Lane Configuration Guide to Support Safe Bicycling and Vehicular Travel

Kentucky Transportation Cabinet
Division of Planning
February 2010

Introduction to the Guide

This guide was established as a quick reference for professionals working in the pavement resurfacing program. It shows potential lane configurations that support a Complete Street concept, allowing for safe, compatible traffic conditions for automobiles and bicycles. It is not meant as an authoritative guide about striping, signing or marking.

Each project will be unique and its design will warrant individual consideration to choose the appropriate typical cross section. In some cases, there may be a need for multiple cross sections along a corridor where the width, parking conditions, or traffic volumes vary.

Guidelines were written to cover most urban and suburban conditions. Travel lane widths vary between 10 and 12 feet. It must be clear that research has shown that there are no negative safety effects and minimal capacity effects by using a 10-foot travel lane (as opposed to 11- or 12-foot), especially on roadways with speeds equal or less than 35mph.

The recommended width of a bicycle lane is five feet from the face of curb. In cases of higher speeds or traffic volumes, or when an uneven joint between the pavement and gutter pan exists, a six-foot bicycle lane is preferred. Next to on-street parking, the recommended width of a bicycle lane is six feet, when possible. It is suggested that exceptions to these recommendations be reviewed by the KYTC Pedestrian and Bicycle Coordinator.

This guide primarily addresses curb and gutter roadway sections. The concepts can also be applied with no or minor modifications on roadways without curb.

On urban and suburban streets and (non-freeway) highways, rumble strips should not be used. Curb drainage inlets should include bicycle-safe grates where the openings are either diagonal or transverse to the direction of travel. Minor widening may be considered on roadways without curbs to achieve safe lane configurations.

On high-speed roadways (urban and rural), it is recommended that paved shoulders be 6' or wider to safely accommodate bicyclists.

Intersections can provide a challenge to incorporating bicycle lanes. This guide provides an example of how to correctly include a bicycle lane when a right-turn lane exists.

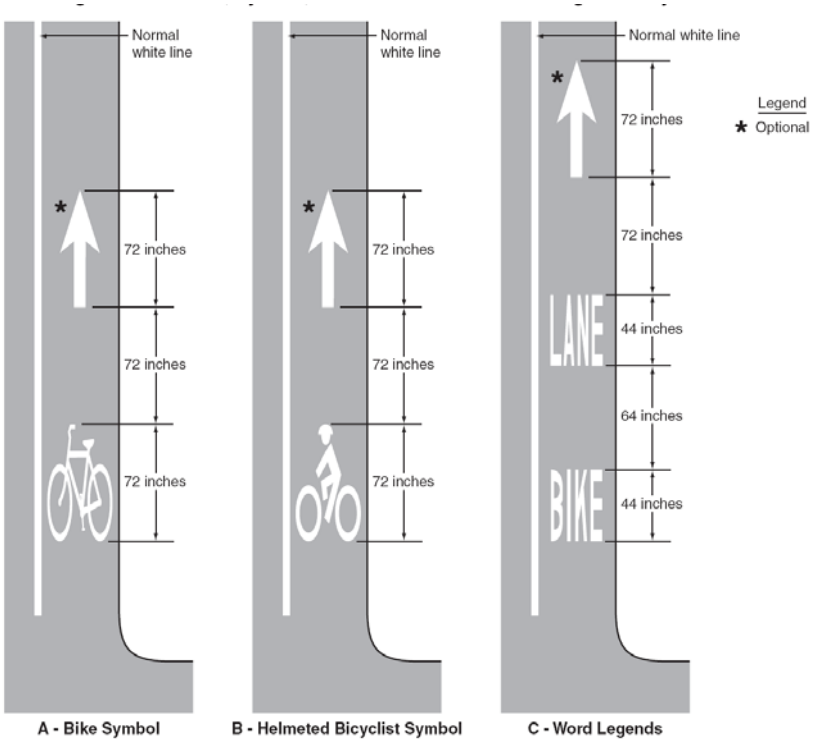
For further information or technical assistance on a project, please contact the Pedestrian and Bicycle Coordinator within the KYTC Division of Planning.

Contents

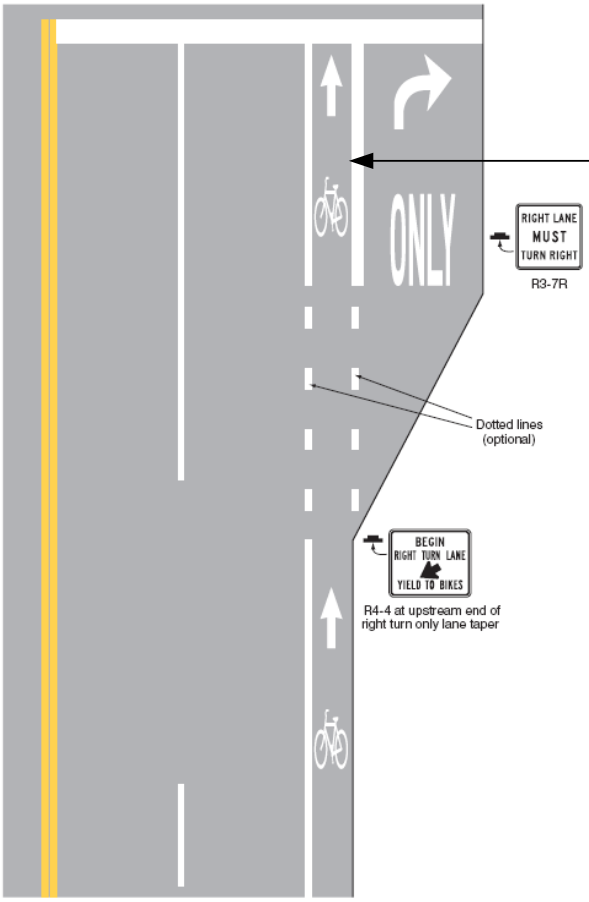

LANE
BIKE
NO
STOPPING
ANY
TIME

Bicycle Lane
Signing & Marking

Requirements for signing and striping are specified within the MUTCD, Part 9, Traffic Control for Bicycle Facilities. In general, bicycle lanes should be marked and signed to clearly signify to drivers and cyclists alike where the bicycle lane starts and stops, parking restrictions, and any restrictions or hazards. There is limited guidance on the longitudinal spacing on the placement of bicycle lane symbols; however, they should be placed near the beginning of the bicycle lane and periodic intervals based on engineering judgment. Share the Road signs should also be considered for roadways with bicycle lanes or shared lanes.



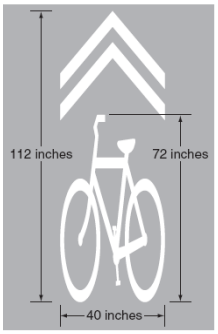
Bicycle Lane with Right Turn Lane



Dashed if width of bicycle lane plus right-turn lane is equal or less than 12'.

In some cases, there may be limited room to fit a full width right-turn lane and bicycle lane. An option to allow for right turns and bicycle lane continuity is to combine the two within the same area. The same layout above would be used with exception that the solid white line normally between the turning lane and bicycle lane is dashed.

