Note: Anyone wishing to speak at any Transportation Commission meeting is encouraged to do so. If you wish to speak, please rise and, after you have been recognized by the Chair, give your name and complete address for the record. You will then be allowed to speak. Please note the public testimony may be limited by the Chair.

ASHLAND TRANSPORTATION COMMISSION
June 27, 2013
AGENDA

I. **CALL TO ORDER:** 6:00 PM, Civic Center Council Chambers, 1175 E. Main Street

II. **ANNOUNCEMENTS**

III. **CONSENT AGENDA**
- A. Approval of Minutes
  1. May 23, 2013

IV. **PUBLIC FORUM**

V. **ACTION ITEMS**
- A. Bollards (45 min.)
- B. Dust/Slow Sign (15 min.)

VI. **NON ACTION ITEMS**
- A. Audible Pedestrian Signals Update (5 min.)
- B. Miscellaneous Concrete Project (5 min.)

VII. **FOLLOW UP ITEMS**
- A. Plaza Walk
- B. Rapid Flashing Beacon Homing Sound
- C. Downtown Study Update
- D. Hersey St. Sidewalk Project

VIII. **INFORMATIONAL ITEMS**
- A. Action Summary
- B. Traffic Crash Summary
- C. Road Diet Analysis

IX. **COMMISSION OPEN DISCUSSION**

X. **FUTURE AGENDA TOPICS**
- A. Transportation Safety Public Outreach
- B. SOU Multi-Modal Future

XI. **ADJOURNMENT:** 8:00 PM

Next Meeting Date: July 25, 2013

CITY OF ASHLAND

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Public Works Office at 488-5587 (TTY phone number 1 800 735 2900). Notification 48 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to the meeting (28 CFR 35.102-35.104 ADA Title I).

CITY OF
ASHLAND

Transportation Commission

Contact List as of June 2013

Name	Title	Telephone	Mailing Address	E-mail Address	Expiration of Term
Craig Anderson	Commissioner	541-488-0418	575 Elizabeth Avenue	craig.ashland@gmail.com	4/30/2014
David Chapman	Commissioner	541-488-0152	390 Orchard Street	davidchapman@ashlandhome.net	4/30/2016
VACANT	Commissioner				4/30/2015
Pam Hammond	Commissioner	541-482-1343	642 Vansant Street	hammondpam@yahoo.com	4/30/2014
Shawn Kampmann	Commissioner	541-482-5009	P O Box 459	shawn@polarissurvey.com	4/30/2015
Corinne Viéville	Commissioner 541-488-9300	541-944-9600	805 Glendale Avenue	corinne@mind.net	4/30/2016
David Young	Commissioner	541-488-4188	747 Oak Street	dyoung@jeffnet.org	4/30/2015
Non Voting Ex Officio Membership					
Mike Faught	Director of Public Works	541- 488-5587	20 E. Main Street	faughtm@ashland.or.us	
Carol Voisin	Council Liaison	541-482-3559	20 E. Main Street	carol@council.ashland.or.us	
Brandon Goldman	Planning Dept	541- 488-5305	20 E. Main Street	goldmanb@ashland.or.us	
Steve MacLennan	Police Dept	541- 552-2809	20 E. Main Street	maclenns@ashland.or.us	
Scott Hollingsworth	Fire Dept	541- 552-2932	20 E. Main Street	hollings@ashland.or.us	
Honorè Depew	SOU Student Liaison	503- 422-6723		honoredepew@gmail.com	
VACANT	Ashland Schools				
Dan Dorrell PE	ODOT	541- 774-6354	100 Antelope Rd WC 97503	Dan.w.dorrell@odot.state.or.us	
Nathan Broom	RVTD	541- 608-2411	3200 Crater Lake Av 97504	n.broom@rvtd.org	
VACANT	Ashland Parks		20 E. Main Street		
Jenna Stanke	Jackson County Roads	541- 774-6231	200 Antelope Rd WC 97503	stankeJS@jacksoncounty.org	
David Wolske	Airport Commission			david@davidwolske.com	
Staff Support					
Scott Fleury	Engineering Serv Manager	541- 488-5347	20 E. Main Street	fleurys@ashland.or.us	
Karl Johnson	Associate Engineer	541-552-2415	20 E. Main Street	johnsonk@ashland.or.us	
Jodi Vizzini	Public Works Assistant	541-552-2427	20 E. Main Street	vizzinij@ashland.or.us	

ASHLAND TRANSPORTATION COMMISSION
MINUTES
MAY 23, 2013

These minutes are pending approval by the Transportation Commission.

CALL TO ORDER: Chair David Young called the meeting to order at 6:00 p.m. in the Civic Center Council Chambers, 1175 E. Main Street.

Commissioners Present: Craig Anderson, Shawn Kampmann Corinne Viéville and David Young
Absent Members: Pam Hammond
Ex Officio Present: Steve MacLennan
Staff Present: Mike Faught, Scott Fleury and Jodi Vizzini

ANNOUNCEMENTS
No announcements were presented.

CONSENT AGENDA
A. Approval of Minutes
   1. April 25, 2013

The minutes of April 25, 2013 were approved as presented.

PUBLIC FORUM
No one came forward to speak.

ACTION ITEMS
A. Plaza Parking
Staff Report
Commissioners were given additional handouts at the meeting which included an aerial photo of the Plaza (prior to redesign); a second Plaza striping plan drawing; and a memo from former Transportation Commissioner, Mike Gardiner.

Scott Fleury gave a brief overview of the Plaza parking, both prior and post Plaza redesign. He reminded the Commission the previous Plaza configuration included a yellow painted curb that was used as a temporary loading zone for truck deliveries. He noted vehicles are currently parking along the curb adjacent to the Plaza as it is no longer painted yellow.

Mr. Fleury pointed out the Plaza redesign committee was in favor of painting the loading zone on the pavement as illustrated in the Ashland Plaza Striping Plan #1 (provided in the Transportation Commission packet). He stated several business owners were in favor of adding extra parking spaces along the Plaza as illustrated in the Ashland Plaza Striping Plan #2 (handout provided at the meeting). He encouraged Commissioners to discuss options keeping in mind the future Downtown Multi-Modal Parking and Circulation Study.

Commission Discussion
A question was asked regarding the lawfulness of the prior yellow painted curb configuration along the Plaza island indicating a no parking zone, yet being used as a temporary loading zone. Officer MacLennan replied that Diamond Parking and Ashland Police allow the temporary truck parking. It was noted the way the Plaza parking functioned in the past (i.e. truck deliveries in the morning, temporary parking throughout the day for rafters, mountain bike clients, Plaza events, Ashland Police enforcement in the evenings) seemed to work well.

Staff informed the Commission that streets surrounding the Plaza will be chip sealed and restriped in the fall, creating two additional parking spaces.

Commissioners discussed posting signage which led to a discussion on the amount of signs throughout the city adding to the existing sign clutter.

Comments

- A comment was made that the Plaza is also a public space used as a community gathering for music, artistic events, etc. causing this area to be a critical loading zone (not just used for business deliveries).
- It was implied that both visitors and residents recognize yellow painted curbs as a no parking zone and Commissioners felt it would make sense to keep it standardized.
- It was noted that allowing parking along the curb detracts from the Plaza improvements by closing off the open space.
- It was expressed that the decision seemed to be a trade-off between convenient parking and safety.

Concerns

Areas of concern surrounding the current configuration (without yellow painted curb) and use of the Plaza included:

- traffic backing up while drivers parallel park,
- vehicles double parked while waiting for another vehicle to leave,
- poor visibility of pedestrians crossing due to cars parked too closely to the crosswalks,
- potential for drivers/passengers leaving their vehicles and crossing in an unpredictable manner (e.g. passenger side exit into traffic; not using the crosswalks), and
- lack of emergency access for Police and Fire if vehicles are allowed to park along the curb.

Suggestions

A suggestion was made to enforce a no parking zone on N. Main St. prior to turning into the Plaza. Staff noted that 52 foot trucks rarely park in the Plaza because of the turn radius making this zone preferable for longer trucks.

Officer MacLennan concluded from a safety standpoint that he would recommend making this area a no parking zone. He felt the next best thing would be to post signs. He added that temporary loading zone curb colors (white or green) do not prevent cars from parking in those areas.

Commissioners Viéville /Anderson m/s to recommend painting the curb yellow around the entire Plaza, with no signage, and with the understanding that enforcement occur as it has historically. Voice vote: all AYES. Motion passed.

Mr. Fleury summarized the Commission concerns were safety related, specifically police and fire emergency access; the potential for double parking; passengers opening doors into traffic; vehicle backing conflicts; pedestrians walking in between cars; and drivers attempting to parallel park which creates a narrow passing lane. In addition to safety, the Commission recommendations were also based on circulation concerns.

A discussion took place on the alignment of curb cuts and crosswalks since the Plaza redesign. It was decided that Commissioner Viéville would meet with staff the following week and physically walk the Plaza crosswalks and analyze the current layout.

NON ACTION ITEMS

A. Bike Friendly Community Status

Staff Report

Mike Faught shared that Ashland's Bicycle Friendly Community status has been upgraded from a Bronze to Gold level by the League of American Bicyclists after review of the recently submitted application. He summarized the application highlights which included multi-modal transportation, bike events, safety classes, certified instructors and bicycle friendly businesses. He added Ashland is one of only 8 cities in the nation to receive the Gold level award.

B. Audible Pedestrian Signals Update

Staff Report

Mr. Fleury gave a brief overview on the status of the audible signal installation. He reported an Oregon Department

of Transportation (ODOT) representative picked up the audible signals for installation along with the Polara Engineering, Inc. vendor who was in town to assist programming the audible devices. He added an additional order of signal buttons will be placed with the remaining grant money. Commission and staff discussed the status of the existing signals and whether they have the capability of providing the audible homing tick feature. Staff reported they have been in contact with each of the vendors and Southern Oregon University (SOU) and felt positive that all signals could be programmed to include this feature.

C. Bike and Pedestrian Path Intersections Signage

Staff Report

Mr. Fleury directed attention to the evaluations and recommendations of several bike/pedestrian intersections of concern throughout the city by Southern Oregon Transportation Engineering, LLC. The recommendations included adding stop signs, stop bars and removing fencing and/or vegetation to improve sight distance. Mr. Faught explained the evaluation was prompted by a citizen who was involved in a near collision with a bicycle at one of the intersections being reviewed. Mr. Fleury also provided information on the hazards of bike bollards.

Commission Discussion

Commissioner Young provided a historical background of an agenda item that was brought to the former Bicycle & Pedestrian Commission following a cyclist collision with a bike bollard on the central bike path. Various scenarios on the inherent danger of bollards were shared including riding at night without a light; riding in a group (visibility blocked by front rider); novice rider conflict with oncoming bike(s) and/or pedestrians; and bike trailers hitting the bollard base. Commissioner Young acknowledged the purpose of bollards is to obstruct vehicles from entering the bike path but felt other options could be explored.

Mr. Fleury shared his concern with vehicles entering the bike path as the area is not large enough to turn around once it has entered. He offered several options to standard bollards for Commissioners to consider which included striping patterns on the path, offset fencing and lighting the area. Commissioners shared thoughts on different options. Commissioner Young asked staff to consider making this topic an action item on a future agenda after doing further research on dimensions and insurance liability.

D. Miscellaneous Concrete Project

Mr. Fleury announced that Vitus Construction, Inc. was the low bidder for the 2013 Miscellaneous Concrete Project. He outlined the next steps involved with the contract which will result in work beginning in June. He acknowledged several city streets that will receive installation of handicap ramps and sidewalk improvements along with numerous projects resulting from the approved Transportation System Plan (TSP).

COMMISSION OPEN DISCUSSION

A question was asked about the status of sidewalk improvements on Hersey St. Staff replied the process has begun and is contingent on Council approval. Staff added the same process is in place for Walker Avenue which is designed to begin in spring of next year.

A request was made for City staff to talk to the owners of a local hostile about large groups of guests walking in the bike lane creating conflict with cyclists. Officer MacLennan agreed to talk to the owners.

Commissioners commented on several areas of concern involving cyclist/runner/pedestrian conflicts as well as vehicles driving on sidewalks. Officer MacLennan addressed their concerns.

Mr. Faught updated the Commission on the progress of filling current vacancies.

Mr. Fleury reported that Oregon Shakespeare moved the bike rack further up the sidewalk. He added staff will monitor the area to see how cars interact with the relocated bike rack.

Mr. Faught handed out Fork/Hargadine/Pioneer reconfiguration diagrams. He clarified that staff was moving forward with the recommended reconfiguration as illustrated in Figure 4 which includes adding bulb-outs and moving the stop bars. He added a crosswalk was not recommended at this intersection.

A comment was made on the urgency of committing to the Downtown Study aspect of the TSP. Mr. Faught provided an update on funding strategies for the study.

A discussion took place on the importance of working with SOU in an effort to promote cycling and other forms of non-motorized transportation.

INFORMATIONAL ITEMS

A. Traffic Safety Connection May Newsletter

Did not review. Informational item only.

