

i am traffic.org

Human Powered Diversity

Basic Bicyclist Width

Body/handlebar width = 30"
Minimum operating space = 48"
Preferred Operating Space = 60"

This is the width and operating space determined by AASHTO for a basic, upright bicyclist. There are many diverse widths and heights for human-powered vehicles. This doesn't begin to include their unique characteristics and needs.*

Source: AASHTO Guide for the Development of Bicycle Facilities, 4th Edition (2012)

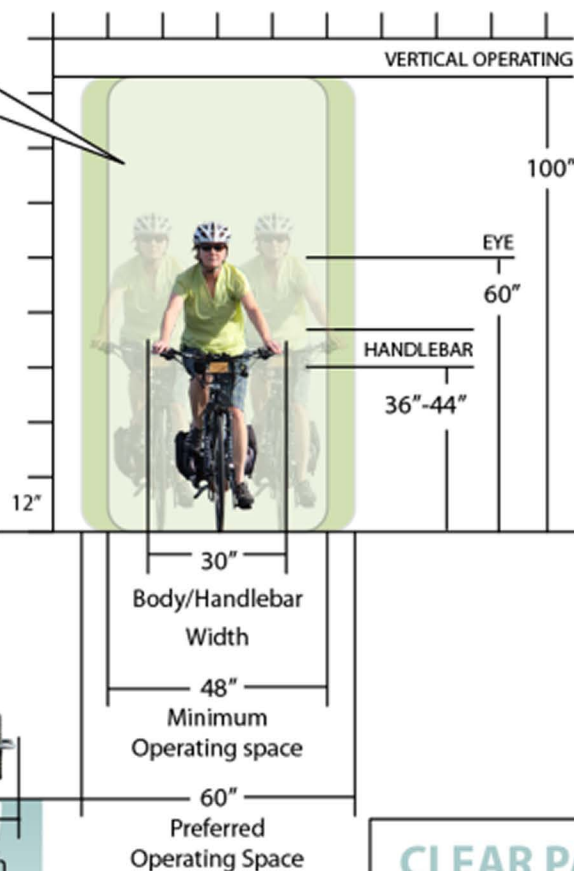
CARGO BIKES & TRAILERS



Many single-track cargo bikes are designed to carry loads much wider than the empty bicycle width.

32"
Vehicle Width

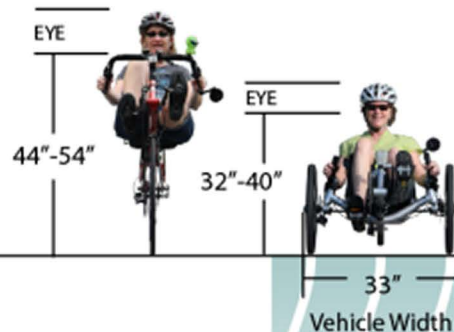
32"
Trailer Width



VANTAGE & VISIBILITY

Recumbent bikes, trikes and hand cycles position their drivers lower than an upright bicycle. Edge obstructions that an upright bicycle driver might be able to see over may require a recumbent driver to move farther left for vantage.

RECUMBENT BIKES & TRIKES



CLEAR PAVEMENT AREA

Triple-track vehicles require clean pavement equal to the width of their minimum operating space.

Bike lanes are problematic because they collect debris and are often barely wider than the bicyclist's operating space.

i am traffic.org

Basic Vehicles & Lanes

Motor Vehicle Width

The largest possible vehicle should be taken into consideration in any bike lane design or when anticipating side-by-side lane sharing.

Maximum legal body width =
102" (8.5')

EXCLUDING lights, mirrors or other required devices which may extend up to 10 inches on each side.

3ft

Minimum
legal passing
clearance a
motorist must
give a bicyclist
in many states.
It is measured
from whatever
device sticks out
the farthest.

3' is inadequate
for large vehicles
and high speed
differentials.

