Figure 1

STREET SECTIONS

FOR REFERENCE ONLY

PRINCIPAL ARTERIAL

5-Lane Principal Arterial - Please refer to Section 7205 in the Policy Manual for the criteria and standards related to each section.

Road / R/W	Walk to P/L	Walk	Planter	Curb & Gutter	Bike Lane w/ Buffer	Outside Lane	Thru Lane	Turn Lane	Thru Lane	Outside Lane	Bike Lane w/ Buffer	Curb & Gutter	Planter	Walk	Walk to P/L
5-Lane Principal Arterial Street Section w/ Bike Lanes															
75 / 105	2	5	8	2	8	11	11	11	11	11	8	2	8	5	2

Road / R/W	Walk to P/L	MUP	Planter	Curb & Gutter	Outside Lane	Thru Lane	Turn Lane	Thru Lane	Outside Lane	Curb & Gutter	Planter	MUP	Walk to P/L
5-Lane Principal Arterial Street Section w/ Multi-Use Path													
59 / 99	2	10	8	2	11	11	11	11	11	2	8	10	2
Right of Way at Private and Public intersections shall adjust to the setbacks required within the Multi-Use Pathway Toolkit													
Right of Way at driveways shall adjust to the setbacks required within the Multi-Use Pathway Toolkit													

7-Lane Principal Arterial - Please refer to Section 7205 in the Policy Manual for the criteria and standards related to each section.

Road / R/W	Walk to P/L	Walk	Planter	Curb & Gutter	Bike Lane	Outside Lane	Thru Lane	Thru Lane	Thru Lane	Turn Lane	Thru Lane	Outside Lane	Bike Lane	Curb & Gutter	Planter	Walk	Walk to P/L
7-Lane Principal Arterial Street Section w/ Existing Bike Lanes																	
91 / 121	2	5	8	2	5	11	11	11	11	11	11	11	5	2	8	5	2

Road / R/W	Walk to P/L	MUP	Planter	Curb & Gutter	Outside Lane	Thru Lane	Thru Lane	Thru Lane	Turn Lane	Thru Lane	Outside Lane	Curb & Gutter	Planter	MUP	Walk to P/L
7-Lane Principal Arterial Street Section w/ Multi-Use Path															
81 / 121	2	10	8	2	11	11	11	11	11	11	11	2	8	10	2
Right of Way at Private and Public intersections shall adjust to the setbacks required within the Multi-Use Pathway Toolkit															
Right of Way at driveways shall adjust to the setbacks required within the Multi-Use Pathway Toolkit															

MINOR ARTERIAL

3-Lane Minor Arterial - Please refer to Section 7205 in the Policy Manual for the criteria and standards related to each section.

Road / R/W	Walk to P/L	Walk	Planter	Curb & Gutter	Bike Lane w/ Buffer	Outside Lane	Thru Lane	Outside Lane	Bike Lane w/ Buffer	Curb & Gutter	Planter	Walk	Walk to P/L
3-Lane Minor Arterial Street Section w/ Bike Lanes													
53 / 83	2	5	8	2	8	11	11	11	8	2	8	5	2

Road / R/W	Walk to P/L	MUP	Planter	Curb & Gutter	Outside Lane	Thru Lane	Outside Lane	Curb & Gutter	Planter	MUP	Walk to P/L
3-Lane Minor Arterial Street Section w/ Multi-Use Path											
37/77	2	10	8	2	11	11	11	2	8	10	2
Right of Way at Private and Public intersections shall adjust to the setbacks required within the Multi-Use Pathway Toolkit											
Right of Way at driveways shall adjust to the setbacks required within the Multi-Use Pathway Toolkit											

4-Lane Minor Arterial - Please refer to Section 7205 in the Policy Manual for the criteria and standards related to each section.

Road / R/W	Walk to P/L	Walk	Planter	Curb & Gutter	Bike Lane w/ Buffer	Outside Lane	Thru Lane	Thru Lane	Outside Lane	Bike Lane w/ Buffer	Curb & Gutter	Planter	Walk	Walk to P/L
4-Lane Minor Arterial Street Section w/ Bike Lanes														
64/94	2	5	8	2	8	11	11	11	11	8	2	8	5	2

Road / R/W	Walk to P/L	MUP	Planter	Curb & Gutter	Outside Lane	Thru Lane	Thru Lane	Outside Lane	Curb & Gutter	Planter	MUP	Walk to P/L
4-Lane Minor Arterial Street Section w/ Multi-Use Path												
48/88	2	10	8	2	11	11	11	11	2	8	10	2
Right of Way at Private and Public intersections shall adjust to the setbacks required within the Multi-Use Pathway Toolkit												
Right of Way at driveways shall adjust to the setbacks required within the Multi-Use Pathway Toolkit												

5-Lane Minor Arterial - Please refer to Section 7205 in the Policy Manual for the criteria and standards related to each section.

Road / R/W	Walk to P/L	Walk	Planter	Curb & Gutter	Bike Lane w/ Buffer	Outside Lane	Thru Lane	Turn Lane	Thru Lane	Outside Lane	Bike Lane w/ Buffer	Curb & Gutter	Planter	Walk	Walk to P/L
5-Lane Minor Arterial Street Section w/ Bike Lanes															
75/105	2	5	8	2	8	11	11	11	11	11	8	2	8	5	2

Road / R/W	Walk to P/L	MUP	Planter	Curb & Gutter	Outside Lane	Thru Lane	Turn Lane	Thru Lane	Outside Lane	Curb & Gutter	Planter	MUP	Walk to P/L
5-Lane Minor Arterial Street Section w/ Multi-Use Path													
59 / 99	2	10	8	2	11	11	11	11	11	2	8	10	2
Right of Way at Private and Public intersections shall adjust to the setbacks required within the Multi-Use Pathway Toolkit													
Right of Way at driveways shall adjust to the setbacks required within the Multi-Use Pathway Toolkit													

COLLECTOR

3-Lane Collector - Please refer to Section 7206 in the Policy Manual for the criteria and standards related to each section.

Road / R/W	Walk to P/L	Walk	Planter	Curb & Gutter	Bike Lane	Outside Lane	Thru Lane	Outside Lane	Bike Lane	Curb & Gutter	Planter	Walk	Walk to P/L
3-Lane Collector Street Section w/ Bike Lanes													
47/77	2	5	8	2	5	11	11	11	5	2	8	5	2

Road / R/W	Walk to P/L	MUP	Planter	Curb & Gutter	Outside Lane	Thru Lane	Outside Lane	Curb & Gutter	Planter	MUP	Walk to P/L
3-Lane Collector Street Section w/ Multi-Use Path											
37/77	2	10	8	2	11	11	11	2	8	10	2
Right of Way at Private and Public intersections shall adjust to the setbacks required within the Multi-Use Pathway Toolkit											
Right of Way at driveways shall adjust to the setbacks required within the Multi-Use Pathway Toolkit											

2-Lane Collector - Please refer to Section 7206 in the Policy Manual for the criteria and standards related to each section.

Road / R/W	Walk to P/L	Walk	Planter	Curb & Gutter	Bike Lane	Thru Lane	Thru Lane	Bike Lane	Curb & Gutter	Planter	Walk	Walk to P/L
2-Lane Collector Street Section w/ Bike Lanes												
36/66	2	5	8	2	5	11	11	5	2	8	5	2

Road / R/W	Walk to P/L	MUP	Planter	Curb & Gutter	Thru Lane	Thru Lane	Curb & Gutter	Planter	MUP	Walk to P/L
2-Lane Collector Street Section w/ Multi-Use Path										
26/66	2	10	8	2	11	11	2	8	10	2
Right of Way at Private and Public intersections shall adjust to the setbacks required within the Multi-Use Pathway Toolkit										
Right of Way at driveways shall adjust to the setbacks required within the Multi-Use Pathway Toolkit										

LOCAL STREETS

Local Streets - Please refer to Section 7207 in the Policy Manual for the criteria and standards related to each street section.

Road / R/W	Walk to P/L	Walk	Curb	Park Lane	Thru Lane	Thru Lane	Park Lane	Curb	Walk	Walk to P/L
Standard Local										
33/47	2	5	.5	7	9	9	7	.5	5	2
Standard Local – City of Kuna and City of Star										
36/50	2	5	.5	8	9.5	9.5	8	.5	5	2
Reduced Width Local										
27/41	2	5	.5	-	9.5	9.5	7	.5	5	2
Minor Urban										
24/28	2	5 (in easement)	.5	-	11.5	11.5	-	.5	5 (in easement)	2
Standard Rural (1-5 acres)										
30/52	11 (with swale)	none	2 (concrete ribbon)	-	13	13	-	2 (concrete ribbon)	none	11 (with swale)
Standard Rural (+5 acres)										
24/50	10 (with borrow ditch)	none	3 (gravel shoulder)	-	12	12	-	3 (gravel shoulder)	none	10 (with borrow ditch)

1. All dimensions are in feet.
2. Street sections less than 33-feet wide require approval by the appropriate fire department.
3. Criteria and Conditions in the Policy Manual shall be met to determine street section.
4. The Reduced Width Local street section may be constructed as a 29/43 is demonstrated that the width is necessary to accommodate utilities.

COMMERCIAL/INDUSTRIAL STREETS

Commercial/Industrial Streets - Please refer to Sections 7208 and 7209 in the Policy Manual for the criteria and standards related to each street section.

Road / R/W	Walk to P/L	Walk	Curb	Bike Lane or Parking	Outside Lane	Turn Lane	Outside Lane	Bike Lane or Parking	Curb	Walk	Walk to P/L
2-Lane Commercial w/ Parking											
36/50	2	5	.5	7.5 (Parking)	10	-	10	7.5 (Parking)	.5	5	2
3-Lane Commercial											
40/54	2	5	.5	-	13	13	13	-	.5	5	2
3-Lane Commercial w/ Bike Lanes											
46/60	2	5	.5	6	11	11	11	6	.5	5	2
3-Lane Industrial											
40/54	2	5	.5	-	13	13	13	-	.5	5	2
3-Lane Industrial w/ Parking											
52/66	2	5	.5	7.5 (Parking)	12	12	12	7.5 (Parking)	.5	5	2

1. All dimensions are in feet.
2. Criteria and Conditions in the Policy Manual shall be met to determine street section.

Figure 2

STREET DESIGN GUIDELINES

FOR REFERENCE ONLY

Sections 7205, 7206, and 7207 – Please refer to the Policy Manual for the criteria and standards related to each section.