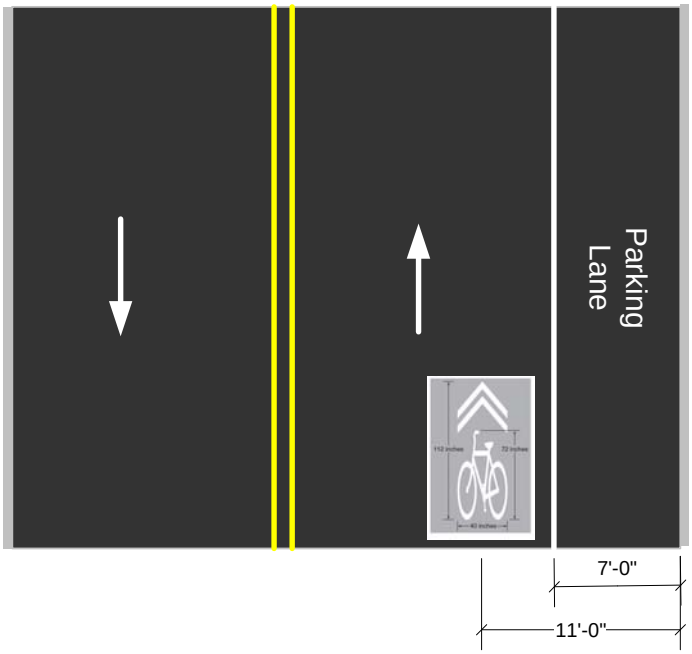
Shared Lane Marking
(aka Sharrow)



The Shared Lane Marking (sharrow) is permitted in the 2009 update of the MUTCD. On roadways with a speed limit of 35 mph or less, there are five reasons on why a sharrow may be used:

1. To assist bicyclists with lateral positioning in a shared lane with on-street parallel parking in order to reduce the chance of a bicyclist's impacting the open door of a parked vehicle.
2. To assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane.
3. To alert road users of the lateral location bicyclists are likely to occupy within the traveled way.
4. To encourage safe passing of bicyclists by motorists
5. To reduce the incidence of wrong-way bicycling.

Placement of the sharrow where 7' wide parking exists should be 11' on center from the face of the curb . When used, the MUTCD specifies that sharrows should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter.



Shoulder Rumble Strips

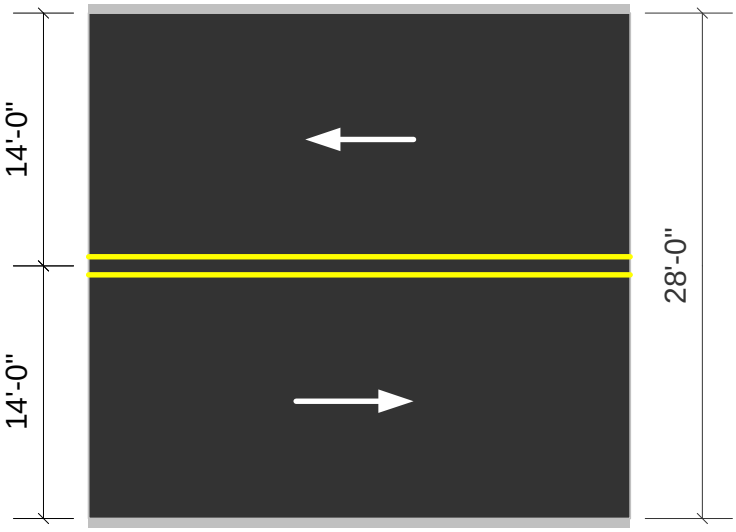
Concerns over the use of shoulder rumble strips have often been expressed by the bicycling community. These concerns primarily state that rumble strips 1) are not safe to be ridden on by cyclists, 2) present a barrier between the traffic lane and shoulder restricting movements to/ from the shoulder and 3) are typically placed in the optimum spot for riding, i.e., next to traffic but outside of the debris collecting on the shoulder.

Special consideration of cyclists should be given when considering whether to incorporate rumble strips on a project. The KYTC standard specification (403.03.08) states, “Unless specified in the plans, do not construct rumble strips on facilities with posted speed limits of 45 mph or less.”

For suburban highways with speed limits higher than 45 mph, the context should be considered on whether rumble strips are truly justified to improve safety. Rumble strips may not be appropriate in locations where driveway density is high, actual travel speeds are low, or high levels of bicycle traffic exist. In cases where rumble strips are necessary, it is recommended to place the rumble strip as close to the edge of travel lane as possible.

28' Cross Section
Curb & Gutter
No Parking

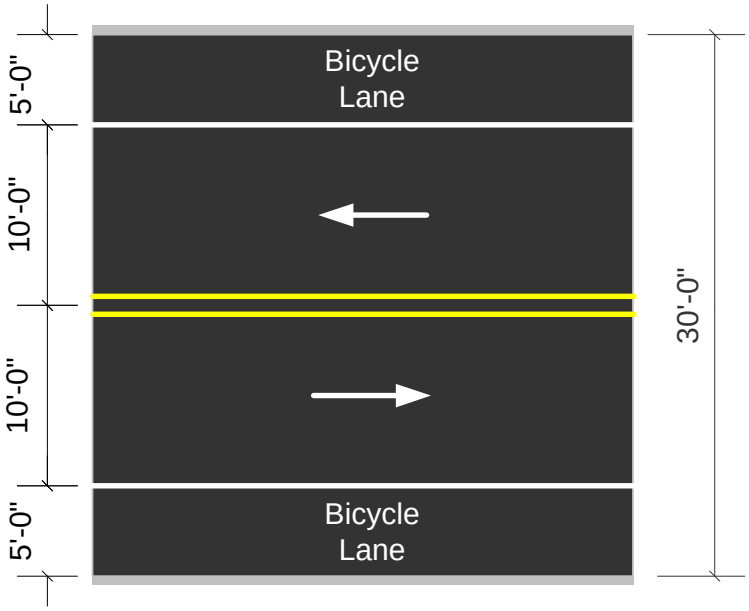
SHARED LANES



Driving lane may include up to 2' gutter pan.

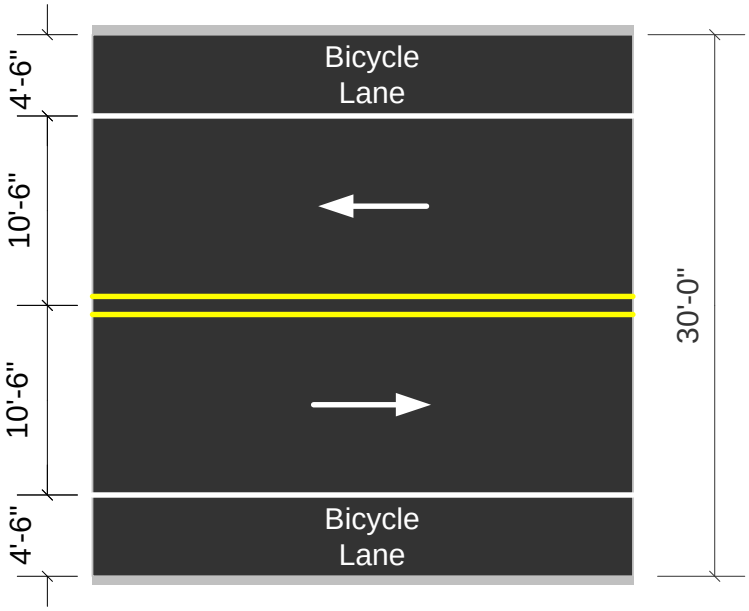
30' Cross Section
Curb & Gutter
No Parking

BICYCLE LANES



Option A
(Preferred)

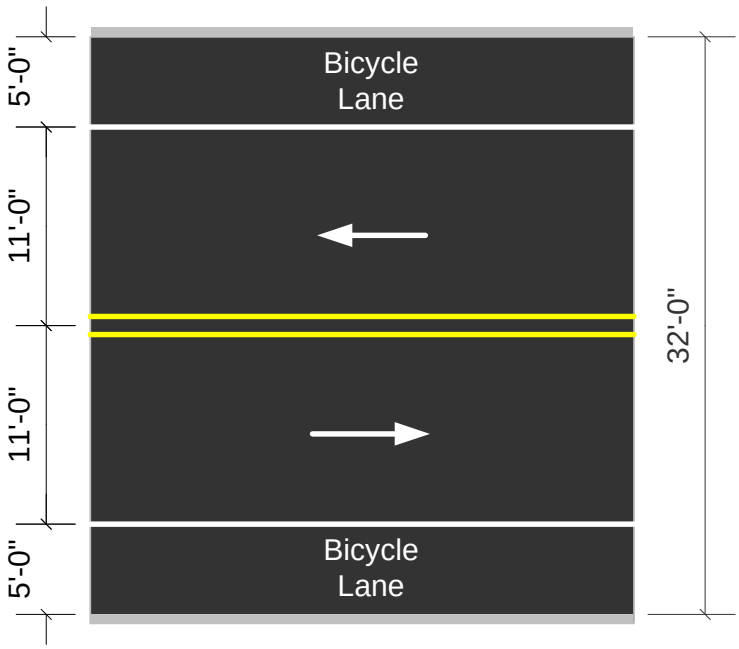
Bicycle lane may include up to 2' gutter pan.