Basic Bicyclist Width

Body/Handlebar Width = 30"
Minimum Operating Space = 48"
Preferred Operating Space = 60"

**Does not include clearance from
fixed or moving objects**

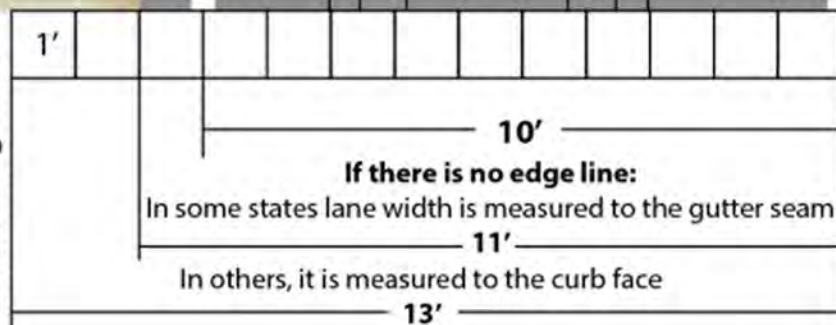
This is the width and operating space determined by AASHTO for a basic, upright bicyclist. There are many diverse widths and heights for human-powered vehicles. This doesn't begin to include their unique characteristics and needs.*

Source: AASHTO Guide for the Development of Bicycle Facilities, 4th Edition (2012)



Gutter pans
vary in
width from
1' - 6'

Measuring Lanes



Lanes widths are measured from the center of the stripes
12'

Travel lanes are intended for vehicles to be operated in the center. While drivers can move to one side of the lane or the other to avoid transient hazards, lanes are not designed to require this behavior with respect to other road users in adjacent lanes. This is important when we discuss bike lane widths.

i am traffic.org

Exclusion Zones

f /iamtrafficorg

An Exclusion zone is an area of vulnerability, where cyclists are at the highest risk of conflicts and crashes. *Successful bicyclists understand and avoid these parts of the road.*

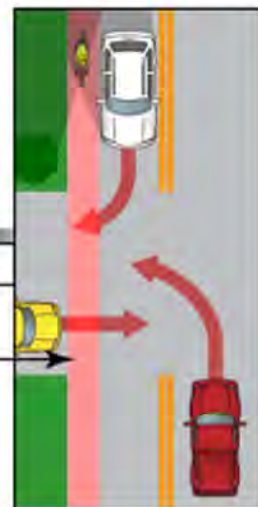


Intersection Conflict Zone

~4ft from the edge* when approaching intersections and driveways
Screened by sight obstructions (vegetation, buildings, poles, parked cars) → **Drive-out risk**
Screened by passing vehicles → **Left Cross risk**
Easy to disregard/misjudge → **Right Hook, Drive-out and Left Cross risk**

Edge Hazard Zone

~2ft from the edge*
Curb face
Uneven pavement/seam
Debris (sticks, leaves, sand, broken glass, auto parts)
Standing water, snow, ice



Close Inlane Passing Zone

6'-13' from the center line or lane line

Door Zone

~11ft from the curb

Strike zone: extension of a car door.

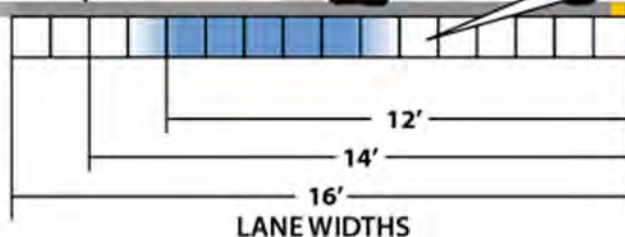
Startle zone: the area in which a suddenly-opened door would startle a bicyclist into automatically swerving into overtaking traffic (minimum of 1'; varies by individual).

Being struck and swerving to avoid a door are both common causes of severe injury and death.