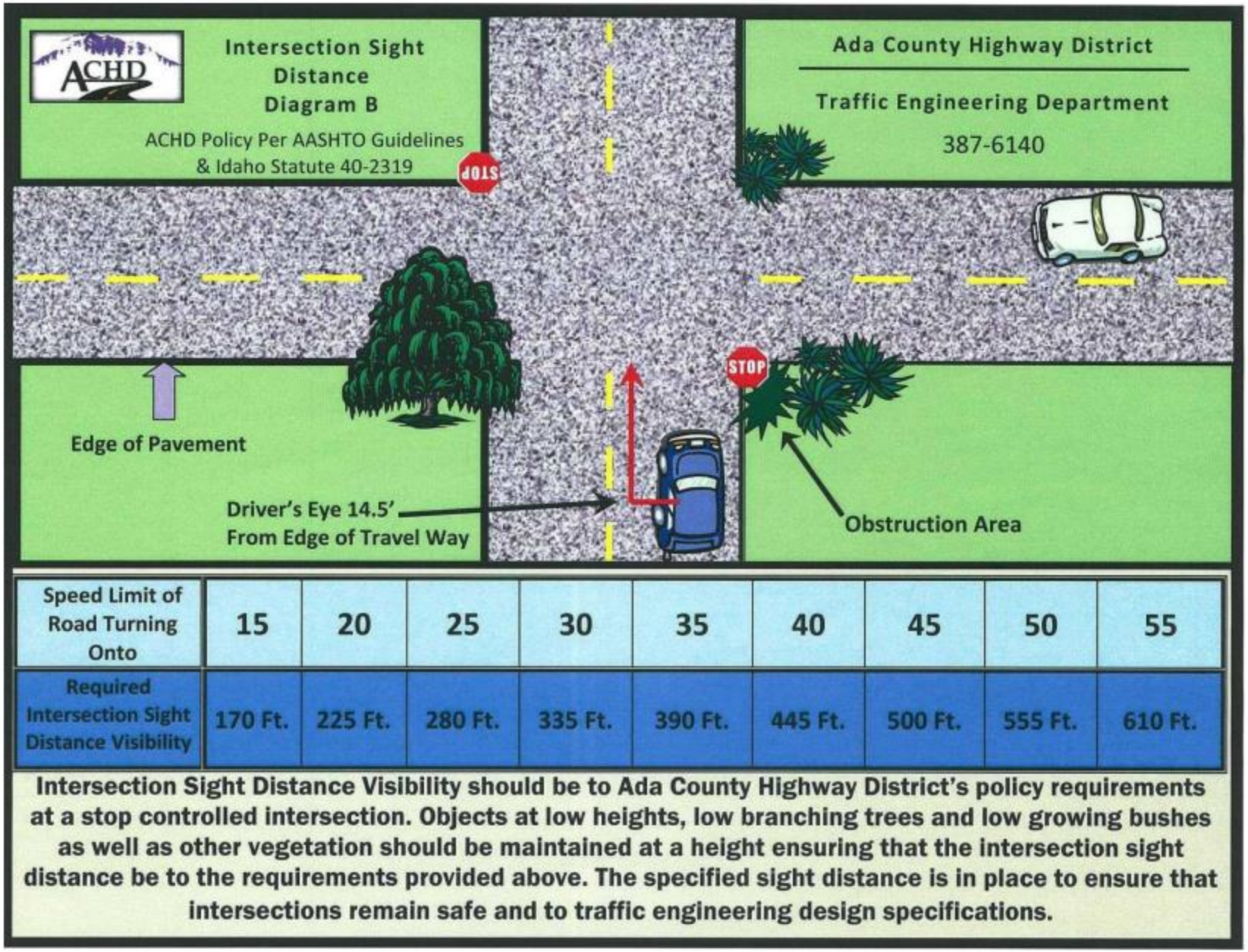
Description	Local Street Section 7207	Collector Street Section 7206	Arterial Street Section 7205
Standard Right-of-Way Width	47’	66’ - 77’	78’ - 124’
Standard Right-of-Way Width (City of Kuna and City of Star)	50’	66’ - 77’	78’ - 124’
Standard Street Section	33’	26’ - 47’	37’ - 91’
Standard Street Section (City of Kuna and City of Star)	36’	26’ - 47’	37’ - 91’
Curb Type	Vertical or Rolled	Vertical	Vertical
Sidewalk/Multi-Use Pathway Width	5’ Detached or Attached	10’ Multi-Use Path (Preferred) - May also be 5’ Detached or 7’ Attached	10’ Multi-Use Path (Preferred) - May also be 5’ Detached or 7’ Attached w/ approval. Contact ACHD for required facility.
Landscape Buffer (Back of Curb to Face of Sidewalk/Multi-Use Path)	Encouraged. No minimum. 8’ if planting trees.	Encouraged. 8’ for multi-use paths or if planting street trees. Refer to LSPM.	Encouraged. 8’ for multi-use paths or if planting street trees. Refer to LSPM.
Stopping Sight Distance for Vertical/Horizontal Curves	150’	200’	Refer to AASHTO
Minimum/Maximum Profile Grade	0.4% - 10%	0.4% - 10%	0.4% - 10%
Minimum Centerline Radius of Curves	100’	180’	Refer to AASHTO
Design Speed	25 MPH.	25 MPH. A design speed of 30 MPH may be approved by ACHD.	Target speed of 35 MPH. A design speed above may be approved by ACHD.
Tangent Length Between Curves	50’	100’	Refer to AASHTO
Tangent Length Approaching Intersections	150’	200’	360’
Traffic Index	6	8	Case-by-Case
Minimum Back of Curb Radius	15’	30’	30’

AASHTO = *American Association of State Highway and Transportation Officials*

LSPM = *Livable Streets Performance Measures* (ACHD)

Figure 3

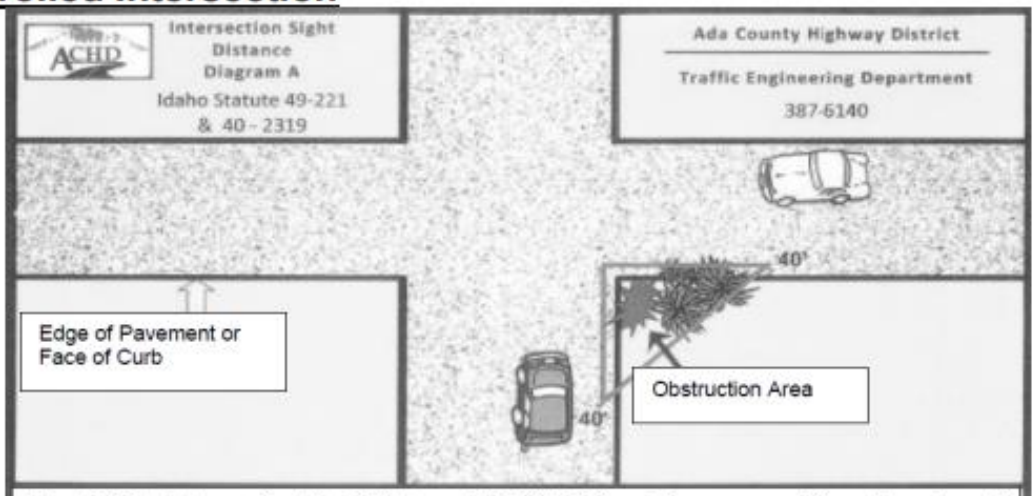
SIGHT DISTANCE



Speed Limit of Road Turning Onto	15	20	25	30	35	40	45	50	55
Required Intersection Sight Distance Visibility	170 Ft.	225 Ft.	280 Ft.	335 Ft.	390 Ft.	445 Ft.	500 Ft.	555 Ft.	610 Ft.

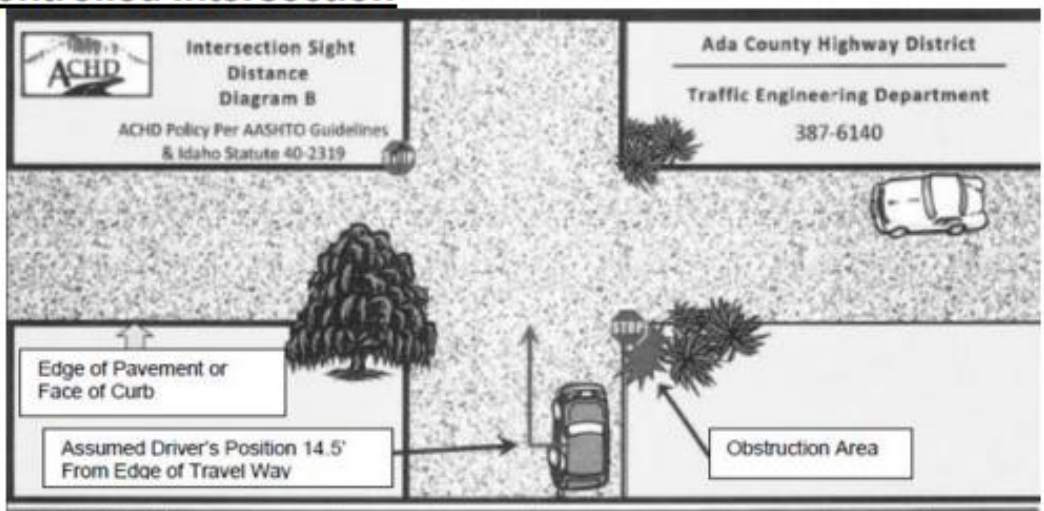
Intersection Sight Distance Visibility should be to Ada County Highway District's policy requirements at a stop controlled intersection. Objects at low heights, low branching trees and low growing bushes as well as other vegetation should be maintained at a height ensuring that the intersection sight distance be to the requirements provided above. The specified sight distance is in place to ensure that intersections remain safe and to traffic engineering design specifications.

Uncontrolled Intersection



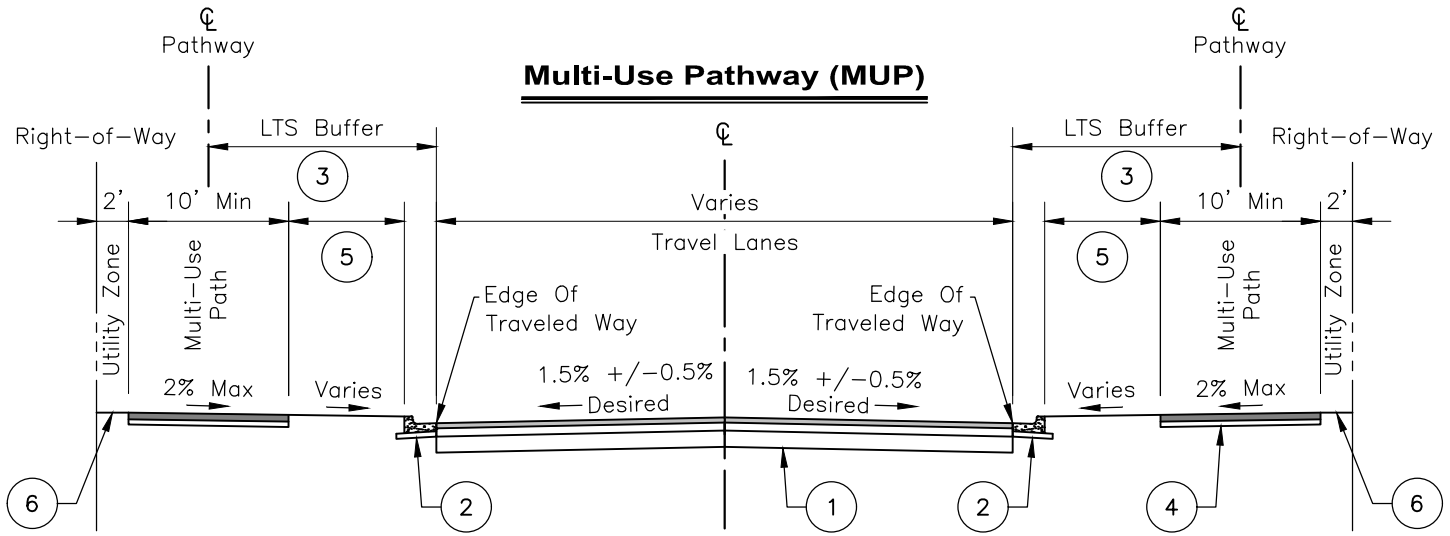
The 40-foot Intersection Sight Distance Visibility Triangle is measured from the edge of pavement or face of curb (where existing) at each corner of an intersection of public roads. Items within the 40-foot Intersection Sight Distance Visibility Triangle, including but not limited to, fences, private signs, shrubs, rocks and similar features,shall not be higher than 3 feet above the adjacent roadway surface. Trees or other overhanging elements within the vision triangle shall be maintained so that minimum clearance within the vision triangle is 10 feet above the adjacent roadway surface.

Stop Controlled Intersection



Speed Limit of Road Turning Onto	15	20	25	30	35	40	45	50	55
Required Intersection Sight Distance Visibility	170 Ft.	225 Ft.	280 Ft.	335 Ft.	390 Ft.	445 Ft.	500 Ft.	555 Ft.	610 Ft.

The Intersection Sight Distance Visibility Triangle is measured with one leg of the triangle originating 14.5 feet from the edge of travel way along the stop controlled street and the second leg of the triangle extending either right or left along the uncontrolled street for the distance corresponding to the posted speed limit of the uncontrolled street. Items within the Intersection Sight Distance Visibility Triangle, including but not limited to, fences, private signs, shrubs, rocks and similar features, shall not be higher than 3 feet above the adjacent roadway surface. Trees or other overhanging elements within the vision triangle shall be maintained so that a minimum clearance within the vision triangle is 10 feet above the adjacent roadway surface.



