

DRAFT



City of San Francisco Bicycle Plan Update: Supplemental Design Guidelines

September, 2003

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Table of Contents

Introduction	1
Bike Lane Designs	
1A. Bike Lane Design Guidelines	3
1B. Bike Lane Designs for Two-way Streets	4
1C. Bike Lane Designs for One-way Streets	5
2. Colored Bike Lane Treatment Through a Conflict Area	6
Bicycles and Transit	
3A. Bicycles and Transit Policy	7
3B. Transit Stop Striping: Shared Bus/Bicycle Lane	8
4A. Transit Stop Striping: Far Side Bus Zone	9
4B. Transit Stop Striping: Near Side Bus Zone	10
Additional Bicycle Facility Treatments	
5. Contra-flow Bike Lane	11
6. Bicycle Streaming Lane (Bike Box)	12
7. Left-side Bike Lane on One-way Street with Bicycle Streaming Lane	13
8. Left-side Bike Lane on One-way Street: Two Bike Lane Option	14
9. Bike Lane with Parking: Diagonal Striping Buffer	15
10. One-way Bike Path (Physically-separated Lane)	16
11A. Combined Parking Lane and Bike Lane (Floating Bike Lane with Striping)	17
11B. Combined Parking Lane with Bike Lane (Shared-lane Arrow)	18
12. Bicycle Boulevard	19
13. Class I Path Crossing of Roadway	20
14A. Bike-only Left-turn Pockets: Scenario 1	21
14B. Bike-only Left-turn Pockets: Scenario 2	22
15. Shared Bike Lane/Right-turn Pocket	23
16. Bike Lane Through a Complex Intersection	24
17. Bike Lanes Adjacent to Back-In Diagonal Parking	25
18. Shared-lane Arrow Marking	26
19A. Double Turn Lanes: Shared Lane	27
19B. Double Turn Lanes: "Ghost" Bike Lane	28
Bicycle Facility Signage and Signals	
20. Supplementary Bicycle Facility Signs and Signals	29

Introduction

The City of San Francisco has been working for the past decade to implement on-street bikeway projects in order to encourage cycling, improve safety, and improve the quality of bicycling so that it becomes an integral part of daily life. Because San Francisco is a completely built-out urban environment, almost all projects involve retrofitting existing streets and intersections. San Francisco has challenging topography, a high demand for on-street parking, extremely high volumes of transit and motor vehicle traffic, and many complex situations. When looking to implement bike lanes or other improvements on San Francisco's streets, the standard design manuals offer limited solutions for San Francisco.

The San Francisco Supplemental Design Guidelines are a compliment to the 2003 San Francisco Bicycle Plan Update. These design concepts are intended to supplement the bikeway design guidelines for typical bikeway situations provided in Caltrans Highway Design Manual (HDM) Chapter 1000, the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, and the Manual of Uniform Traffic Control Devices (MUTCD) 2000, Part 9 Traffic Controls for Bicycle Facilities. These treatments draw upon creative solutions in use in other locations in California, other States, and European cities. These designs are conceptual at this stage, and must be reviewed further before being applied to actual situations. It should be noted that for several of the designs, more than one option is presented. In these cases, ultimately one preferred design should be selected. Strong design guidelines will allow the City of San Francisco to improve the quality of the bicycle network by applying the highest standard of bicycle safety, comfort, and convenience.

This document does not attempt to replace material covered within the HDM, AASHTO Guidelines, or MUTCD, but rather, to clarify local treatments of bicycle facility design. This document will be approved by the Interdepartmental Staff Committee on Traffic and Transportation (ISCOTT) and represents the common interests and support of the City and County of San Francisco's departments and agencies. Caltrans HDM Chapter 1000, Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, and the Manual of Uniform Traffic Control Devices (MUTCD) should be referenced and the use of this document should be supplemental as the name implies.

As part of the Master Plan, the City will be applying the design solutions found in the Supplemental Design Guide to individual sites. These sites were selected as high priorities for improvements based on safety, connectivity, potential cycling usage, and popular support criteria. Once implemented, each site will be carefully monitored, at which time the City will assess the design and make recommendations regarding the its further application.

Clarifications on Terminology

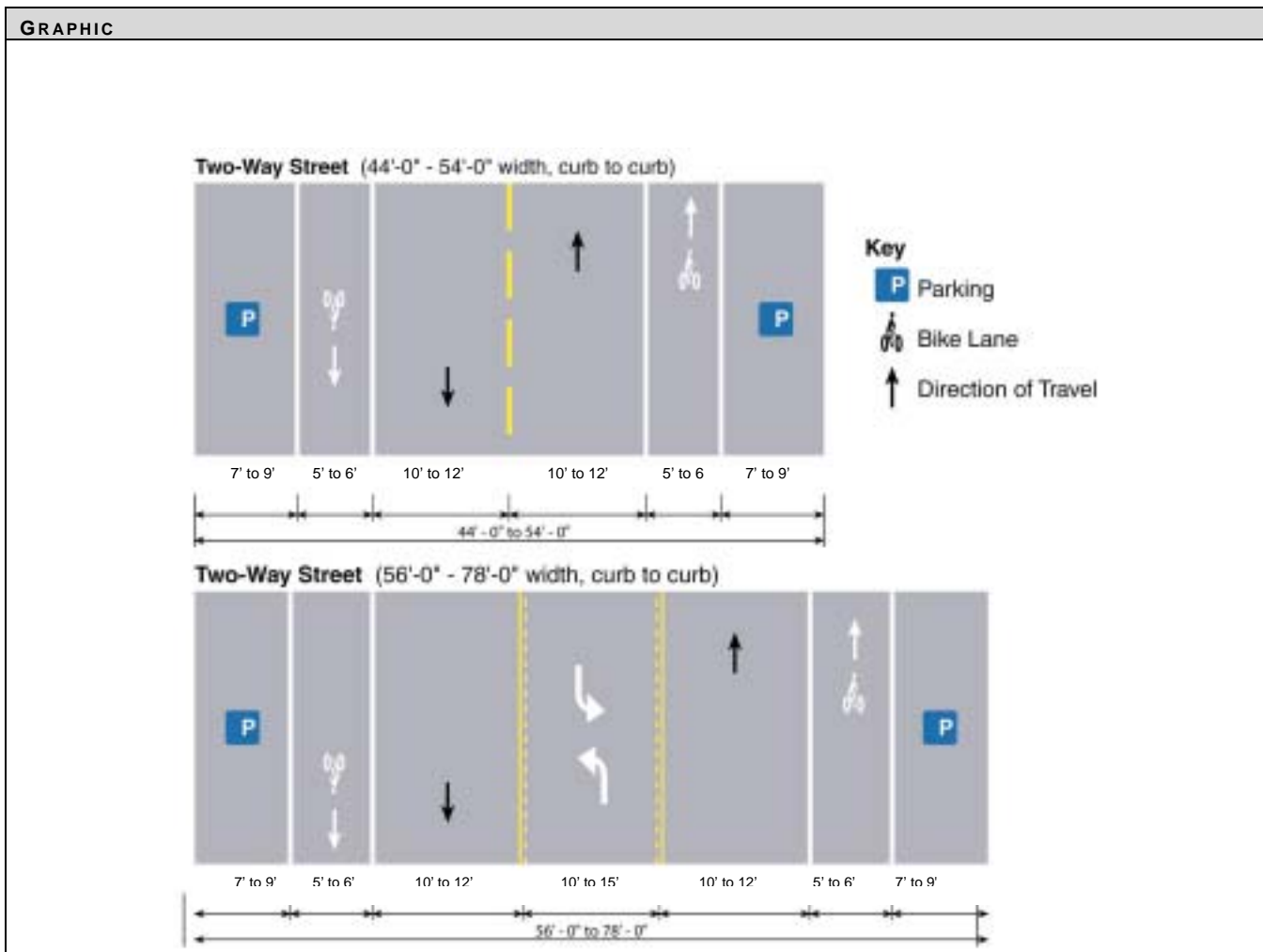
"SHALL" or "MUST"	All language that is explicitly stated as such, is referenced within Caltran's HDM, MUTCD, AASHTO's Guide for The Development of Bicycle Facilities, or other traffic engineering manuals. The San Francisco Supplemental Design Guidelines conforms to these overriding documents.
"SHOULD"	All language that is suggestively stated as such, represents a "best practices" guideline that should be followed, but is still open for interpretation depending on a multiple of local factors including; topography, lane widths, vehicle speeds, collision history, etc. Suggestive guidelines can not conflict with these explicit standards.
"MAY"	All language that is conditionally stated as such, represents a guideline that could be followed in San Francisco. Conditional guidelines are dependant on multiple variables. Often times they should be coupled with a "before and after" study to determine their effectiveness. They can not conflict with explicit standards set forth in the HDM, MUTCD, or AASHTO's Guide for The Development of Bicycle Facilities.

1A. BIKE LANE DESIGNS: GUIDELINES

DESCRIPTION
<p>BICYCLE LANE WIDTH</p> <p>RECOMMENDED GUIDELINE:</p> <p>Bike lanes alongside parking lanes shall be at least 5' wide. They may be widened to 6' if space is available and the parking lane has been widened to 9'. Bike lanes alongside curbs shall be at least 4' wide, with 3' minimum from gutter joint to the bike lane stripe. Curbside bike lanes should be 5' wide, and may be wider if necessary and space is available. Bicycle lanes >5' alongside parking lanes may be desirable with one or more of the following conditions:</p> <ul style="list-style-type: none"> ▪ Traffic volumes (including truck or bus volumes)/speeds are high ▪ Bicycle volumes are high ▪ Wider bike lane will not encourage illegal parking or driving in the bicycle lane to bypass congestion <p>Bike lanes are typically dashed from 100' in advance of intersections to the intersection in order to warn cyclists of impending conflicts and to allow motorists to travel across the bike lane to turn or merge as required in the California Vehicle Code. The dashed length may be of a shorter distance in special situations, such as short blocks.</p> <p>MINIMUM STANDARD:</p> <p>The minimum standard for bicycle lane width is established in Highway Design Manual Chapter 1000 as 4' in width. The minimum standard for bicycle lane width adjacent to parking is 5' in width.</p> <p>PARKING LANE WIDTH</p> <p>RECOMMENDED GUIDELINE:</p> <p>The recommended guideline for parking lane width is 8' . Parking lanes may be of narrower width if specifically required for other modes, with preference to transit over motor vehicle traffic.</p> <p>9' parking lane width is recommended where one or more of the following conditions exists (assuming space is available):</p> <ul style="list-style-type: none"> ▪ Parking turnover is high (metered parking, commercial areas) ▪ Higher concentration of wide vehicles in parking lane (trucks, buses, etc) ▪ It is preferable to narrow travel lanes to encourage slower speed ▪ Widening the parking lane moves the bike lane away from the curb and keeps motorists near the middle of the road, increasing sight distances for traffic on cross-streets <p>MINIMUM STANDARD:</p> <p>The minimum standard for parking lane width is 7'. A 7' parking lane width is acceptable with one or more of the following conditions:</p> <ul style="list-style-type: none"> ▪ Low parking turnover (neighborhood streets) ▪ Uphill bike lane (slow cycling speeds) ▪ Space constraints do not allow for wider parking lane <p>TRAVEL LANE WIDTH</p> <p>RECOMMENDED GUIDELINE:</p> <p>Travel lanes adjacent to a bike lane should be 10' in width. In the absence of designated truck routes and/or high capacity transit lines, additional curb to curb width should be allocated according to the following priority: (1) bicycle and pedestrian circulation, (2) transit operations, and, (3) private vehicle operations.</p> <p>Travel lanes should be greater than 10' when the following circumstances exist:</p> <ul style="list-style-type: none"> ▪ Roadway is posted at greater than 30 mph ▪ Roadway is a transit (including MUNI) route ▪ Roadway is a designated truck route, with oversized vehicles common