If the lane is not wide enough to share, a bicyclist should leave less than a car width between herself and the lane line to discourage motorists from trying to pass within the lane.

***Bike lanes may increase width of exclusion zone:**
Road debris may extend the full width of a bike lane since that space is not swept by cars. Edge bike lanes increase the risk of the intersection conflict zone by making bicyclists irrelevant.



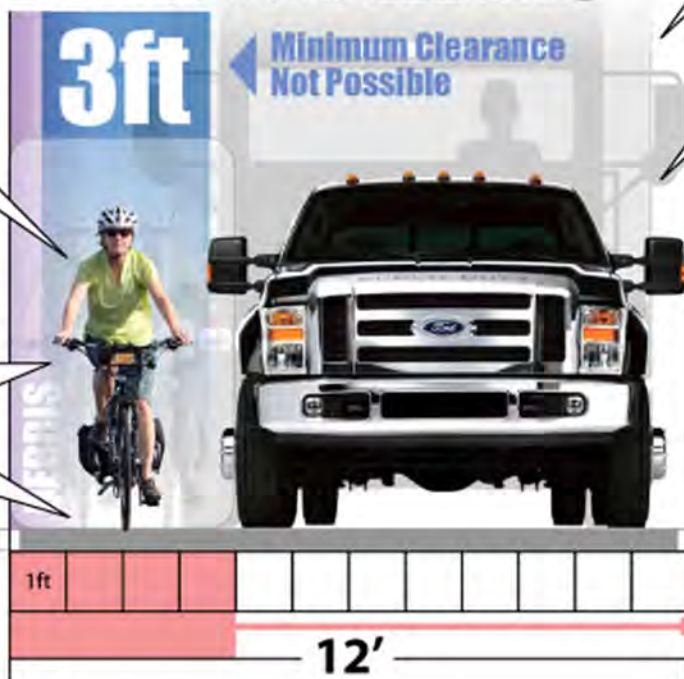
Not shareable with any car, SUV or large truck
Shareable with cars and SUVs, but NOT large trucks
Minimum shareable with cars, SUVs and large trucks

WHY MAY USE FULL LANE **i am traffic.org**

- No steel box.
- No fenders.
- Balancing a single track vehicle.
- Vulnerable to debris, pavement imperfections, and wind blast.
- Passed with the highest speed differentials.

Bicyclist minimum operating space = 48"

No margin for error. No escape from close passes.



Large vehicle mirrors may extend to 120 in.

F-Series Super-Duty Trucks mirror to mirror width = 104.9"



High-vulnerability to Crossing & Turning Conflicts

Best Practice Encouragement for Successful Bicycling

 /iamtrafficorg

Space to avoid debris, pavement imperfections, and wind blast.

A place to go if another driver tries to pass too close.

Preferred Operating Space 60"

Plenty of passing clearance.

3ft



1ft
EXCLUSION ZONE

12'

12'



Successful bicycle driver:

- Same vantage and visibility as the drivers of other vehicles.
- Ability to move as far left as the driver's side of a car in order to see and be seen around obstructions, and prevent other drivers' mistakes.
- Ability to anticipate and prevent most intersection conflicts.

Encouraged with Bikes May Use Full Lane signs and Shared Lane Markings (Sharrows) placed in the center of the lane.