Option B

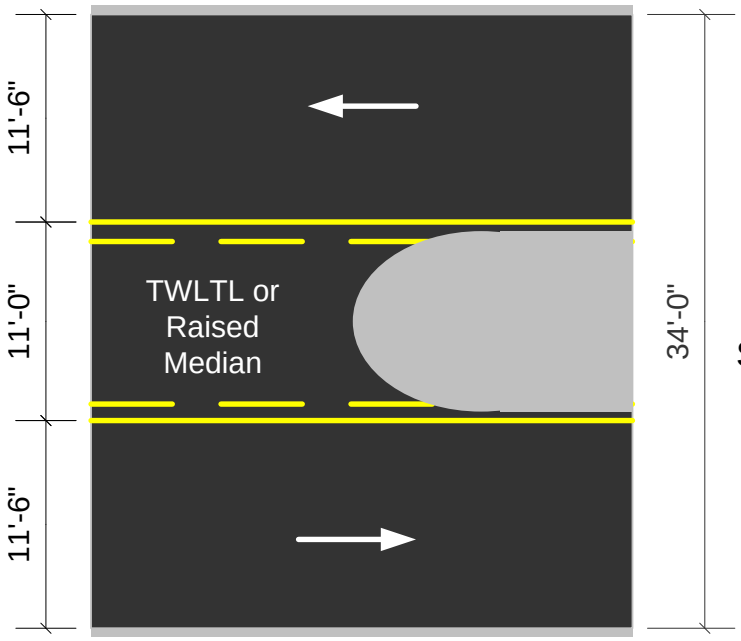
32' Cross Section
Curb & Gutter
No Parking

BICYCLE LANES



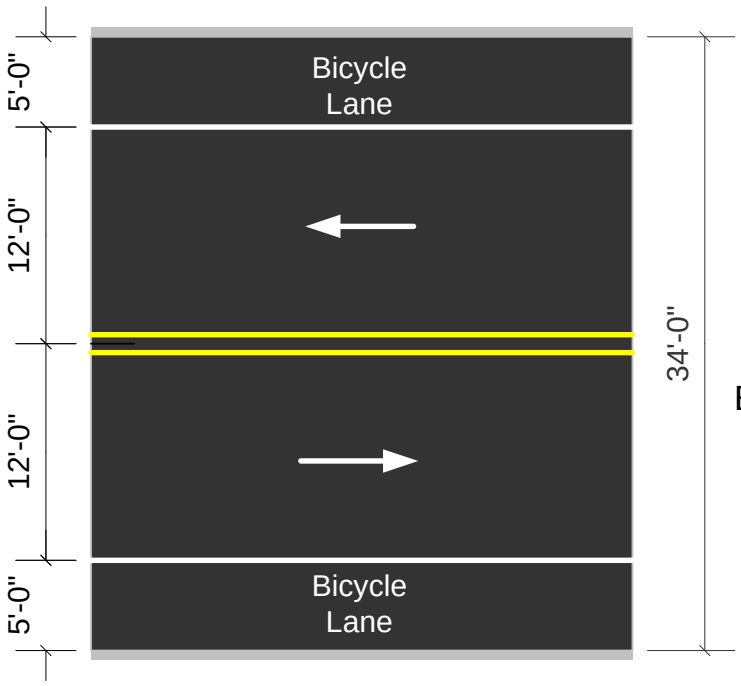
Bicycle lane may include up to 2' gutter pan.

34' Cross Section
Curb & Gutter
No Parking



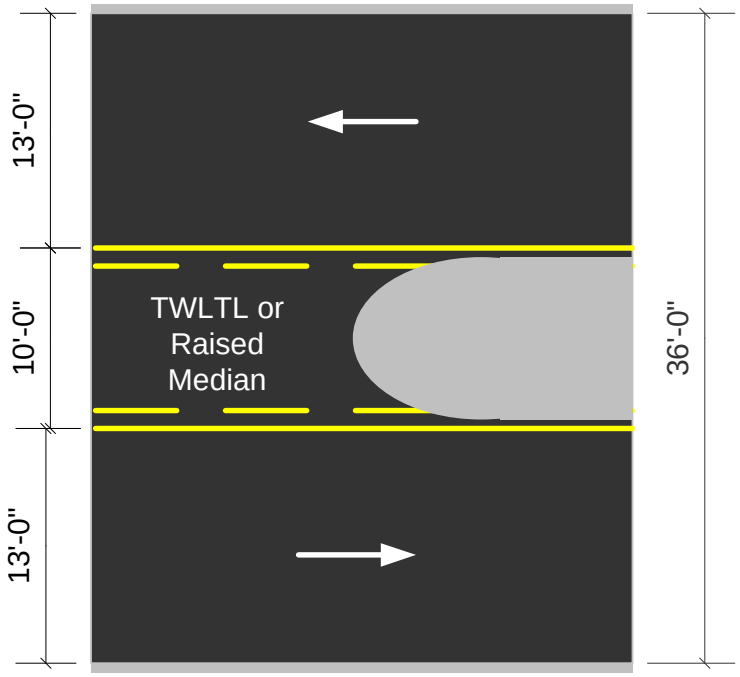
SHARED LANES

Bicycle lane/Driving lane may include up to 2' gutter pan.
Travel lane width next to median may include a gutter pan.



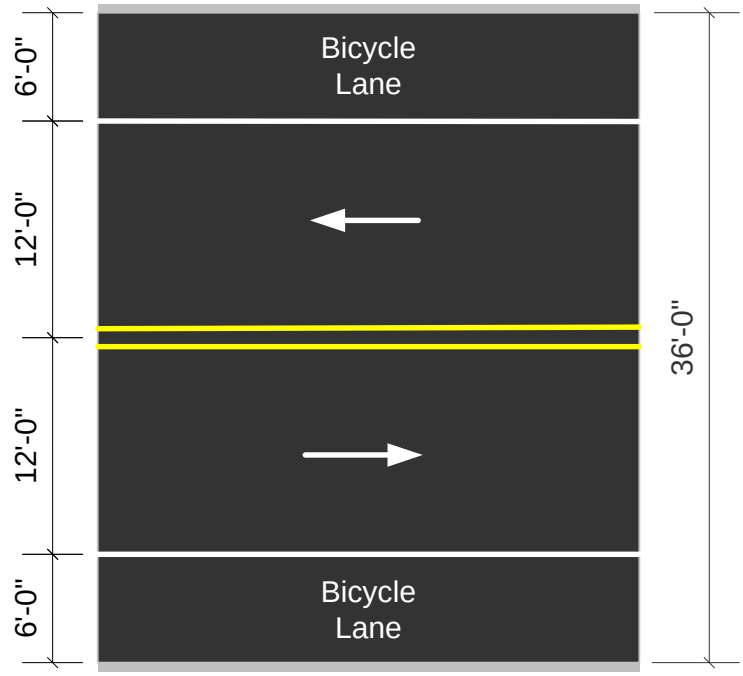
BICYCLE LANES

36' Cross Section
Curb & Gutter
No Parking



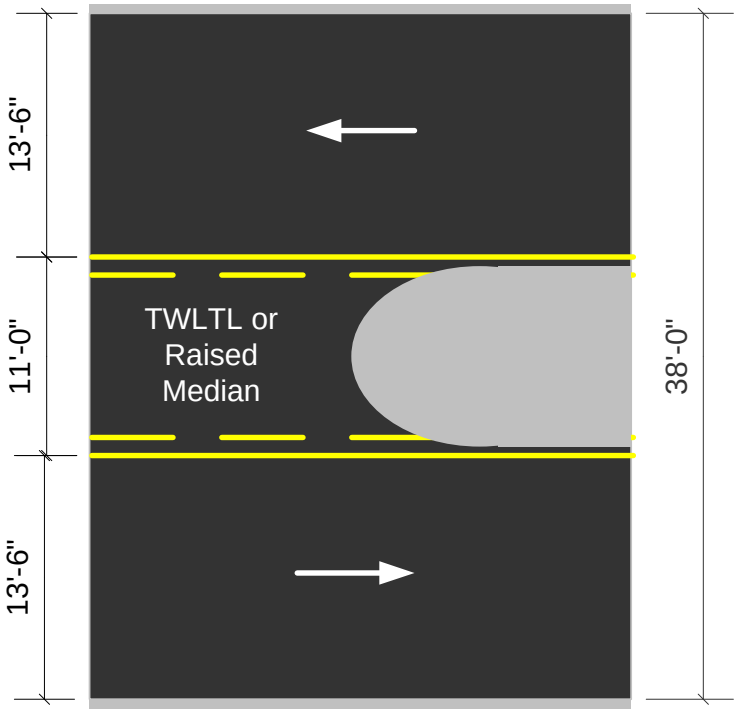
SHARED LANES

Bicycle lane/Driving lane may include up to 2' gutter pan.
Travel lane width next to median may include a gutter pan.