1B. BIKE LANE DESIGNS FOR TWO-WAY STREETS

DETAILS
<p>Bike Lane Markings All striping must be non-skid material.</p> <p><u>Preferred marking material:</u> Thermoplastic or other non-slick retroreflective material.</p> <p><u>Bike Lane Stripe:</u> 6" wide</p> <p><u>Parking Lane Stripe:</u> 4" wide</p> <p><u>Spacing Between Bike Stencils:</u> Stencil spacing will be determined base on block length, parking turnover, land use, and other relevant factors.</p> <p><u>Optional Treatment::</u> Colored lanes (dyed or thermoplastic) may be considered in addition to striping of bicycle lanes.</p>

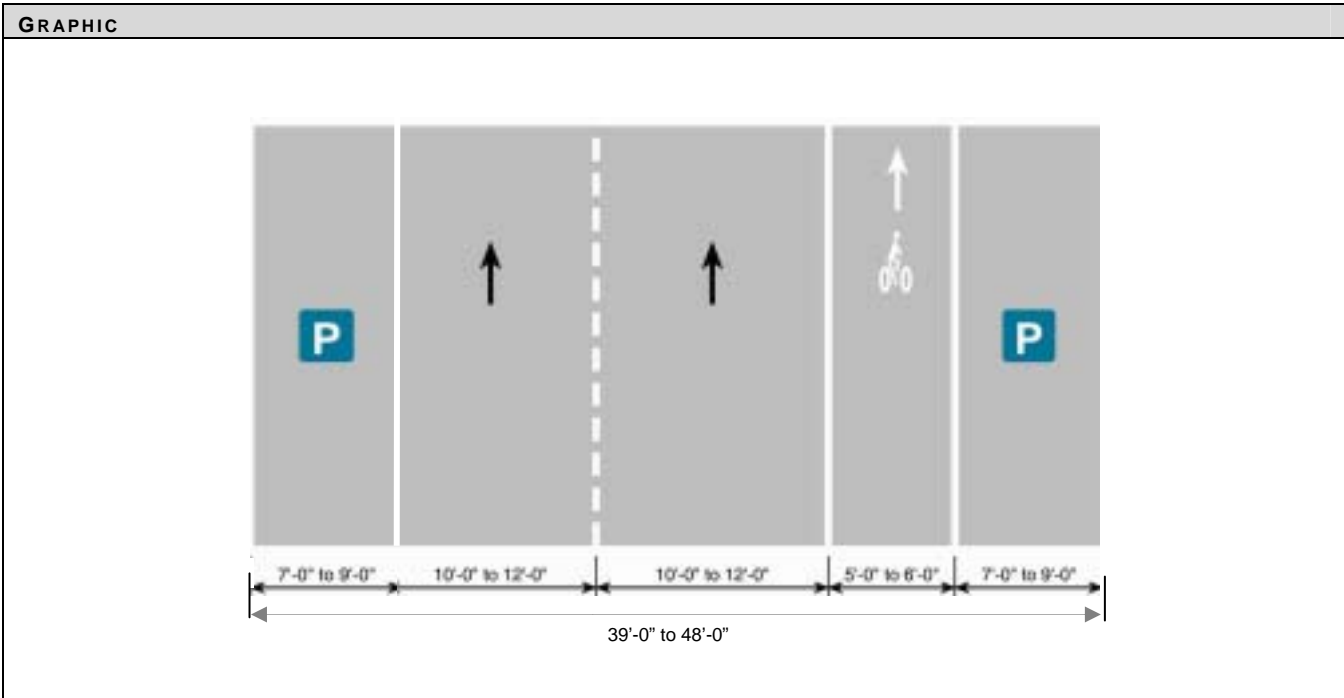


1C. BIKE LANE DESIGNS FOR ONE-WAY STREETS

DESCRIPTION

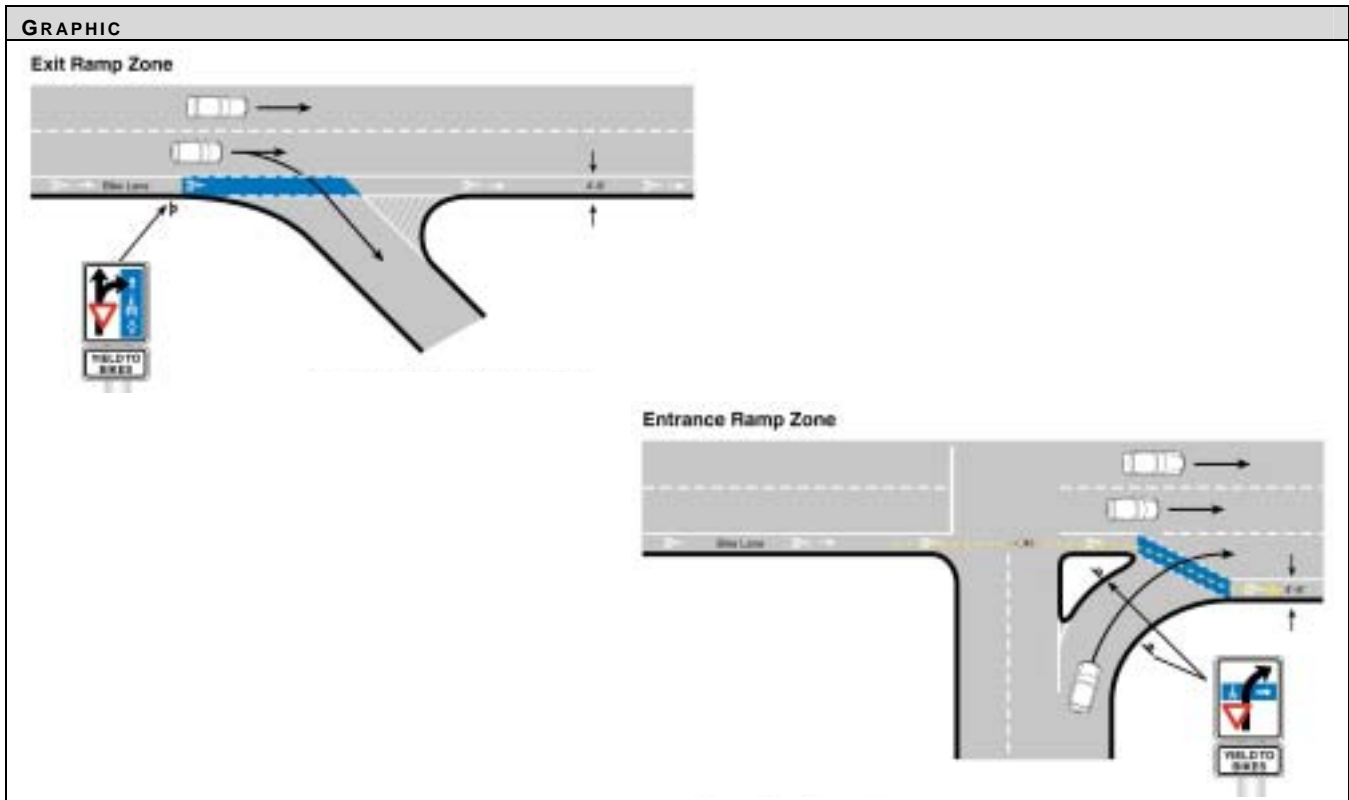
The bike lane designs and guidelines for one-way streets are similar to those of two-way streets. On typical streets with on-street parking, a bicycle lane should be 5' in width. The previous pages summarize the recommended and minimum widths for bicycle lanes, parking lanes, and travel lanes.

On one-way transit streets, bike lanes on the opposite side of the street should be considered.



2. COLORED BIKE LANE TREATMENT THROUGH A CONFLICT AREA

DESCRIPTION
Colored bike lanes could be used in high-conflict areas, to alert drivers of the presence of bicyclists and bicycle lanes. These areas can be painted or treated with a thermoplastic. Typically, yield signs that instruct bicyclists and drivers about the lanes are installed wherever the colored lane treatments are used. An alternative use of colored bicycle lanes, mentioned above under "Optional Treatment" for 1B, would be to provide continuous colored bicycle lanes with a discontinuation of the coloration at conflict areas. Determination of the most effective treatment requires further study.



POTENTIAL APPLICATIONS
<ul style="list-style-type: none"> ▪ High volume of vehicles turning across bike lane to exit or enter a roadway in a ramp-like configuration. This should not be used in typical 4-legged intersection situations that simply have a high volume of turning motor vehicles. ▪ Roadways / ramps merge at angles where motorist sight distance is impaired, or that cause motorists to be looking to merge in such a way that they may not see cyclists in a normally-marked bike lane. ▪ High volume of bicyclists ▪ Cyclists have priority movement <p>Other potential situations for application of colored bike lanes include:</p> <ul style="list-style-type: none"> ▪ Contra-flow bike lanes ▪ Left-side bike lanes on high volume roads ▪ Bike-only left-turn pockets

SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none"> • Portland, OR • Cambridge, MA • Montreal • Denmark • New York City

NOTES
National committees are currently reviewing the use of color for bike lane situations. Should they make a recommendation for green or other colors, the design would use the recommended coloring. Coloring should also be coordinated with colored MUNI transit lanes that are being studied. Use of this type of lane may also require changes to the California Vehicle Code. The City of Portland conducted a study of colored bike lanes through conflict zone, demonstrating that motorists yield to bicyclists 92 percent of the time (compared to 72 percent of the time before colored bike lane implementation). Fewer bicyclists approaching the conflict area looked for oncoming traffic after the blue pavement was put in place.

3A. INTRODUCTION TO BICYCLE/TRANSIT DESIGN GUIDELINES

BICYCLES AND TRANSIT POLICY

Planning for and implementation of bicycle facilities on transit routes requires an agreed-upon rationale for the placement of bicycle facilities. This policy is established in Chapter 4: Implementation of the San Francisco Bicycle Plan.

DRAFT POLICY STATEMENT*

When a bicycle facility or project is proposed for an existing transit route, the Department of Parking and Traffic Bicycle Program (DPT) bicycle program staff will review existing data on transit operations and present to MUNI a project description in order to initiate a project specific review. DPT will inform MUNI staff of the proposed project to identify specific data needs. MUNI and DPT staff will work collaboratively to determine the specific steps required to demonstrate project viability. In the event that the proposed bicycle facility is demonstrated to negatively impact transit operations based on transit service schedules or transit rider safety, then the project will not be recommended.

*This policy will be developed for the Draft Bicycle Plan Update and incorporated in the final Update based on DPT and MUNI staff input. This current page in the Supplemental Design Guideline serves as a draft and placeholder.

BICYCLES AND TRANSIT DESIGN GUIDELINES

Where bicycle facilities are shown to be compatible with existing or planned transit facilities based on DPT/MUNI study of design alternatives, diagrams 3B, 4A, and 4B should be followed. These diagrams specifically related to shared bicycle and transit streets.

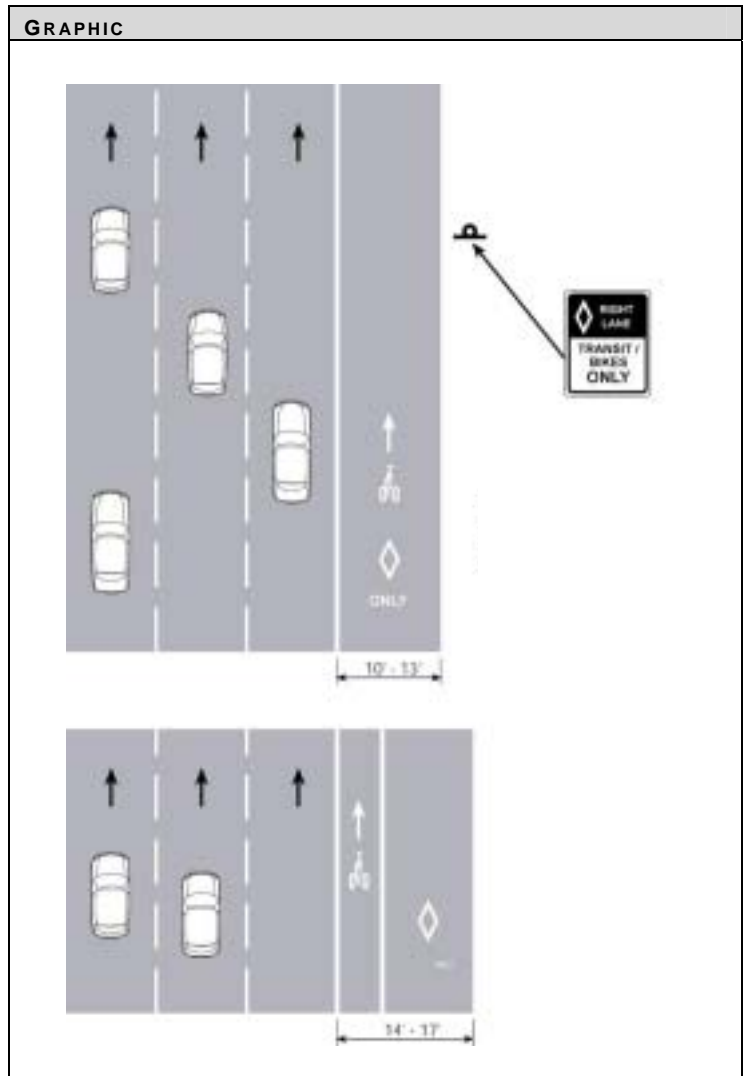
Additional transit related diagrams may be added to this Supplemental Design Guidelines document as required to address specific recurring circumstances involving bicycles and transit vehicles.