i am traffic.org

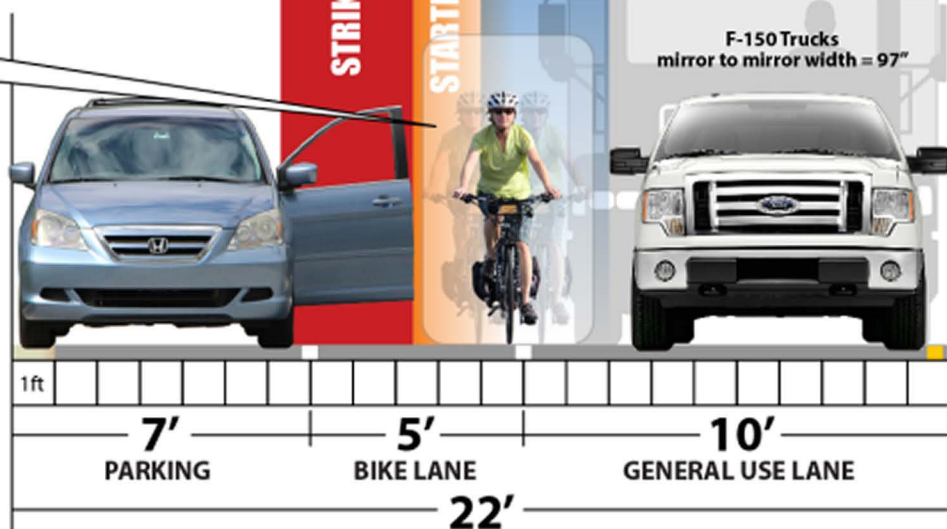
Don't Squeeze Me into the Door Zone

AASHTO says you can do this. Don't.

No space for a bicyclist

- Center of bike lane: direct door strike
- Inside left edge of bike lane: potential to be startled/swerve and inadequate passing clearance
- Inside right edge of general use lane: invites sideswipe
- Centered in general use lane: safe from harm but subject to harassment for not being "in her place."

Bicyclist minimum operating space = 48"



Bicyclists have been killed as a result of this design. Either a door strike or startle swerve can put a bicyclist immediately into the path of overtaking traffic.

Ethical Use of 22ft:

Best Practice

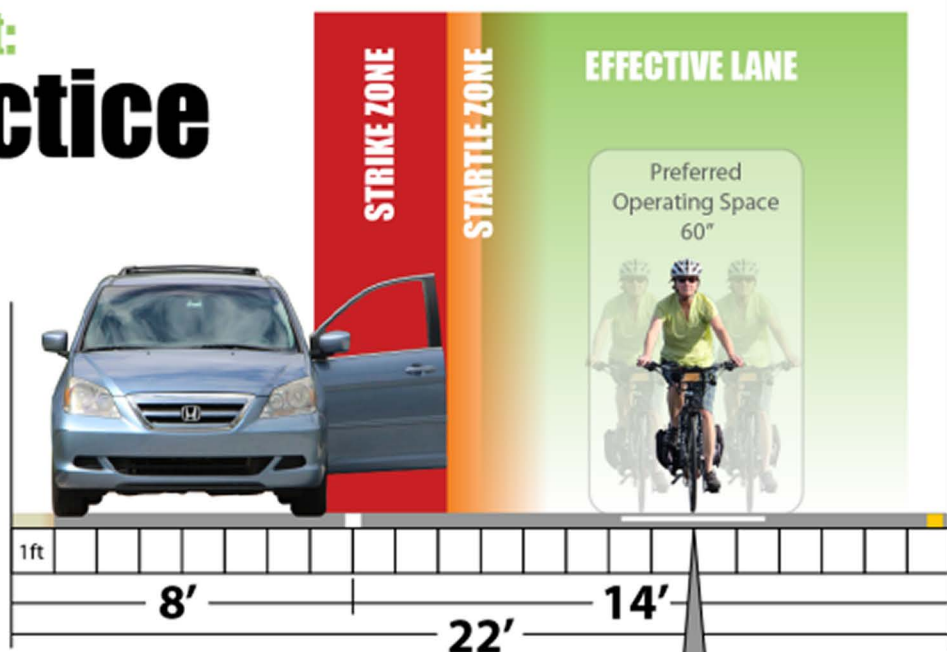
Encouragement for Successful Bicycling

Successful bicycle driver:

- Stays clear of the door zone.
- Positions herself to achieve the same vantage and visibility as other drivers.
- Is not at risk of being doored
- Can prevent most intersection conflicts.