Notes

1. Material Sections Will Be Determined By ACHD During Design. Refer To ACHD Policy Manual For Additional Information.
2. Standard 6" Vertical Curb And Gutter Per ACHD Standard Drawing SD-701, Shown. Specific Curb Types To Be Determined By ACHD During Design. (Reference 1)
3. Level of Traffic Stress (LTS) Buffer Is Measured From Edge Of Traveled Way To Centerline Of Multi-Use Pathway (MUP). Refer To Table 1, For Buffer Widths Based On Level Of Traffic Stress (LTS). LTS 1 Desired, LTS 2 Minimum. Minimum 3' Buffer Between Curb And Front Of Multi-Use Pathway. Buffer Materials/Treatments To Be Determined On A Case-By-Case Basis During Project Design. If Buffer Is Traversable, Buffer Shall Comply With All ADA Requirements.
4. MUP Material Section Will Be Determined By ACHD During Design.
5. Roadside Buffer Is Measured From The Top Back Of Curb To The Front Of The MUP. Minimum Width Of 3' For Roadways With 3 Or Fewer Travel Lanes, Minimum Width Of 4' For Roadways With 4 Or More Travel Lanes. Buffer May be Traversable.
6. Provide 2' Minimum Lateral Clearance From Vertical Obstructions (Utility Boxes, Power Poles, Etc.) On Either Side Of The Pathway. Utilities May Be Located Within The Roadside Buffer Provided The Minimum Lateral Clearance Is Met, And The Roadside Minimum Lateral Clearance Is Met Per ACHD Policy Manual. Refer To ACHD Policy Manual For Additional Utility Location Requirements.

Table 1: Level Of Traffic Stress (LTS) Buffer Widths

Total Travel Lanes	Total Buffer Width Measured From Edge Of Traveled Way To Centerline Of MUP		
	5'-10'	11'-14'	15'+
1-2	LTS 2	LTS 1	LTS 1
3	LTS 2	LTS 1	LTS 1
4-5	LTS 3	LTS 2	LTS 1
6+	LTS 4	LTS 3	LTS 2

EXHIBIT NO. MUP-01

Multi-Use Path Example Applications
Typical Sections

ACHD
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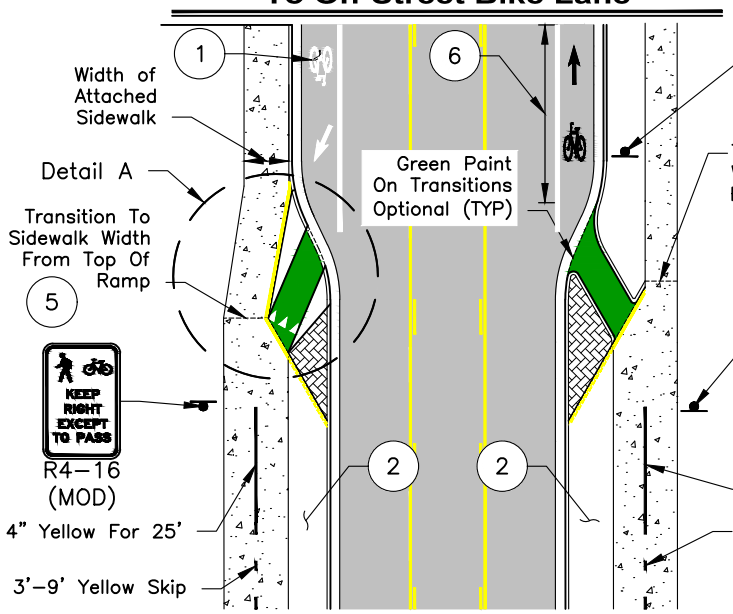
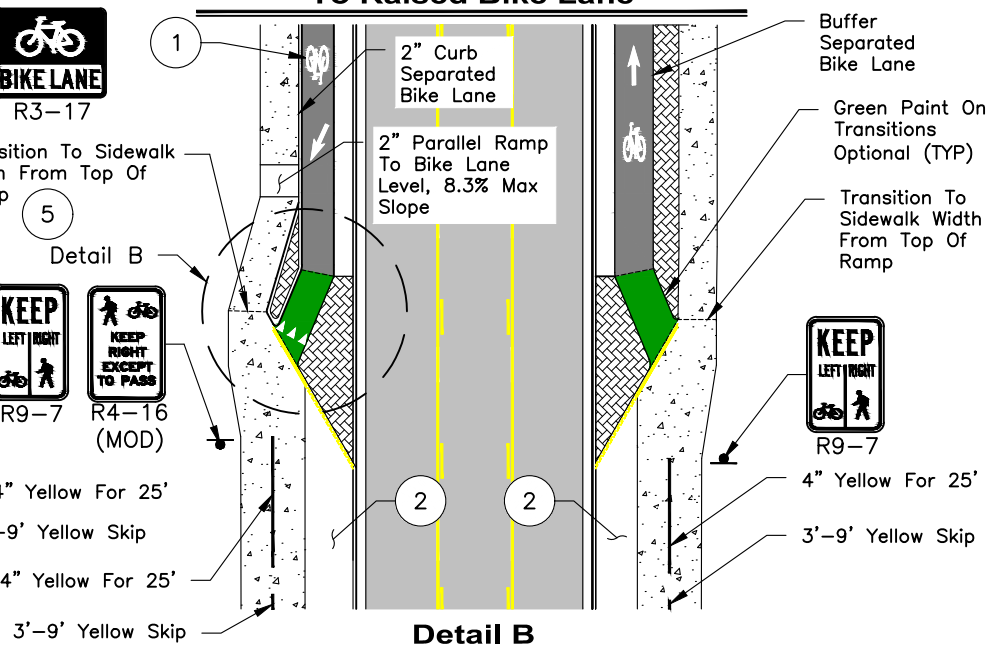
Multi-Use Path Transition To On-Street Bike Lane

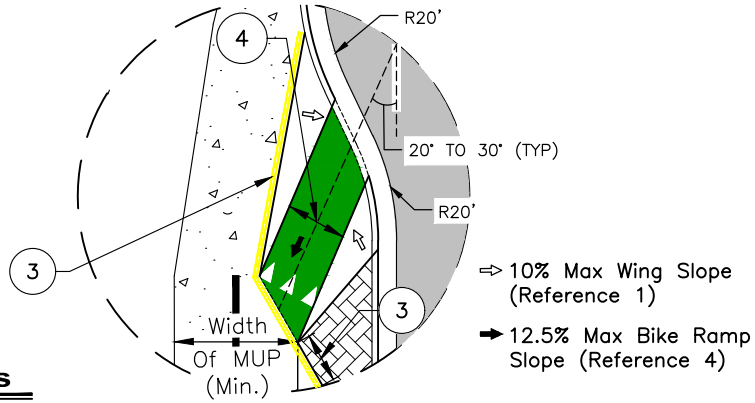


Multi-Use Path Transition To Raised Bike Lane



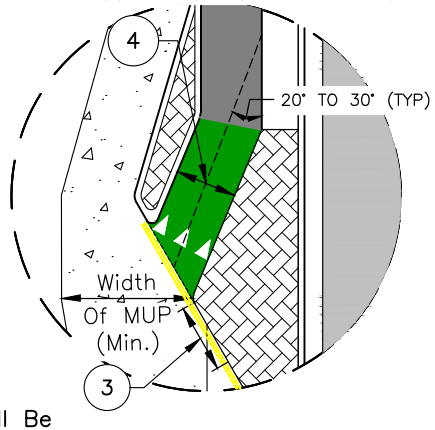
Detail A

On-Street Approach/Departure Ramps



Detail B

Raised Approach/Departure Ramps



Notes

1. Bike Lane Marking Per ACHD Standard Drawing TS-1113.04. Marking Shall Be Placed Immediately Before And After A Bike Transition Ramp (Reference 10).
2. Buffer Material May Be Traversable Until Bike Ramp Deflection. Buffer Treatments/Materials To Be Determined On A Case-By-Case Basis During Project Design.
3. Introduce Geometric Deflection Via Detectable Edge/Buffer For Positive Guidance Along Pedestrian Desirable Path. 2' Minimum Deflection Length On Roadway Side Of Bike Ramp. Detectable Edge/Buffer Treatments Including TWSIs, Curbs, Aggregates, Or Other Detectable Treatments For Deflection To Be Determined On A Case-By-Case Basis During Project Design.
4. Match Receiving Bike Facility Width, 5' Minimum.
5. Width To Match Sidewalk Width At Top Of Bike Curb Ramp.
6. 30' Minimum Before Any Bike Lane Crossing Conflicts (I.E. On-Street Parking, Turn Lanes, Etc.)

EXHIBIT NO. MUP-02

Multi-Use Path Example Applications
Transition To Bike Lane

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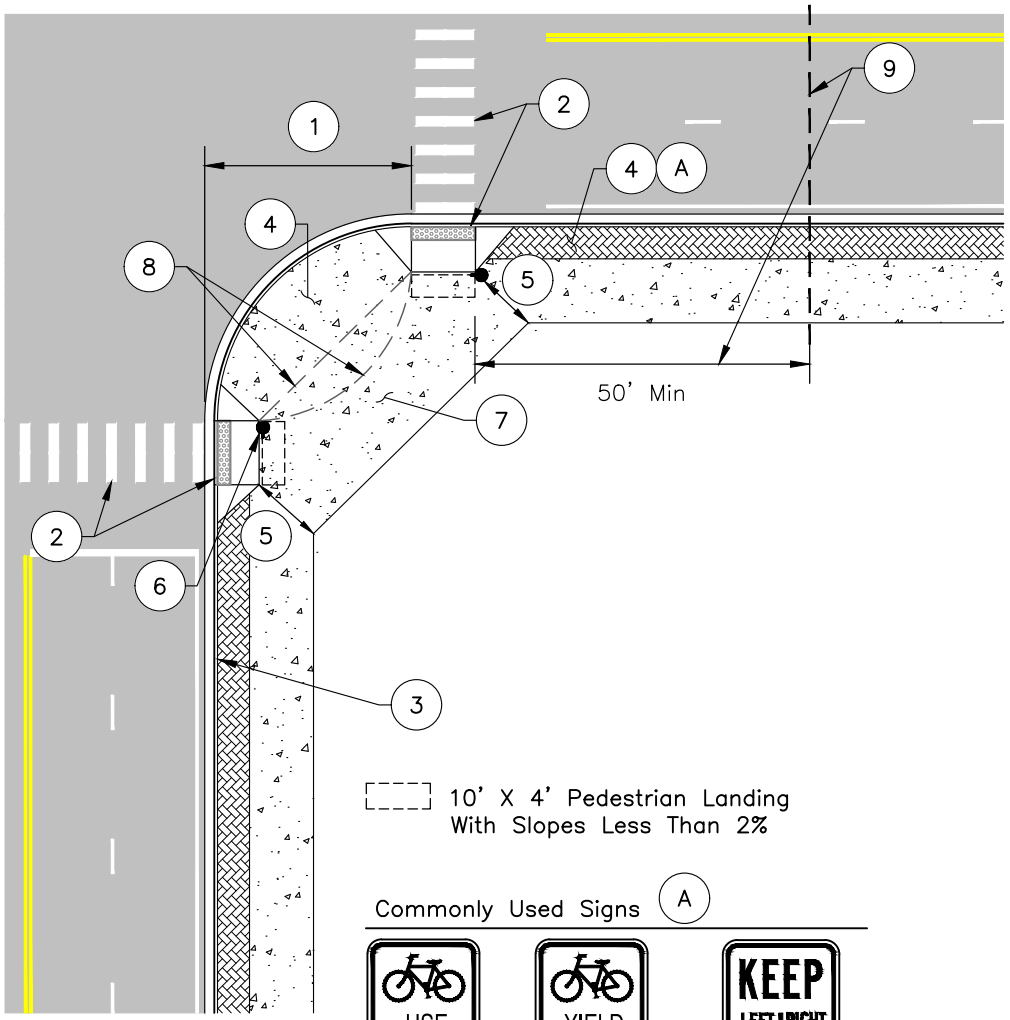
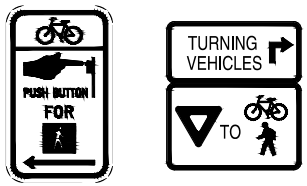
Elements Of A Multi-Use Path Intersection (Signalized) (B)



Commonly Used Signs (A)

R9-5 R9-6 R9-7



R10-4B(L) MOD R10-15(R) MOD

Notes

(1)

Speed Limit (MPH)	Crossing Setback Lip Of Gutter To Front Of Crosswalk (FT)
20-35	6
40	10
45	16
50	20
55	24

6' Minimum Setback When Adjacent To Right Turn Lane (Ref 3,4,5)

(2) Width Of Crosswalk And Curb Ramp Opening Shall Be Equal To Or Greater Than The Width Of The Multi-Use Path.

(3) 6" Vertical Curb & Gutter Per ACHD Standard Drawing SD-701, Shown (Reference 1). Curb Type to Be Determined During Design.

(4) Area May Be Utilized For Signal Equipment And Other Traffic Control Devices.

(5) Minimum Clear Width Between Signal Poles, Push Buttons, Top Of Ped Ramp Or Other Vertical Obstructions Shall Be Equal To Or Greater Than The Width Of The MUP.