3B. TRANSIT STOP STRIPING: SHARED BUS/BICYCLE LANE

DESCRIPTION

The shared bus/bicycle lane should be used where width is available for a bus lane, but not a bus and bike lane. The dedicated lane attempts to reduce conflicts between bicyclists, buses, and automobiles. Various cities have experimented with different designs and there is currently no evidence of one design being more effective than the others.

- POTENTIAL APPLICATIONS**
- On auto-congested streets, moderate or long bus headways
 - Moderate bus headways during peak hour
 - No reasonable alternative route



NOTES

The diamond marking for bus-only lanes is being changed. This design should be updated with the new marking (yet to be determined).

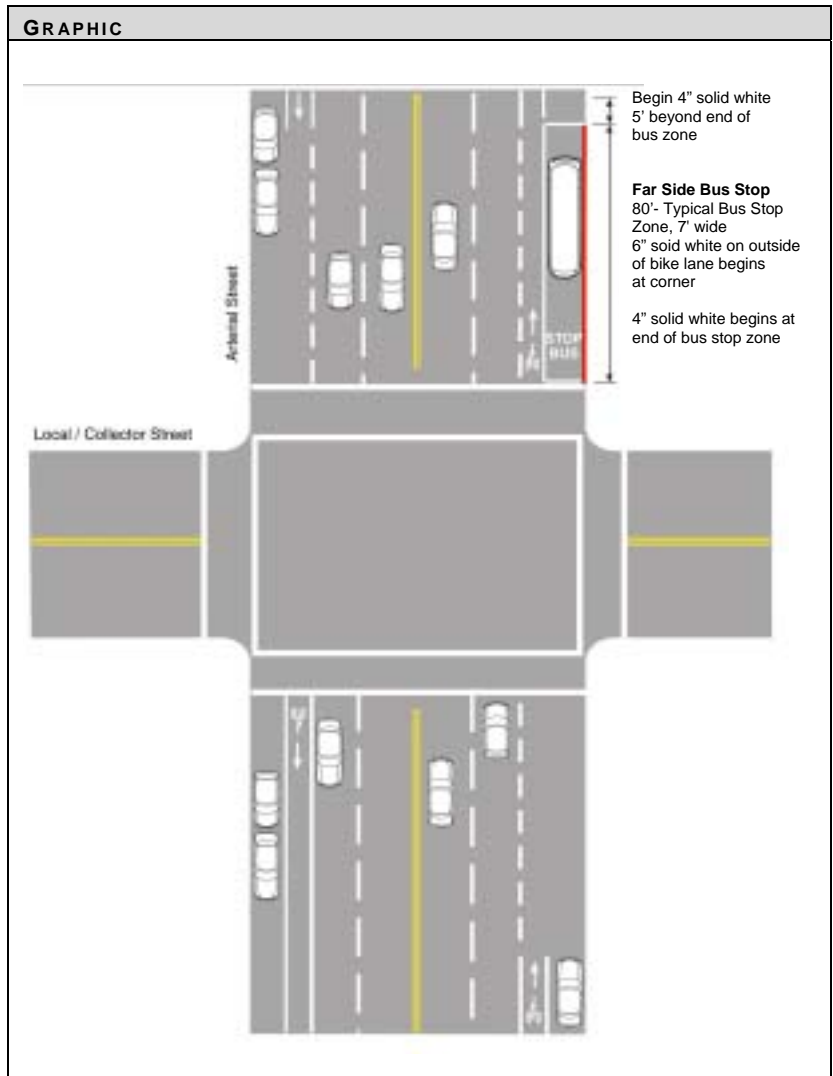
Taxis and right turning vehicles are also allowed in transit lanes. A clear sign design that conveys who is allowed use of a transit lane needs to be developed.

- SELECTED LOCATIONS WHERE TREATMENT IS BEING USED**
- Madison, WI
 - Vancouver, Canada
 - Toronto, Canada
 - Philadelphia, PA
 - Berlin, Germany

4A. TRANSIT STOP STRIPING: FAR SIDE BUS ZONE

DESCRIPTION
<p>This guideline details the striping of bike lanes adjacent to far-side bus zones. The bus zone will have a white striped box with BUS STOP marked inside. The bus zone box will serve as the inside demarcation between buses/bicycles. The outside bicycle lane stripe should be dashed from the crosswalk to end of the bus zone.</p>

POTENTIAL APPLICATIONS
<ul style="list-style-type: none"> When bus stops are located on the far side of intersections



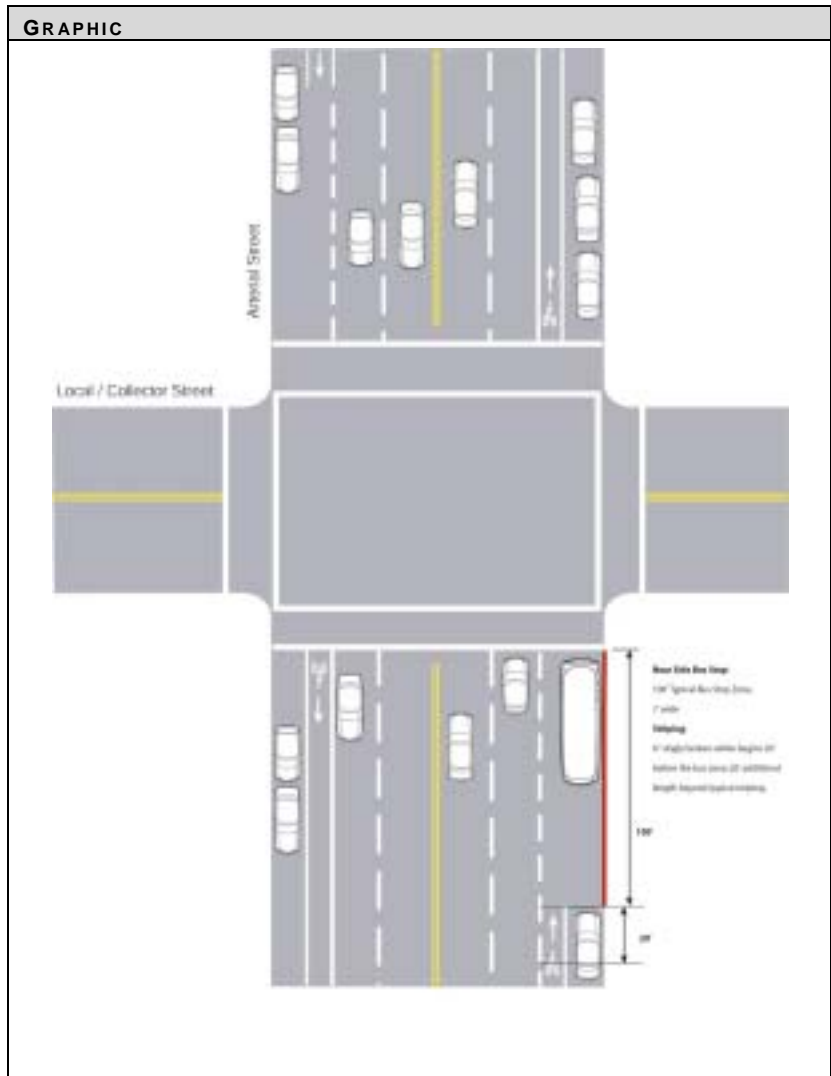
NOTES
<p>This treatment is currently being used in San Francisco.</p>

SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none"> Philadelphia San Francisco

4B. TRANSIT STOP STRIPING: NEAR SIDE BUS ZONE

DESCRIPTION
<p>This guideline details the striping of bike lanes adjacent to near-side bus zones. The solid right line of the approaching bike lane will stop 5 feet before the bus box and the left side of the bus box serves as the right bike lane stripe.</p>

POTENTIAL APPLICATIONS
<ul style="list-style-type: none"> When bus stops are located on the near side of intersections



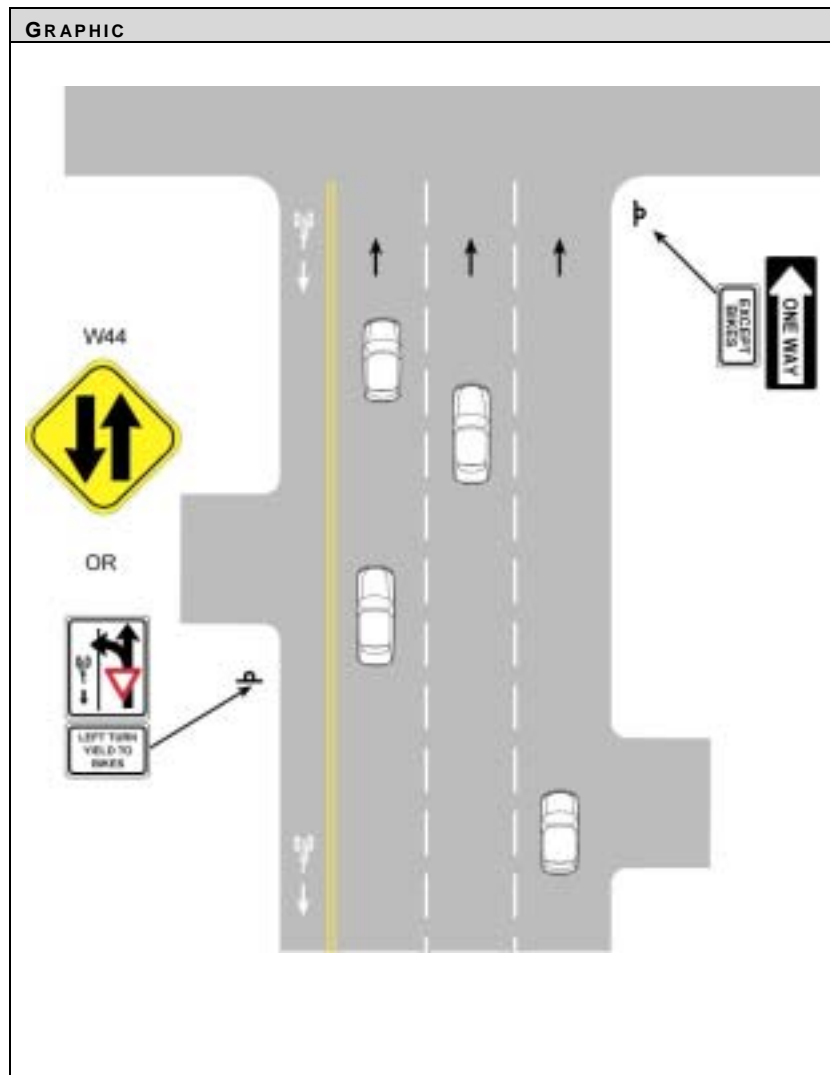
NOTES
<p>This treatment is currently being used in San Francisco.</p>

SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none"> Philadelphia San Francisco

5. CONTRA-FLOW BIKE LANE

DESCRIPTION
The contra-flow bicycle lane provides a striped lane going against the flow of automobile travel. The lanes should be separated by a double-yellow line.