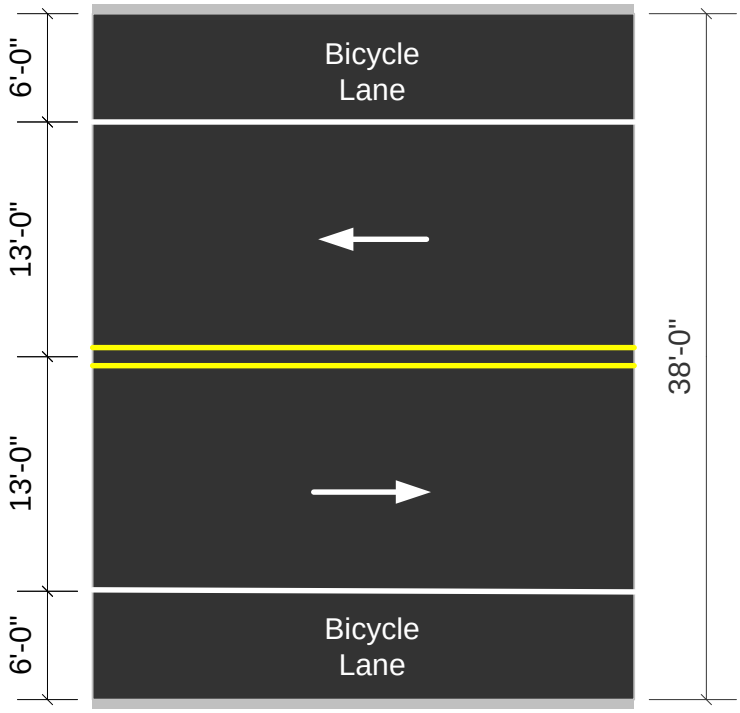
BICYCLE LANES

38' Cross Section
Curb & Gutter
No Parking



SHARED LANES

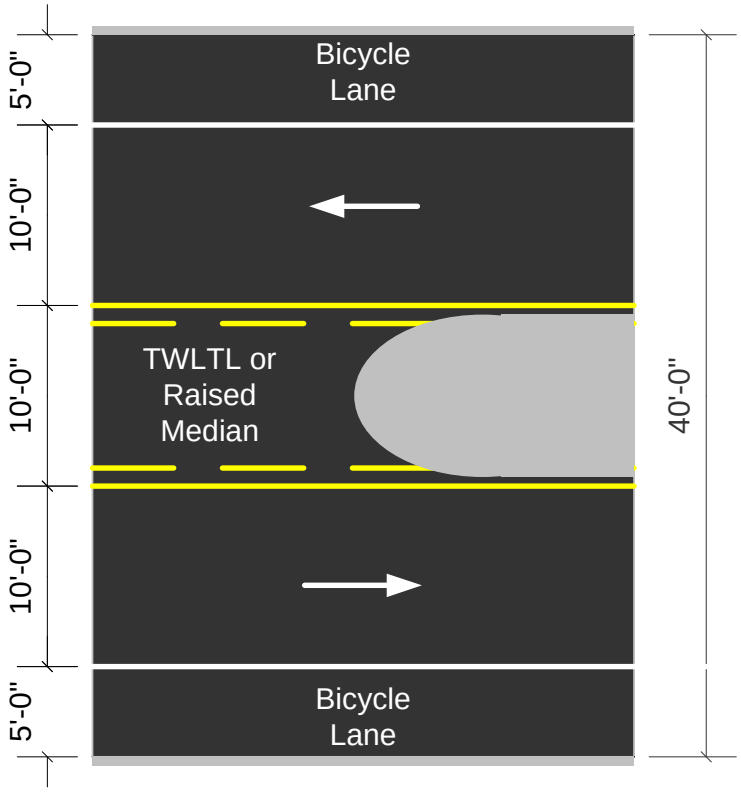
Bicycle lane/Driving lane may include up to 2' gutter pan.
Travel lane width next to median may include a gutter pan.



BICYCLE LANES

40' Cross Section
Curb & Gutter
No Parking

BICYCLE LANES



*** Bicycle lane may include up to 2' gutter pan if total width is 5'-0"**
**** Travel lane width next to median may include a gutter pan.**

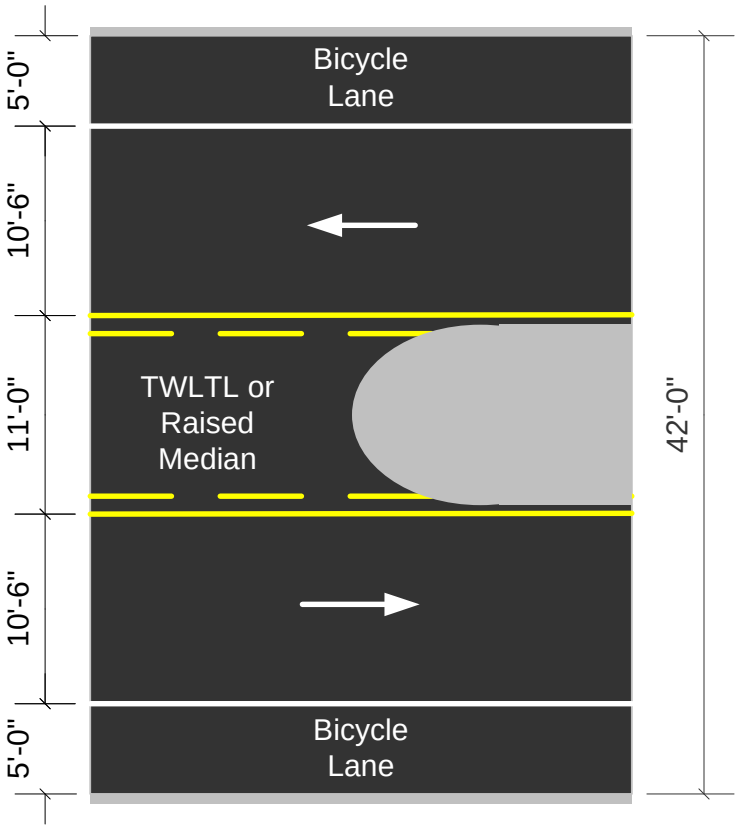
Optional Configuration

Total = Bicycle Lane* + Travel Lane** + Median Width + Travel Lane** + Bicycle Lane*

40' = 4.5' + 10' + 11' + 10' + 4.5'