B. Action Summary

Did not review. Informational item only.

C. Traffic Crash Summary

Officer MacLennan gave an update on traffic related issues on N. Main Street.

D. Multi-Modal CIP Projects

Mr. Fluery called attention to the TSP projects added to the Capital Improvements Plan spreadsheet included in the informational packet.

ADJOURNMENT

Meeting adjourned at 8:00 p.m.

Respectfully submitted,
Jodi Vizzini, Public Works Assistant

Memo

CITY OF ASHLAND

Date: June 20, 2013
From: Scott A. Fleury
To: Transportation Commission
RE: Bike Path Bollards

QUESTION:
Does the Transportation Commission have a recommendation on safety improvements of bike path crossing with regards to striping, lighting, signage and/or removing the exiting bollards?

BACKGROUND:
Bollards are currently located at five crossings along the bike path (reference pictures). Bollards are installed to keep vehicles from entering the bike path. The bollards are retro-reflective plastic "candles" attached to a metal base that is concreted into the pavement.

Bollards were discussed by the Bicycle and Pedestrian Commission at the August 21, 2008 meeting. The minutes and associated content are attached for reference.

The bike path is approximately 10 foot wide in all locations detailed below. The minimum clearance around the bollard to the edge of the path is four feet. The maximum clearance is six feet. All locations have a "no motor vehicle" sign placed at the entrance to the bike path. There is no warning striping or striping directly around the bollards. The bike path is not illuminated and there is no direct light source near the bollards.

Staff has asked risk management to inquire with the City's liability carrier regarding removing the bollards and leaving the appropriate no motor vehicle signage in place, but has not received information back as of yet.

Staff spoke with Jenna Stanke, Jackson County, who manages the Bear Creek Greenway path regarding the removal of bollards from path crossings. She stated that it should be looked at on a case by case basis with a determination being made about the possibility of vehicular access to the path from the roadway without the bollards in place. After visiting each path crossing section staff's opinion is that the bike path crossings are aligned in such a way to deter motor vehicle access without bollards in place. The Oregon Bike and Pedestrian Design Guide states that bollards should only be used when absolutely necessary with a minimum of five feet of clearance and should be spaced approximately 20 feet back of the roadway intersection (reference enclosed design guide section on shared use paths). An alternative to bollards is installation of offset fencing, but this as well can be hazardous to cyclists if improperly laid out.

