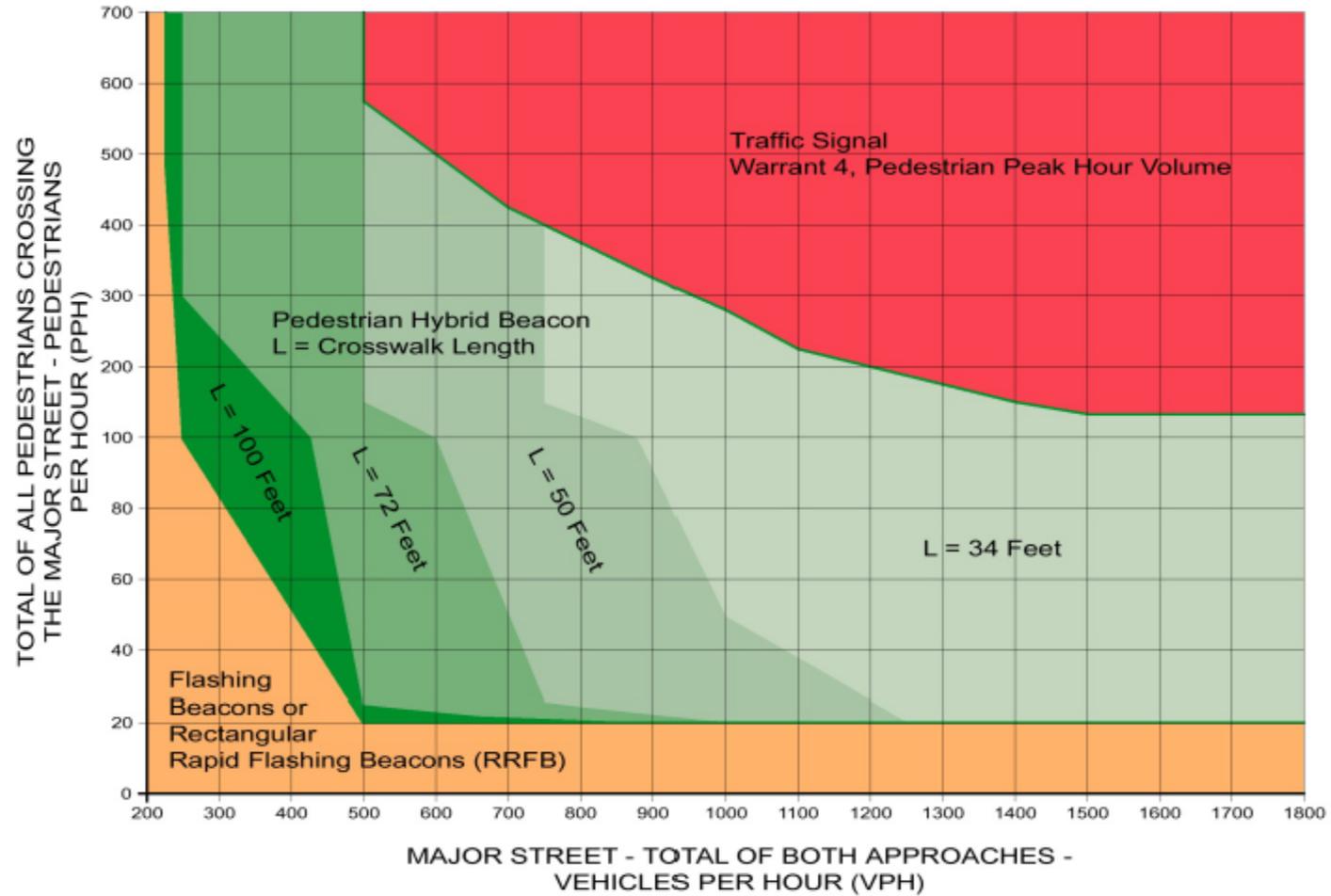


- LEGEND**
- MUTCD Traffic Signal Warrant 4 Chart
Note: 133 PPH applies as the lower threshold volume
 - MUTCD Guidelines for the Installation of Pedestrian Hybrid Beacons on Low-Speed Roadways Chart
Note: 20 PPH applies as the lower threshold volume
 - MUTCD Guidelines for the Installation of Pedestrian Hybrid Beacons on Low-Speed Roadways Chart
Note: 20 PPH applies as the lower threshold volume
 - Guideline for the Installation of Flashing Beacons or Rectangular Rapid Flashing Beacons on Low-Speed Roadways Chart

