



**Bike Lanes at Driveways**  
*Photo: City of Ventura*



**Bike Keyholes**  
*Photo: Google Maps*

# BICYCLE ISSUES & SYSTEMIC ENGINEERING COUNTERMEASURES

**Shoulders Marked as Bike Lanes**  
*Photo: Bike Walk Lee Blog*



**Bike Lanes at Driveways**  
*Photo: Safe Mountain View Blog*



**Bicycle Ahead Warning Sign (MUTCD W11-1 with W16-9P)**  
*Photo: MUTCD*



## RESOURCES AND CONTACT INFORMATION

- FDOT Design Standards: <http://www.dot.state.fl.us/rddesign/DS/16/STDs.shtm>
- FDOT Traffic Engineering Manual: <http://www.dot.state.fl.us/trafficoperations/Operations/Studies/TEM/TEM.shtm>
- FDOT Statewide Lane Elimination Guide: <http://www.dot.state.fl.us/rddesign/CSI/Default.shtm>
- FDOT Plans Preparation Manual: <http://www.dot.state.fl.us/rddesign/PPMManual/PPM.shtm>
- Manual on Uniform Traffic Control Devices (MUTCD): [http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/pdf\\_index.htm](http://mutcd.fhwa.dot.gov/pdfs/2009r1r2/pdf_index.htm)
- ADA Guidance: <https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/proposed-rights-of-way-guidelines/introduction>
- Space Coast TPO State of the System Report: <http://spacecoasttpo.com/counts/performance-monitoring-and-management/>
- For questions relating to safety projects on State roadways, contact Tony Nosse with the FDOT District 5 - 386-943-5000
- For questions relating to safety projects on Non-State roadways, contact the Space Coast TPO - 321-690-6890



2725 Judge Fran Jamieson Way  
 Building B, Room 105, MS #82  
 Melbourne, FL 32940  
 (321) 690.6890  
 tpostaff@spacecoasttpo.com

LOCATION	GENERAL ISSUE	SPECIFIC ISSUE	COUNTERMEASURE	IMPLEMENTATION TIME FRAME *	COST
Roadway Segment	Bicycle Facilities	No bicycle lanes or paved shoulder, no opportunity to add bicycle lanes, and posted speed 35 mph or less	Install BIKES MAY USE FULL LANE (MUTCD Sign R4-11) signage Shared lane markings (FDOT Design Standard 17347 Sheets 1 and 2) could also be installed along with the signage	Maintenance	\$
		No bicycle lane markings on existing paved shoulder	Formalize the paved shoulder by adding bicycle lane markings (FDOT Design Standard 17347), keyholes (Sheet 5 of 17347) should be installed at right turn locations	Maintenance/Near Term	\$-\$
		What is bicycle lane connectivity on roadways surrounding study location?	Review bicycle lane connectivity on adjoining roadways and see if proposed improvements are appropriate and connect to other roadways	Near Term	\$
		Standard bicycle lane/shoulder is present but space is available to install buffered bicycle lanes High speed corridors where bicycle lanes are present	Expand the current bicycle lane to be a seven foot buffered bicycle lane (5' wide bike lane with a 2' striped buffer), keyholes should be installed at right turn locations	Near/Long Term	\$-\$-\$
		Greater than 2 lane roadways with no bicycle lanes, bicycle crash history, and excess vehicular capacity	Perform lane elimination study (FDOT Statewide Lane Elimination Guide)	Near/Long Term	\$-\$-\$
	Corridor Lighting	Burnt out light bulbs	Contact the owner/maintainer of the lighting system	Maintenance	\$
		Inconsistent lighting levels, and/or light poles spaced unevenly	Perform lighting uniformity study	Near/Long Term	\$-\$-\$
		No lighting present	Perform lighting justification study	Near/Long Term	\$-\$-\$
		Low lighting levels in areas where lighting is present and evenly spaced	Change from high pressure sodium lighting to LED lighting if lighting levels along corridor meet standard but nighttime crashes are occurring	Long Term	\$-\$-\$