Figure 1: Mountain Ave. looking west

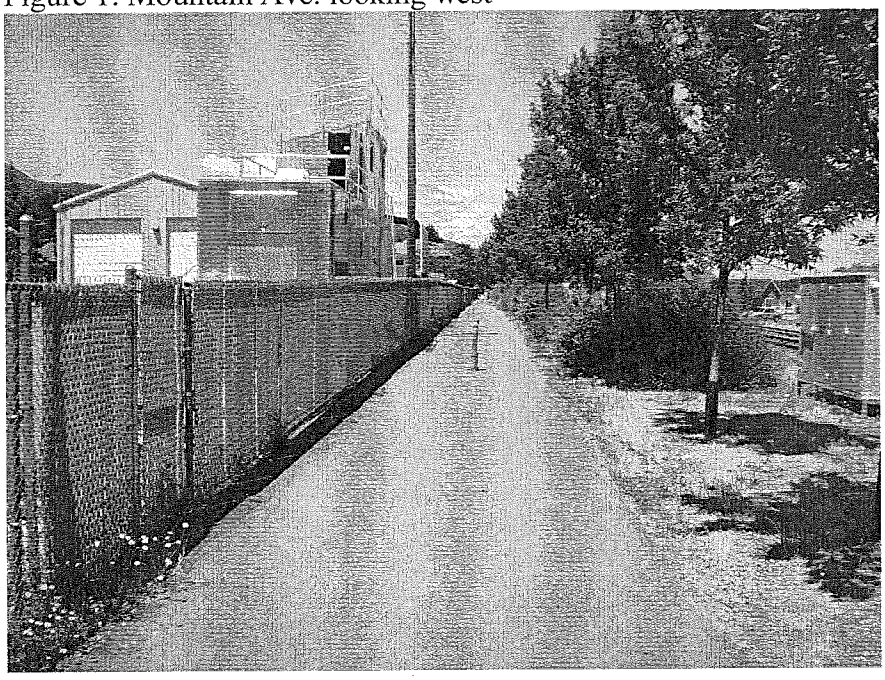


Figure 2: Mountain Ave. looking east

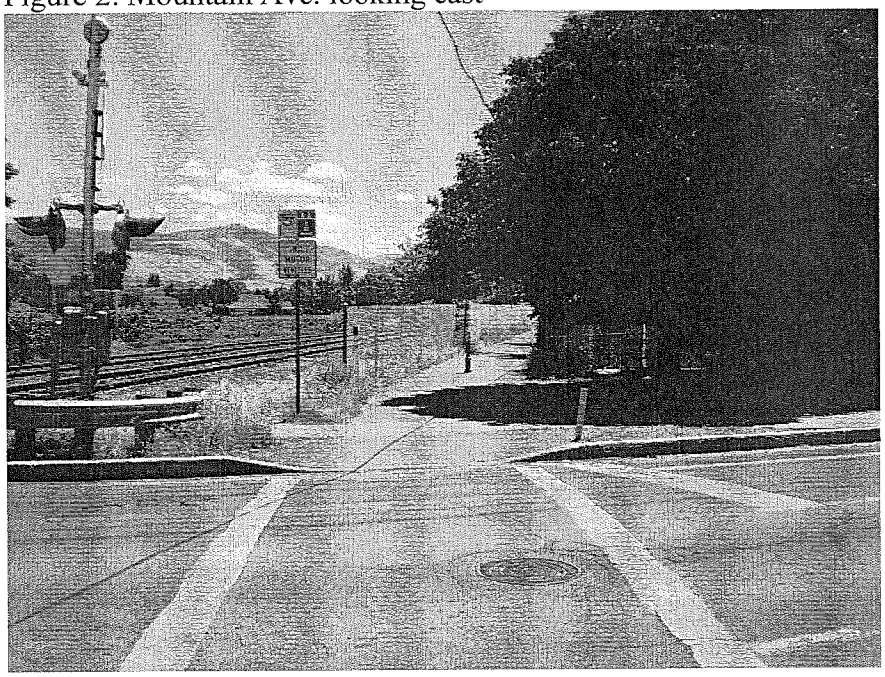


Figure 3: E. Main looking west

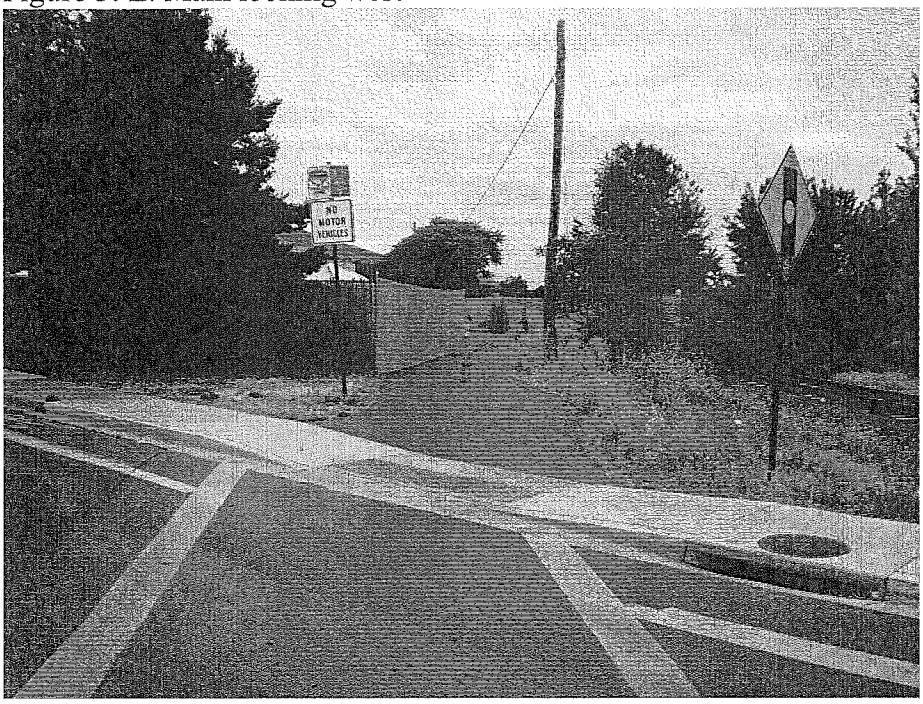


Figure 4: E. Main looking east

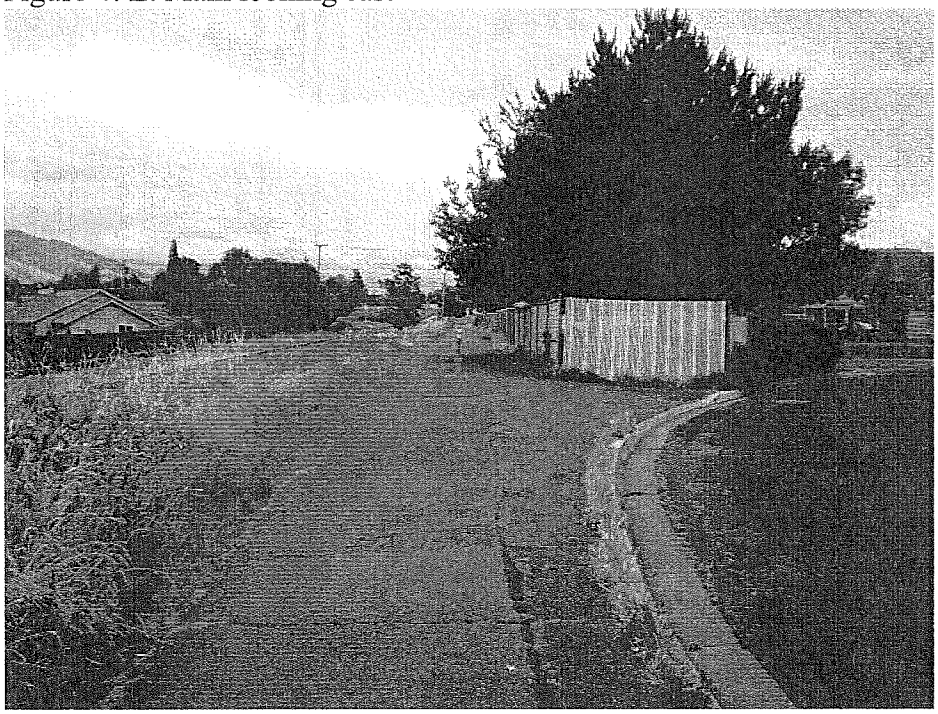


Figure 5: Wightman St. looking east

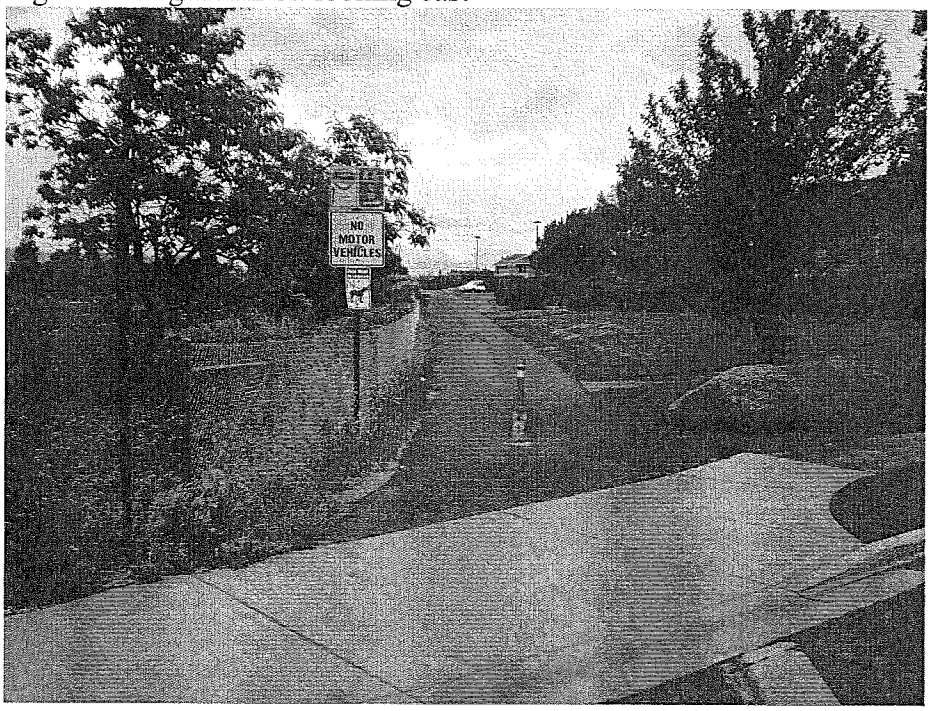


Figure 6: Wightman St. looking east

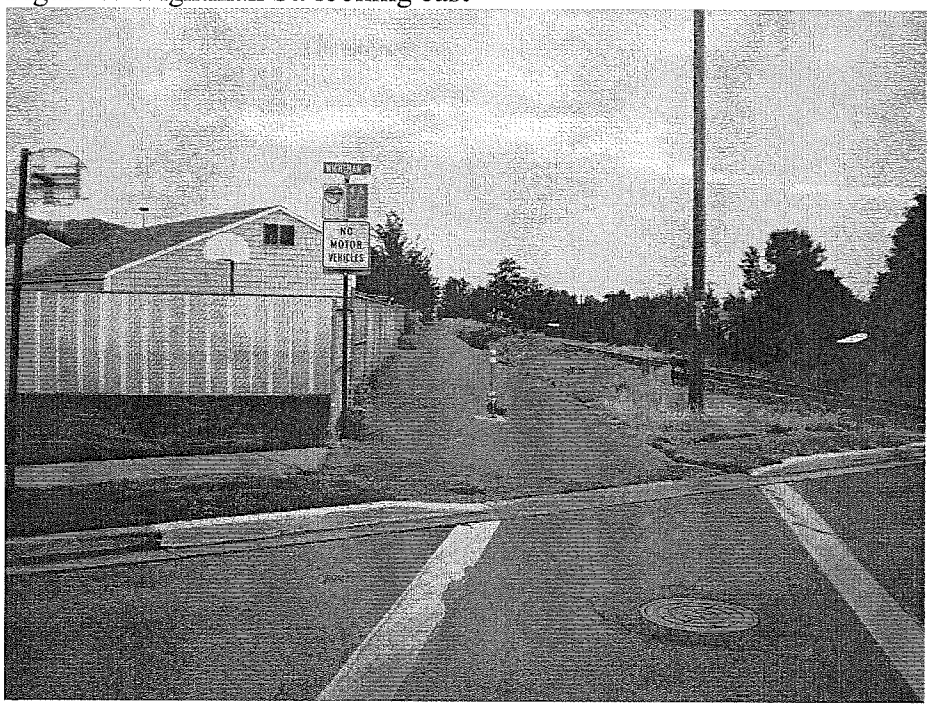


Figure 7: Walker Ave looking east

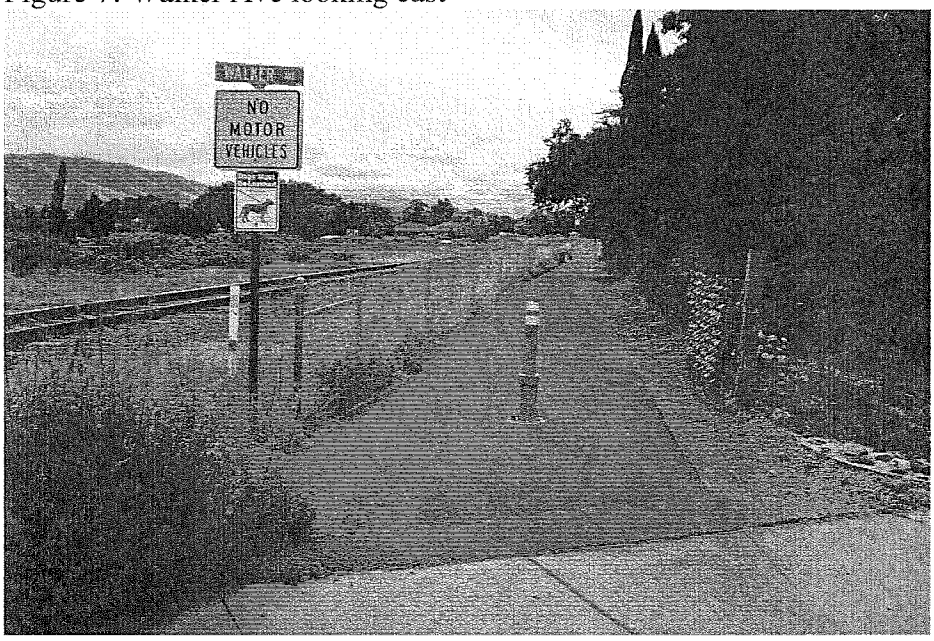


Figure 8: Walker Ave looking west

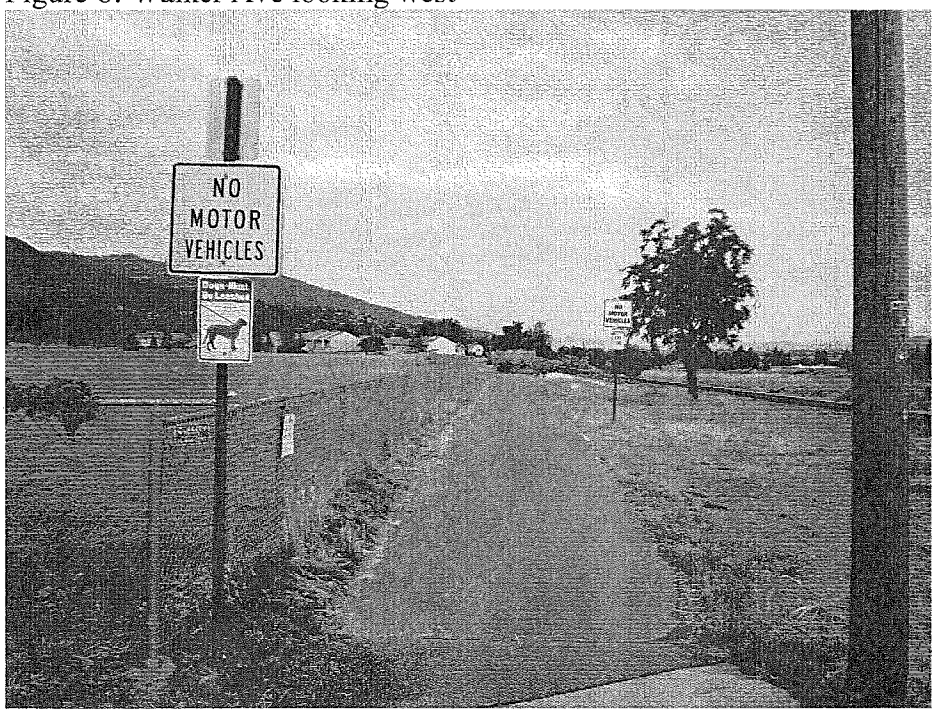
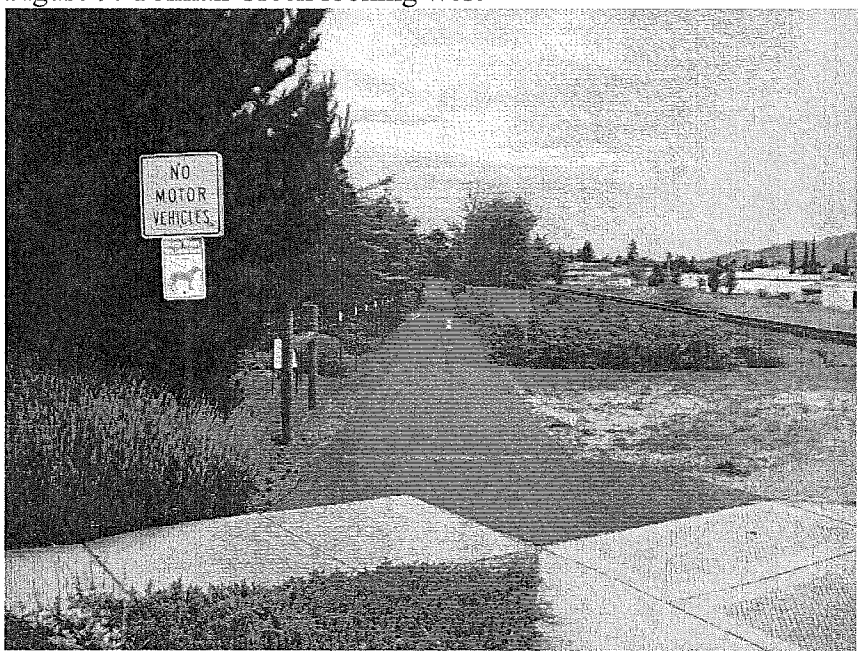


Figure 9: Tolman Creek looking west



CONCLUSION:

Staff recommends removal of all bollards from the bike path locations shown in the photos above. At a minimum, striping should be placed around the bollards consistent with Caltrans barrier striping detail and a light source for illumination at night for pedestrians and cyclists.

CITY OF ASHLAND BICYCLE & PEDESTRIAN COMMISSION

Agenda

Thursday, August 21st, 2008 @ 5:15 P.M.
Siskiyou Room @ 51 Winburn Way
Community Development & Engineering Services Building

I. CALL TO ORDER

II. APPROVAL OF MINUTES: June 19th, 2008 *(No July meeting or minutes.)*

III. PUBLIC FORUM - Business from the audience not included on the agenda.
(Limited to 5 minutes per speaker and 15 minutes total.)

IV. INFORMATIONAL ITEMS
Subcommittee & Liaison Reports

V. ITEMS FOR DISCUSSION
Bike Path Bollards (Powerpoint Presentation by Gary MacGraw)
Greenway Maintenance & Safety
Top 10 & Near-Miss Lists
Bicycle Friendly Community Status, Signage & Council Presentation
Transportation Commission
Gas Prices & the Rise of Cycling (Warshawsky)
Maps & Signs
New Business
Agenda Items for Next Month

VI. ADJOURNMENT

Upcoming Meetings

Next Regular Meeting - Thursday, September 18th, 2008 at 5:15 P.M.

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the City Administrator's office at (541) 488-6002 (TTY phone number 1-800-735-2900). Notification 72 hours prior to the meeting will enable the City to make reasonable arrangements to ensure accessibility to the meeting (28 CFR 35.102-35.104 ADA Title I).

Derek Severson - Bollards on the Bike path

From: "Gary MacGraw" <gary@adicentral.com>
To: <seversod@ashland.or.us>
Date: 6/23/2008 3:59 PM
Subject: Bollards on the Bike path

Hi Derek,

Here is a link to the situation in Chico that occurred on their bike path with Bollards. If you would not mind distributing this to the bicycle and pedestrian committee I would appreciate it. Laurie remember discussing the bike path near the dog park "ad nauseum" while on the Park Commission before it was put in, but has no recollection of bollards being part of that discussion. I am interested to know if they were an after thought and who would be making that decision.

The more I ask around the more scary stories I hear about the bollards. Hopefully someone will look into the situation and evaluate the risk factors in having them in place.

I sent the Chico link to Jenna Stanke and offered to share my views if that would be helpful.
http://www.chicovelo.org/ed.html

Sincerely,

Gary MacGraw

SANTA BARBARA BICYCLE COALITION

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BIKE COMMUTE
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YOUTH BIKE
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SANTA BARBARA BICYCLE COALITION
PO Box 92047
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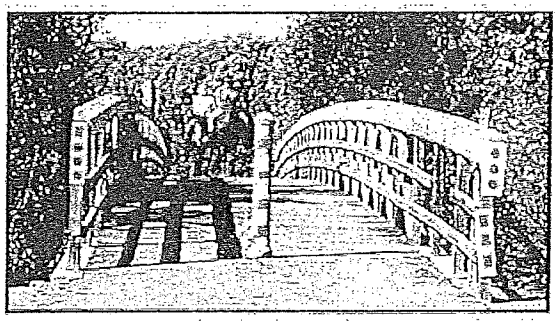
California 93190

Posts on South Coast paths



This is one of the posts on the Obern Trail, here at the bridge over the Maria Ygancio Creek. Photo by Ralph Fertig.

On November 1st, 2002, commuting bicyclist Bob Biskner ran into a post on the Obern Trail path, breaking a scapula and ribs. It brought out a number of stories about collisions with posts on paths, and prompted a study of bikepath posts (or "bollards") in southern Santa Barbara county in the hope of making conditions safer for bicyclists everywhere.

You can download the 10-page report Posts on Bikepaths as an Adobe PDF file by clicking **here**. It's a 3.2 MB file, so might take a while.

When it was first posted in late 2002, comments about the draft version were solicited. They are all included below; some have been incorporated into the final version. It is not comprehensive because other posts have been reported and at least two were moved back from a bridge entrance for safety.

Comments on the study

Date: 12/7/02 12:38 PM
From: David Madajian

Fantastic job. You may want to make a strong recommendation that any path opening 7 feet or less should never have a post. I measured my Geo to come up with this.

Date: 12/10/02 7:52 AM
From: Michael M. Moule

Nice report. My suggestions:

1. Could you include (maybe as an appendix) the reports of crashes into posts. It would make a much stronger argument to use posts only as a last resort. You could even include a reference to each crash report under the appropriate post description in the report.

2. It might be helpful to at least to describe in more detail the types of crashes and potential crash hazards - you could make a reference to the numerous scrape marks on the posts.

3. Most folks no longer refer to "bike paths" and use "shared use paths"

and amber, I believe) would be the best.