Figure 3.8.5

Guidelines for the Installation of Pedestrian Treatments on High-Speed Roadways

Speeds greater than 35 mph



- LEGEND**
- MUTCD Traffic Signal Warrant 4 Chart
Note: 133 PPH applies as the lower threshold volume
 - MUTCD Guidelines for the Installation of Pedestrian Hybrid Beacons on High-Speed Roadways Chart
Note: 20 PPH applies as the lower threshold volume
 - Guideline for the Installation of Flashing Beacons or Rectangular Rapid Flashing Beacons on High-Speed Roadways Chart



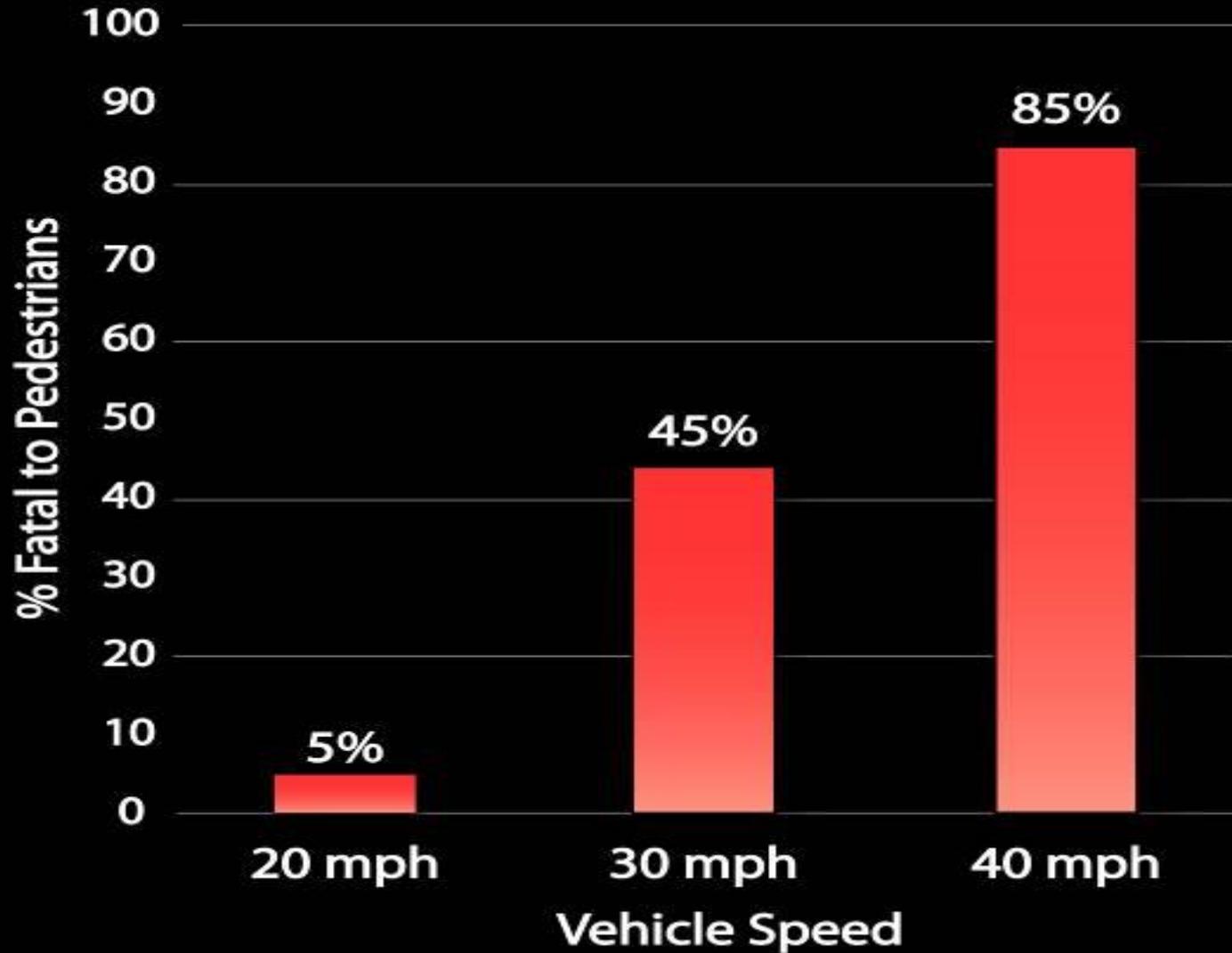
Top 10 Walkability Factors – Urban Form

- 10. Narrow Streets
- 9. Street Trees
- 8. Traffic Volumes
- 7. Sidewalks
- 6. Interconnected Streets
- 5. On Street Parking
- 4. Lower Traffic Speeds
- 3. Mixed Land Use
- 2. Buildings Fronting St.
- 1. Small Block Size!

