

Wrong-Way Driving (WWD)

EQPW Committee

December 2021



LEXINGTON

Problem Statement

- Wrong-way driving likely happens frequently but is difficult to quantify.
- Drivers often self-correct or manage to reach their destination without incident.
- When crashes occur, they are often head-on collisions resulting in severe damage and/or loss of life



Contributing Factors of WWD

- Intoxication or drugged (+60%)
- Being male (+60%)
- Driving at night & weekends
- Driving alone (+80%)
- History of other traffic violations
- Over 70 years old

Typical Exit Ramp



Indicators near point of entry:

- “Do Not Enter”
- “Wrong Way”
- “One-Way”
- White stripe on left
- Yellow stripe on right





Typical Exit Ramp

- Current design approach implements warnings for WWD within 250' of the intersection with the crossroad.
- Most ramps on I-64/I-75 are 1250' & NCR are at least 700'.
- There is ample room on typical ramps for additional countermeasures.

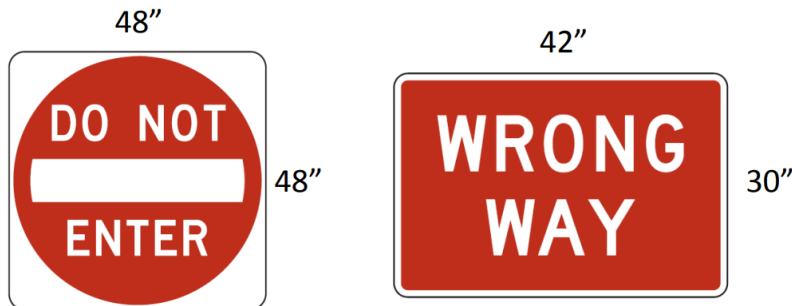


Possible Improvements: Signs & Markings

- KYTC is developing a systematic approach for enhanced signs and markings.
- Lowest cost and can be quickly implemented but can also be scaled up to meet the problem.
- Can supplement existing signs and markings.

Sign Enhancements

- Installing supplemental lower signs:
 - avoids sight restrictions
 - more visible at night because they are in the path of low beam headlights.
 - potentially more visible to the impaired.
(tend to drive with their eyes low looking)
- Place additional signs closer to the mainline.
- Increase the size of signs.
- Add red reflective markers on sign posts for DNE and WW signs, guardrails, & delineator posts.



Marking Enhancements

- Adding painted arrows closer to the traffic mainline w/ reflective red markers.
- Improved markings for cross street traffic to indicate where to turn. (arrows, dotted extensions)
- Add raised medians or paint existing medians to discourage incorrect turns.
- Other innovative marking products which display red arrows or text on one side and look like normal markings on the other. (currently being tested by some other state DOTs)

Red retroreflector arrow



Retroreflectors on lane lines



Correct Approach



Incorrect Approach



New thermoplastic marking product w/ red messages facing WWDs





Possible Improvements: Technology

- KYTC applied for an FHWA Transportation Technology grant in September.
- It will focus on technological applications to help address wrong-way crashes in metropolitan areas like Lexington.
- Longer term solutions. (Higher cost/Longer buildout time)



Technology Enhancements

- 24/7 LED WRONG WAY Signs on Exit Ramps.
- LED or flashing beacon Wrong Way signs with detection system.
- Red light bars.
- Internally lit wrong way sign with detection.
- Right way driver warning system
- Wrong way detection integration with TMCs, CCTV, DMS to warn other motorists and law enforcement.

Carmanah's WWD Countermeasures for DOTs

			
	WW100 Warning System	WW200 Vehicle Detection and Warning System	WW400 Vehicle Detection, Warning, and Alert System
Detection:	None - 24-7 flashing	Radar	Multi-zone radar
Warning:	LED enhanced signs or red light bars	LED enhanced signs or red light bars	LED enhanced signs or red light bars
Capture:			Visible and infrared cameras
Confirmation:			Visible and infrared cameras
Alerts:			Software and email
Price / pole:	\$2,100 – 2,600 / sign pole	\$2,100 – 2,600 / sign pole + \$4,400 – \$4,800 / detection and sign pole	\$2,100 – 2,600 / sign pole + \$38,000 - \$42,000 / detection and sign pole
Price / ramp:	\$4,200 – 5,200	\$6,500 – 7,400	\$40,100 – \$44,600





Questions?