I guess I have some questions about flexibility. How flexible is flexible? If it is flexible enought not to cause a fall or stop an emergency or maintenance vehicle, it would not stop unauthorized vehicles either. Do you know of any evidence that a flexible posts results in less crashes or less severe injuries?

It would seem to me that the downside to reflectors and flexible posts is durability--resistance to both the elements and vandalism.

Splitting the path in two would present its own set of hazards, especially for night time cycling, but would probably be safer during the day. Perhaps rolled curbs, rather than vertical curbs, ought to be used on the approach side of the planted medians.

You might want to use the term divided path instead of separated path. To me, a separated path is one separated from the street, not itself.

I would suggest that this little paper has national import and you should ask Thunderhead for comments.

Date:1/14/03 4:29 PM
From: Cheryl Everett First let me say what a great report. Then I would like to thank who ever is responsible for the removal of the posts at the Atascadero Creek Bike path at Nueces Drive.

I would like to strongly recommend the removal of both posts on the North Goleta Bike Route at San Jose Creek. There is no way a motorist could get on that bridge. There is a wooden fence on the west side that you have to ride around before entering the bridge and then make a quick turn to go around the post when riding from the direction of Santa Barbara to Goleta. This is very dangerous and most times I can't make the quick turn and end up riding on the left side of the post to avoid hitting it. Well there is my opinion for what it's worth.

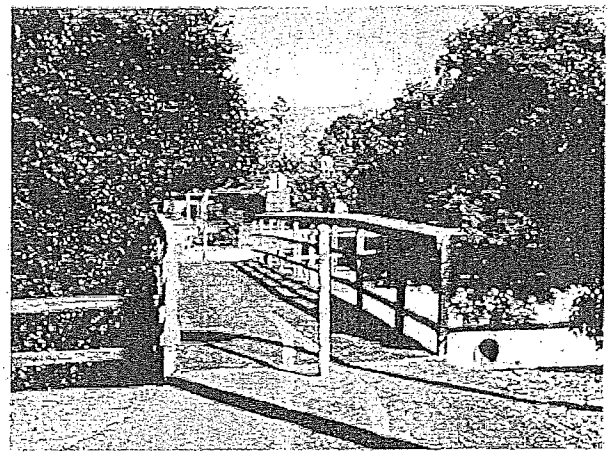
Date:1/21/03 9:21 PM
From: Mike Wills Excellent report. However, there are several posts that were not included. Along the bikepath between UCSB and Isla Vista, running parallel to Ocean Road, there are several bikeposts at the entrances to the bikepath--specifically Cervantes, Picasso, Pardall, and Trigo roads and also Del Playa Drive.

On the bikepath west of Los Carneros there are 5 tall narrow poles at the entrance to family student housing.

Date:1/24/03 4:09 PM
From: Walt Seifert

One more comment on posts.

Shouldn't there be warning signs wherever posts must be installed? There are warning for medians and other impediments in roadways.

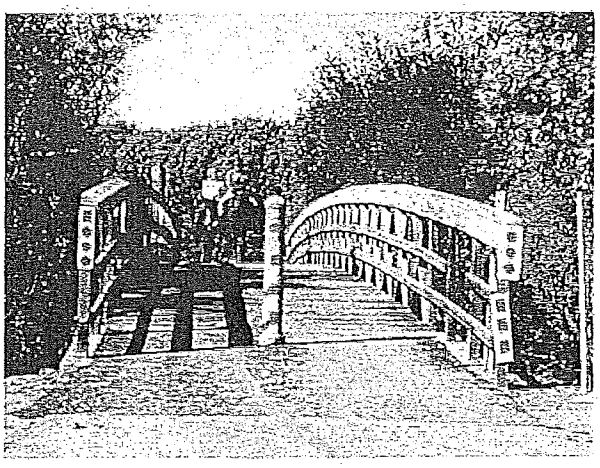


Obern Trail

Location: south end of Arroyo Drive
Jurisdiction: Santa Barbara County
Number of posts in path: 2
Post size: 48" high, 3" diameter
Post material: galvanized steel
Reflective tape: yes
Path width at posts: 8 feet
Bridge: rubber mat, wood railings, yellow paint on entry railings, no deflection at entry.

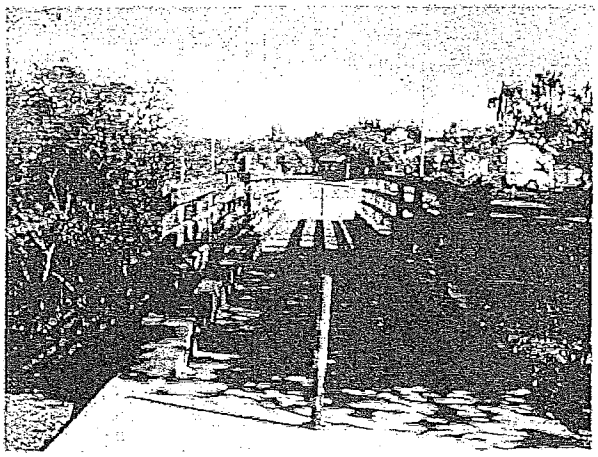
North Goleta Bike Route

Location: over San Jose Creek
Jurisdiction: City of Goleta
Number of posts in path: 2
Post size: 38" high, 3.5" diameter
Post material: painted steel
Reflective tape: no
Path width at posts: 9 feet
Bridge: wood planks, white wood railings, reflectors on entry railings, deflection at entry.



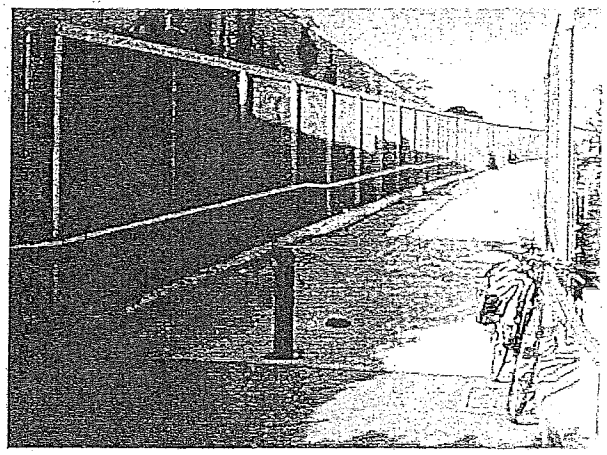
Obern Trail

Location: over Maria Ygancia Creek
Jurisdiction: Santa Barbara County
Number of posts in path: 2
Post size: 48" high, 6" diameter
Post material: galvanized steel
Reflective tape: yes
Path width at posts: 10 feet
Bridge: wood planks, wood railings, reflectors on entry railings, no deflection at entry.



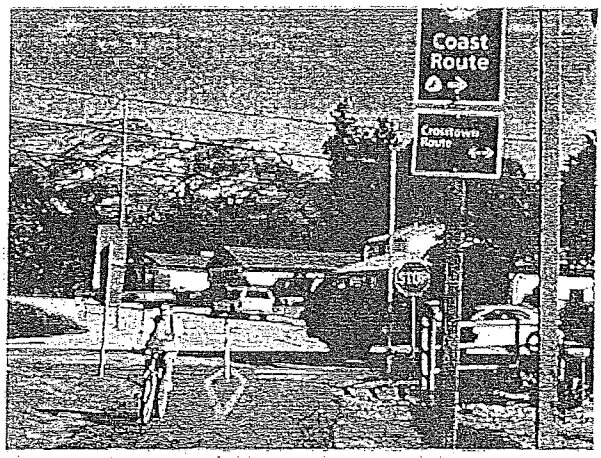
North Goleta Bike Route

Location: over Las Vegas Creek
Jurisdiction: City of Goleta
Number of posts in path: 2
Post size: 35" high, 3" diameter
Post material: painted steel, rusted
Reflective tape: fragments
Path width at posts: 7 feet
Bridge: wood planks, brown wood railings, no reflectors on entry railings, no deflection at entry.



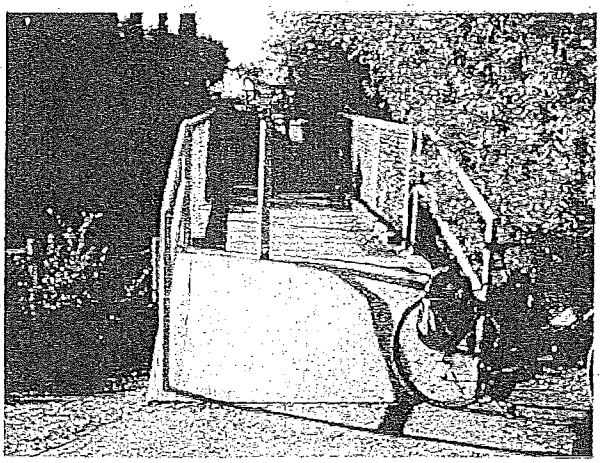
Ortega Street/101 bridge

Location: over Highway 101, north side
Jurisdiction: City of Santa Barbara
Number of posts in path: 1
Post size: 33" high, 6.5" diameter
Post material: green painted steel
Reflective tape: no
Path width at posts: 12 feet
Bridge: concrete, steel railings, no reflectors near entry railings, no angled deflection at entry.



Obern Trail

Location: entrance at Modoc Road
Jurisdiction: Santa Barbara County
Number of posts in path: 1
Post size: 48" high, 3" diameter
Post material: galvanized steel
Reflective tape: yes
Path width at posts: 13.5 feet

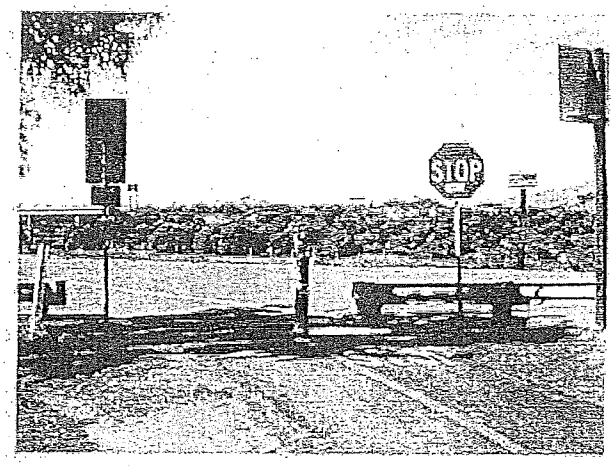


Via Real to El Carro Lane

Location: over drainage channel
Jurisdiction: City of Carpinteria
Number of posts in path: 3
Post size: 42" high, 3.5" diameter
Post material: painted steel
Reflective tape: no
Path width at posts: 5 feet
Bridge: wood planks, steel & chain link railings, no reflectors on entry railings, no angled deflection at entry.

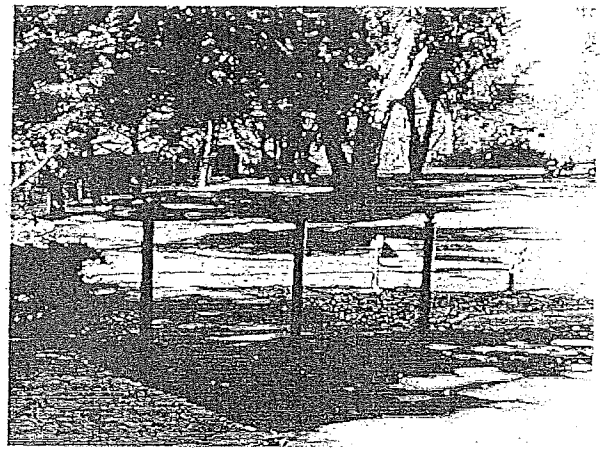
Obern Trail

Location: on Nueces Drive
Jurisdiction: Santa Barbara County
Number of posts in path: 1
Post size: 48" high, 3.25" diameter
Post material: galvanized steel
Reflective tape: yes
Path width at posts: 12 feet
Bridge: rubber mat, wood railings, yellow paint on entry railings, no deflection at entry.