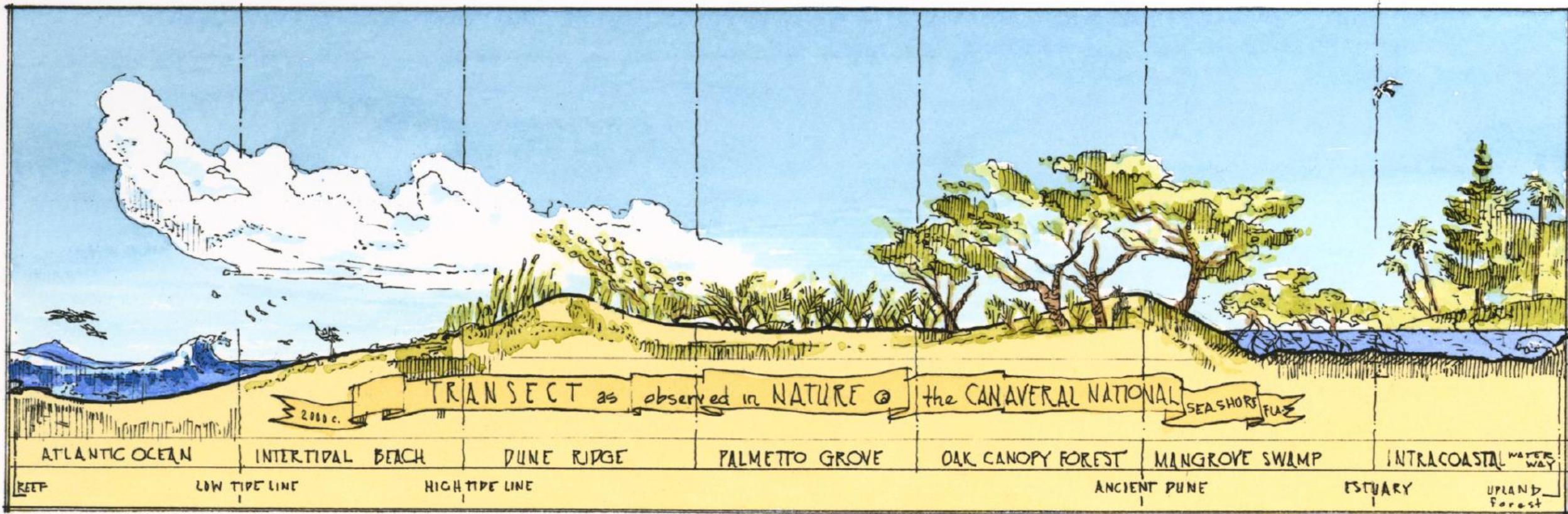
Top 3 Walkability Factors – Pedestrians

- 3. Vehicle Speed
- 2. Vehicle Speed
- 1. Vehicle Speed

Pedestrian Fatalities & Speed