42' Cross Section
Curb & Gutter
No Parking

BICYCLE LANES



*** Bicycle lane may include up to 2' gutter pan.**
**** Travel lane width next to median may include a gutter pan.**

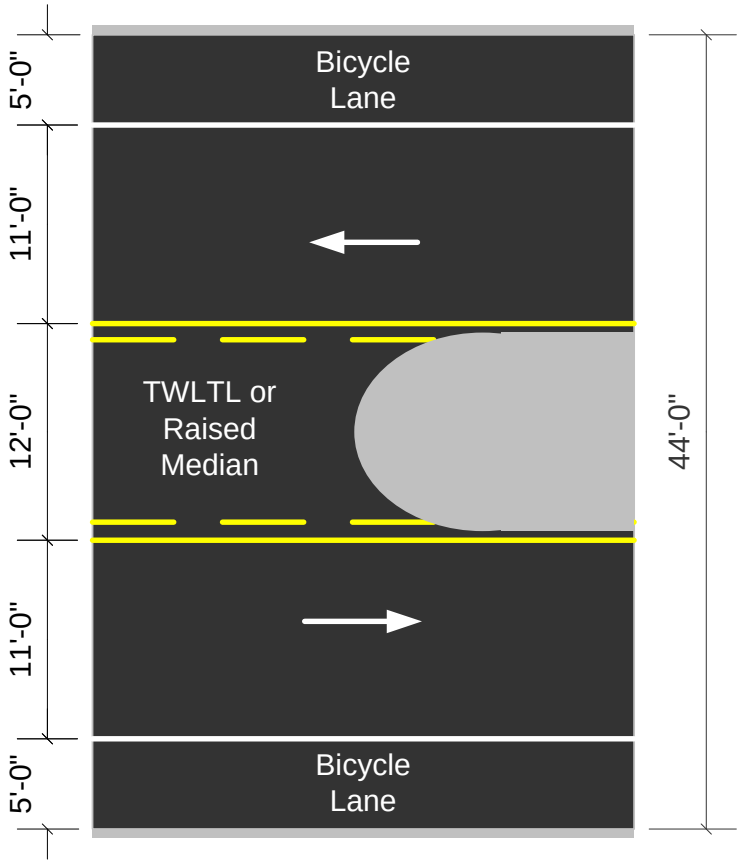
Optional Configuration

Total = Bicycle Lane* + Travel Lane** + Median Width
+ Travel Lane** + Bicycle Lane*

42' = 5.5' + 10.5' + 10' + 10.5' + 5.5'

44' Cross Section
Curb & Gutter
No Parking

BICYCLE LANES



*** Bicycle lane may include up to 2' gutter pan.**
**** Travel lane width next to median may include a gutter pan.**

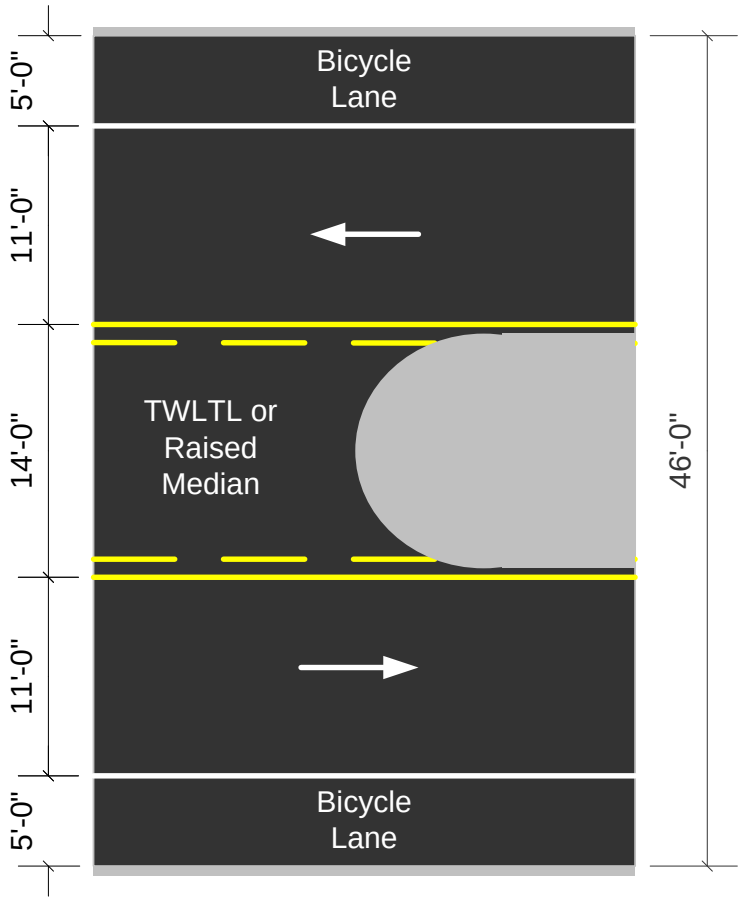
Optional Configurations

Total = Bicycle Lane* + Travel Lane + Median Width
+ Travel Lane + Bicycle Lane*

44' = 5.5' + 10.5' + 12' + 10.5' + 5.5'
44' = 5.5' + 11' + 11' + 11' + 5.5'
44' = 6' + 10' + 12' + 10' + 6'

46' Cross Section
Curb & Gutter
No Parking

BICYCLE LANES



*** Bicycle lane may include up to 2' gutter pan.**
**** Travel lane width next to median may include a gutter pan.**

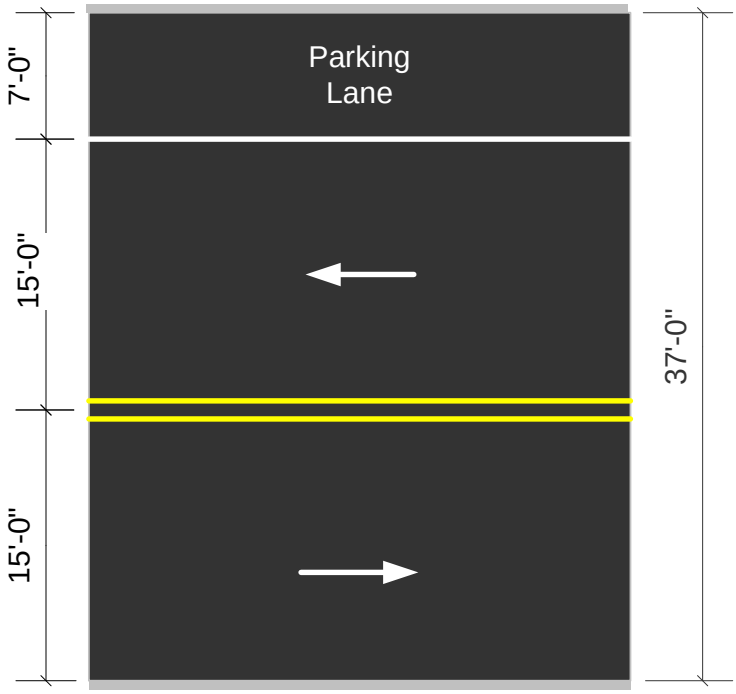
Optional Configurations

Total = Bicycle Lane* + Travel Lane** + Median Width + Travel Lane** + Bicycle Lane*

46' = 5.5' + 11' + 13' + 11' + 5.5'
46' = 6' + 11' + 12' + 11' + 6'

34'-38' Cross Section
Curb & Gutter
Parking 1 Side

SHARED LANES

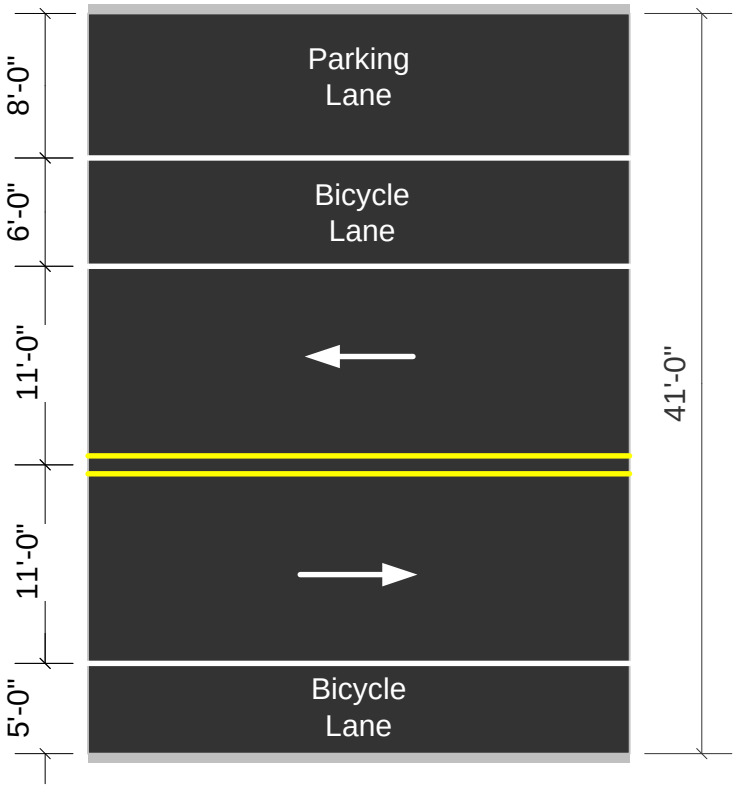


Total = Parking Lane* + Travel Lane + Travel Lane*
34' = 7' + 13.5' + 13.5'
35' = 7.' + 14' + 14'
36' = 7' + 14.5' + 14.5'
37' = 7' + 15' + 15'
38' = 7' + 15.5' + 15.5'