(6) Pedestrian Push Button Pole Equipped With APS Per ACHD Standard Drawing TS-1106.02 (Reference 10). Push Button Locations Shown For Reference Only And Shall Be Determined During Design.

(7) Area Equal To Or Greater Than The Width Of The Of The MUP To Remain Clear And Free From Obstructions For Multi-Use Mixing Zone And Queue Storage.

(8) Curb (Or Other ADA Detectable Surface Feature) May Be Utilized In This Area For Channelization. If Utilized, Minimum Clear Width Between Curb And Back Of Pathway Shall Be Equal To Or Greater Than The Width Of The Multi-Use Pathway.

(9) See Sheet MUP – 02 For Multi-Use Pathway To Bike Lane Transitions.

(A) Signage Is Considered Context Sensitive To Each Project And Specific Signal Equipment Layout. MUTCD Signs and Modified (MOD) Signs To Be Considered Include R9-5, R9-6, R9-7, R10-4b(L/R) MOD, R10-15 (L/R) MOD. Signage Shown For Reference Only And Shall Be Determined During Design.

(B) Signalized Intersection Shown. Same Principals Apply To All-Way-Stop-Controlled Intersections.

EXHIBIT NO. MUP-03

Multi-Use Path Example Applications

Signalized Intersection

ACHD
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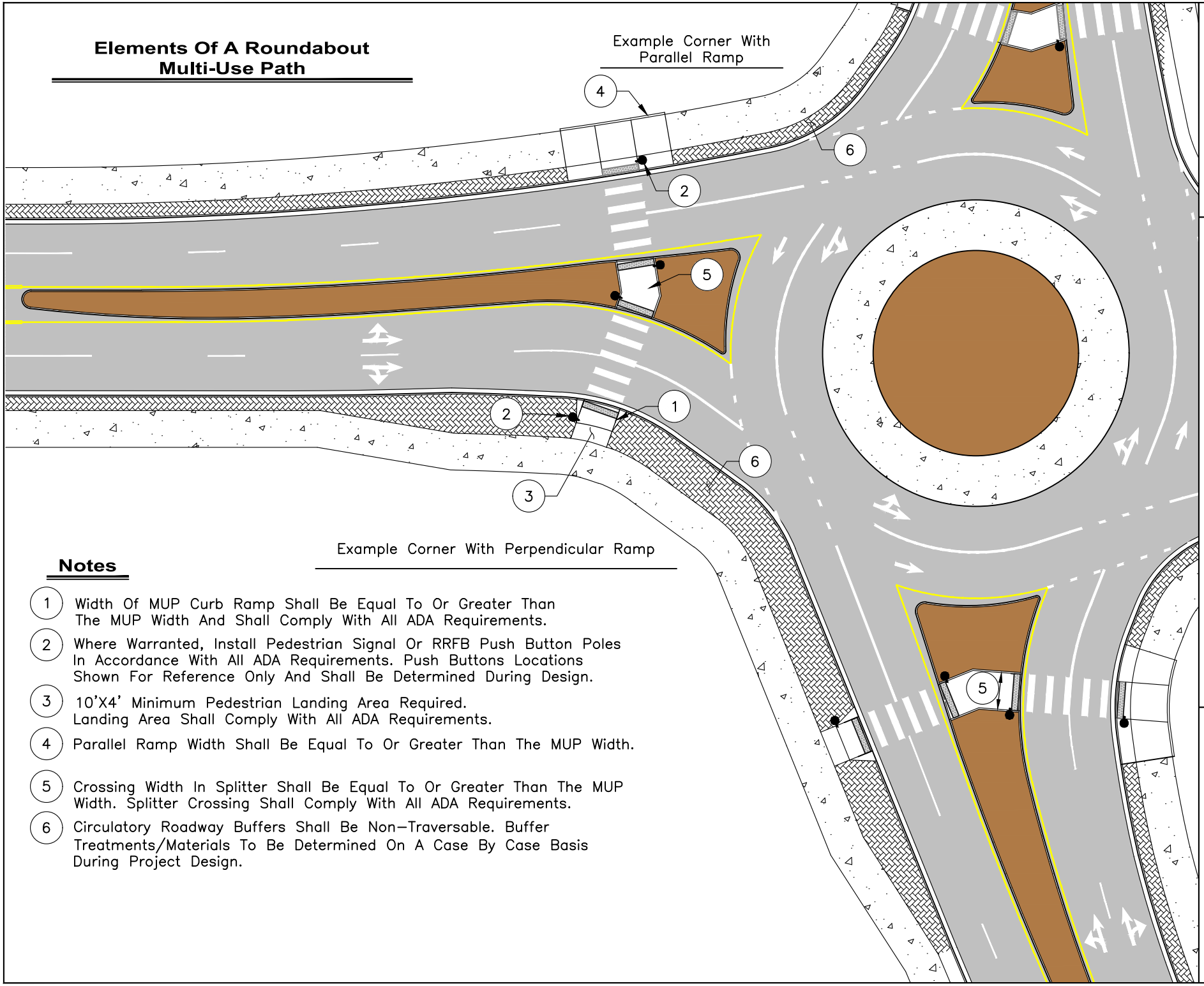
Elements Of A Roundabout
Multi-Use Path



Notes

1. Width Of MUP Curb Ramp Shall Be Equal To Or Greater Than The MUP Width And Shall Comply With All ADA Requirements.
2. Where Warranted, Install Pedestrian Signal Or RRFB Push Button Poles In Accordance With All ADA Requirements. Push Buttons Locations Shown For Reference Only And Shall Be Determined During Design.
3. 10'X4' Minimum Pedestrian Landing Area Required. Landing Area Shall Comply With All ADA Requirements.
4. Parallel Ramp Width Shall Be Equal To Or Greater Than The MUP Width.
5. Crossing Width In Splitter Shall Be Equal To Or Greater Than The MUP Width. Splitter Crossing Shall Comply With All ADA Requirements.
6. Circulatory Roadway Buffers Shall Be Non–Traversable. Buffer Treatments/Materials To Be Determined On A Case By Case Basis During Project Design.

EXHIBIT NO. MUP–04

Multi–Use Path Example Applications
Roundabout

ACHD

3775 Adams Street, Boise, Idaho, 83714
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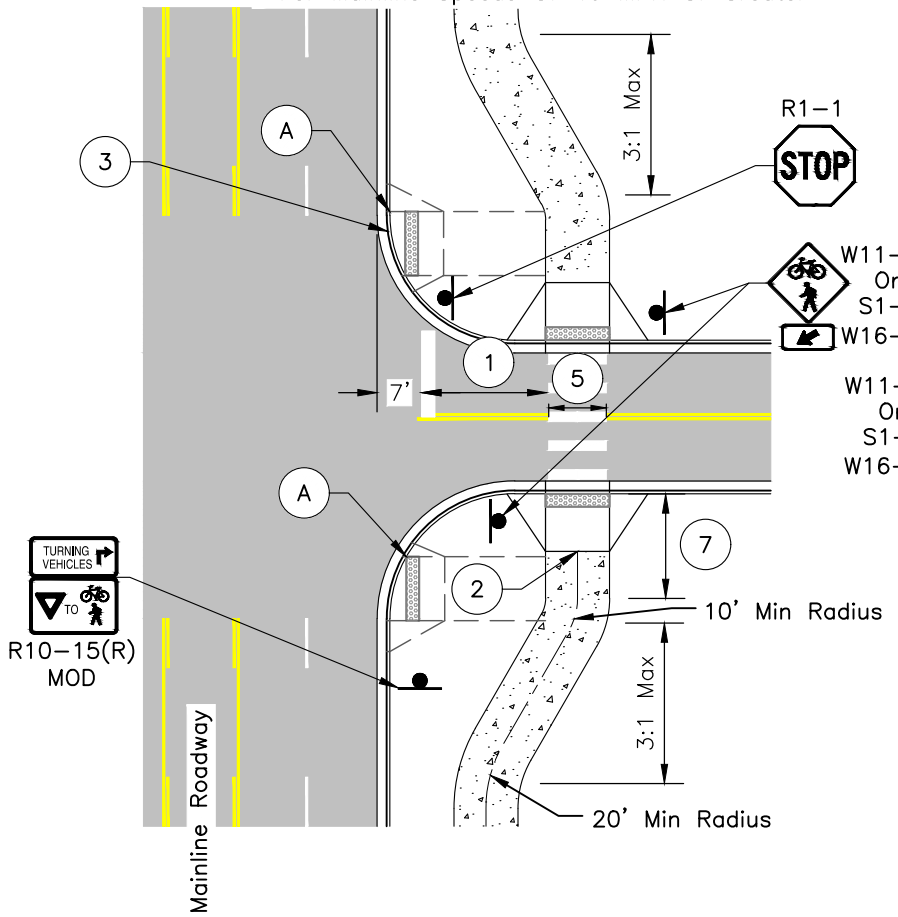
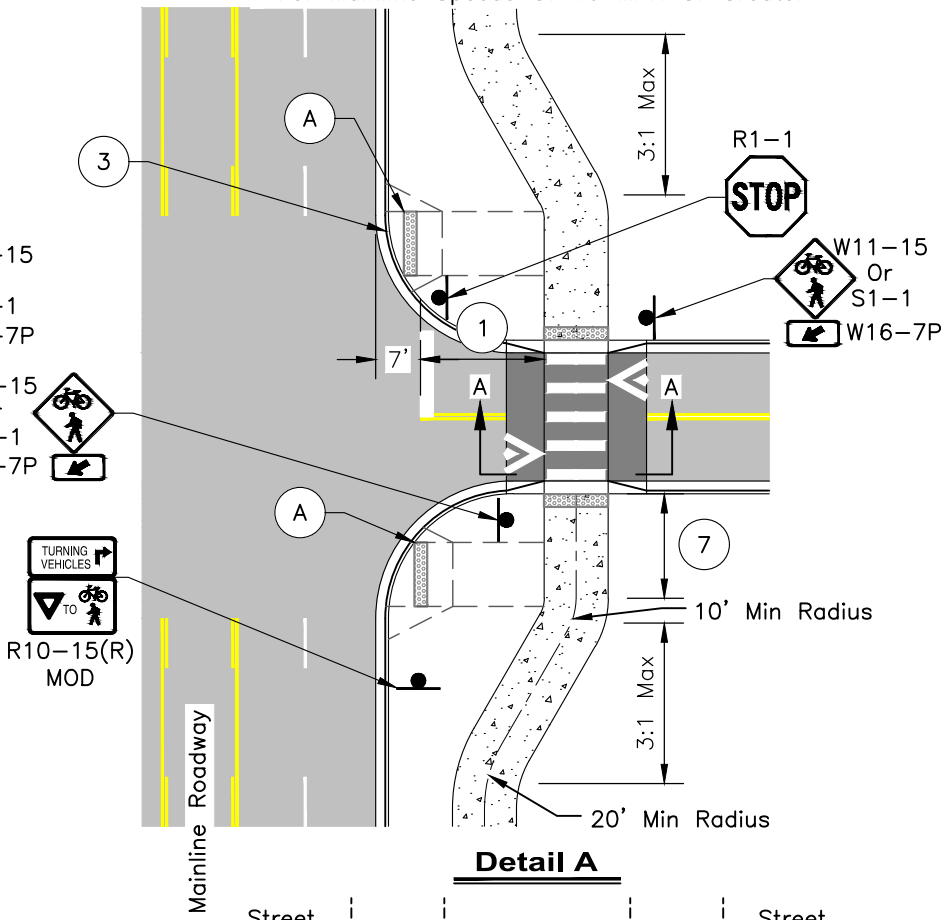
Unsignalized At-Grade Side Street Crossing

For Mainline Speeds Of 40 MPH Or Greater

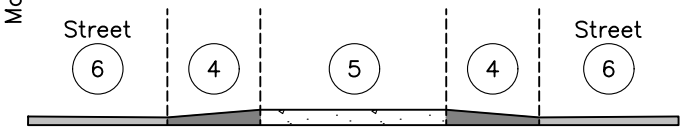


Unsignalized Raised Side Street Crossing

For Mainline Speeds Of 40 MPH Or Greater



Detail A



Notes

1. 16' Min Setback From Front Of Stop Bar Pavement Marking To Front Of Crosswalk Pavement Marking For At Grade Crossings. 19' Minimum Set Back For Raised Crossings.
2. Width Of MUP Curb Ramp Shall Be Equal To Or Greater Than The MUP Width And Shall Comply With All ADA Requirements.
3. When Crossing Of Mainline Is Required, Both Mainline Curb Ramp Widths Shall Be Equal To Or Greater Than The MUP Width, And Comply With All ADA Requirements.
4. Roadway Approach Ramp And Departure Ramp Shall Not Exceed 8.3% Slope. Speed Hump Markings Shall Be Used On Transition Ramps.
5. 3" Maximum Crossing Height. Crossing Width Shall Be Equal To Or Greater Than The MUP Width And Shall Comply With All ADA Requirements.
6. Raised Crossings Considered On A Case By Case Basis.
7. 8' Minimum If Crossing Of Mainline Is Not Required.
A. Crossing(s) Of The Mainline To Be Provided If Side Street Is A Public Roadway. May Not Be Required For Commercial Driveways. Crossing Locations To Be Determined During Project Design.