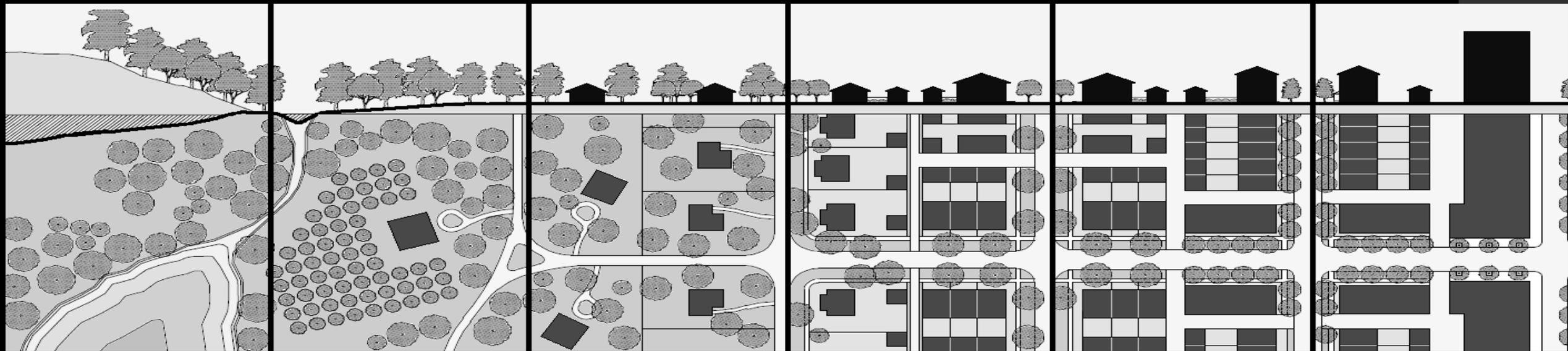


LU1 > TRQ



Title: A natural Transect Illustration

Source: James Wassell

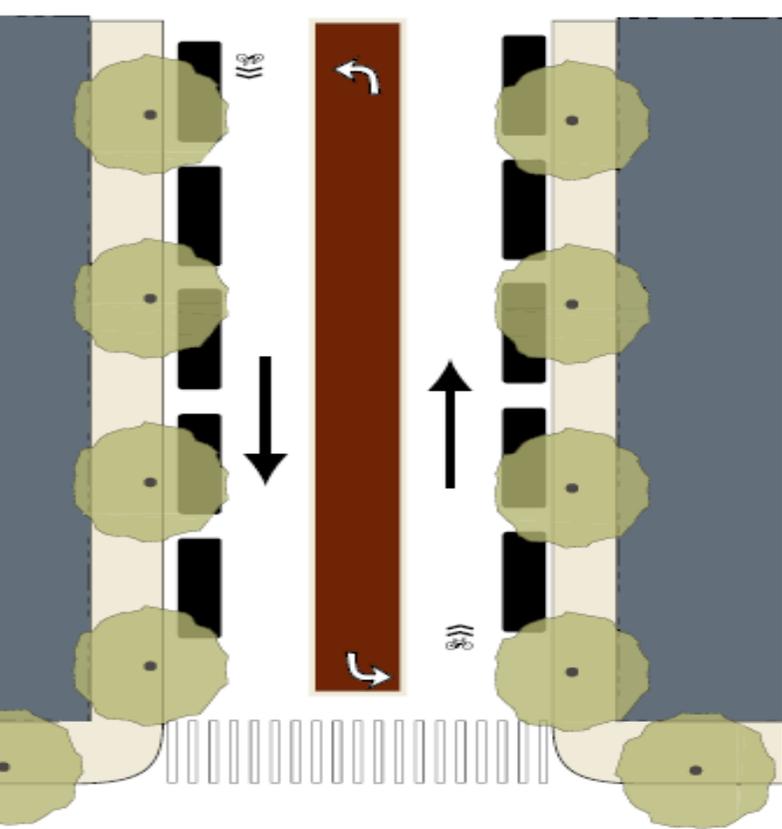