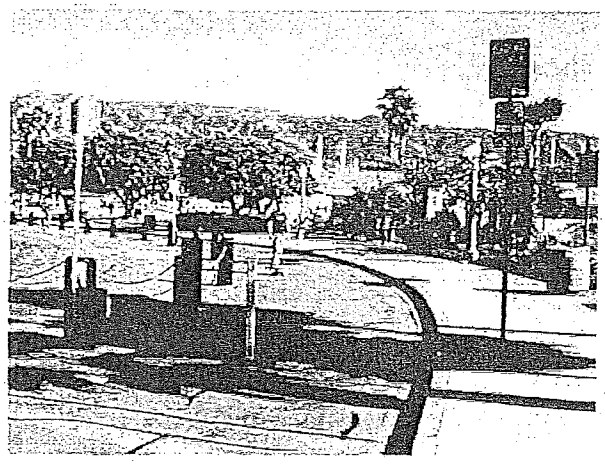
Obern Trail

Location: entrance at Goleta Beach County Park
Jurisdiction: Santa Barbara County
Number of posts in path: 1
Post size: 48" high, 6" diameter
Post material: galvanized steel
Reflective tape: fragments
Path width at posts: 9 feet



La Mesa Park path

Location: entrance off parking, Meigs Road
Jurisdiction: City of Santa Barbara
Number of posts in path: 3
Post size: 47" high, 3.5" diameter
Post material: black painted steel
Reflective tape: no
Path width at posts: 10.5 feet

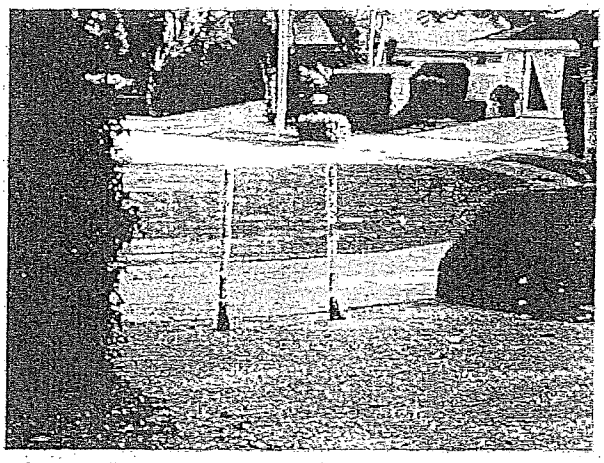


Cabrillo Boulevard Beachway

Location: entrance at Harbor Way
Jurisdiction: City of Santa Barbara
Number of posts in path: 1
Post size: 44" high, 4" widest part
Post material: yellow flexible plastic
Reflective tape: yes
Path width at posts: 12 feet

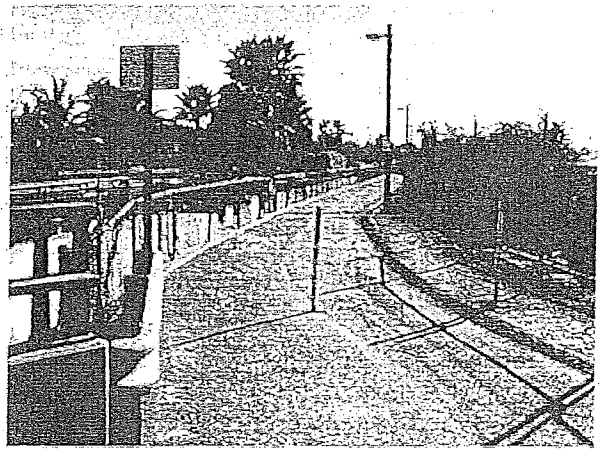
Pershing Park-to-City College path

Location: entrance off Shoreline Drive
Jurisdiction: City of Santa Barbara
Number of posts in path: 4
Post size: 46-50" high, 5.5"x 6"
Post material: yellow painted wood
Reflective tape: no
Path width at posts: 18 feet



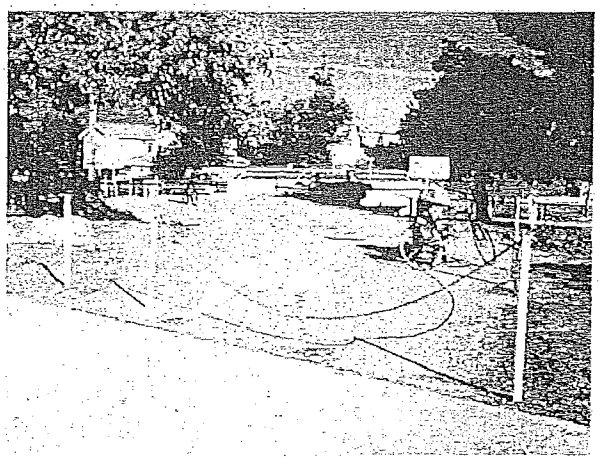
Via Real-El Carro Lane path

Location: entrance at El Carro Lane
Jurisdiction: City of Carpinteria
Number of posts in path: 2
Post size: 52" high, 3" diameter
Post material: painted steel
Reflective tape: fragments
Path width at posts: 10 feet



Sterling Avenue-Foothill Road path

Location: entrance at Foothill Road
Jurisdiction: City of Carpinteria
Number of posts in path: 1
Post size: 46" high, 2.5" diameter
Post material: white painted steel
Reflective tape: no
Path width at posts: 11 feet



Sterling Avenue-Foothill Road path

Location: entrance at Sterling Avenue
Jurisdiction: City of Carpinteria
Number of posts in path: 1
Post size: 44" high, 2" diameter
Post material: white painted steel
Reflective tape: no
Path width at posts: 15 feet

Carpinteria Creek path

Location: entrance at Carpinteria Avenue
Jurisdiction: City of Carpinteria
Number of posts in path: 1
Post size: 42" high, 3" diameter
Post material: white painted steel
Reflective tape: fragments
Path width at posts: 16 feet

What can be done?

The purpose of posts in paths is very basic: *keep motorists off the path.*

In consideration of injuries that have been sustained by bicyclists who strike bikepath posts, the Santa Barbara Bicycle Coalition asks that local jurisdictions adopt the following three phase approach to keeping motorists off our paths:

1. **Install signs next to paths**
2. **Install a divided path**
3. **Use carefully-designed and located posts only as a last resort.**

These three measures are described below.

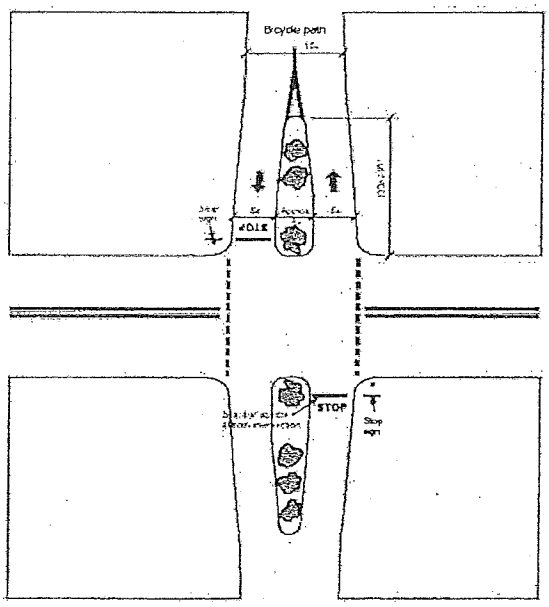
1. Install signs next to paths

Often, all that is needed to keep motorists off bikepaths is a sign that says "NO MOTOR VEHICLES." Such a sign would be posted where roads and bikepaths cross. The sign is safest for bicyclists and least expensive for the jursidiction—if it keeps motorists off the road. Many communities use signs as the first means of control and find out that nothing more is needed.

Protection of bridges and errant motorists who attempt to drive on them may require special consideration.

2. Install a divided path

By dividing the path into two narrower one-way paths just before it reaches the roadway, motorists are discouraged from entering the path:



The diagram is from the *North Carolina Bicycle Facilities Planning and Design Guidelines*. The planting is low enough to allow service and emergency vehicles to pass over it, but high enough to discourage most motorists.

3. Carfully select and position posts

As a last resort, if the other two methods are ineffective in keeping motorists off bikepaths, posts may be required.

The posts should be:

- preferably flexible rather than solid
- if solid, removable for emergency and maintenance access
- light color and reflectorized for visibility
- possibly with solar-powered LED lights
- in height, 36-45 inches tall

The posts should be positioned:

- at least 5 feet apart
- either one or three across a trail, not two
- set back 10-30 feet from an intersection
- set back 5-10 feet from a bridge
- with diversion striping on the pavement
- with overhead lights nearby.

SANTA BARBARA BICYCLE COALITION

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CHAPTER 7: SHARED USE PATHS

Paths accommodate many users

Introduction

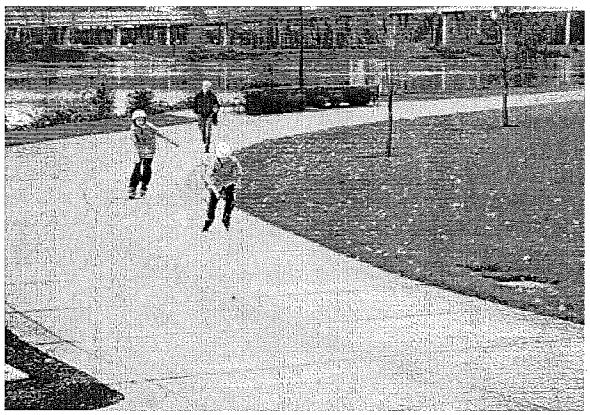
Originally called "bike paths," then "multi-use paths," shared-use paths are used by pedestrians, joggers, skaters, bicyclists and many others. Shared-use path planning and design must take into account the various skills and characteristics of these different users. Many inexperienced cyclists don't want to ride in traffic and may not ride on streets until they gain experience and confidence. A separated path provides a learning ground for bicyclists and can attract cyclists who prefer a more aesthetic experience.

Well planned and designed paths can provide access and mobility to pedestrians and bicyclists in areas where the roads don't serve their needs. They can have their own alignment along streams, canals, utility corridors, abandoned or active railroads, and greenways. Many serve as linear parks. Paths can serve both utilitarian and recreational cyclists.

The key components to successful paths include:

- Continuous separation from traffic, by locating paths along a river or a greenbelt such as a rail-to-trail conversion, with few street or driveway crossings; however, this must be balanced with:
- Frequent connections to land-uses, such as residential areas, shopping, schools and other destinations;
- Security: proximity to housing and businesses increases visibility (despite fears of some property owners, paths do not attract crime into adjacent neighborhoods); illumination helps provide a sense of security at night;
- Scenic qualities, offering an aesthetic experience that attracts cyclists and pedestrians;
- Well-designed street crossings, with measures such as signals or median refuge islands (paths directly adjacent to roadways are not recommended, as they tend to have many conflict points);

- Shorter trip lengths than the road network, with connections between dead-end streets or cul-de-sacs, or as short-cuts through open spaces;
- Good geometric design, by providing adequate width, grades, and curvature and avoiding problems such as poor drainage, blind corners and steep slopes;
- Good pavement design, including subgrade and base preparation, to ensure path longevity, good surface conditions and to reduce maintenance cost; and
- Proper maintenance: regular sweeping and repairs can prevent paths from falling into disrepair, with the subsequent increased liability and decreased use.



Paths are used by many non-motorized modes

Shared Use Paths vs. Cycle Tracks

Shared use paths share many commonalities with cycle tracks. However, shared use paths differ from cycle tracks in important ways.

Similarities:

- Separation from traffic;
- Used by bicyclists; and
- Driveway/alley/side street conflicts must be addressed.

Differences:

- Shared use paths are used by many modes: bikers, walkers, joggers, skaters, etc;
- Cycle tracks are for exclusive bicyclist use;
- Share use paths are properly sited where driveways and side street conflicts are minimal;
- Shared use paths may or may not be adjacent to a roadway;
- Cycle tracks replace bike lanes;
- Shared use paths may compliment or supplement bike lanes;
- Shared use paths have two way, largely unregulated bicycle traffic; and
- Cycle tracks are most commonly one way, regulated bicycle traffic.

Important Considerations

To ensure success, the following concerns must be addressed at the planning, design, construction and maintenance phases of path projects:

Crossings

The number of at-grade crossings with streets or driveways should be limited; street crossings are one of the most important path design elements. At grade street crossings should be visible to drivers, with proper traffic control for path users and motorists. Where good quality street crossings cannot be obtained, crossings should be grade separated.