EXHIBIT NO.
MUP-05

Multi-Use Path Example Applications
Unsignalized Side Street Crossings

ACHD
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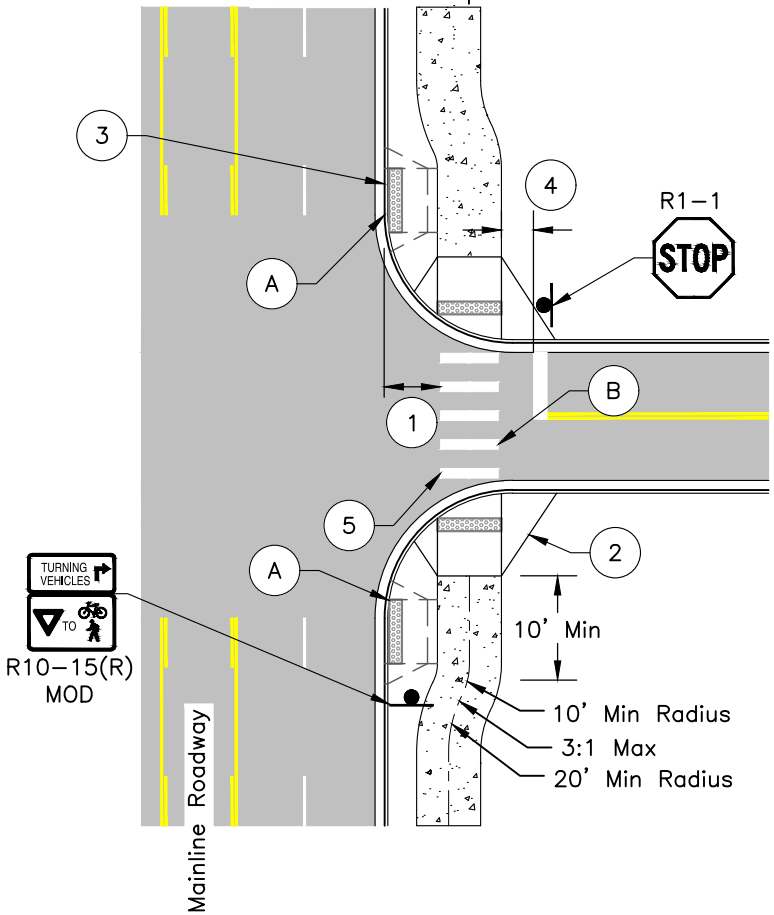
Unsignalized At-grade Side Street Crossing

For Mainline Speeds Of 35 MPH Or Less



Notes

1. 6' Minimum Setback From Lip of Gutter To Front Of Crosswalk. Minimum Setback To Bike Crossing To Improve Visibility For Vehicles, Pedestrians, And Bicycles. (Reference 3, 4)
2. Width Of MUP Curb Ramp Shall Be Equal To Or Greater Than The MUP Width And Shall Comply With All ADA Requirements.
3. When Crossing Of Mainline Is Required, Both Mainline Curb Ramp Widths Shall Be Equal To Or Greater Than The MUP Width, And Comply With All ADA Requirements.
4. 4' Minimum Setback From Crosswalk Per ACHD Standard Drawing TS–1112.03 (Reference 10).
5. Width Of Crossing Shall Be Equal To Or Greater Than The MUP Width And Shall Comply With All ADA Requirements.

A. Crossing(s) Of The Mainline To Be Provided If Side Street Is A Public Roadway. May Not Be Required For Private Roadways Or Driveways. Crossing Locations To Be Determined During Project Design.

B. At Grade Crossing Shown, Raised Crossings To Be Considered On A Case–By–Case Basis. Raised Crossing Shall Be Per Detail A On MUP–05.

EXHIBIT NO.
MUP–06

Multi–Use Path Example Applications
Unsignalized Side Street Crossings

ACHD
3775 Adams Street, Boise, Idaho, 83714
www.achdidaho.org

References For Multi-Use Pathways

1. Ada County Highway District. "2017 ACHD Supplement To The 2017 ISPWC." December 2017, https://www.achdidaho.org/documents/engineering/ispwc/2017_ispwcsupplements.pdf.
2. City Of West Linn Public Works Department. Separated Bike Path At Intersection Standard Drawings. Revised February 2019, https://westlinnoregon.gov/publicworks/standard-drawings.
3. Massachusetts Department Of Transportation. "Separated Bike Lane Planning & Design Guide." 2015, https://www.mass.gov/lists/separated-bike-lane-planning-design-guide.
4. National Association Of City Transportation Officials. "urban Bikeway Design Guide Annotated Plans." April 2011.
5. U.S. Department Of Transportation Federal Highway Administration. "Separated Bike Lane Planning And Design Guide." May 2015.
6. NCHRP Report 834 Crossing Solutions At Roundabouts And Channelized Turn Lanes For Pedestrians With Vision Disabilities, January 2017.
7. NCHRP Report 672, Roundabouts, A Guide Book, 1st And 2nd Editions, 2010.
8. United States Access Board. "R304.5.1.2 Shared Use Paths". 2013 https://www.access-board.gov/files/prowag/prow-sup-snprm-2013.pdf
9. NCHRP Guide For Low Speed Multimodal Roadways, 2018.
10. ACHD Traffic Standards/Specifications. http://www.achdidaho.org/Departments/Engineering/Traffic/trafficStandards.aspx

EXHIBIT NO.
MUP-07

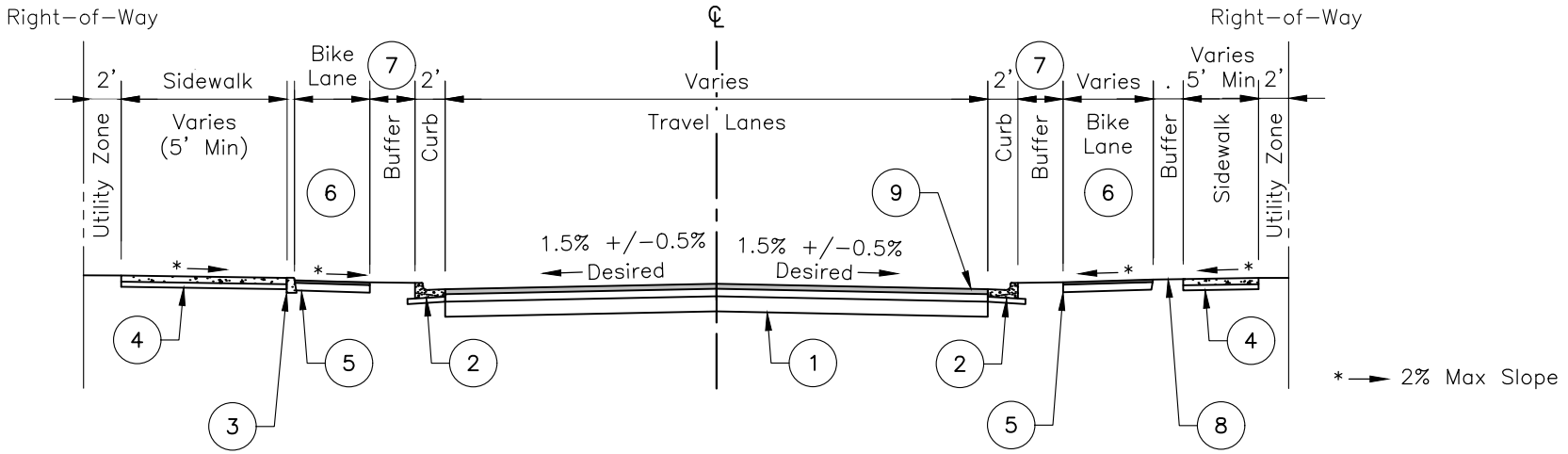
Multi-Use Path Example Applications

References

3775 Adams Street, Boise, Idaho, 83714
www.achdidaho.org

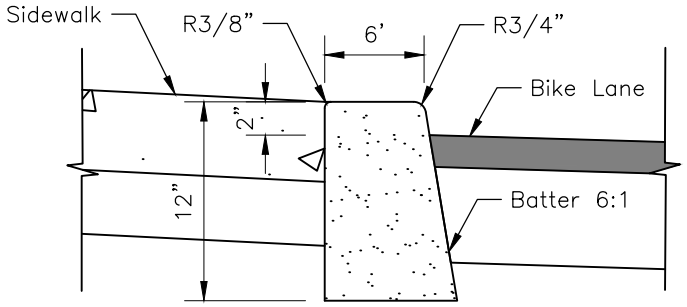
Curb Separated Raised Bike Lane

Buffer Separated Raised Bike Lane



Detail A

Not To Scale



Notes

1. Material Sections Will Be Determined By ACHD At The Time Of Application. Refer To ACHD Policy Manual For Additional Information.
2. Standard 6" Vertical Curb And Gutter Per ACHD Standard Drawing SD-701, Shown. Specific Curb Types To Be Determined By ACHD During Design. (Reference 1)
3. Modified Vertical Curb With 2" Reveal. Refer To Detail A, This Sheet. 2" Curb Reveal Provides ADA Detectability.
4. Standard Concrete Sidewalk Per ACHD Standard Drawing SD-709 (Reference 1).
5. Hot Mix Asphalt Or Colored Concrete With Saw Cut Joints Are The Preferred Surface Materials For Bike Lanes. Material Section Will Be Determined By ACHD During Design.
6. 6.5' Bike Lane Desired, 5' Minimum.
7. Roadside Buffer Varies. 3' Minimum Width To Accommodate Signage, On-Street Parking, And Other Roadside Features.
8. 2' Minimum Width For Sidewalk Buffer. Clear Delineation Between The Sidewalk And Bike Lane, Via Pavement Markings, Surface Materials/Coloring, Etc., Shall Be Provided. Buffer Space May Be Traversable As Long As All ADA Requirements Are Met From Back Of Curb To Back Of Sidewalk, Including The Bike Lane.
9. Buffer Separated Bike Lanes Required When On-Street Parking Is Present. Roadside Buffer, Bike Lane, And Sidewalk Buffer Shall Be Traversable And Comply With All ADA Requirements.