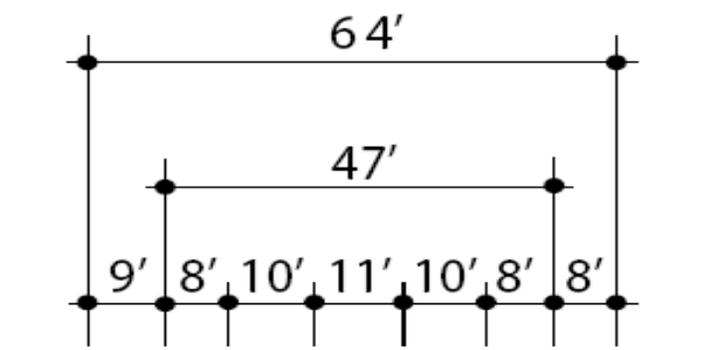
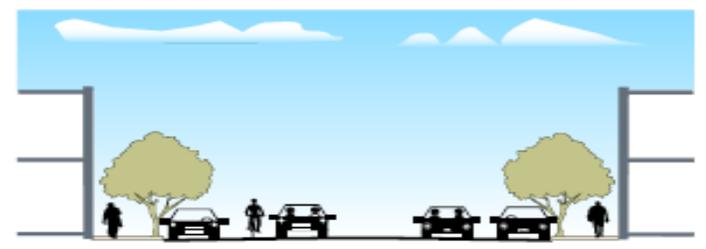
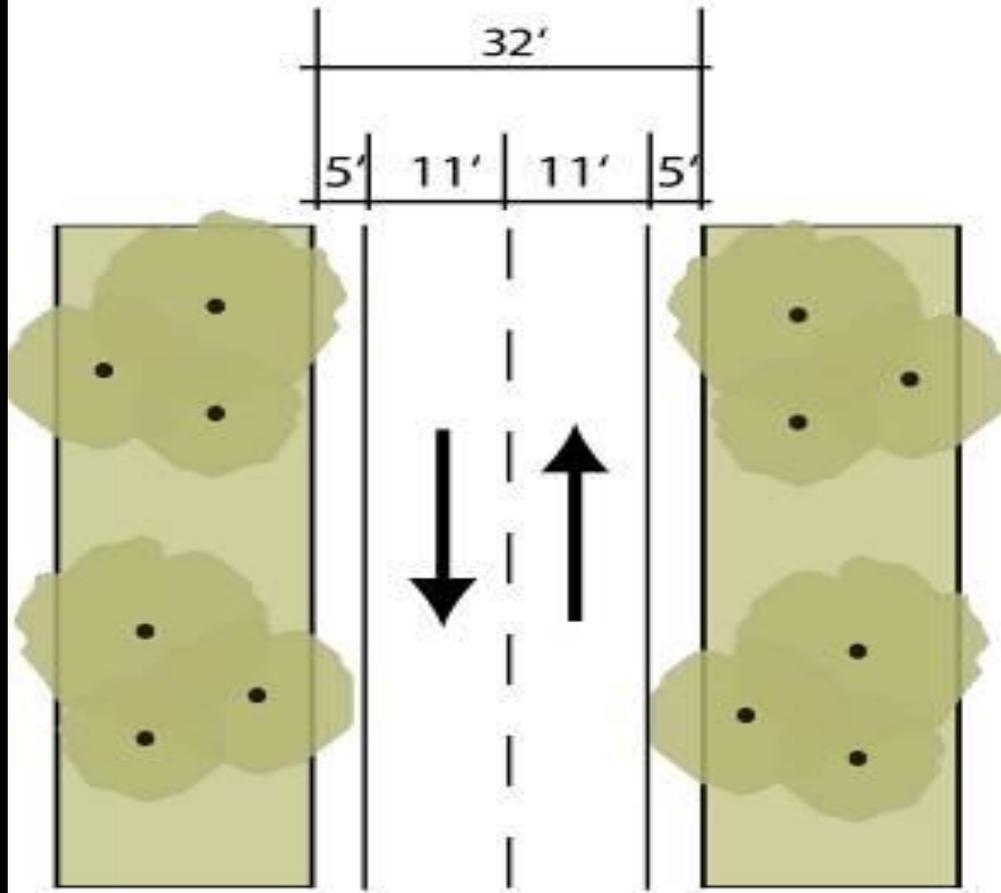
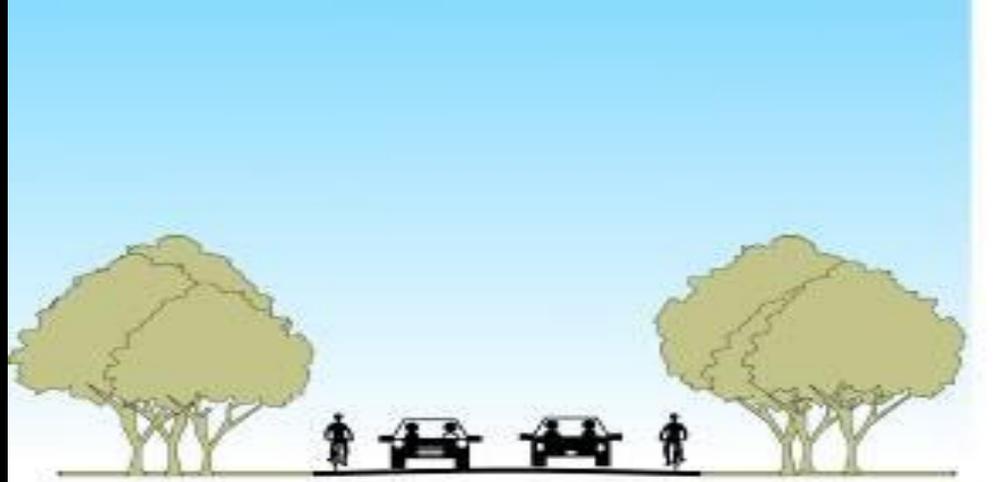