POTENTIAL APPLICATIONS
<ul style="list-style-type: none"> ▪ Provides direct access to key destination ▪ Improves safety ▪ Infrequent driveways on bike lane side ▪ Bicyclists can safely and conveniently re-enter traffic at either end ▪ Sufficient width to provide bike lane ▪ No parking on side of street with bike lane ▪ Existing high bicycle usage of street ▪ Less than three blocks in length ▪ No other reasonable route for bicyclist



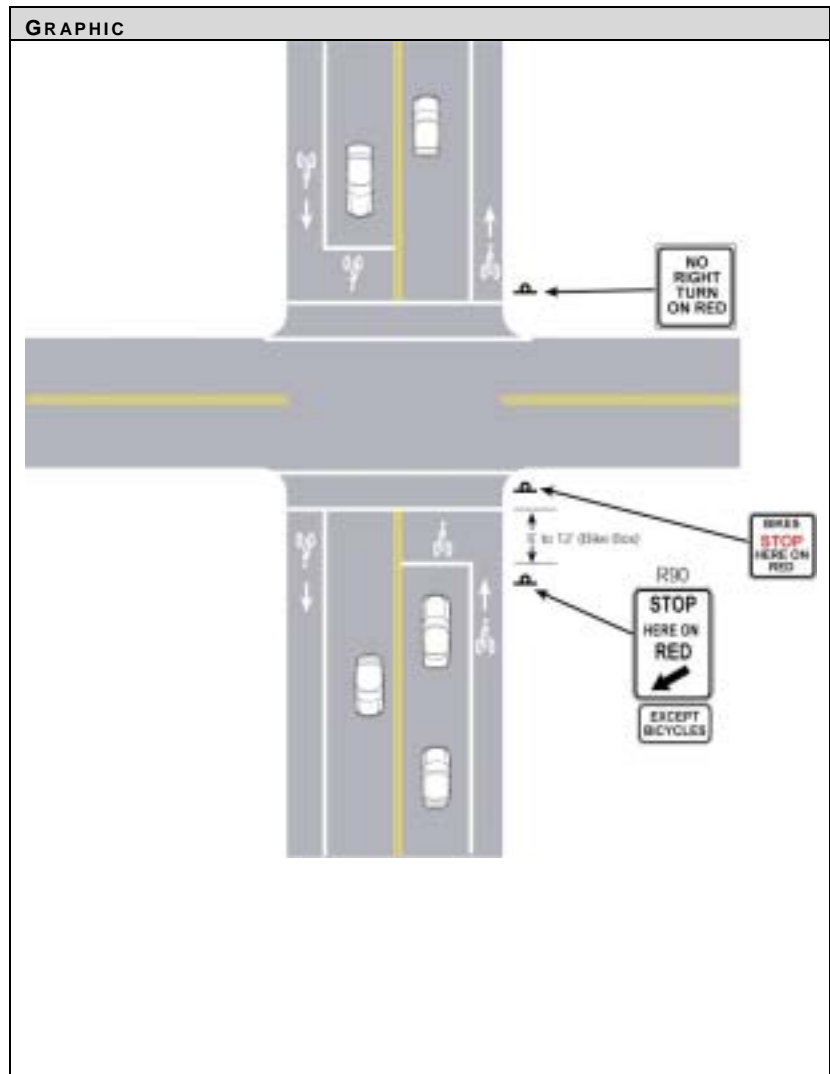
NOTES
This type of treatment should only be considered after all other methods to accommodate bicycles along a corridor have been considered. This treatment is to be considered the exception, and not the rule, for one-way streets. As a part of trial implementation, an effective sign design to accompany this treatment needs to be determined. A standard two way traffic warning sign (W44) may be most appropriate.

SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none"> • Portland, OR • Madison, WI • Cambridge, MA • San Francisco (The Presidio)

6. BICYCLE STREAMING LANE (BIKE BOX)

DESCRIPTION
This treatment includes a bicycle lane leading to a “box” situated behind the crosswalk and in front of the motor vehicle stop bar. The bike box allows bicyclists to move to the front of the queue and position themselves for turning movements. The treatment also improves the visibility of bicyclists. A bicycle marking is stenciled in the box and should be accompanied by signs communicating where bicycles and motor vehicles should stop.

POTENTIAL APPLICATIONS
<ul style="list-style-type: none"> At intersections with a high volume of bicycles and motor vehicles Where there are frequent turning conflicts and/or intersections with a high percentage of turning movements by both bicyclists and motorists No right turn on red Can be combined with a bicycle signal (optional)



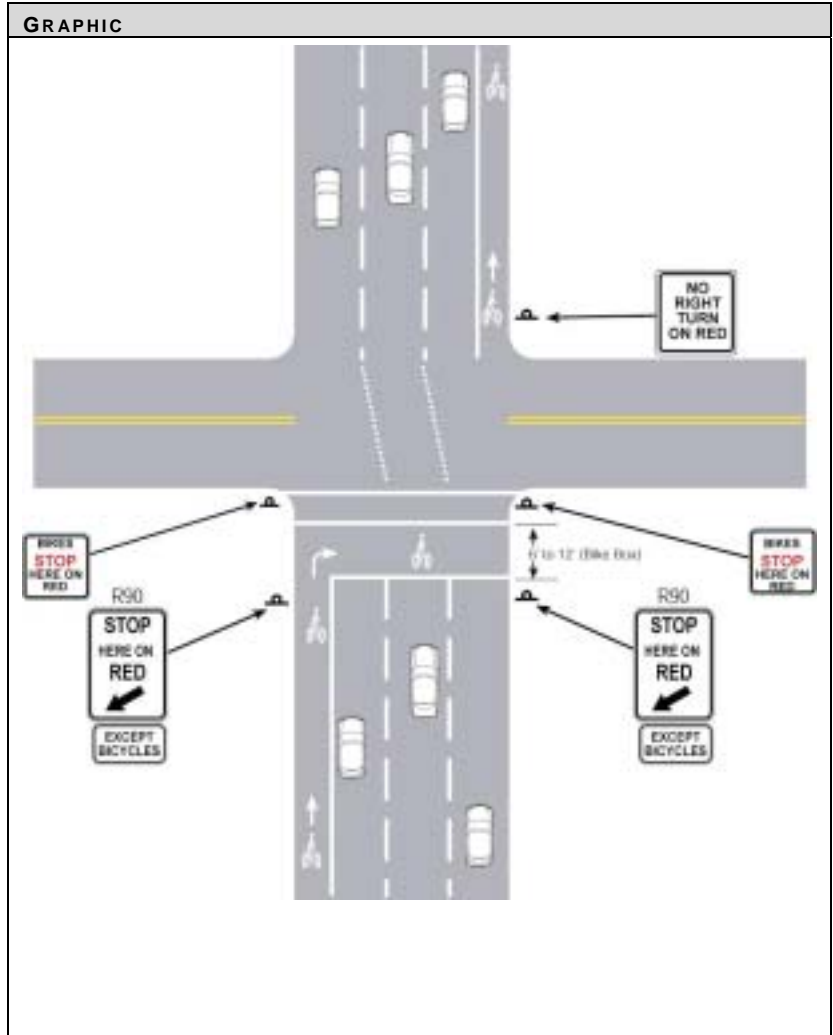
NOTES
All signage is presented as a starting point for development of a final design. Signs shown may or may not be included in a final facility design. Signage for this facility type should be consistent citywide. Use of double-wide stop bars should be considered prior to installation of additional signage.

SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none"> Eugene, OR Portland, OR Cambridge, MA

7. LEFT-SIDE BIKE LANE ON ONE-WAY STREET WITH STREAMING BIKE LANE (BIKE BOX)

DESCRIPTION
<p>This treatment provides a way to transition from a left side bike lane to a right side bike lane through the use of a bike box at an intersection. The bike box also allows cyclists to position themselves in front of stopped automobile traffic. The use of a bike box may be coupled with a countdown signal to inform cyclists (and pedestrians) of the available signal time to cross the street.</p>

POTENTIAL APPLICATIONS
<ul style="list-style-type: none"> Provides connection to a path or other bikeway facility Decreases conflicts with bus stops or highway ramps Where use does not interfere with near-side bus stops. Transition back to right-side bike lane can be made, if necessary Signal progression should be noted along street. If signal progression may lead to cyclists traveling perpendicular to traffic arriving at green light, reconsider bike box, or use traffic control for bikes traveling perpendicular in box, such as a bike signal Use with countdown signal to indicate time remaining for crossing in the bike box.



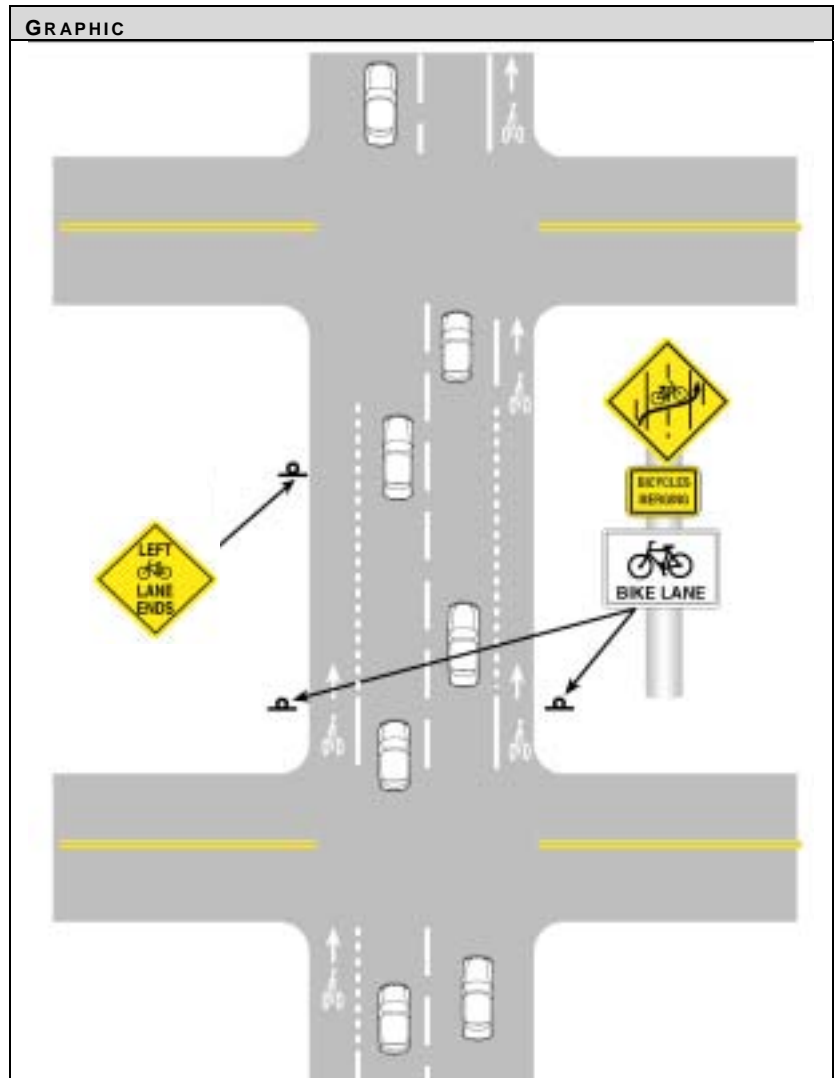
NOTES
<p>All signage is presented as a starting point for development of a final design. Signs shown may or may not be included in a final facility design. Signage for this facility type should be consistent citywide. Use of double-wide stop bars should be considered prior to installation of additional signage.</p>

SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none"> Eugene, OR Cambridge, MA European cities

8. LEFT-SIDE BIKE LANE ON ONE-WAY STREET: TWO BIKE LANE TRANSITION OPTION

DESCRIPTION
This design provides two bike lanes on a one-way road as a way to transition from a left-side bike lane to a right-side bike lane.