EXHIBIT NO.
RBL-01

Raised Bike Lane Example Applications
Typical Sections

ACHD
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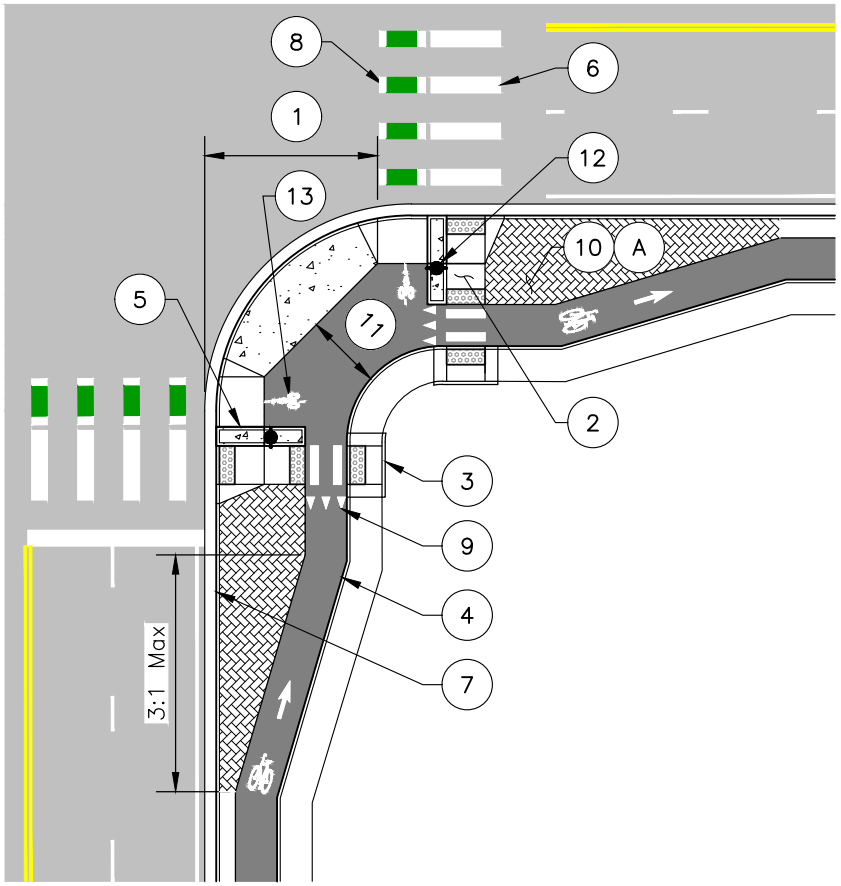
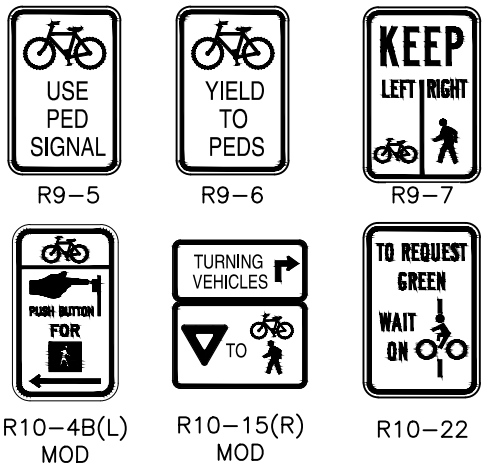
www.achdidaho.org

Elements Of A Protected Intersection (Signalized) (B)
Curb Separated Raised Bike Lane



Commonly Used Signs



Notes

(1)

Speed Limit (MPH)	Crossing Setback Lip Of Gutter To Front Of Bike Ladder Markings(FT)
20–35	6
40	10
45	16
50	20

6' Minimum Setback When Adjacent To Right Turn Lane (Ref 3,4,5)

(2) 4' By 4' Minimum, Pedestrian Landing Area Required. Landing Shall Comply With All ADA Requirements.

(3) Pedestrian Ramp, Type G Per SD–712G, 2'' Drop To Bike Lane Level (Reference 1).

(4) 2" Vertical Curb. Refer To Detail A, RBL–01.

(5) Combination Perpendicular Curb Ramp With 3' Vertical Curb Separating Bikes And Pedestrians. Pedestrian Ramp Width Shall Be Equal To Or Greater Than The Sidewalk Width. Bike Ramp Shall Be Equal To Or Greater Than The Bike Lane Width.

(6) Crosswalk Markings Per ACHD Standard Drawing TS–1112.03 (Reference 11).

(7) 6" Vertical Curb & Gutter Per ACHD Standard Drawing SD–701 (Reference 1).

(8) Bike Ladder Markings.

(9) Yield Markings Per ACHD Standard Drawing TS–1113.06 For Pedestrian Crossing of Bike Lane (Reference 10).

(10) Area May Be Utilized For Signal Equipment And Other Traffic Control Devices.

(11) 10' Minimum To Provide Queue Storage And Bike Mixing Zone Maneuverability.

(12) Pedestrian Signal Pole Or Push Button Pole Equipped With A Separate Dedicated Push Button For Pedestrians And A Separate Dedicated Push Button And Signage For Bikes. See Note C.

(13) If Loop Detection Is Used, Place Loop Detection Under Bike Detector Pavement Markings (MUTCD 9C–7). Place R10–22 Signage On The Curb Separator, And Provide A Bicycle Signal Head On Destination Side (Bike Signal Phased Simultaneously With Pedestrian Crossing). See Note A.

(A) Bike Detection Devices May Include Push Buttons, Loop Detectors, Cameras, Or Radar. Detection Preference And Signal Equipment Layout To Be Determined By ACHD During Project Development.

(B) Signalized Intersection Shown. Same Principals Apply To All–Way–Stop–Controlled Intersections.

(C) Signage Is Considered Context Sensitive To Each Project And Specific Signal Equipment Layout. MUTCD Signs To Be Considered Include R9–5, R9–6, R9–7, R10–4b (L/R) MOD, R10–15 (L/R) MOD, R10–22.

EXHIBIT NO. RBL–02

Raised Bike Lane Example Applications

Protected Intersection

ACHD
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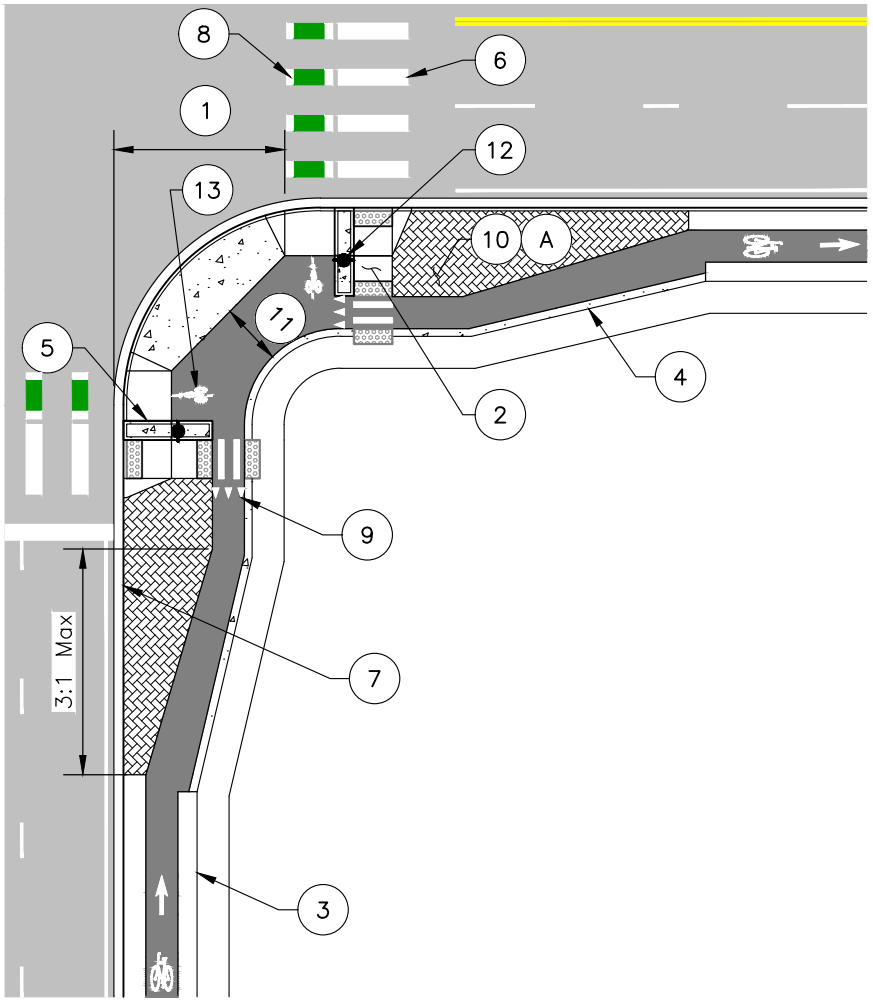
www.achdidaho.org

Elements Of A Intersection (Signalized)
Buffer Separated Raised Bike Lane

B



Notes

1	Speed Limit (MPH)	Crossing Setback Lip Of Gutter To Front Of Bike Ladder Markings(FT)
20–35	6
40	10
45	16
50	20

6' Minimum Setback When Adjacent To Right Turn Lane (Ref 3,4,5)

2 4' By 4' Minimum, Pedestrian Landing Area Required. Landing Shall Comply With All ADA Requirements.

3 Situation Shown For Non–Traversable Roadway And Sidewalk Buffers. If Buffers Are Traversable, The Entire Area Shall Be Considered Mixed Use And Comply With All ADA Requirements From Back Of Curb To Back Of Sidewalk. Refer To MUP–03 For Multi–Use Intersection Treatments.

4 Buffer Material To Be Detectable. Treatments/Materials To Be Determined During Project Design.

5 Combination Perpendicular Curb Ramp With 3' Vertical Curb Separating Bikes And Pedestrians. Pedestrian Ramp Width Shall Be Equal To Or Greater Than The Sidewalk Width. Bike Ramp Shall Be Equal To Or Greater Than The Bike Lane Width.

6 Crosswalk Markings Per ACHD Standard Drawing TS–1112.03 (Reference 10).

7 6" Vertical Curb & Gutter Per ACHD Standard Drawing SD–701 (Reference 1).

8 Bike Ladder Markings.

9 Yield Markings Per ACHD Standard Drawing TS–1113.06 For Pedestrian Crossing of Bike Lane (Reference 10).

10 Area May Be Utilized For Signal Equipment And Other Traffic Control Devices.

11 10' Minimum To Provide Queue Storage And Bike Mixing Zone Maneuverability.

12 Pedestrian Signal Pole Or Push Button Pole Equipped With A Separate Dedicated Push Button For Pedestrians And A Separate Dedicated Push Button And Signage For Bikes. See Note C.

13 If Loop Detection Is Used, Place Loop Detection Under Bike Detector Pavement Markings (MUTCD 9C–7). Place R10–22 Signage On The Curb Separator, And Provide A Bicycle Signal Head On Destination Side (Bike Signal Phased Simultaneously With Pedestrian Crossing). See Note A.

A Bike Detection Devices May Include Push Buttons, Loop Detectors, Cameras, Or Radar. Detection Preference And Signal Equipment Layout To Be Determined By ACHD During Project Development.

B Signalized Intersection Shown. Same Principals Apply To All–Way–Stop–Controlled Intersections.

C Signage Is Considered Context Sensitive To Each Project And Specific Signal Equipment Layout. MUTCD Signs To Be Considered Include R9–5, R9–6, R9–7, R10–4b(L/R) MOD, R10–15 (L/R) MOD, R10–22.

EXHIBIT NO.
RBL–03

Raised Bike Lane Example Applications
Protected Intersection

ACHD
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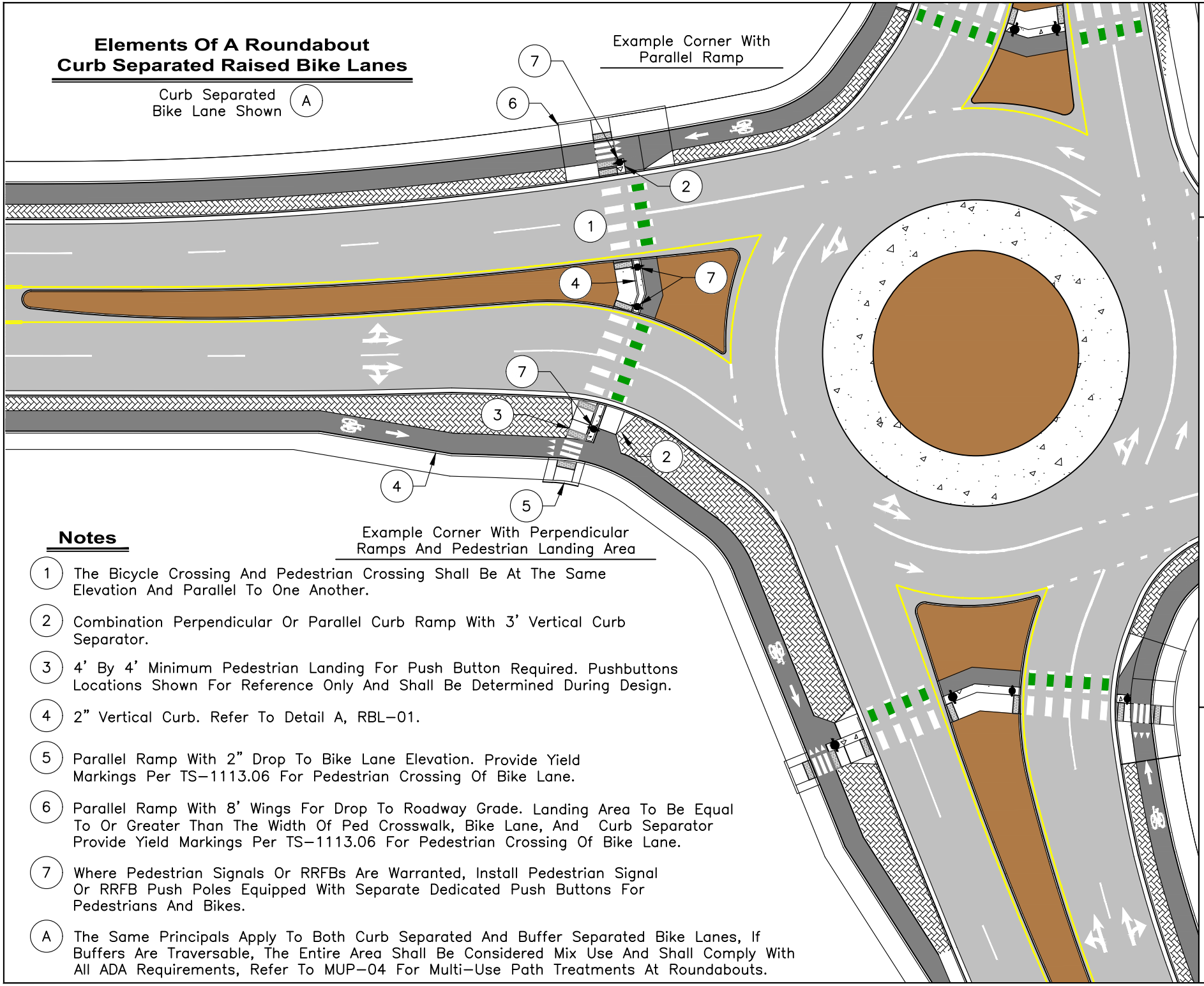
Elements Of A Roundabout
Curb Separated Raised Bike Lanes