Encouragement:

- Sharrows placed in the center of the effective travel lane (useable space outside the door zone).
- Ideal frequency = 125'
- Bikes May Use Full Lane signs as reinforcement.



EXAMPLE: LONG BEACH, CA



The center of the Sharrow should be placed at 16 feet—the center of the effective lane.

i am traffic.org

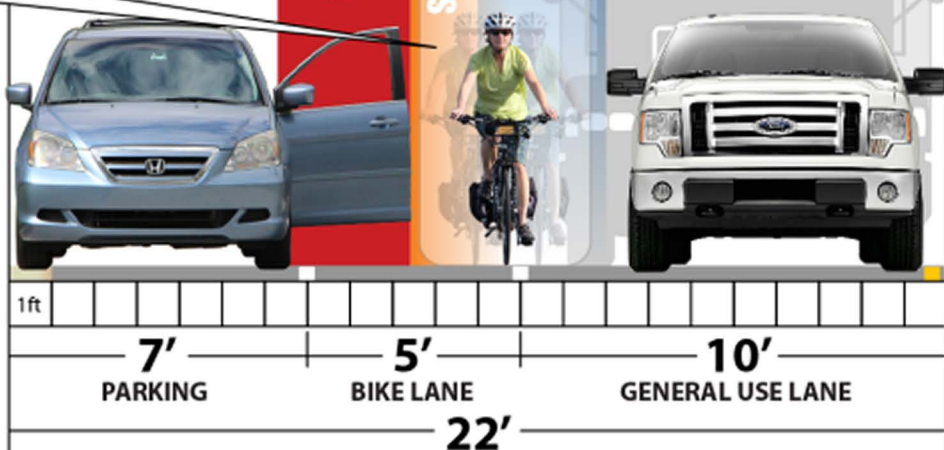
Don't Squeeze Me into the Door Zone

AASHTO says you can do this. Don't.

No space for a bicyclist

- Center of bike lane: direct door strike
- Inside left edge of bike lane: potential to be startled/swerve and inadequate passing clearance
- Inside right edge of general use lane: invites sideswipe
- Centered in general use lane: safe from harm but subject to harassment for not being "in her place."

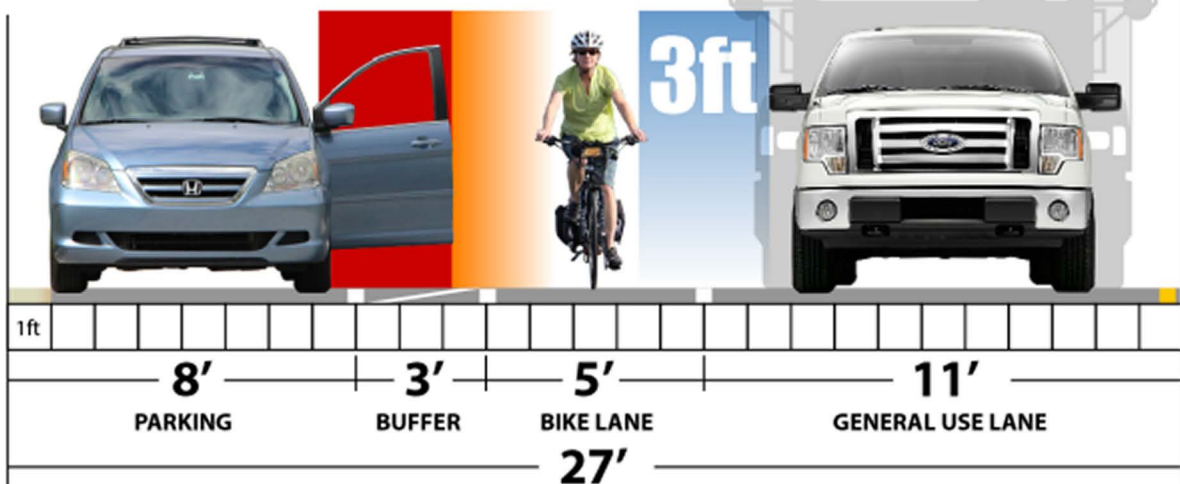
Bicyclist minimum operating space = 48"



Bicyclists have been killed as a result of this design. Either a door strike or startle swerve can put a bicyclist immediately into the path of overtaking traffic.