Buffered Bike Lane

Photo: Bike Cleveland

Signalized Intersections	Bicycle Facilities	No bicycle lane keyholes between outside through lane and right turn lane	Install keyholes for bicycle lane (FDOT Design Standard 17347)	Maintenance/Near Term	\$-\$
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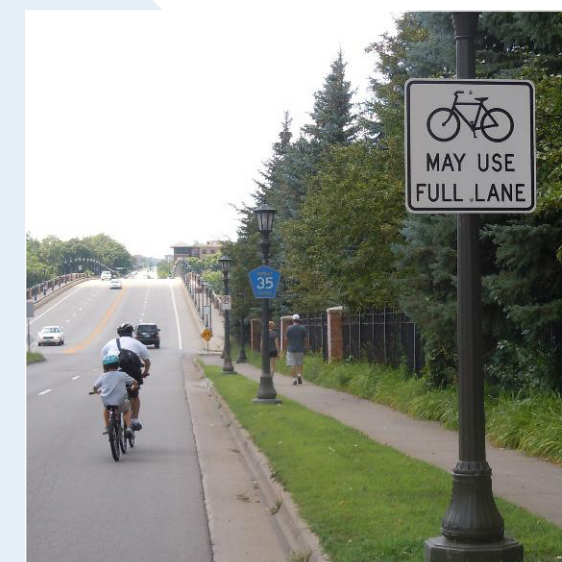
Sharrows

Photo: Dan Reed



Minor Street Intersection	Vehicular Sight Distance	Vehicle cannot see bicyclist utilizing sidewalk at current stop bar location	Trim/remove shrubbery, if located on private property work with property owner	Maintenance	\$
			Study to review sight distance triangle at the intersection, remove obstructions within sight triangle or move the stop bar closer to the street	Maintenance/Near Term	\$
	Conflicts between Bicyclists and Vehicles	Minor streets with bicycle crash history	Add bicyclist warning signage (W11-1 with W16-9P)	Maintenance	\$
	Bicycle Facilities	No bicycle lane keyholes between outside through lane and right turn lane (if right turn lane is present)	Install keyholes for bicycle (FDOT Design Standard 17347)	Maintenance/Near Term	\$-\$

Driveway	Conflicts between Bicyclists and Vehicles	Driveways with bicycle crash history	Add bicyclist warning signage (W11-1 with W16-9P)	Maintenance	\$
			Trim/remove shrubbery, if located on private property work with property owner to trim/remove the shrubbery	Maintenance	\$
	Vehicular Sight Distance	Vehicle cannot see bicycle utilizing sidewalk at current stop bar location	Perform a study to review sight distance triangle at the intersection, remove obstructions within sight triangle or move the stop bar closer to the street	Maintenance/Near Term	\$
			Perform driveway reconstruction during the roadway's next 3R project to reduce curb return radii on one/both of the corners of the driveway	Near/Long Term	\$-\$-\$
	Bicycle Exposure on Sidewalk	Large areas of bicycle exposure across driveways High driveway frequency increases bicycle exposure on sidewalk	Perform driveway reconstruction during the roadway's next 3R project to reduce the driveway widths down to the 36' maximum (FDOT Design Standard 515)	Near/Long Term	\$-\$-\$
Perform driveway consolidation during potential redevelopment or during the roadway's next 3R project, where feasible			Near/Long Term	\$-\$-\$	



Bike May Use Full Lane (MUTCD Sign R4-11)

Photo: www.smart-trips.com

**\*IMPLEMENTATION TIME FRAME DESCRIPTIONS**

- **Maintenance:** Addressed by public agency staff on a short timeframe at a relatively low cost
- **Near Term (within 3-5 years):** Suggestions needing additional study; suggestions that could be incorporated into an upcoming construction project (i.e. 3R project)
- **Long Term (5+ years):** suggestions that may be incorporated into longer term construction projects or may need to be programmed for funding as a standalone project