*** Parking lane/Driving lane may include up to 2' gutter pan.**

37'-44' Cross Section
Curb & Gutter
Parking 1 Side

BICYCLE LANES



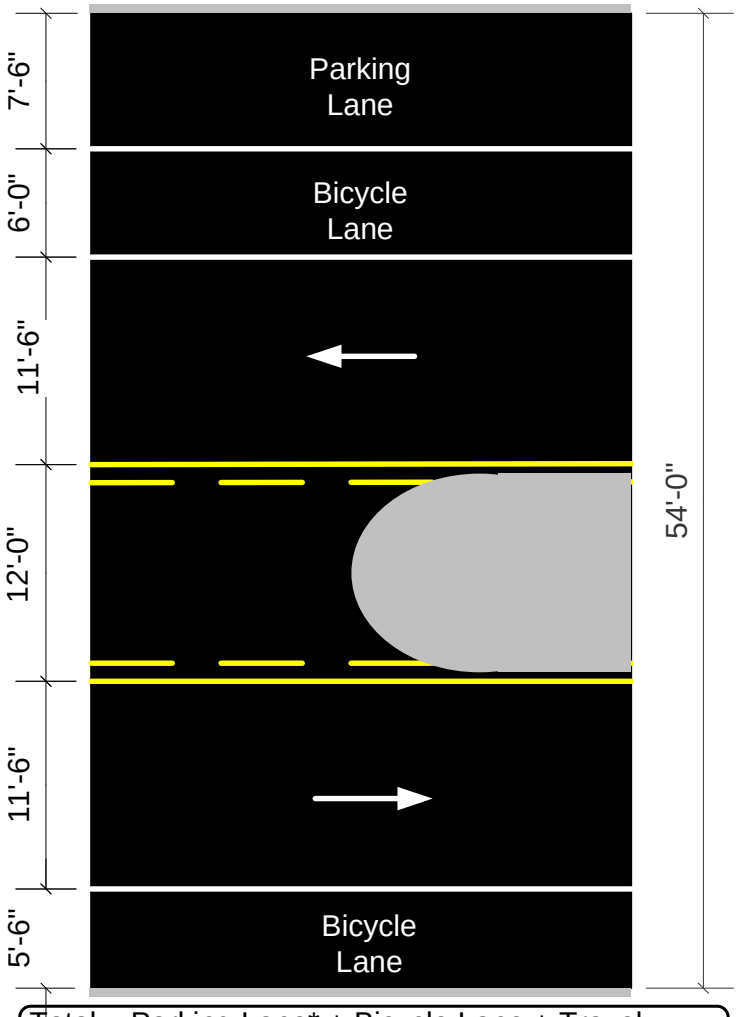
Total = Parking Lane* + Bicycle Lane +
Travel Lane + Travel Lane + Bicycle Lane*

37' = 7' + 5' + 10' + 10 + 5'
38' = 7' + 6' + 10' + 10' + 5'
39' = 7' + 6' + 10.5' + 10.5' + 5'
40' = 7' + 6' + 11' + 11' + 5'
41' = 8' + 6' + 11' + 11' + 5'
42' = 8' + 6' + 11' + 11' + 6'
43' = 8' + 6' + 11.5' + 11.5' + 6'
44' = 8' + 6' + 12' + 12' + 6'

*** Parking lane/Bicycle lane may include up to 2' gutter pan.**

47'-57' Cross Section
Curb & Gutter
Parking 1 Side
TWLTL or Median

BICYCLE LANES



Total = Parking Lane* + Bicycle Lane + Travel Lane** + TWLTL + Travel Lane** + Bicycle Lane*

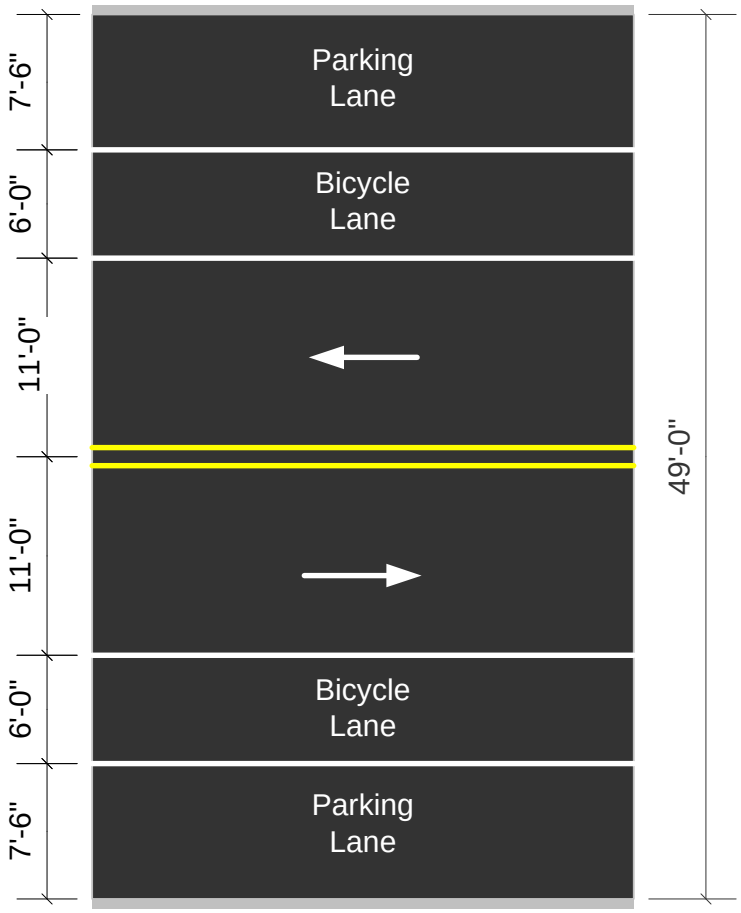
47' = 7' + 5' + 10' + 10' + 10' + 5'
48' = 7' + 6' + 10' + 10' + 10' + 5'
49' = 7' + 6' + 10' + 11' + 10' + 5'
50' = 7' + 6' + 10.5' + 11' + 10.5' + 5'
51' = 7' + 6' + 10.5' + 12' + 10.5' + 5'
52' = 7' + 6' + 11' + 12' + 11' + 5'
53' = 7.5' + 6' + 11' + 12' + 11' + 5.5'
54' = 7.5' + 6' + 11.5' + 12' + 11.5' + 5.5'
55' = 7.5' + 6' + 11.5' + 13' + 11.5' + 5.5'
56' = 7.5' + 6' + 12' + 13' + 12' + 5.5'
57' = 7.5' + 6' + 12' + 14' + 12' + 5.5'