POTENTIAL APPLICATIONS
<ul style="list-style-type: none">▪ Provides connection to a path or other bikeway facility▪ Decreases conflicts with bus stops or highway ramps▪ Transition back to right-side bike lane can be made, if necessary



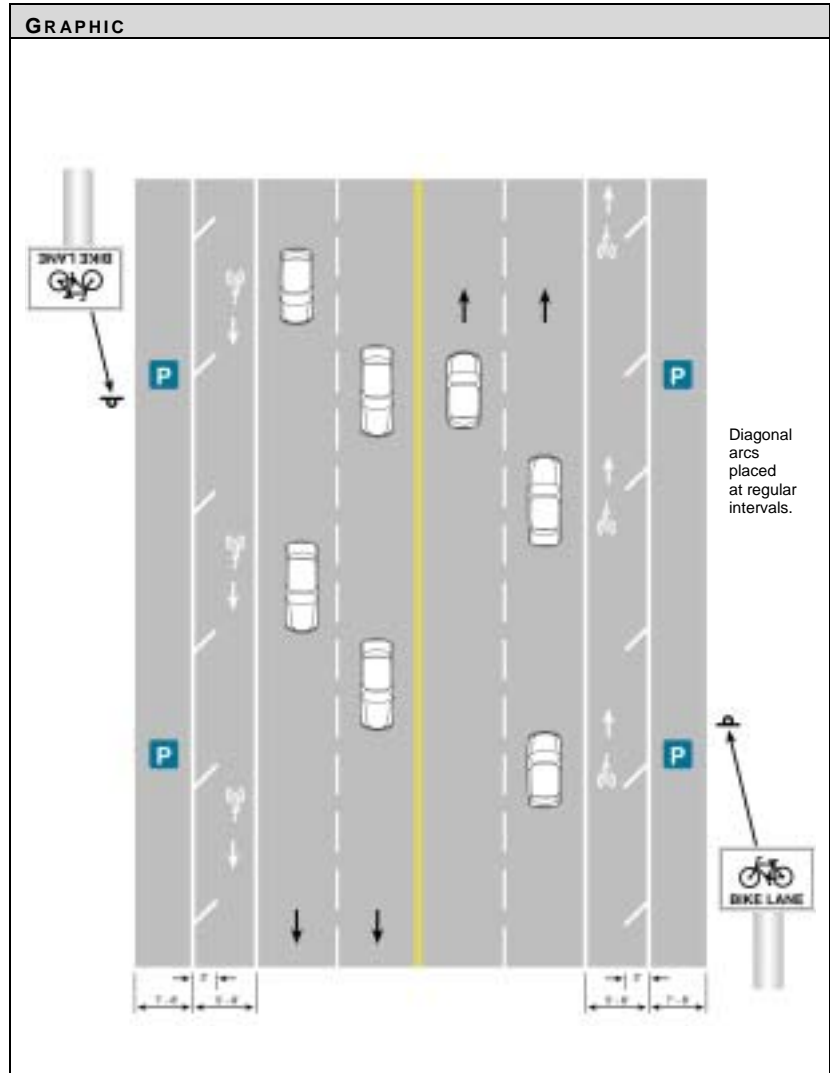
NOTES
Use of pavement messages in the left side bike lane (such as "BIKE LANE ENDS") or motor vehicle lanes (such as "BIKE MERGE AHEAD") may be appropriate.

SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none">• Portland, OR

9. BIKE LANE WITH PARKING: DIAGONAL STRIPING BUFFER

DESCRIPTION
A diagonal striping buffer could be used to indicate an area of concern for bicyclists due to the opening of car doors.

POTENTIAL APPLICATIONS
<ul style="list-style-type: none"> ▪ Bike lane adjacent to on-street parking, especially with high turnover ▪ Bicyclists riding in “door zone”.



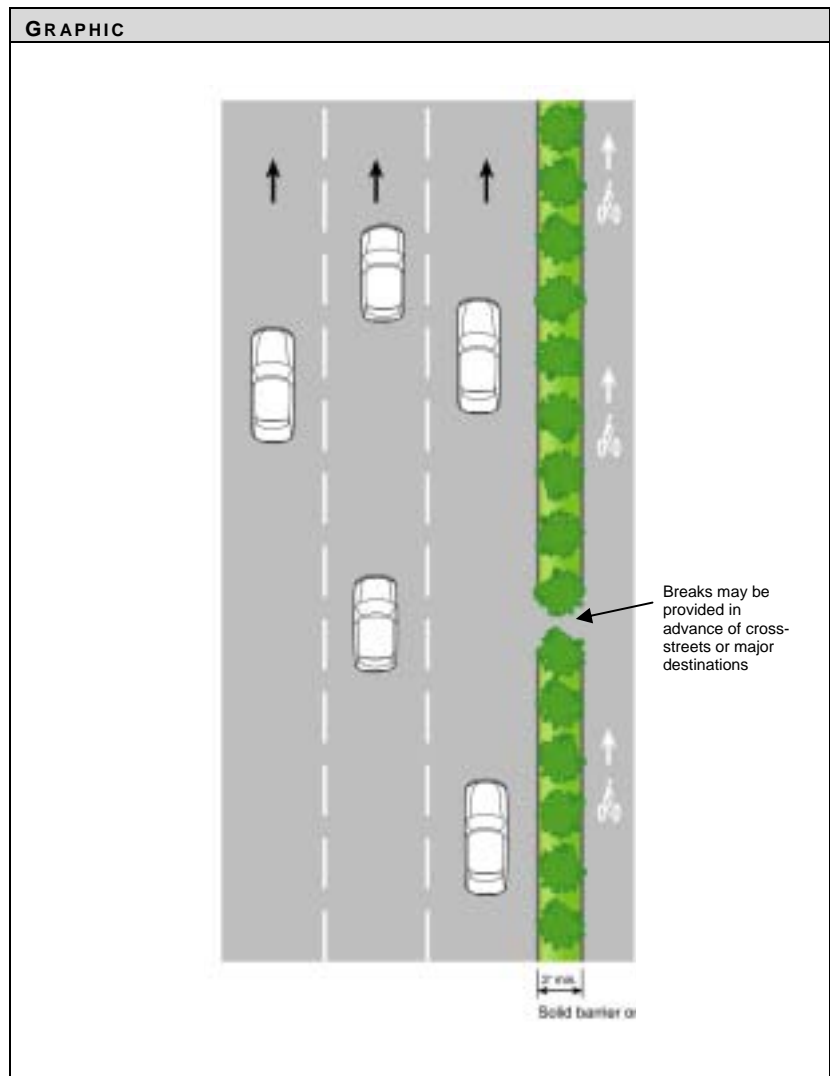
NOTES
This treatment has not been tested for its effectiveness. A before and after study is recommended before wide spread application of this treatment is recommended. In areas demarcated with parking T's, simply extending the stem of the T may discourage cyclists from riding the door zone. This treatment should be studied.

SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none"> • Minneapolis, MN

10. ONE-WAY BIKE PATH (PHYSICALLY-SEPARATED LANE)

DESCRIPTION
The treatment provides a physical barrier between bikes and cars. It is useful along streets with minimal crossings. Installation of a one-way bike path should be undertaken only after careful consideration due to the problems of enforcing one-way operation and the difficulties in maintaining a path of restricted width

POTENTIAL APPLICATIONS
<ul style="list-style-type: none"> ▪ When adequate pedestrian facilities exist so that the bike facility will not be considered a "multi-use path" ▪ Relatively few driveways or intersections ▪ Provides connection between two shared use path facilities ▪ Intersection transitions can be made ▪ Moderate to high speeds ▪ Regular street sweeping of track is possible ▪ There is an equivalent bikeway for the opposite direction that will be more attractive for cyclists in lieu of riding the wrong way on the track ▪ Where path does not interfere with transit stops



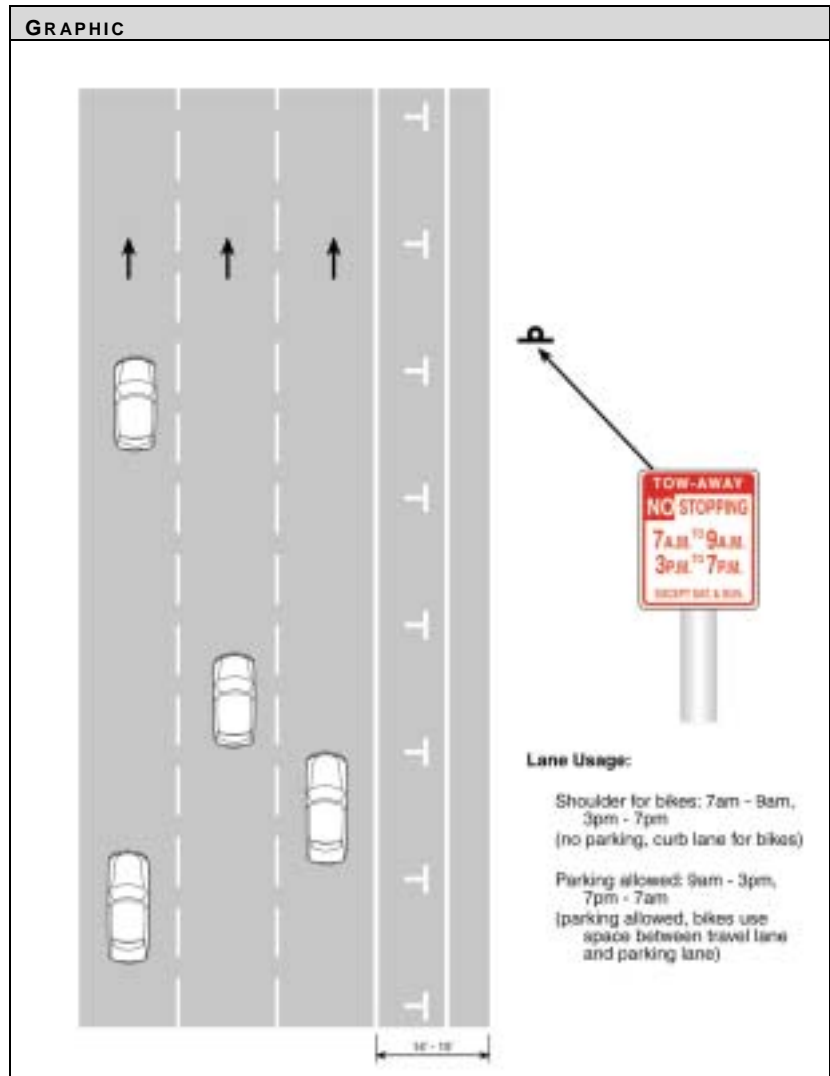
NOTES
On some routes, it may be appropriate to use soft hit posts or other means of physical separation 40 inches in height. However, Caltrans Chapter 1000 prohibits use of raised pavement markers to delineate bike lanes. There must be an equivalent bikeway for the opposite direction of travel that will be more attractive to bicyclists than riding the wrong way in the one-direction cycle track.

SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none"> • European Cities • Quintana Roo, Mexico

11A. COMBINED PARKING LANE AND BIKE LANE (FLOATING BIKE LANE WITH STRIPING)

DESCRIPTION
This treatment designates a single lane to function as a parking lane, a designated bike route, and then both, depending on the time of day. During peak commute times when parking is not allowed, cyclists will use the shoulder. During off-peak hours when parking is allowed, bicyclists can use the space between the remaining automobile travel lanes and the parking lane.

POTENTIAL APPLICATIONS
<ul style="list-style-type: none"> Primary bicycle commute routes Not enough width to provide standard bike lane and parking



NOTES
Beginning of each block must be cross hatched appropriately to prohibit parking in this location. This cross hatching treatment is used on The Embarcadero. Various treatments can be implemented as necessary, such as: cross hatching at beginning of facility, wider lane lines, merge signs, and longer parking T's to discourage use of lane by motor vehicles during off-peak hours.

SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none"> San Francisco, CA (The Embarcadero)

11B. COMBINED PARKING LANE AND BIKE LANE (USING SHARED ARROW)

DESCRIPTION
This treatment designates a single lane to function as a parking lane, a designated bike route, and then both, depending on the time of day. The difference is that the "shared arrow" marking is used in lieu of striping.