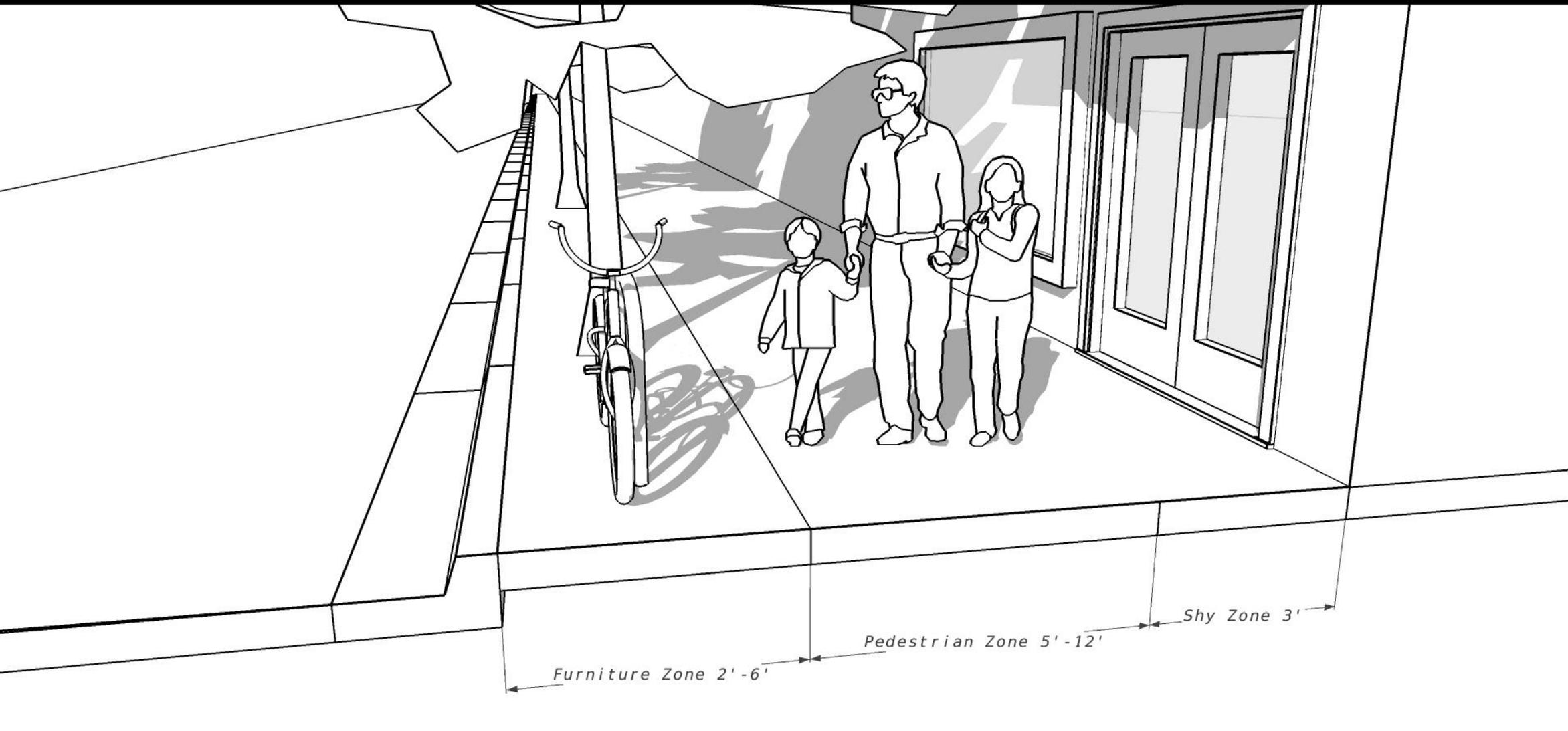
DPZ & Co.