Best Practice Buffered Bike Lane

An 8ft parking stall makes parking easier and ensures more vehicles will be parked within the stalls.



This bike lane allows bicyclists a space clear of the door zone and close passing hazards.

- Minimum of 16' of width is needed to create the buffered bike lane (8' parking + 3' buffer + 5' bike lane).
- 6' bike lane is preferred to give bicyclists a better buffer from large vehicles in the adjacent lane.
- The parking lane should be discontinued on approach to intersections to provide right turn lanes to the right of the bike lane.

If there is not enough space to provide these minimum dimensions, then full use of a regular travel lane should be encouraged with Bikes May Use Full Lane signs and Shared Lane Markings (Sharrows).

The general use lane should not be less than 11ft or large vehicles will encroach on the bicyclists' operating space.

EXAMPLE: REDONDO BEACH, CA



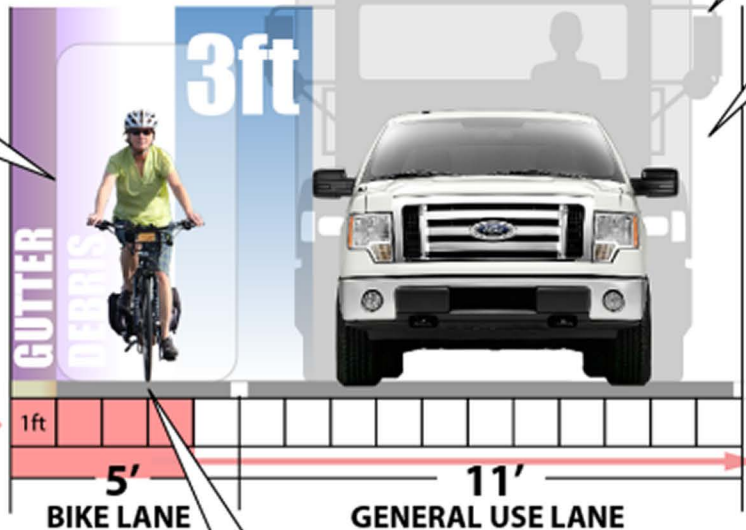
i am traffic.org

Don't Shove Me into the Gutter

Bicyclist minimum operating space = 48"

The gutter (typically 12"-24") is not considered operating space for other vehicles. It should not be for bicycles.

EXCLUSION ZONE



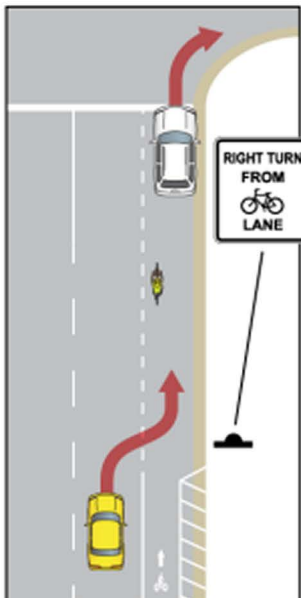
Edge bike lanes provide a much lower level of service than having full use of a regular 10-12ft travel lane.

- Space collects debris causing bicyclists to need more operating space to avoid hazards.

- Large vehicles must move left within their lanes to provide a passing buffer, leaving the bicyclist at the mercy of other drivers.
- Bicyclist suffers decreasing visibility and vantage; increased exposure to conflicts.

Edge bike lanes direct bicyclists to operate in a high-conflict, low-visibility area.