Access

Limiting crossings must be balanced with providing access. To serve users well, a path must have frequent and convenient access to the street network. Access points that are spaced too far apart will require users to travel out of direction to access or leave the path. The path should terminate where it is easily accessible to and from the street system, (e.g. at a controlled intersection or at the end of a dead-end street). Terminating a path midblock on a busy thoroughfare, or at a busy intersection, is generally not recommended; if there is no alternative, a well-designed connection and

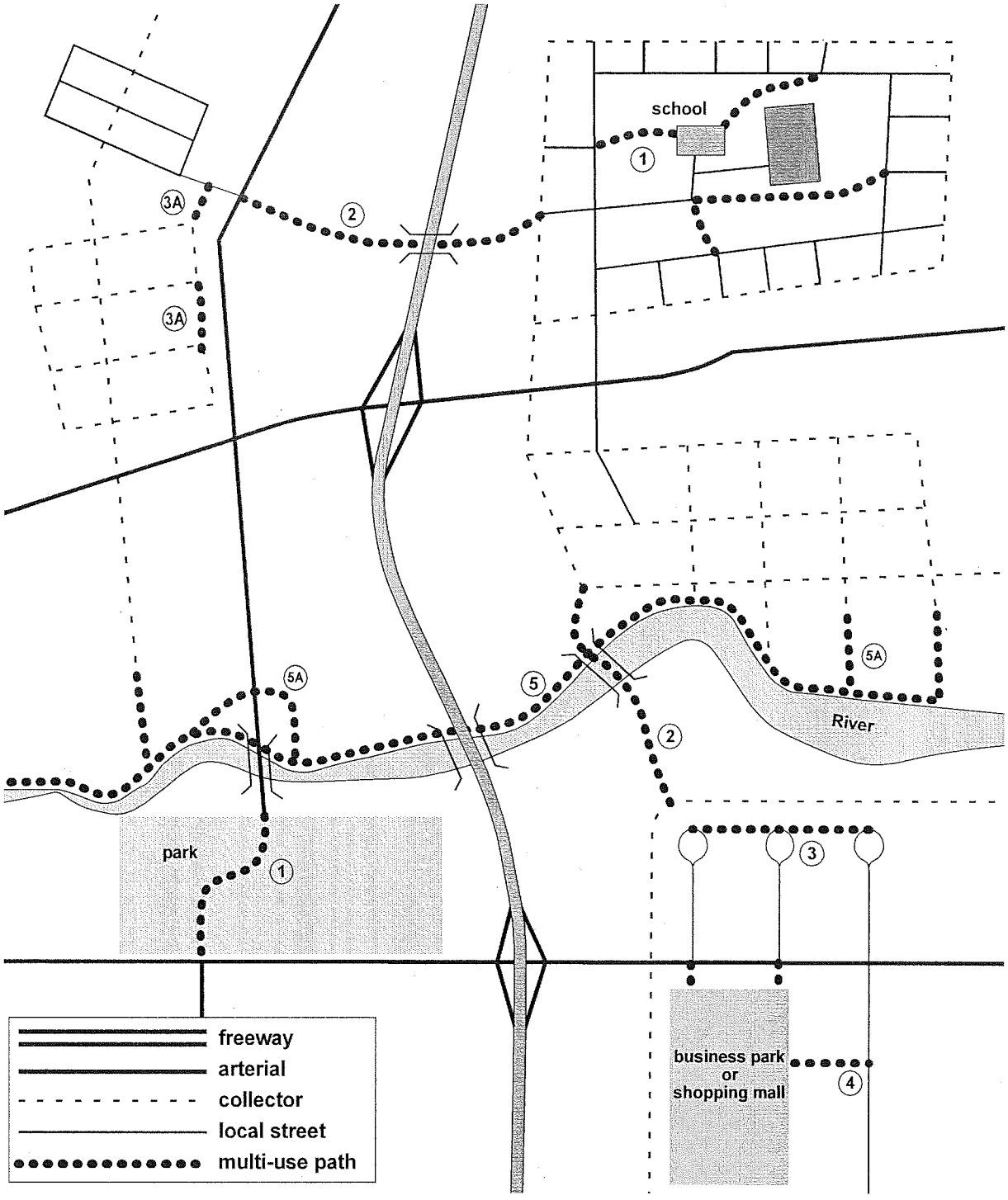


Figure 7-1: Shared-Use path siting considerations

crossing must be provided. Guide signs should be used to direct users to and from the path and to provide orientation and destination information on the path.

Security

Shared-use paths in secluded areas should ensure personal security. Illumination and clear sight distances improve visibility and comfort. Location markers, mileage posts and directional signing help users know where they are. Frequent accesses improve response time by emergency providers.

Maintenance

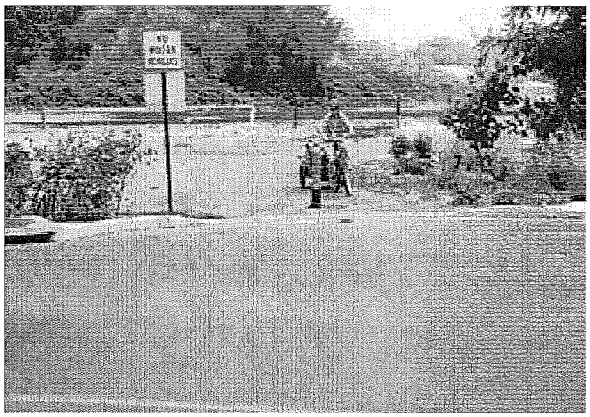
Shared-use paths require special trips for inspection, sweeping and repairs. They must be built to a standard high enough that allows heavy maintenance equipment to use the path without deterioration. Building to a high standard also decreases long-term maintenance needs and improves user comfort and safety.

On-street facilities

Many experienced bicyclists prefer to ride on the road rather than a path adjacent to roadways. This can be confusing to motorists, who may expect all cyclists to use the path. The presence of a path should not be used as a reason to not provide adequate shoulders or bike lanes on roads, where appropriate, or sidewalks for pedestrians in urban areas.

Standards

Paths should be built to a standard that accommodates all users, from commuters to recreationists, with minimal conflicts. Building a narrow path to save money can lead to problems if the path is popular. If usage is expected to be low, reconsider the need for a path. Pavement design is another important standard: even though paths do not get driven on by heavy motor vehicles, they do experience deterioration due to weather and aging. A path should last as many years as a residential street before needing maintenance or repaving.



Path connection to local street

Paths Next to Roadways

Concerns

Shared-use paths should not be placed next to roadways with many driveways and or street accesses. Half of the bicycle traffic will ride against the normal flow of motor vehicle traffic, with the following consequences for bicyclists:

- Research has shown that 95% of right turns are made without the driver ever looking right. Thus motorists crossing the path do not notice bicyclists coming from the direction opposite to prevailing traffic, especially if sight distance is poor.
- Bicyclists on the path are often required to stop or yield at cross-streets and driveways. Stopping often disrupts wheeled users' momentum; consequently, they end up not stopping, placing themselves in jeopardy when approaching a busy street crossing where yielding and/or stopping is required.
- Motor vehicles stopped on a cross-street or driveway may block the path.
- When the path ends, some bicyclists riding against traffic continue to travel on the wrong side of the street, as do bicyclists getting to a path. Wrong-way travel by bicyclists is a major cause of bicyclist-to-automobile crashes and should never be a design element, unless considerable care is taken to address the safety issues.

- Because of the proximity of motor vehicle traffic to opposing bicycle traffic, barriers may be necessary to separate the path from the roadway. Barrier design should take into consideration maintenance of the facility and use available right-of-way.

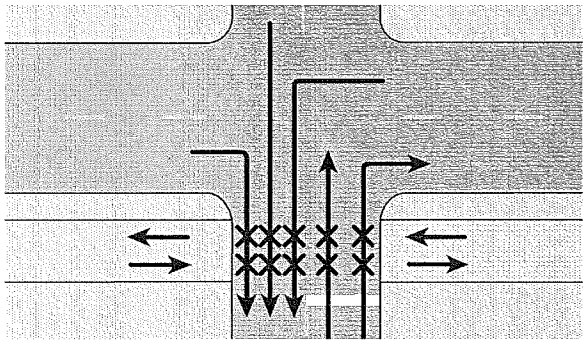


Figure 7-2: Intersection and driveway conflicts at path

Design Standards

ODOT has adopted the AASHTO Guide for the Development of Bicycle Facilities for path design standards. The AASHTO guide should be consulted for geometric design standards such as sight-distance, and horizontal and vertical curves. The following section is an explanation of these standards. Though shared-use paths are intended for many users, the bicycle is the appropriate design vehicle because of its higher travel speeds.

Most of the design standards discussed here are for paths intended for both transportation and recreation. For designing recreational trails in more rural settings, refer to "Designing Sidewalks and Trails for Access," published by FHWA: Publication No. FHWA-HEP-99-006.

Standards should be met wherever possible, but there are circumstances where economics or physical constraints make it difficult to meet standards. A reasonable approach must be taken, so extraordinary sums are not spent on a short section of path; nor should the natural landscape be excessively disturbed.

Guidelines

Separated paths along roadways may be considered when:

Bicycle and pedestrian use is anticipated to be high;

The traffic conditions (high-speed, high-volumes) on the adjacent roadway are such that on-road bikeways and sidewalks may be undesirable;

The path can be kept separate from motor vehicle traffic, with few roadway or driveway crossings;

There are no reasonable alternatives for bikeways and sidewalks on nearby parallel streets;

There is a commitment to provide path continuity throughout the corridor;

The path can be terminated at each end onto streets with good bicycle and pedestrian accommodation, or onto another safe, well-designed path;

There is adequate access to local cross-streets and other facilities along the route;

Any needed grade-separation structures do not add substantial out-of-direction travel; and

The total cost of providing the path is proportionate to the need. This evaluation should consider the costs of:

Grading, paving, drainage, fences, retaining walls, sound walls, crossings, signs and other necessary design features;

Grade-separated structures needed to eliminate at-grade crossings; and

Additional maintenance, including the need for specialized maintenance equipment.

Note: *In many cases, the best choice is to improve the roadway system to accommodate cyclists and pedestrians, which may require connecting up local streets or improving nearby, parallel streets.*

Conversely, there are areas where high usage, or potentially high speeds dictate dimensions greater than standards for user safety and comfort.

Width & Clearances

Width

Ten feet is a common width for a two-way shared-use path and may be appropriate in a rural context; they should be 12 feet wide or more in areas with high mixed-use, in urban and suburban contexts. Faster-moving bicyclists require greater width than pedestrians; optimum width should be based on the relative use by these two modes. Twelve feet also allows for greater passing opportunities. High use by skaters may also require greater width.

The absolute minimum width for a two way path is 8 feet; to be used at pinch points only or where long-term usage is expected to be very low. Proper horizontal and vertical alignment is critical to ensure good sight distances.

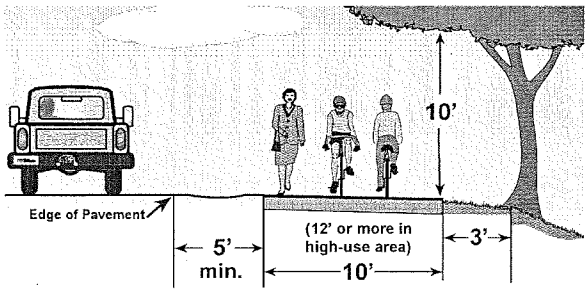


Figure 7-3: Suggested shared use path dimensions

Although one-way paths may be intended for one direction of bicycle travel, they will often be used as two-way facilities, especially by pedestrians. Caution must be used in selecting this type of facility. If needed, they should be 6 feet wide and designed and signed to ensure one-way operation by bicyclists. One-way paths are primarily used for short connections to a roadway.

Popular paths quickly become crowded

Paths with Heavy Use

A well-planned and designed path, connecting land uses conveniently, will attract many users and the path should be 12 feet or greater. A separate soft-surface jogger or equestrian path may be constructed with bark mulch adjacent to the paved path. A stable gravel shoulder is still required along the path edge to keep the surface from breaking up. Placing soft-surface jogger or equestrian path adjacent to the path also results in bark mulch encroaching onto the paved portion of the path.

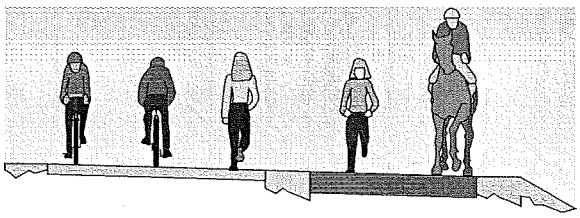


Figure 7-4: Paved path with separate soft surface trail

Gravel shoulders prevent raveling of path edges

With very high use by both pedestrians and bicyclists, the two modes can be separated with striping, to provide two one-way bike lanes next to a single walking area. For separation to work, adequate width for each mode must be provided. The minimum total width required is 16 feet: two 5-foot bike lanes and a 6-foot walking area. Eighteen or 20 feet are needed in areas of very high use or where users will want to stop to enjoy the view; the areas dedicated to walking and bicycling can vary based on their respective anticipated use. The pedestrian portion of the path should be closer to the vistas, such as next to a river, as pedestrians are more likely to linger, stop and admire views.

With exceptionally high use by both pedestrians and bicyclists, totally separate facilities should be considered: a path for cyclist and a path for pedestrians, with signing to indicate proper use.

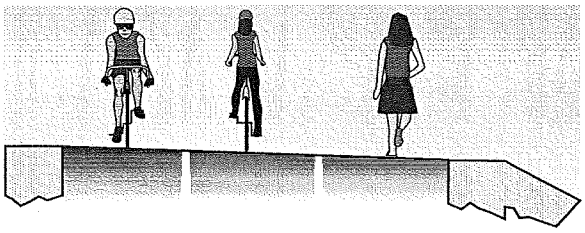
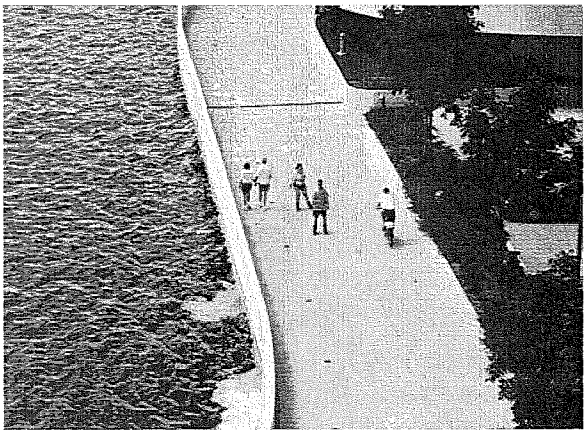


Figure 7-5: Wide path striped to separate modes



Path striped to separate users

Lateral Clearance

A 3 foot or greater (min. 2 feet) shy distance on both sides of a shared-use path is necessary for safe operation. This area should be graded level, flush to the path and free of obstructions to allow recovery by errant bicyclists. This applies to cut-sections, where falling debris can accumulate, stimulating weed growth, further restricting the available width.