Curb Separated Bike Lane Shown (A)



Notes

1. The Bicycle Crossing And Pedestrian Crossing Shall Be At The Same Elevation And Parallel To One Another.
2. Combination Perpendicular Or Parallel Curb Ramp With 3' Vertical Curb Separator.
3. 4' By 4' Minimum Pedestrian Landing For Push Button Required. Pushbuttons Locations Shown For Reference Only And Shall Be Determined During Design.
4. 2" Vertical Curb. Refer To Detail A, RBL–01.
5. Parallel Ramp With 2" Drop To Bike Lane Elevation. Provide Yield Markings Per TS–1113.06 For Pedestrian Crossing Of Bike Lane.
6. Parallel Ramp With 8' Wings For Drop To Roadway Grade. Landing Area To Be Equal To Or Greater Than The Width Of Ped Crosswalk, Bike Lane, And Curb Separator Provide Yield Markings Per TS–1113.06 For Pedestrian Crossing Of Bike Lane.
7. Where Pedestrian Signals Or RRFBs Are Warranted, Install Pedestrian Signal Or RRFB Push Poles Equipped With Separate Dedicated Push Buttons For Pedestrians And Bikes.

A. The Same Principals Apply To Both Curb Separated And Buffer Separated Bike Lanes, If Buffers Are Traversable, The Entire Area Shall Be Considered Mix Use And Shall Comply With All ADA Requirements, Refer To MUP–04 For Multi–Use Path Treatments At Roundabouts.

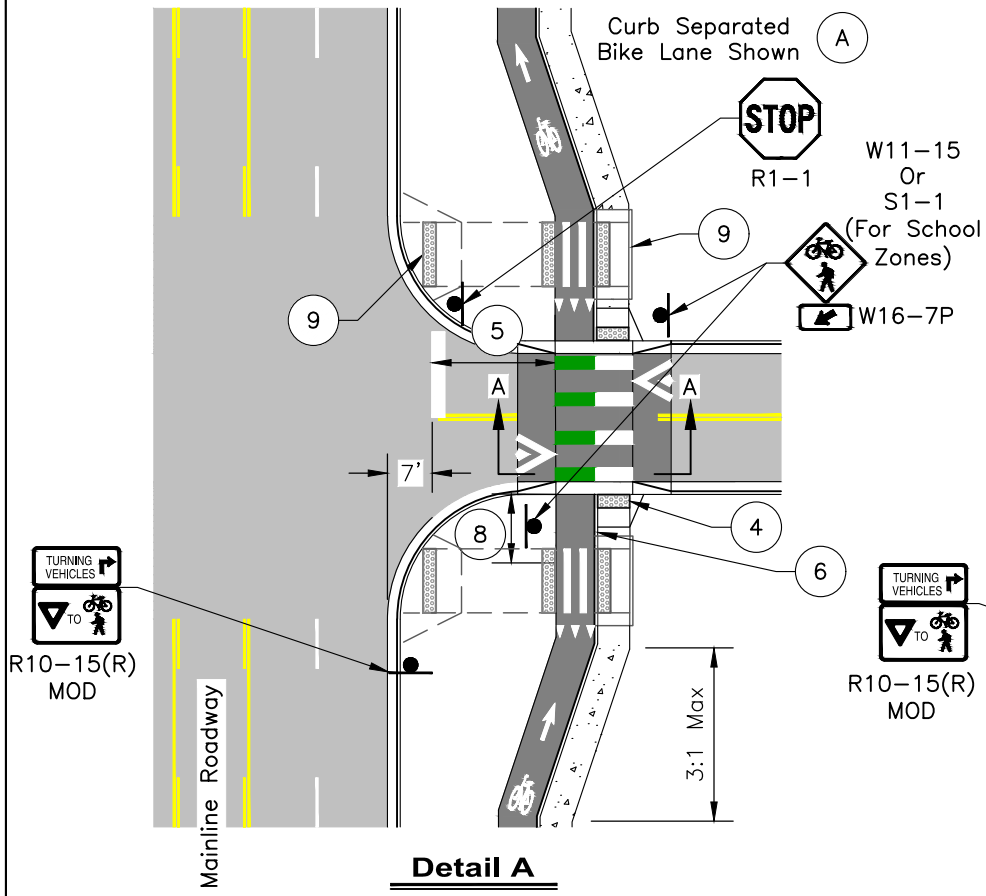
EXHIBIT NO. RBL–04

Raised Bike Lane Example Applications
Roundabout

ACHD
3775 Adams Street, Boise, Idaho, 83714
www.achdidaho.org

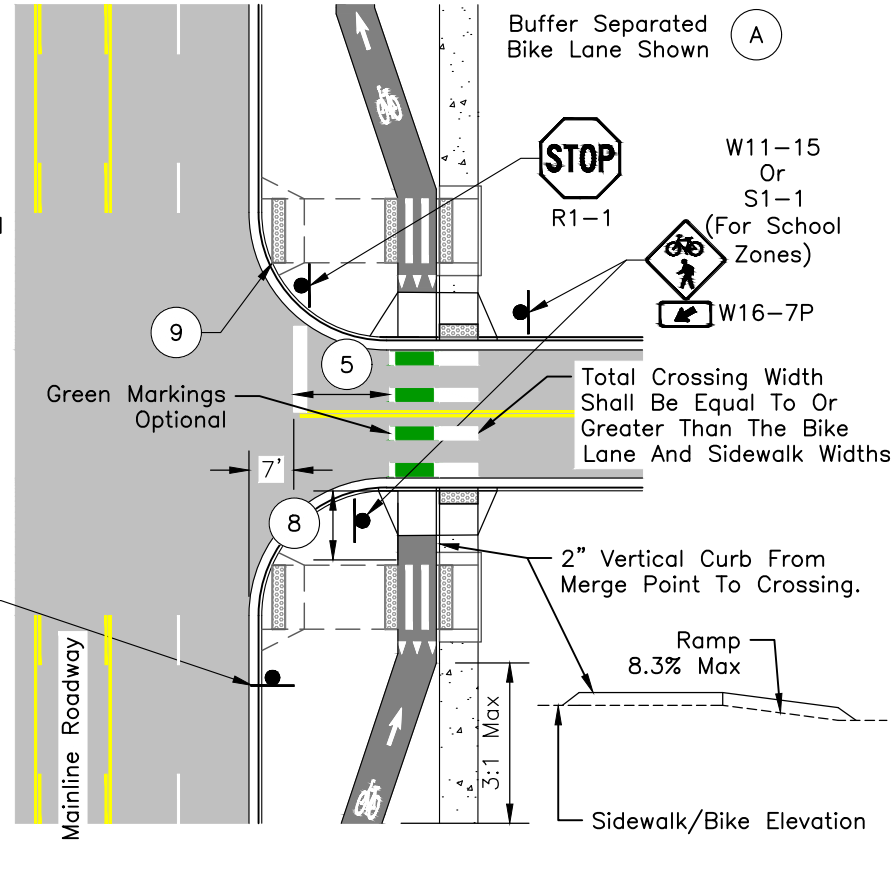
Unsignalized Raised Side Street Crossing

For Mainline Speeds Of 40 MPH Or Greater

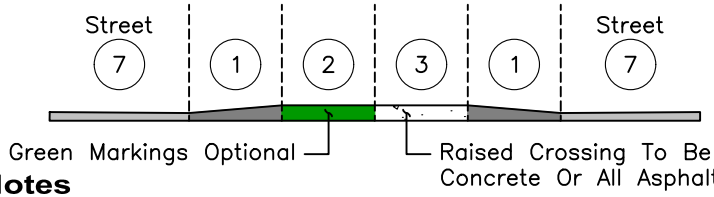


Unsignalized At-Grade Side Street Crossing

For Mainline Speeds Of 40 MPH Or Greater



Detail A



Notes

1. Approach Ramp And Departure Ramp Shall Not Exceed 8.3% Slope. Speed Hump Markings Shall Be Used On Transition Ramps. 3" Maximum Crossing Height.
2. Width of Bike Lane Crossing Shall Be Equal To Or Greater Than The Width Of The Bike Lane And Comply With All ADA Requirements.
3. Width Of Pedestrian Cross Walk Shall Be Equal To Or Greater Than The Width Of The Sidewalk And Comply With All ADA Requirements.
4. Perpendicular Curb Ramp With 2" Drop To Bike Lane & Crossing Level.
5. 16' Min Setback From Front Of Stop Bar Pavement Marking To Front Of Bike Ladder Pavement Marking For At Grade Crossings. 19' Minimum Set Back For Raised Crossings.
6. 2" Vertical Curb. Refer To Detail A, RBL-01.
7. Raised Crossings Considered On A Case By Case Basis.
8. 8' Minimum If Crossing Of Mainline Is Not Required.
9. Unsignalized Mainline Crossing To Be Determined On A Case By Case Basis During Project Design. Multi-Use Path Crossing Shown. See RBL-02 for Separated Crossing Curb Ramp.
A. The Same Principals Apply To Both Curb Separated And Buffer Separated Bike Lanes, If Buffers Are Traversable, The Entire Area From Back Of Curb To Back Of Sidewalk Shall Be Considered Mixed Use And Comply With All ADA Requirements.