Best Practice Preferential Use Lane



Buffer discontinued and bike lane line dashed 200ft before an intersection. Right-turning motorists must make turns from the bike lane and yield to bikes.

A **Preferential Use Lane** is designed with the same consideration given to bus and HOV lanes.

- Must provide adequate operating space and clearance from vehicles in adjacent lanes.
- Must offer the same vantage as the drivers of other vehicles (outside exclusion zone).
- Intersection design must encourage right turning drivers to merge into—not turn across—the lane.

If there is not enough space to do this, then full use of a regular 10-12ft travel lane should be encouraged.

EXAMPLE: SAN PEDRO, CA



i am traffic.org

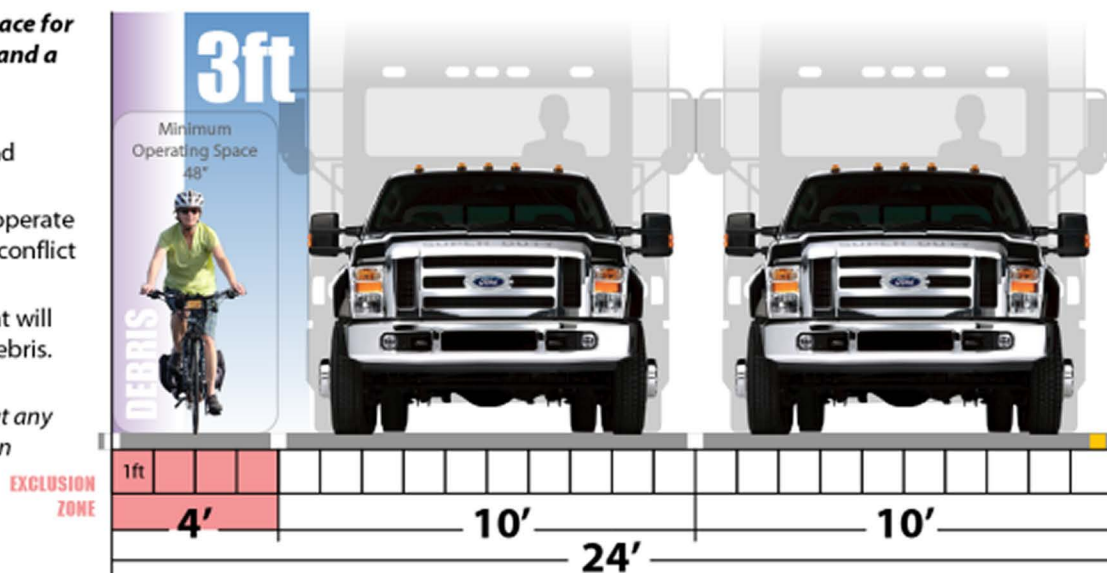
Don't Shove Me into the Gutter

f /iamtrafficorg

24' is not enough space for 2 general use lanes and a bike lane!

- Reduces bicyclist's operating space and passing clearance.
- Forces bicyclist to operate in the intersection conflict exclusion zone.
- Creates a space that will naturally fill with debris.

This is the result of a misguided notion that any bike lane is better than nothing.



10' lanes do not offer adequate buffer between motor vehicles in adjacent lanes. Motorists can't pass a bicyclist safely if there is another vehicle in the left lane.

Ethical Use of 24ft:

Best Practice

Encouragement for Successful Bicycling

Successful bicycle driver:

- Same vantage and visibility as the drivers of other vehicles.
- Ability to move as far left as the driver's side of a car in order to see and be seen around obstructions, and prevent other drivers' mistakes.
- Ability to anticipate and prevent most intersection conflicts.

If the goal is to maintain two same-direction general use lanes in 24', a bicycle lane should not be added.

Full lane use should be encouraged with Bikes May Use Full Lane signs and Shared Lane Markings (Sharrows) placed in the center of the lane.