Dover, Kohl & Partners

ZHA, Inc.





Furniture Zone 2' - 6'

Pedestrian Zone 5' - 12'

Shy Zone 3'

Table 5.2 Minimum Recommended Streetside Dimensions for Thoroughfares in Walkable Areas Under Constrained Conditions

Streetside Zone	Minimum Dimension
Residential (All Context Zones)	
Edge and Furnishing Zone (Planting Strip, utilities, etc.)	3 feet
Clear Pedestrian Travel Way	5 feet
Frontage Zone	1 foot
Total Minimum Streetside Width: 9 feet	
Commercial with Ground Floor Retail (All Context Zones)	
Edge and Furnishing Zone (Treewell ¹ , utilities, bus stops, etc.)	4 feet
Clear Pedestrian Travel Way	6 feet
Frontage Zone	2 feet
Total Minimum Streetside Width: 12 feet	

¹ Plant only small caliper trees (4" diameter when mature) in 4-foot treewells.

The minimum recommended streetside dimensions for thoroughfares in other areas (such as vehicle-oriented areas) should be based on the designer's understanding of the community's objectives, the future desired traversability of the area, the future potential redevelopment of the adjacent property and the need to accommodate all users.

- Source: ITE/CNU
Designing
Walkable Urban
Thoroughfares

Table 6.4 Design Parameters for Walkable Urban Thoroughfares (continued)

Thoroughfare Design Parameters for Walkable Mixed-Use Areas									
	General Urban (C-4)			Urban Center/Core (C-5/6)					
	Commercial			Residential			Commercial		
	Boulevard [1]	Avenue	Street	Boulevard [1]	Avenue	Street	Boulevard [1]	Avenue	Street
Context									
Building Orientation (entrance orientation)	front	front	front	front	front	front	front	front	front
Maximum Setback [2]	0 ft.	0 ft.	0 ft.	10 ft.	10 ft.	10 ft.	0 ft.	0 ft.	0 ft.
Off-Street Parking Access/Location	rear, side	rear, side	rear, side	rear	rear	rear, side	rear	rear	rear, side
Streetside									
Recommended Streetside Width [3]	19 ft.	16 ft.	16 ft.	21.5 ft.	19.5 ft.	16 ft.	21.5 ft.	19.5 ft.	16 ft.
Minimum sidewalk (throughway) width	8 ft.	6 ft.	6 ft.	10 ft.	9 ft.	6 ft.	10 ft.	9 ft.	6 ft.
Pedestrian Buffers (planting strip exclusive of travel way width) [3]	7 ft. tree well	6 ft. tree well	6 ft. tree well	7 ft. tree well	6 ft. tree well	6 ft. tree well	7 ft. tree well	6 ft. tree well	6 ft. tree well
Street Lighting	For all thoroughfares in all context zones, intersection safety lighting, basic street lighting, and pedestrian-scaled lighting is recommended. See Chapter 8 (Streetside Design Guidelines) and Chapter 10 (Intersection Design Guidelines).								
Traveled Way									
Target Speed (mph)	25–35	25–30 [4]	25	25–35	25–30	25	25–35	25–30 [4]	25
Number of Through Lanes [5]	4–6	2–4	2–4	4–6	2–4	2–4	4–6	2–4	2–4
Lane Width [6]	10–12 ft.	10–11 ft.	10–11 ft.	10–11 ft.	10–11 ft.	10–11 ft.	10–11 ft.	10–11 ft.	10–11 ft.
Parallel On-Street Parking Width [7]	8'	7–8 ft.	7–8 ft.	7 ft.	7 ft.	7 ft.	8 ft.	8 ft.	7–8 ft.
Min. Combined Parking/Bike Lane Width	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.	13 ft.
Horizontal Radius (per AASHTO) [8]	200–510 ft.	200–330 ft.	200 ft.	200–510 ft.	200–330 ft.	200 ft.	200–510 ft.	200–330 ft.	200 ft.
Vertical Alignment	Use AASHTO minimums as a target, but consider combinations of horizontal and vertical per AASHTO Green Book.								
Medians [9]	4–18 ft.	Optional 4–18 ft.	None	4–18 ft.	Optional 4–16 ft.	None	4–18 ft.	Optional 4–18 ft.	None
Bike Lanes (min./preferred width)	5 ft. / 6 ft.	5 ft. / 6 ft.	5 ft. / 6 ft.	5 ft. / 6 ft.	5 ft. / 6 ft.	5 ft. / 6 ft.	5 ft. / 6 ft.	5 ft. / 6 ft.	5 ft. / 6 ft.
Access Management [10]	High	Low–Moderate	Low–Moderate	Moderate	Low–Moderate	Low–Moderate	High	Low–Moderate	Low–Moderate
Typical Traffic Volume Range (ADT) [11]	15,000–50,000	1,500–30,000	1,000–15,000	15,000–30,000	1,500–20,000	500–5,000	15,000–40,000	1,500–30,000	1,000–15,000
Intersections									
Roundabout [12]	Consider urban single-lane roundabouts at intersections on avenues with less than 20,000 entering vehicles per day, and urban double-lane roundabouts at intersections on boulevards and avenues with less than 40,000 entering vehicles per day.								
Curb Return Radii/Curb Extensions and Other Design Elements	Refer to Chapter 10 (Intersection Design Guidelines)								