EXHIBIT NO. RBL-05

Raised Bike Lane Example Applications

Stop Controlled Side Streets & Approaches

ACHD
3775 Adams Street, Boise, Idaho, 83714
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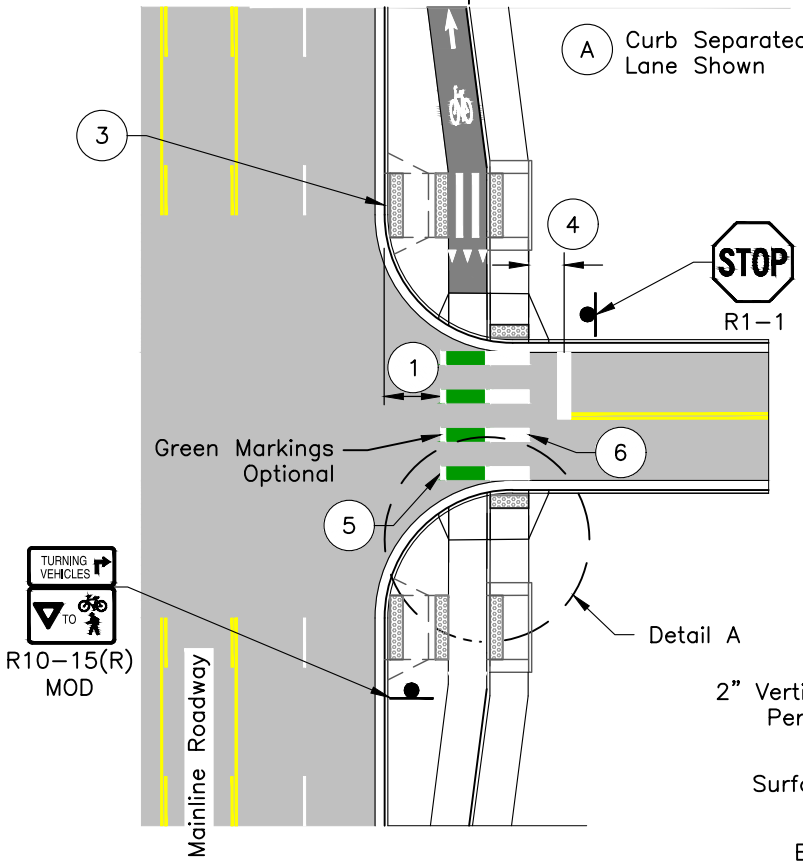
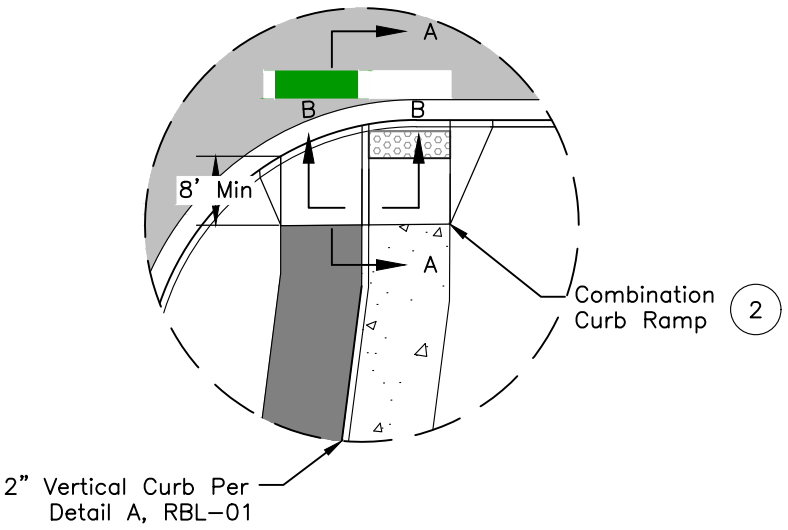
Unsignalized At-Grade Side Street Crossing

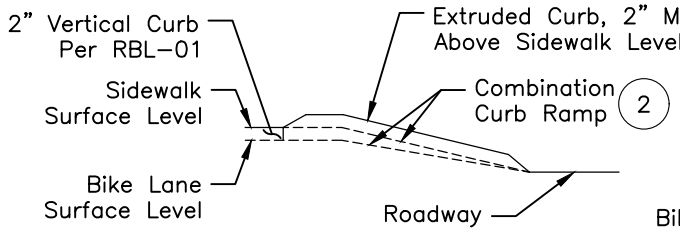
For Mainline Speeds Of 35 MPH Or Less



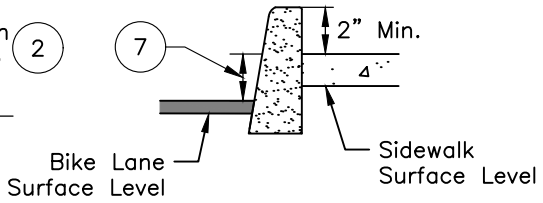
DETAIL A

Curb Separated Bike/Pedestrian Ramp





Section A–A



Section B–B

Notes

1. 6' Minimum Setback From Face Of Curb. Minimum Setback To Bike Crossing To Improve Visibility For Vehicles, Pedestrians, And Bicycles. (Reference 3, 4)
2. Combination Curb Ramps Shall Comply With All ADA Requirements.
3. Mainline Crossing(s) To Be Designed As Multi–Use Path(s) To Accommodate Bikes And Peds. See MUP–05. Crossing Locations To Be Determine During Project Design.
4. 4' Minimum Setback From Crosswalk Per ACHD Standard Drawing TS 1112.03 (Reference 10).
5. Total Crossing Width Shall Be Equal To Or Greater Than The Bike Lane And Sidewalk Widths.
6. At Grade Crossing Shown, Raised Crossings To Be Considered On A Case By Case Basis. Raised Crossing Shall Be Per Detail A On Sheet RBL–05.
7. Curb Height Varies. 2" Reveal At Top Of Ramp, 0" Reveal At Bottom.

A. The Same Principals Apply To Both Curb Separated And Buffer Separated Bike Lanes, If Buffers Are Traversable, The Entire Area From Back Of Curb To Back Of Sidewalk Shall Be Considered Mixed Use And Adhere To Current ADA Requirements.

EXHIBIT NO. RBL–06

Raised Bike Lane Example Applications

Driveway Approaches

ACHD
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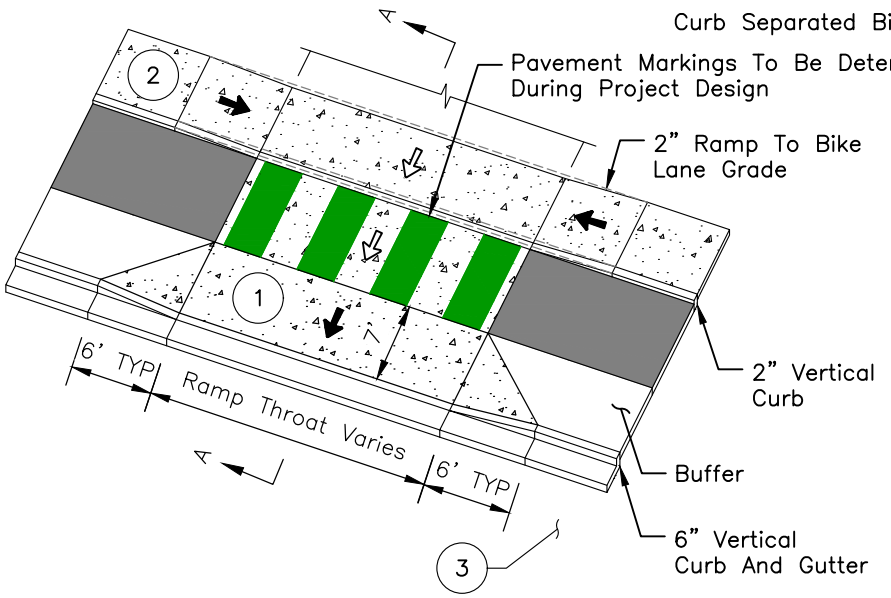
Setback Concrete Driveway Approach
Raised Bike Lane And Sidewalk

Curb Separated Bike Lane Shown (A)



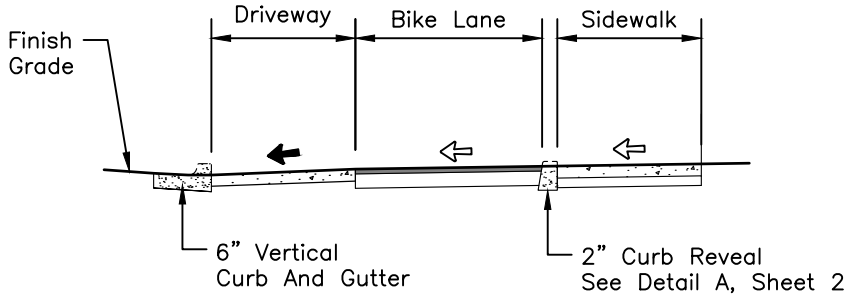
Legend

⇦ 1.5% ± 0.5% (2.0% Max) Slope

⬅ 7.3% ± 1.0% (8.3% Max) Slope

Detail A

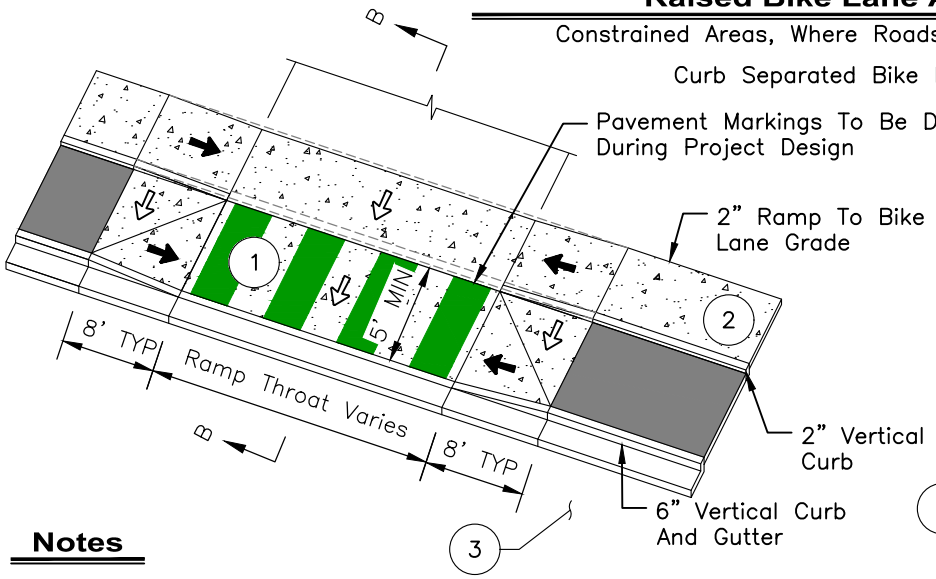
Not To Scale



Zero Setback Concrete Driveway Approach
Raised Bike Lane And Sidewalk

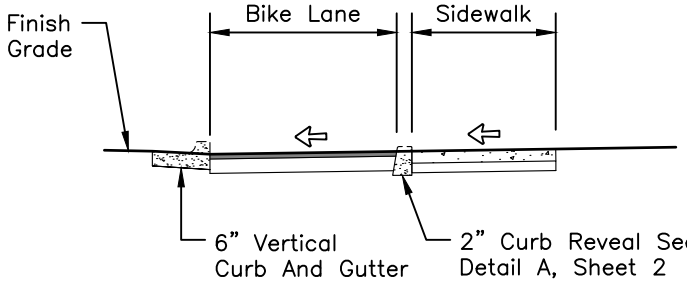
Constrained Areas, Where Roadside Buffer Is Impractical

Curb Separated Bike Lane Shown (A)



Detail B

Not To Scale



Notes

(1) Driveway Approach Dimensions Are Based On 6" Vertical Curb And Gutter. For Additional Information Not Shown On This Sheet, Refer To ACHD Standard Drawing SD-710.

(2) Sidewalk Minimum Width Is 5' At The Driveway Approach.

(3) When On-Street Parking Is Present: Buffer Separated Bike Lanes Per RBL-01 Are Required. Roadside Buffer, Bike Lane, And Sidewalk Buffer Shall Be Traversable And Adhere To ADA Requirements. No Parking Within 30' Of Downstream Crossing (Motorcycle Parking May Be Used To Within 10' Of Crossing)

(A) The Same Principals Apply To Both Curb Separated And Buffer Separated Bike Lanes, Intent Is To Bring Sidewalk And Bike Lane To Same Elevation For The Crossing

EXHIBIT NO. RBL-07

Raised Bike Lane Example Applications

Driveway Approaches

3775 Adams Street, Boise, Idaho, 83714
www.achdidaho.org

References For Raised Bike Lanes

1. Ada County Highway District. "2017 ACHD Supplement To The 2017 ISPWC." December 2017, Https://www.achdidaho.org/documents/engineering/ispwc/2017_ispwcsupplements.pdf.
2. City Of West Linn Public Works Department. Separated Bike Path At Intersection Standard Drawings. Revised February 2019, Https://westlinnoregon.gov/publicworks/standard-drawings.
3. Massachusetts Department Of Transportation. "Separated Bike Lane Planning & Design Guide." 2015, Https://www.mass.gov/lists/separated-bike-lane-planning-design-guide.
4. National Association Of City Transportation Officials. "Urban Bikeway Design Guide Annotated Plans." April 2011.
5. U.S. Department Of Transportation Federal Highway Administration. "Separated Bike Lane Planning And Design Guide." May 2015.
6. NCHRP Report 834 Crossing Solutions At Roundabouts And Channelized Turn Lanes For Pedestrians With Vision Disabilities, January 2017.
7. NCHRP Report 672, Roundabouts, A Guide Book, 1st And 2nd Editions, 2010.
8. United States Access Board. "R304.5.1.2 Shared Use Paths". 2013 Https://www.access-board.gov/files/prowag/prow-sup-snprm-2013.pdf
9. NCHRP Guide For Low Speed Multimodal Roadways, 2018.
10. ACHD Traffic Standards/Specifications. http://www.achdidaho.org/Departments/Engineering/Traffic/trafficStandards.aspx

EXHIBIT NO. RBL-08

Raised Bike Lane Example Applications

References

3775 Adams Street, Boise, Idaho, 83714
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