*** Parking/bicycle lane may include up to 2' gutter pan.**

**** Travel lane width next to median may include a gutter pan.**

45'-53' Cross Section
Curb & Gutter
Parking 2 Sides

BICYCLE LANES



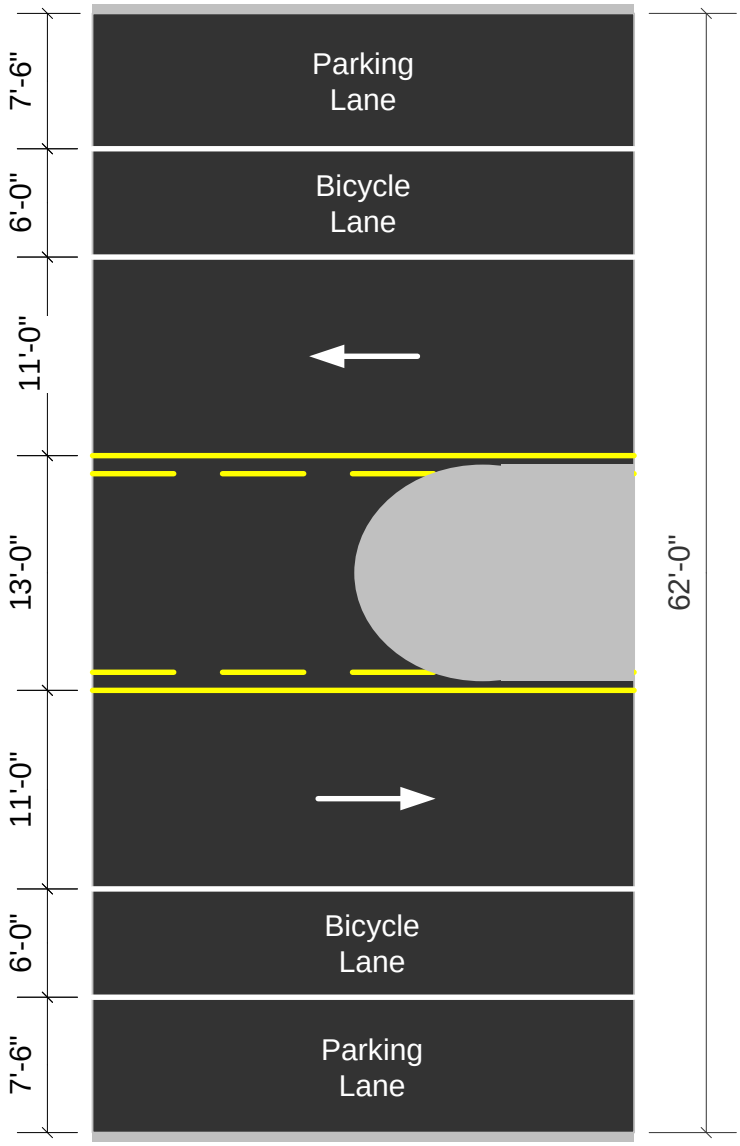
*** Parking lane may include up to 2' gutter pan.**

Total = Parking Lane* + Bicycle Lane + Travel Lane + Travel Lane + Bicycle Lane + Parking Lane*

45' = 7' + 5.5' + 10' + 10' + 5.5' + 7'
46' = 7' + 6' + 10' + 10' + 6' + 7'
47' = 7' + 6' + 10.5' + 10.5' + 6' + 7'
48' = 7' + 6' + 11' + 11' + 6' + 7'
49' = 7.5' + 6' + 11' + 11' + 6' + 7.5'
50' = 7.5' + 6' + 11.5' + 11.5' + 6' + 7.5'
51' = 7.5' + 6' + 12' + 12' + 6' + 7.5'
52' = 8' + 6' + 12' + 12' + 6' + 8'
53' = 8' + 6' + 12.5' + 12.5' + 6' + 8'

54'-65' Cross Section
Parking 2 Sides
Curb & Gutter
TWLTL or Median

BICYCLE LANES



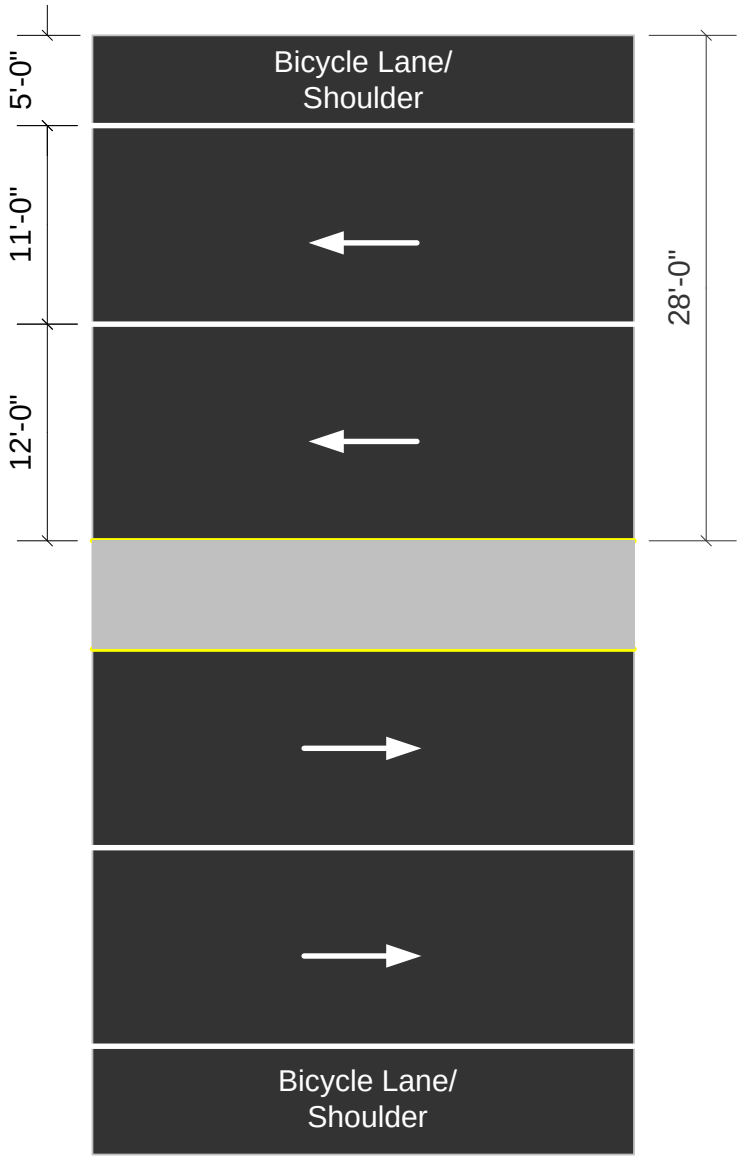
Total = Parking Lane* + Bicycle Lane + Travel Lane** + TWLTL + Travel Lane** + Bicycle Lane + Parking Lane*

54' = 7' + 5' + 10' + 10' + 10' + 5' + 7'
55' = 7' + 5.5' + 10' + 10' + 10' + 5.5' + 7'
56' = 7' + 5.5' + 10' + 11' + 10' + 5.5' + 7'
57' = 7' + 6' + 10' + 11' + 10' + 6' + 7'
58' = 7' + 6' + 10.5' + 11' + 10.5' + 6' + 7'

59' = 7' + 6' + 11' + 11' + 11' + 6' + 7'
60' = 7.5' + 6' + 11' + 11' + 11' + 6' + 7.5'
61' = 7.5' + 6' + 11' + 12' + 11' + 6' + 7.5'
62' = 7.5' + 6' + 11' + 13' + 11' + 6' + 7.5'
63' = 7.5' + 6' + 11' + 14' + 11' + 6' + 7.5'
64' = 7.5' + 6' + 11.5' + 14' + 11.5' + 6' + 7.5'
65' = 7.5' + 6' + 12' + 14' + 12' + 6' + 7.5'

*** Parking Lane may include up to 2' gutter pan. ** Travel lane width next to median may include a gutter pan.**

27'-36' Half Cross Section
No Parking
Existing Fixed Median
BICYCLE LANES/SHOULDERS