POTENTIAL APPLICATIONS
<ul style="list-style-type: none"> ▪ Primary bicycle commute routes ▪ Not enough width to provide standard bike lane and parking

GRAPHIC

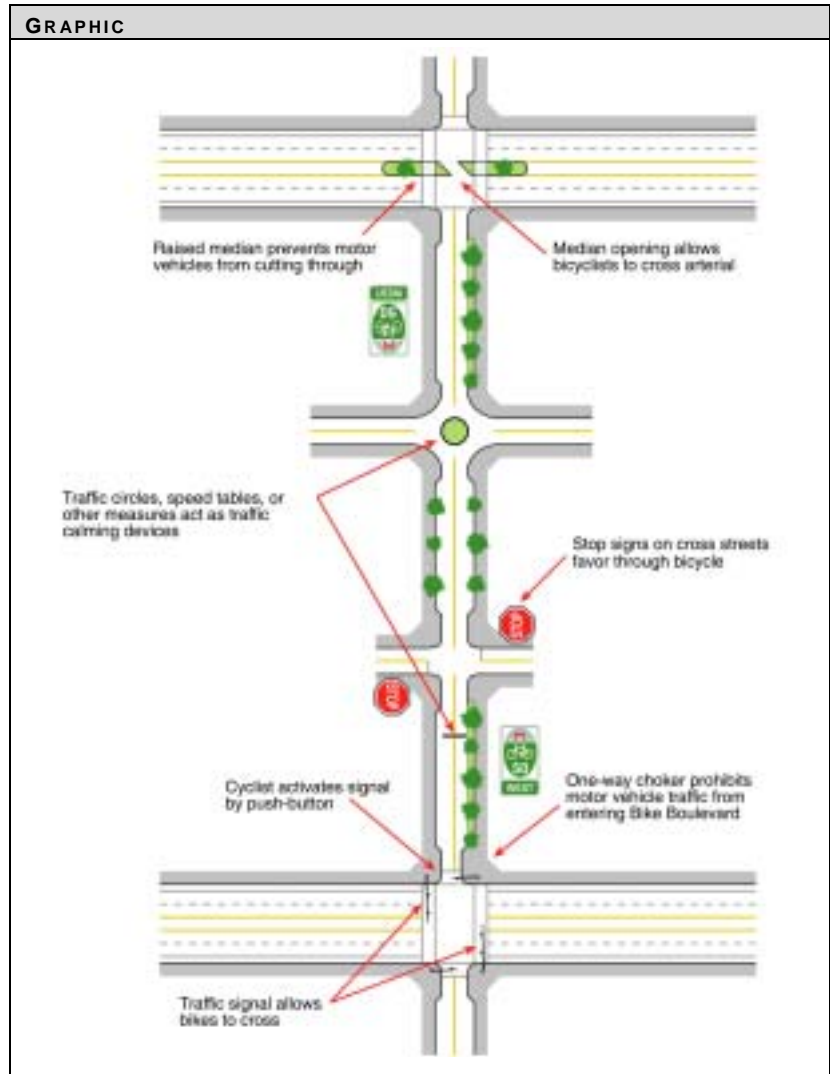
NOTES
“Shared Use Arrow” and “Chevron” stencil symbols are being evaluated for this application.

SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none"> • None known

12. BICYCLE BOULEVARD

DESCRIPTION
The bicycle boulevard treatment is typically a lower volume street with traffic calming treatments that parallels a higher volume arterial. Traffic calming typically includes a set of improvements to slow traffic and prevent cut-through traffic such as: traffic circles, chokers, and medians. In addition, stop signs favor bicyclists by stopping perpendicular traffic. Push-buttons activate traffic signals to allow safe crossings of higher volume roadways.

POTENTIAL APPLICATIONS
<ul style="list-style-type: none"> ▪ Low volume streets ▪ Calming traffic on streets within 1/4 mile of parallel arterials ▪ Allows access to key destinations ▪ Provides safe arterial street crossing



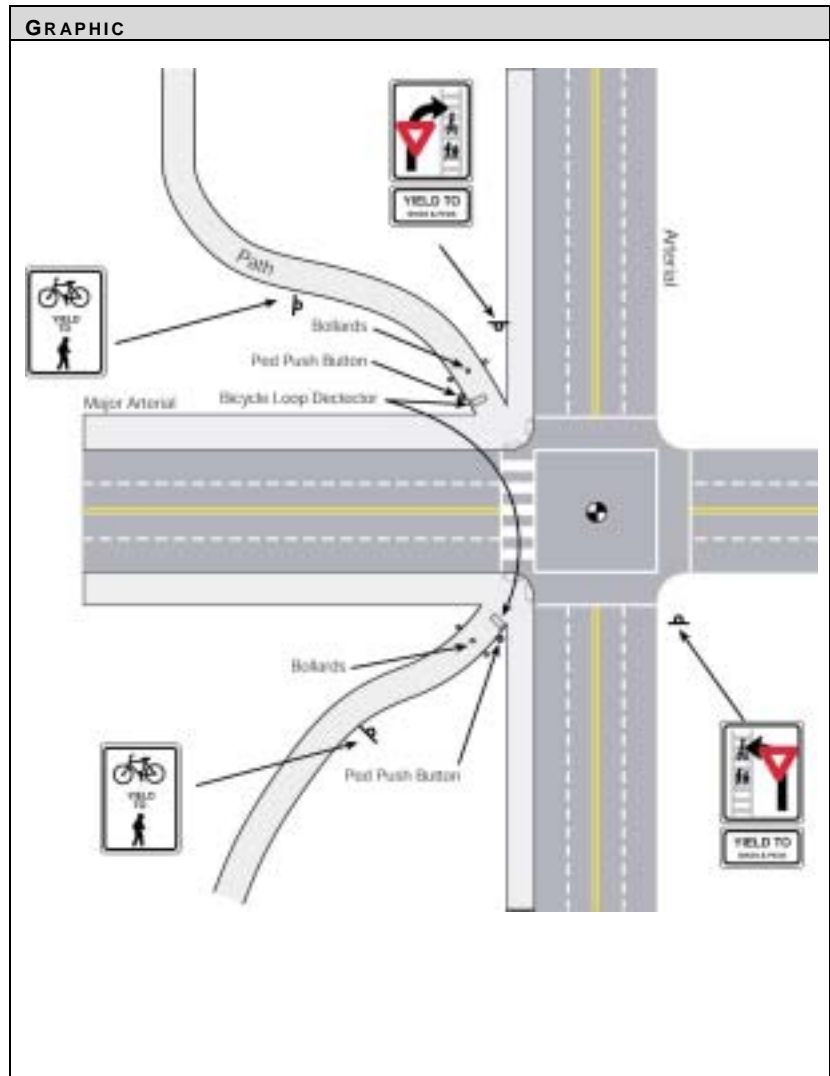
NOTES
20 mph speed limits should be considered.

SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none"> • Portland, OR • Palo Alto, CA • Berkeley, CA • Vancouver, BC

13. CLASS I PATH CROSSING OF ROADWAY

DESCRIPTION
<p>This treatment provides a design for locations where Class I off-street paths cross roadways. Bollards and path geometry could be used to slow path users as they approach the intersection, however the use of bollards should only be used with prudence and where motorized vehicles may attempt to drive on paths.</p>

POTENTIAL APPLICATIONS
<ul style="list-style-type: none"> ▪ Intersections of Class I paths and high volume and/or high speed roadways ▪ Can also be used at a signalized mid-block crossing with median



NOTES
Empty space for notes

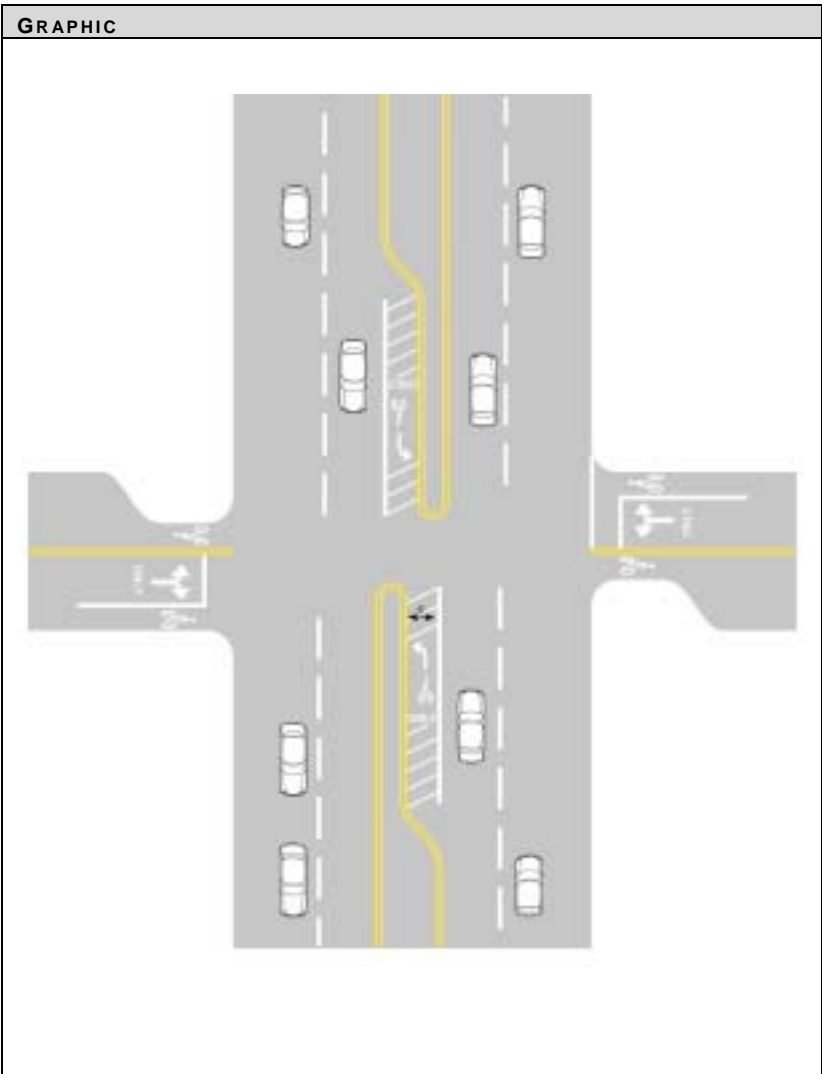
SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none"> • Throughout the United States

14A. BIKE-ONLY LEFT-TURN POCKETS: SCENARIO 1

DESCRIPTION

A left-turn pocket allows only bicycles to access a bicycle boulevard or designated bicycle route. The intersection is controlled and the left-turn pocket may have a left arrow signal, depending on bicycle and vehicle volumes. Signs should be provided that prohibit motorists from turning, while allowing access to bicyclists. Bicycle signal heads may also be used.