• Source: ITE/CNU
 Designing
 Walkable Urban
 Thoroughfares

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
				SHS - Non-SIS												
				Arterial				Collector				TLDC Street***	Freeways			
Covered In				Urban		Rural		Urban		Rural		Urban	Urban	Rural		
Context Zone				T1, T2, District, CSD	T3-Edge	T4-General, T5-Center	T1, T2 Rural	T1, T2 Rural	T1, T2, District, CSD	T3 Edge	T4 General, T5/T6 Center	T1, T2 Rural	T1, T2 Rural	T3 Edge, T4 General, T45/T6 Center	District	Rural
Pedestrian Facility Type*				High Speed Urban/Suburban (50 mph or greater)	Low Speed (40-45 mph)	Very Low Speed (35 mph or less)**	High Speed (60 mph or greater)	Low Speed (55 mph or less)	High Speed Urban/Suburban (50 mph)	Low Speed (40-45 mph)	Very Low Speed (35 mph or less)	High Speed (60 mph or greater)	Low Speed (55 mph or less)	Very Low Speed (35 mph or less)	High Speed (50-70 mph)	High Speed (70 mph)
PPM	Design Stds	Greenbook														
5' sidewalks (both sides)	Y	Y	Y	N	Yb	Yb	N	N	N	Yb	Yb	N	N	Yb	N	N
6' Sidewalks (both sides)	Y	Y	Y	N	Yb	Yb	N	N	N	Yb	Yb	N	N	Yb	N	N
6' Sidewalks/6' Planting Strips (both sides)	N	N	N	Y	Y	Y	N	N	N	Y	Y	N	N	Y	N	N
12' reserve areas (future sidewalk/PS)	N	N	N	N	N	N	Y	Y	Y	Y	N	Y	Y	N	N	N
Shared Use Paths (both sides)	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y
20' Sidewalks (both sides)	N	N	N	N	N	N	N	N	N	N	Y	N	N	Y	N	N
Low speed right turn pork chops	N	N	N	N	Y	Y	N	N	N	Y	Y	N	N	Y	N	N
Trees 30' o.c.	N	N	N	N	N	Y	N	N	N	N	Y	N	N	Y	N	N
Trees 60' or 90' o.c., or opportunistic	N	N	N	Y	Y	N	Y	Y	Y	Y	N	Y	Y	N	N	N
*Does not include signals, markings, etc. See below.																
**This speed or lower is a design exception; 35mph recommended top speed for sharrows																
*** Not an SHS class, but used in TLDC designs																
Additional Specifications																
Condition				Treatment												
In or within 1 mile of an urban area				Ped heads and countdown signals required at signalized intersections												
All legs of signalized intersection where pedestrian facilities are provided				Marked crosswalks												
Transit or pedestrian facilities across the street				Shall provide pedestrian access to and from pedestrian facilities if only on one side of the street												
Long block lengths (>600') in Edge, General or Center Context Zone				Provide midblock crossings no greater than 400' apart to break up long blocks.												

• DRAFT FDOT Complete Streets Matrix for Sidewalk Facilities

FDOT Minimum Standards

- 5' sidewalk and 2' planting strip on Urban type
- Alternative 6' sidewalk back of curb
- Place sidewalk as close as practicable to the ROW – does not have to be at the back of curb!
- In rural condition, shoulder (paved or unpaved) may serve for pedestrian access