Overhead Clearance

The standard clearance to overhead obstructions is 10 feet (min. 8 feet) where fixed objects or natural terrain prohibit the full 10 feet clearance.

Separation from roadway

Where a path is parallel and adjacent to a roadway, there should be a 5-foot or greater width separating the path from the edge of roadway, or a physical barrier of sufficient height should be installed.

Grades & Cross-Slope

AASHTO recommends a maximum grade of 5% for bicyclists, with steeper grades allowable for up to 500 feet, provided there is good horizontal alignment and sight distance; extra width is also recommended. Engineering judgment and analysis of controlling factors can help determine what distance is acceptable for steep grades.

On paths intended primarily for transportation, ADA requirements should be met: the grade of separated pathways should not exceed 5%, to accommodate wheelchair users. Based on AASHTO recommendations and ADA requirements, 5% should be considered the maximum grade allowable for shared-use paths.

For trails with primarily a recreational purpose in areas with steep terrain, these grades may be exceeded. Consult "Designing Sidewalks and Trails for Access" for guidance (Publication: FHWA-EP-01-027).

The standard cross-slope grade is 2%, to meet ADA requirements and to provide drainage. Sharp curves should be banked with the high side on the outside of the curve to help bicyclists maintain their balance.

Typical Pavement Sections

Shared-use paths should be designed with sufficient structural depth for the subgrade soil type and to support maintenance and emergency vehicles. A good rule of thumb is to use the typical pavement section recommended for local streets in a given environment. The pavement structures in Figure 7-6 are just examples; each path must be individually designed to meet the local geological and meteorological conditions.

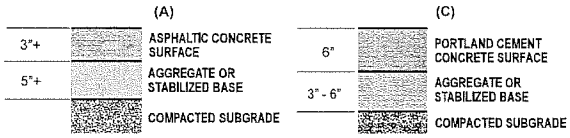


Figure 7-6: Sample pavement designs

The use of concrete surfacing for paths is best for long-term use. Concrete provides a smooth ride when placed with a slip-form paver. The surface must be cross-broomed. The crack-control joints should be saw-cut, not trowelled, to avoid a bumpy ride. Concrete paths cost more to build than asphalt paths, but long-term maintenance costs are lower, since concrete doesn't become brittle, cracked and rough with age, or deformed by roots and weeds, as does asphalt.

If the path is constructed over a very poor subgrade (wet and/or poor material), treatment of the subgrade with lime, cement or geotextile fabric (placed between the subgrade and the base rock) should be considered. Where paths are built in environmentally sensitive areas, the additional runoff must be accounted for. Pervious pavement materials should be considered in these circumstances, though care should be taken with pervious concrete – as many pervious concrete mix designs result in a rice crispy like surface.

Drainage

Shared-use paths must be constructed with adequate drainage to avoid washouts and flooding, and to prevent silt from intruding onto the path due to standing water.

Vegetation

All vegetation, including roots, must be removed in the preparation of the subgrade. New growth should be controlled with a soil sterilant or lime treatment of the subgrade. Plants that can cause other problems should be controlled; for example, plants with thorns can puncture bicycle tires.

Paths built in wooded areas present special problems. The roots of shrubs and trees can pierce through the surface and cause it to heave and break apart. Preventive methods include removal of vegetation, realignment of the path away from trees, and placement of root barriers along the edge of the path. A 12 inches deep shield creates an effective barrier; greater depth is required for some trees such as cottonwoods.

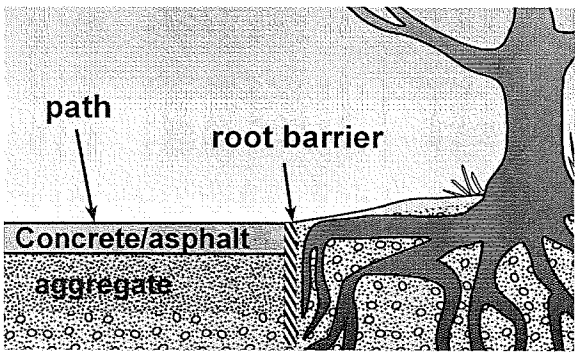


Figure 7-7: Barrier prevents roots from upheaving path

Railings, Fences & Barriers

Fences or railings along paths may be needed to prevent access to high-speed roadways, or to provide protection along steep side slopes and waterways. Fences should only be used where

they are needed for safety reasons. They should be placed as far away from the path as possible; minimum offset should be 2 feet. Many of these principles apply to cut-sections of paths where retaining walls are required: minimum 2 feet offset, with a rub-rail where feasible.

Forty-two inches height fence is recommended. Where concrete barriers are used, tubular railing may be added to achieve the required height. Openings in the railing must not exceed 6 inches in width. Where a cyclist's handlebar may come into contact with a fence or barrier, a smooth, 12 inches wide rub-rail should be installed at a height of 3 feet.

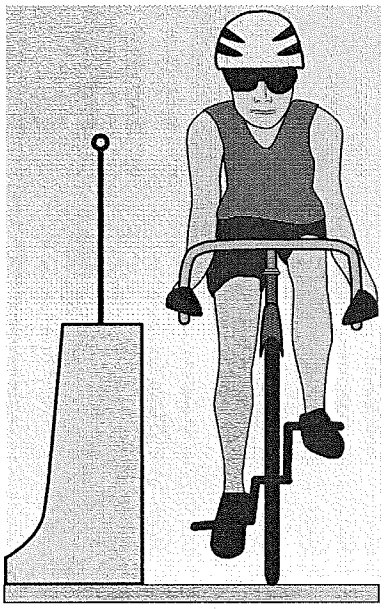


Figure 7-8: Railing added to concrete barrier

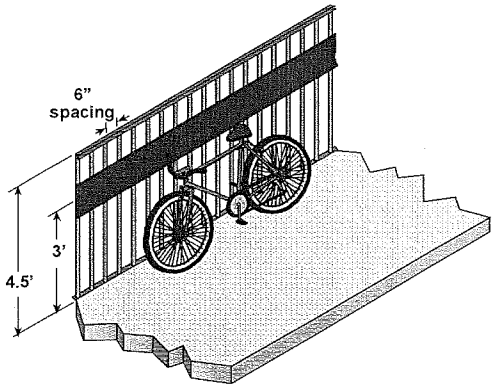


Figure 7-9: Rub rail added to railing

Double fencing should be avoided, (e.g. a fence at the right-of-way and a fence to keep pedestrians off freeways.) A high chain-link fence on each side of a path creates an undesirable cattle-chute effect, making users feel trapped.

Double fencing makes users feel trapped

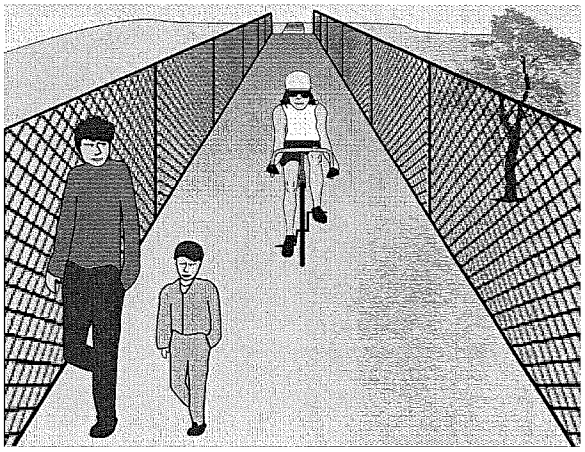
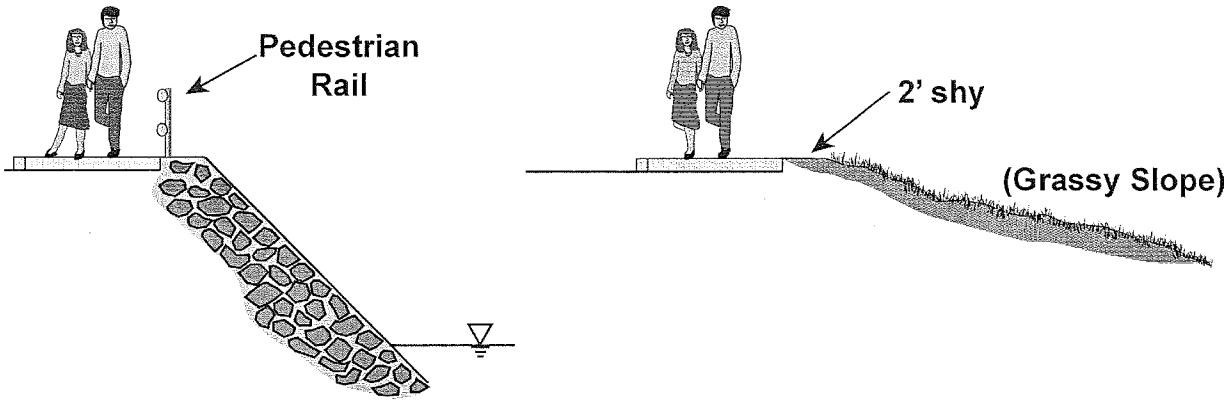


Figure 7-10: High fencing at path edges creates cattle chute effect

The need to include a railing next to a path is dictated by a combination of factors, few of which can be isolated or quantified. When determining the need for a rail or barrier, the designer should look at the combined effects of:

- Clear zone (also called recovery zone): A 2-foot wide (1 foot min) level area should be provided at the outer edges of the paved area so users can recover their balance if they leave the pavement. Shrubbery planted at the edge of the slope (2 feet from the path edge) can help users shy away from the edge.



7-11: Railing needed on left, not needed on right

- Height: The need for railing increases with the height of the path above the adjacent roadway, waterway or other hazard, unless there are other mitigating factors. For most applications a rail height of 42 inches is adequate and preserves views. In locations where bicyclists should be protected from a severe hazard, a minimum railing height of 48 inches is recommended. The maximum rail height of 54 inches should be used only where bicyclists could vault over the railing – such as on a curved section at the bottom of a steep incline.
- Cut or fill cross-slope: 2:1 or flatter is generally considered adequate, unless side-slope material is potentially harmful. Cyclists are more comfortable with 3:1 or 4:1 slope. Maintenance staff prefer a flatter slope for mowing.
- Side-slope material: while a grassy berm or soft shrubbery would not harm a person falling, prickly vegetation, rip-rap, gabion baskets or other hard or jagged objects would not adequately protect a user from injury.
- Hazard below: a freeway, deep river or torrent is a greater potential hazard than a field of hay.
- Users: small children or seniors may need greater protection than other users.

These factors should be evaluated on a case-by-case basis, and a decision made based on engineering judgment. The best decision is to flatten the slope to avoid the need for a barrier. Another option is to shift the path closer to the upslope, offering more shoulder at the down slope side.

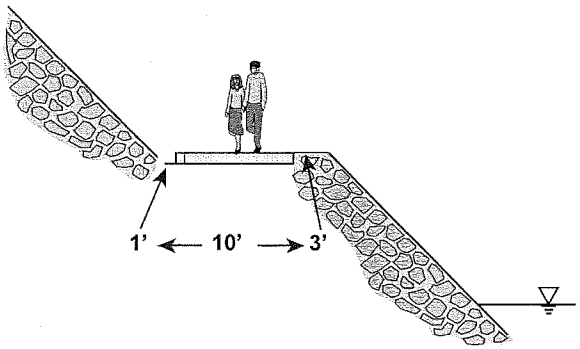


Figure 7-12: Offsetting path reduces need for railing

Gentle grassy slope eliminates the need for railing

Illumination

The need to illuminate paths depends on many factors:

- Location: is it isolated, or adjacent to a well-lit roadway?

- Purpose: is safety or security a concern?
- Security may require continuous illumination.
- Safety may require illumination only at street crossings and access points, especially where bollards and other objects are placed to prevent motor vehicle access.
- Light pollution concerns: many jurisdictions have adopted dark sky ordinances; low-level lighting aimed down at the path surface helps reduce light pollution, and illuminate the path surface.

Engineering judgment should be used to determine the need, quantity and type of path illumination. One solution to satisfy these often competing needs is to illuminate a path only in the evening, with a sign telling users when the lighting will be turned off.

Structures

The width of a shared-use path bridge is normally the same as the approach paved path. Where feasible, a 2-foot shy distance on both sides may be added for additional comfort. For example, a 14-foot wide structure for a 10-foot wide path.