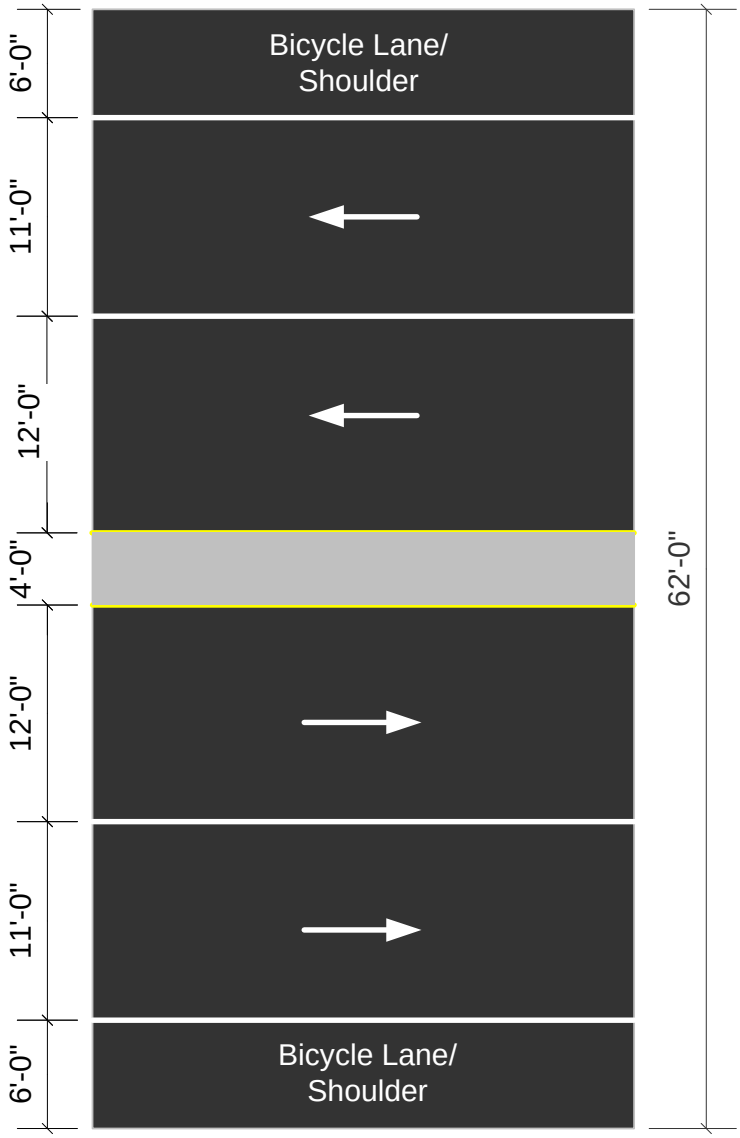
Half Width = Bicycle Lane + Outside Travel Lane + Inside Travel Lane*

27' = 5' + 10' + 12'
28' = 5' + 11' + 12'
29' = 5' + 11' + 13'
30' = 6' + 11' + 13'

31' = 6' + 12' + 13'
32' = 6' + 12' + 14'
33' = 7' + 12' + 14'
34' = 8' + 12' + 14'
35' = 9' + 12' + 14'
36' = 10' + 12' + 14'

*** Travel lane width next to median may include a gutter pan**

56'-66' Cross Section
No Parking
New or Reconstructed Median
BICYCLE LANES/SHOULDERS



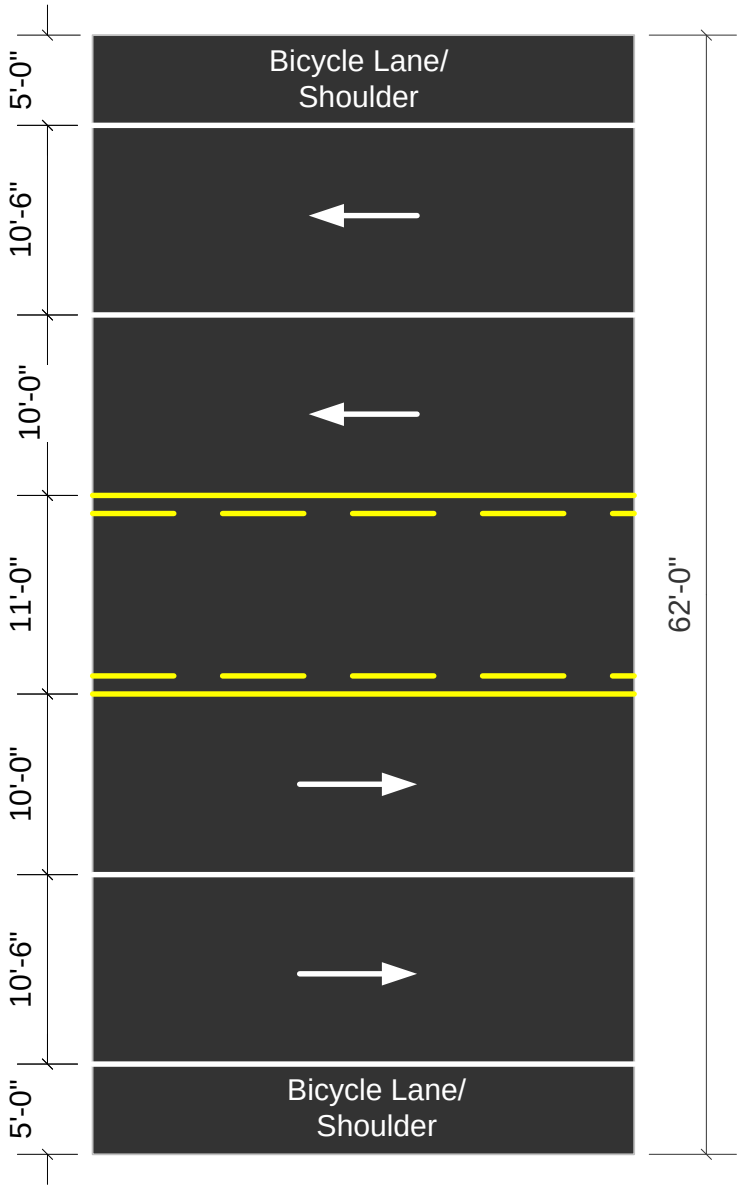
Total = Bicycle Lane + Travel Lane + Travel Lane* + Median + Travel Lane* + Travel Lane + Bicycle Lane

56' = 5' + 10' + 12' + 2' + 12' + 10.5' + 5'
57' = 5' + 10' + 12' + 3' + 12' + 10' + 5'
58' = 5' + 10' + 12' + 4' + 12' + 10' + 5'
59' = 5.5' + 10' + 12' + 4' + 12' + 10' + 5.5'

60' = 6' + 10' + 12' + 4' + 12' + 10' + 6'
61' = 6' + 10.5' + 12' + 4' + 12' + 10.5' + 6'
62' = 6' + 11' + 12' + 4' + 12' + 11' + 6'
63' = 6' + 11' + 12.5' + 4' + 12.5' + 11' + 6'
64' = 6' + 11' + 13' + 4' + 13' + 11' + 6'
65' = 6' + 11' + 13' + 5' + 13' + 11' + 6'
66'** = 6' + 11' + 13' + 6' + 13' + 11' + 6'

*** Travel lane width next to median may include a gutter pan**
**** For widths greater than 66', increase the median width to size.**

60'-76' Cross Section
No Parking
TWLTL
BICYCLE LANES/SHOULDERS



Total = Bicycle Lane + Travel Lane + Travel Lane + TWLTL + Travel Lane + Travel Lane + Bicycle Lane

60' = 5' + 10' + 10' + 10' + 10' + 10' + 5'
61' = 5' + 10' + 10' + 11' + 10' + 10' + 5'
62' = 5' + 10.5' + 10' + 11' + 10' + 10.5' + 5'
63' = 5' + 11' + 10' + 11' + 11' + 10' + 5'
64' = 5' + 11' + 10' + 12' + 10' + 11' + 5'
65' = 5' + 11' + 10.5' + 12' + 10.5' + 11' + 5'
66' = 5' + 11' + 11' + 12' + 11' + 11' + 5'

67' = 5.5' + 11' + 11' + 12' + 11' + 11' + 5.5'
68' = 6' + 11' + 11' + 12' + 11' + 11' + 6'
69' = 6' + 11' + 11' + 13' + 11' + 11' + 6'
70' = 6' + 11' + 11' + 14' + 11' + 11' + 6'
71' = 6' + 11' + 11' + 15' + 11' + 11' + 6'
72' = 6' + 11' + 11' + 16' + 11' + 11' + 6'
73' = 6' + 11.5' + 11' + 16' + 11' + 11.5' + 6'
74' = 6' + 11.5' + 11.5' + 16' + 11'.5 + 11.5' + 6'
75' = 6' + 12' + 11.5' + 16' + 11.5' + 12' + 6'
76' = 6' + 12' + 12' + 16' + 12' + 12' + 6'