- POTENTIAL APPLICATIONS**
- Motor vehicle movement prohibited
 - Low-speed roadway
 - On lower volume arterials and collectors



NOTES

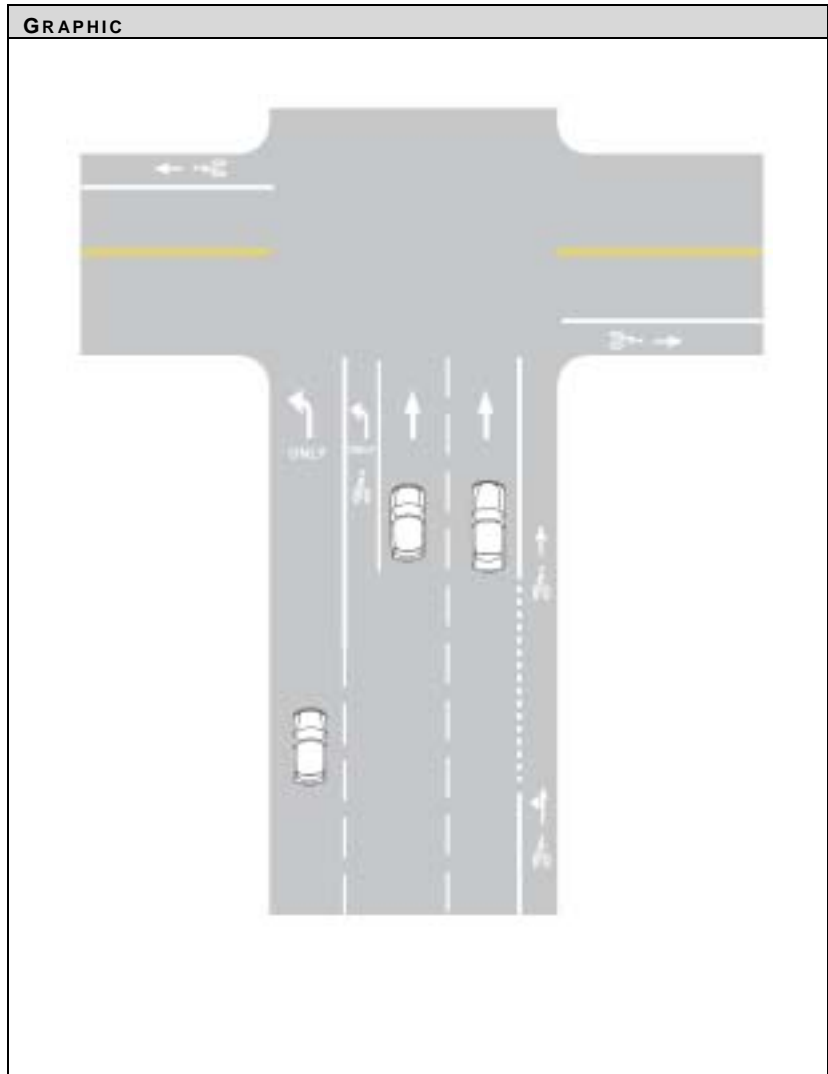
Proper signage must accompany this treatment

- SELECTED LOCATIONS WHERE TREATMENT IS USED**
- Portland, OR

14B. BIKE-ONLY LEFT-TURN POCKETS: SCENARIO 2

DESCRIPTION
This treatment shows a standard-width bicycle lane adjacent to the left-hand turn lane in order to reduce conflicts with turning vehicles.

POTENTIAL APPLICATIONS
<ul style="list-style-type: none">▪ Low-moderate speeds▪ On lower volume arterials and collectors▪ Heavy vehicular left-hand turning movements

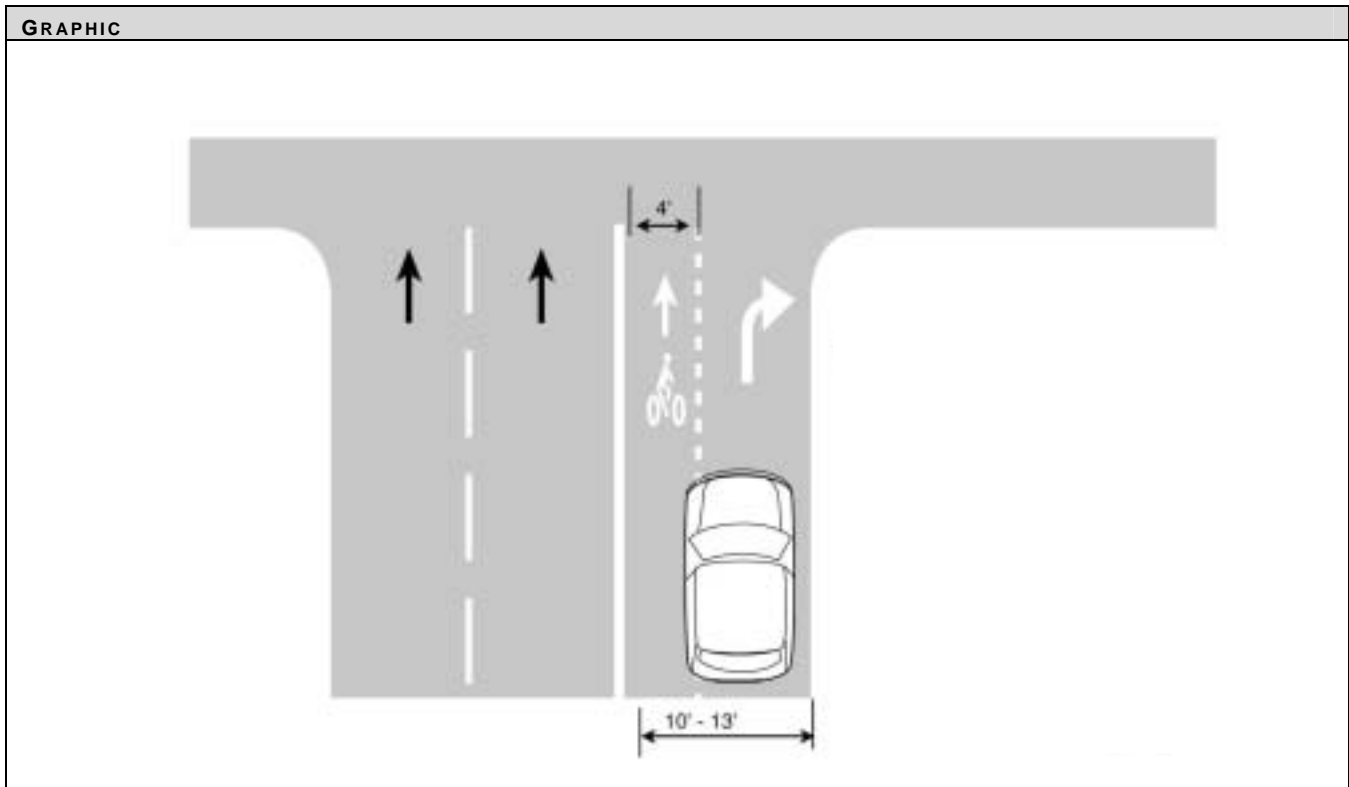


NOTES
The Bicyclists Merging sign may be placed on the right side of the road before the left-side turn pocket.

SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none">• San Francisco, CA (7th St at 16th St)• Flagstaff, AZ

15. SHARED BICYCLE/ RIGHT-TURN POCKET

DESCRIPTION
<p>This treatment places a standard-width bicycle lane on the left side of a dedicated right-hand turn lane when there isn't enough room for both. A dashed stripe delineates the space for bicyclists and motorists within the right-hand turn lane. Signs should be installed to instruct bicyclists and motorists of the usage of this facility.</p>



POTENTIAL APPLICATIONS
<ul style="list-style-type: none"> • On roadways where there is not enough space to implement a standard-width bicycle lane and a standard-width dedicated right-turn lane at the intersection • Low speed roadways • Low volume of heavy vehicle traffic (or those needing a large turning radius)

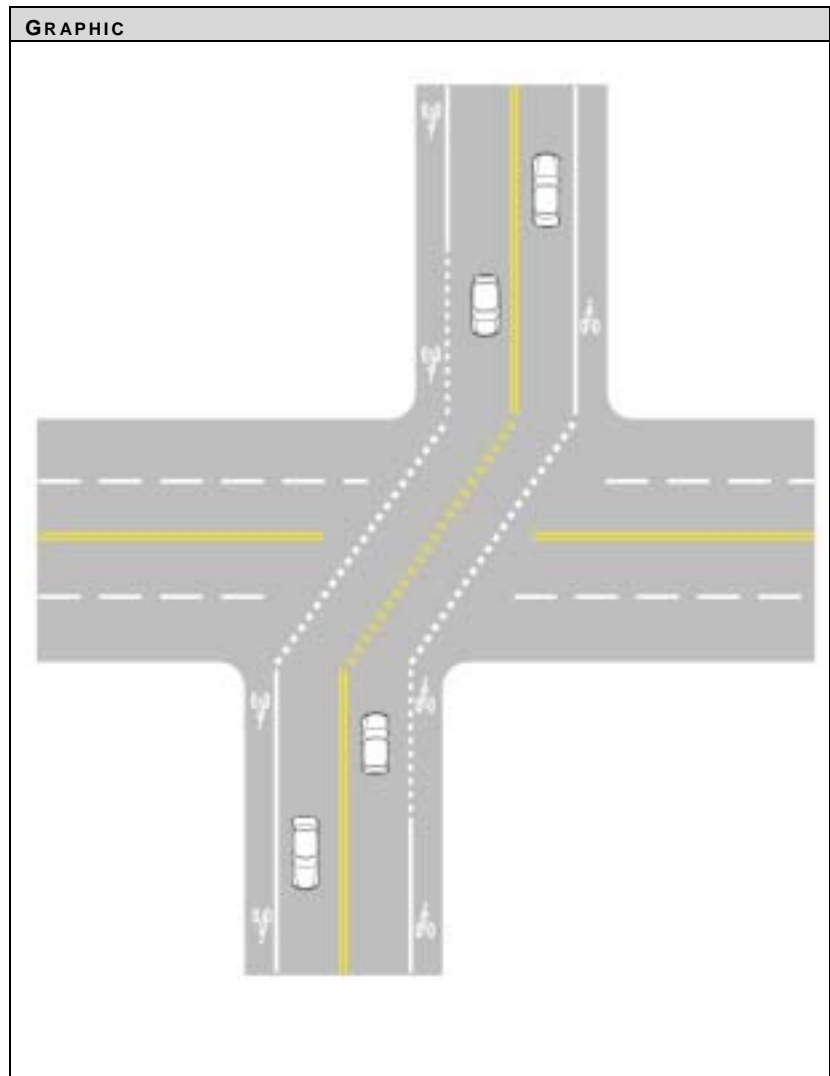
SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none"> • Eugene, OR • Maui, HI

NOTES
<p>Shared-Lane Arrow placed at outside turn lane may prove to be more appropriate marking for this treatment.</p>

16. BIKE LANE THROUGH A COMPLEX INTERSECTION

DESCRIPTION
<p>This treatment uses dashed markings to guide bicyclists and motorists through complex and/or confusing intersections. It also provides a benefit by making the bicycle network visible to travelers on perpendicular streets</p>

POTENTIAL APPLICATIONS
<ul style="list-style-type: none"> ▪ Where intersections are offset by about 7' to 30' ▪ Where there are more than four intersection legs ▪ There is a need to assist vehicle through an intersection. ▪ Where there are significant grades, especially where visibility is compromised ▪ In large, wide intersections ▪ At intersections with especially high bicycle cross-traffic



NOTES
<p>This treatment may be perceived as guidance for bicycles, however it is helpful for all users of the roadway. The HDM does not recommend striping bike lanes through intersections. The HDM does allow “Detail 40” guidelines to aid road users. This is the approach that San Francisco has applied.</p>

SELECTED LOCATIONS WHERE TREATMENT IS USED
<ul style="list-style-type: none"> • Paris, France

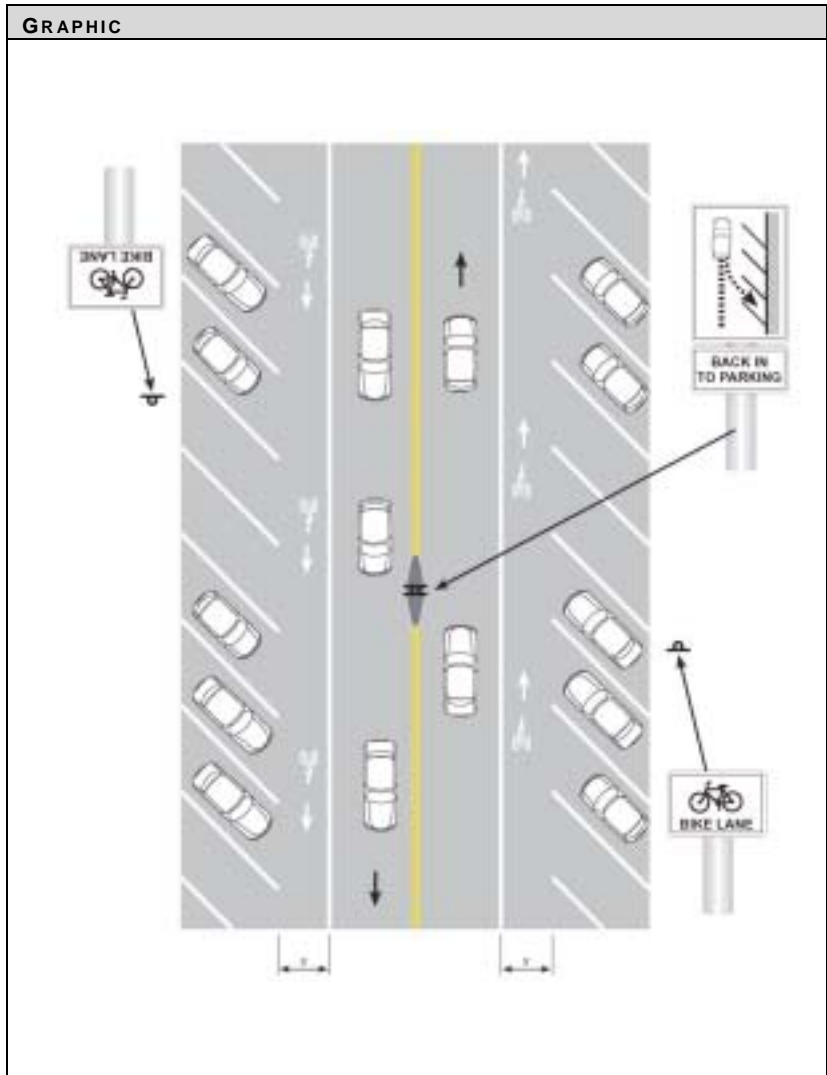
17. BIKE LANES ADJACENT TO BACK-IN DIAGONAL PARKING

DESCRIPTION

Vehicular movements in and out of diagonal parking presents hazards to bicyclists. For this reason, it is recommended to avoid diagonal parking configurations adjacent to bike routes. At locations where diagonal parking is absolutely necessary, back-in parking should be used. This requires drivers to pull in front of a vacant space and reverse into the parking space. This forces the drivers to look behind them before crossing the path of oncoming bicyclists, and improves motorists' sightlines of oncoming bicycle and motor traffic while exiting.

POTENTIAL APPLICATIONS

- Use where diagonal parking is necessary



NOTES

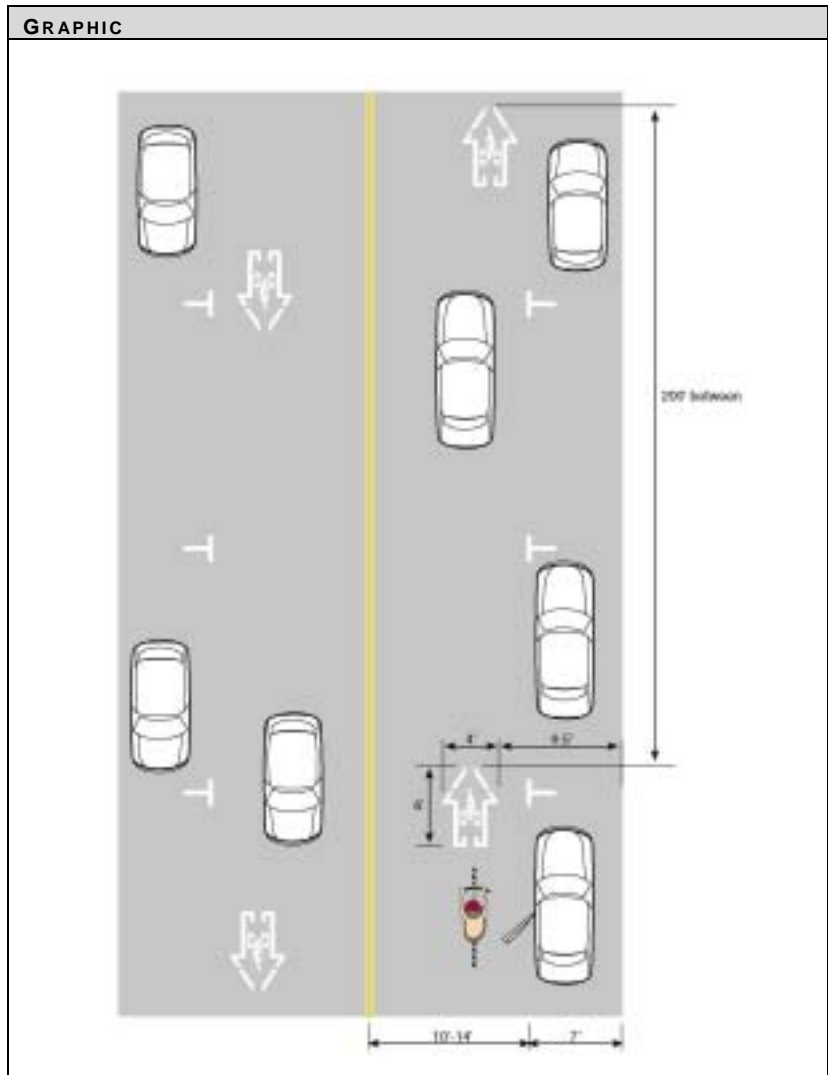
Specific language for signage associated with this treatment will be evaluated as a part of implementation design. Language used by Pottstown, PA (Philadelphia) reads "BACK IN ANGLE PARKING ONLY" behind every third stall. Parking stall widths wider than normal may be needed to accommodate drivers unfamiliar with back in parking. A City ordinance change may be required to specify back in angle parking to create a legal basis for this configuration.

- SELECTED LOCATIONS WHERE TREATMENT IS USED**
- Seattle, WA

18. SHARED-LANE ARROW MARKING

DESCRIPTION
 The primary purpose of this measure is to provide positional guidance to bicyclists on roadways (that are too narrow to be striped with bike lanes). Markings may be placed on the street to inform motorists about the presence of cyclists, and also to inform cyclists how to position themselves with respect to parked cars and the travel lane. The design, placement, and effectiveness of the marking is currently being studied by the City of San Francisco.

- POTENTIAL APPLICATIONS**
- Roadways that are too narrow for standard striped bike lanes
 - Areas that experience a high level of "wrong-way" riding
 - Areas with moderate to high parking turnover



NOTES
 At the time of writing, this marking treatment was being studied for effectiveness by the City of San Francisco. The exact design for the marking and other details such as placement and spacing will be determined after the study is completed.

- SELECTED LOCATIONS WHERE TREATMENT IS USED**
- San Francisco
 - Denver, CO
 - Paris, France
 - Gainesville, FL

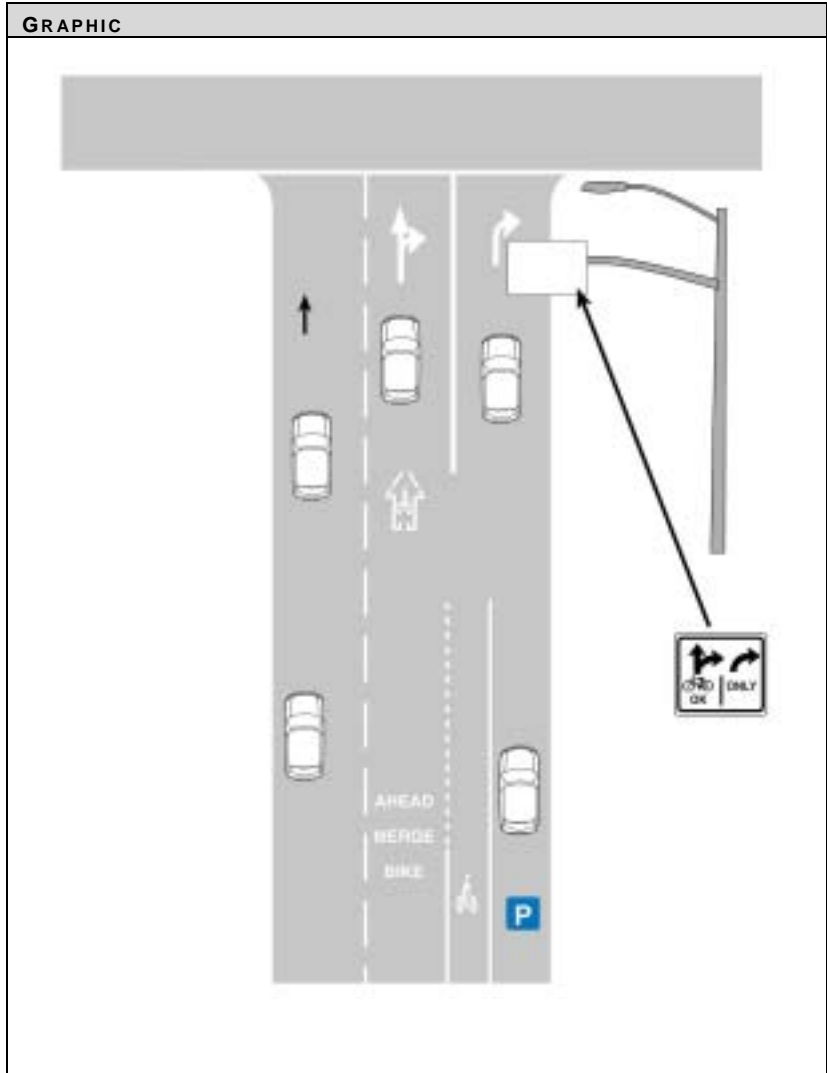
19A. DOUBLE TURN LANES: SHARED LANE

DESCRIPTION

The use of double-turn lanes should be discouraged because of the difficulties they present for pedestrians and bicyclists. Existing double-turn lanes should be studied and converted to single-turn lanes, unless found to be absolutely necessary for traffic operations. In situations where the double-turn lane cannot be avoided, the following design can be used to safely accommodate bicyclists. This design uses the shared arrow stencil to indicate that bicyclists and automobiles are to share the through/turn lane. This properly positions through bicyclists and reduces conflicts with right turning vehicles.

POTENTIAL APPLICATIONS

- In double right turn situations with a right-turn lane and a through/turn lane.



NOTES

- SELECTED LOCATIONS WHERE TREATMENT IS USED**
- San Francisco, CA

20. SUPPLEMENTAL BICYCLE FACILITY SIGNS AND SIGNALS

DESCRIPTION
<p>The following sign designs may be used in connection with the treatments listed in this guide or at locations with standard bike facilities that would benefit from their installation. This listing is meant to supplement the signs listed in the Manual of Uniform Traffic Control Devices (MUTCD) and the Caltrans Traffic Manual. While signs help to inform behavior, it is important to select signage carefully. Overuse of signage can lead to visual clutter which in turn, lessens the effectiveness of the signs and decreases the aesthetic quality of the street.</p>

NON STANDARD SIGN IN CURRENT USE
<p>The following non standard signs are currently used by the City of San Francisco.</p>



Local Bicycle Route Sign: Street signs with a green bridge icon indicate local bicycle routes.



Cross Town Route Sign: Street signs with a red bridge icon indicate cross-town routes



Bicycle Route Detour Sign: Street signs with a black background and orange foreground indicate detoured bicycle routes.



Bicycles Allowed Full Use of Lane Sign: Indicates bicycles allowed full use of lane in situations where no bicycle lanes exist or where merging with vehicle traffic is required for safe operations.



Trucks Make Wide Turns Sign: Indicates to bicyclists and motorists that large trucks will swing left prior to making right turn. Sign warns bicyclists of potential right side conflicts.

NON STANDARD SIGN IN CURRENT USE

The following non standard signs are recommended for trial implementation by the City of San Francisco.



This sign may be used for bike lane transitions.



This sign may be used on a contra-flow lane treatment



This sign may be used where a travel lane crosses a colored-lane treatment



This bicycle-signal head may be used as per the standards set by CTCDC, 11/19/99. The signal provides a separate phase specifically for bicyclists.



This sign may be used at an intersection with double-right turn lanes.



This sign may be used at multi-use path-roadway crossings. Sign should face motorists.