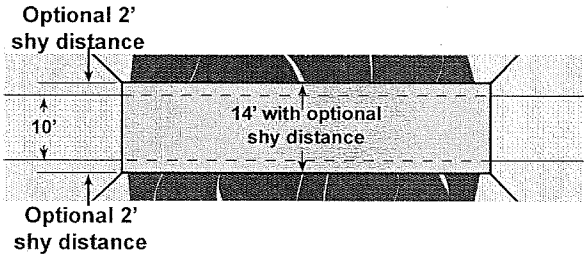


Figure 7-13: 14 feet wide bridge serves a 10 feet wide path

If the costs of a wider bridge are prohibitive, yet extra width is needed because it is anticipated that pedestrians will want to stop and linger to admire the view, viewpoints can be added by widening the bridge at scenic view points.

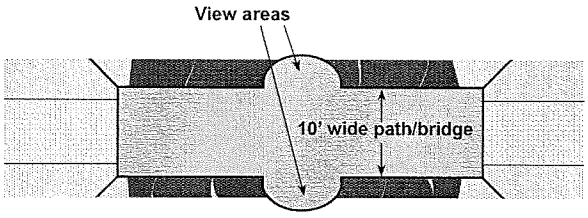
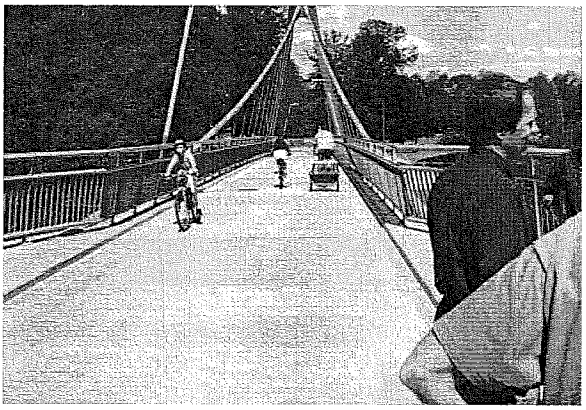


Figure 7-14: Bridge widened at view point



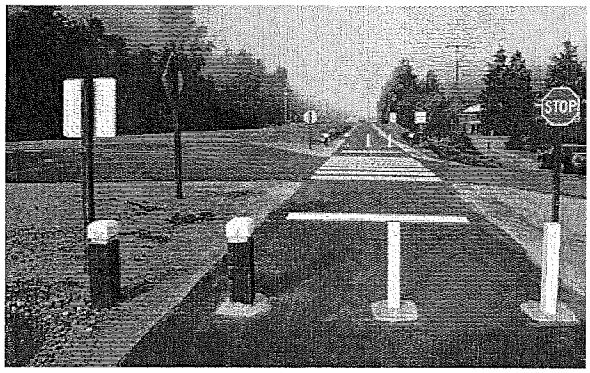
Pedestrians stop to admire the view in widened area without impeding thru traffic

Street crossings

Minor street crossings

In most cases, at-grade crossings of minor streets are acceptable. As traffic volumes on the cross-street increase, so does the need for special treatments, such as a median island or a signal.

The assignment of right of way must be consistent with accepted traffic engineering principles: if the number of anticipated path users is greater than the traffic on the cross-street, the latter should be required to yield or stop to path users. Only when the path crosses a street with higher traffic volumes should path users be required to yield to or stop for traffic on the cross-street. Path users should never be required to yield or stop to traffic at driveways.



Path crossing a minor street should have been given priority right of way

Requiring path users to stop or yield to traffic on minor streets and driveways creates a potential for conflicts and collisions, for the following reasons:

- Wheeled path users (cyclists, skaters etc.) who want to maintain their momentum, will quickly learn to ignore stop or yield signs at minor street or driveway intersections with little cross traffic. Then when a stop or yield sign is placed appropriately at a more important street crossing (with more traffic), cyclists, skaters, etc. often ignore it too, and proceed into traffic without stopping or yielding.
- This behavior carries over onto other streets, where cyclists have learned to ignore stop signs.
- Those who do stop at every driveway or minor street intersection cannot take advantage of the momentum naturally generated by cycling or skating.

Major street crossings

At-grade crossings of busy roads can introduce serious conflicts, and grade separation should be sought, as most path users expect continued separation from traffic.

When grade separation structures cannot be justified, signalization or other measures should be considered to reduce conflicts. Good sight distance must be provided so vehicle drivers can see approaching path users. Most of the techniques described in Chapter 5 "Street Crossings" are applicable to path crossings (e.g. a traffic signal, a median island, advance stop lines on multi-lane roadways, etc.)

Where a path crosses a roadway at an intersection, improvements to the alignment should be made to increase the visibility of approaching path users. One method is to curve the path, so that it is not parallel to the adjacent roadway and the approach is a closer to a right angle. This improves visibility and forces cyclists to slow down.

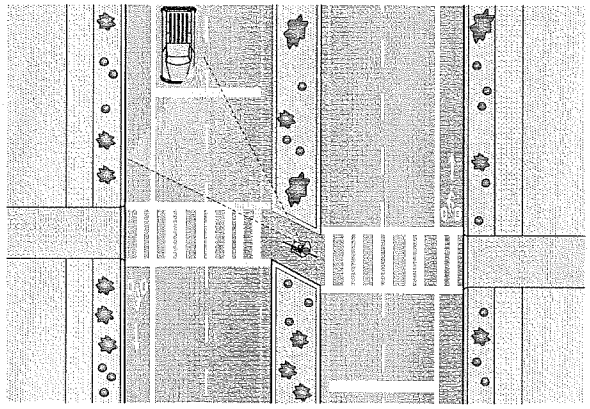


Figure 7-15: Midblock crossing with island and advance stop bar

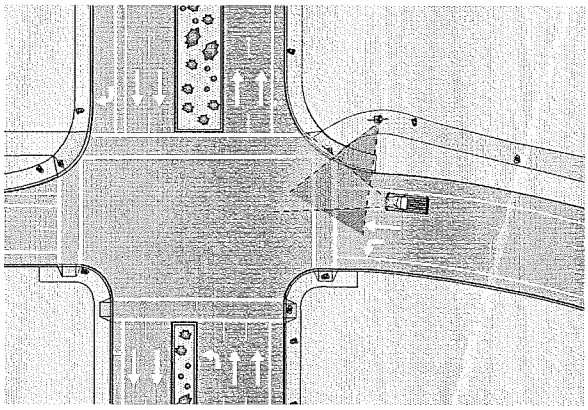


Figure 7-16: Path is curved to align with crosswalk

The greatest conflicts occur where paths cross freeway ramps. Motorists using these ramps are not expecting bicyclists and pedestrians at these locations.

At all path/roadway intersections, illumination should be provided so path users and vehicle drivers can see each other as they approach the conflict area. This is especially critical on paths that are otherwise unlit.

When traffic volumes are too high for path users to find acceptable gaps, even with a median island, signalization should be considered. The techniques in Chapter 5 can be used for path crossings.

Rails-to-trails crossings

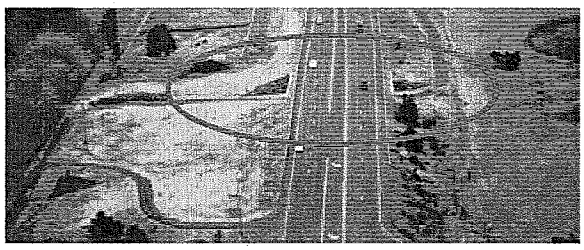
Unlike trails built on a new alignment, rails-to-trail conversions follow the alignment of the old railbed. This can result in many midblock crossings, or crossings too close to intersections. Since the alignment cannot be changed, extra care and attention must be given to ensure drivers and path users are aware of the conflicts, and to provide the best-designed crossing possible.

Undercrossings vs. Overcrossings

When the decision has been made to separate a path from the roadway with a structure, the two choices are over and undercrossings. In some instances, natural terrain makes the choice obvious:

- If the roadway is lower than the path, an overcrossing is the obvious choice;
- If the roadway is higher than the path, the solution is an undercrossing.

When they are both at the same level, the decision is based on weighing a variety of factors. There are advantages and disadvantages to both overcrossings and undercrossings.



Path is fully separated with an undercrossing

Undercrossings

Advantages: They provide an opportunity to reduce approach grades, as the required 10 feet clearance is less than the clearance required for crossing over a roadway. They are often less expensive to build. Sometimes slightly elevating the roadway (3-4 feet) is enough to make an undercrossing attractive.

Disadvantages: They present security problems, due to reduced visibility. An open, well-lighted structure can cost as much as an overcrossing. They may require drainage if the sag point is lower than the water table.

Undercrossings should be 14 feet wide or more. The standard overhead clearance of under-crossings is 10 feet; an 8-foot minimum may be allowable with good horizontal and vertical clearance, so users approaching the structure can see through to the other end. Undercrossings should be visually open for users' personal security and comfort. Illumination is needed in areas of poor visibility, when the undercrossing is long and for nighttime comfort.

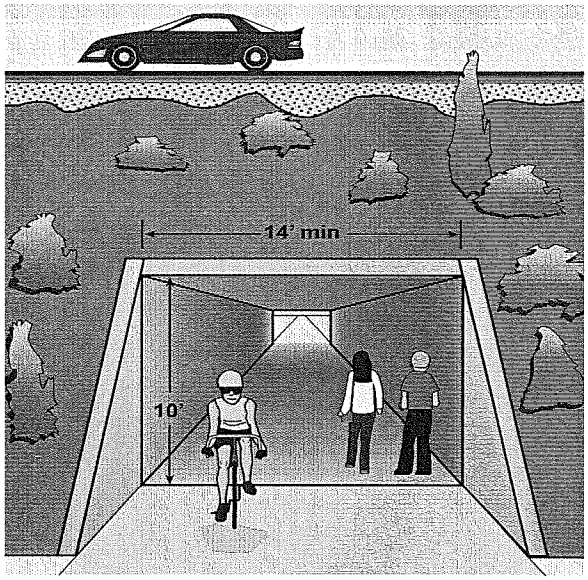
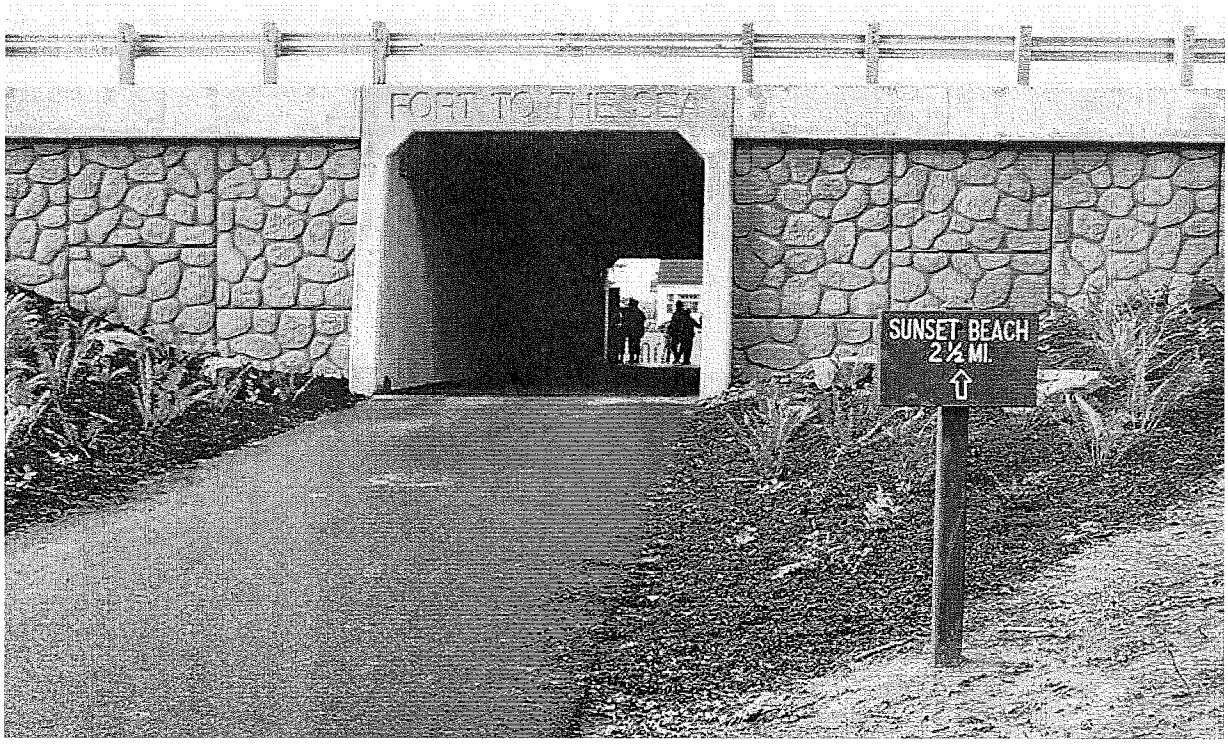


Figure 7-17: Undercrossing



Undercrossing with good sight lines

Overcrossings

Advantages: They are more open and present fewer security problems.

Disadvantages: They require longer approaches to achieve the required clearance over roadways. The total rise can be 20 feet with an additional structural depth of 3 feet. At 5%, this requires a 400 foot approach ramp at each end, for a total of 800 feet. This can be lessened if the road is built in a cut section.

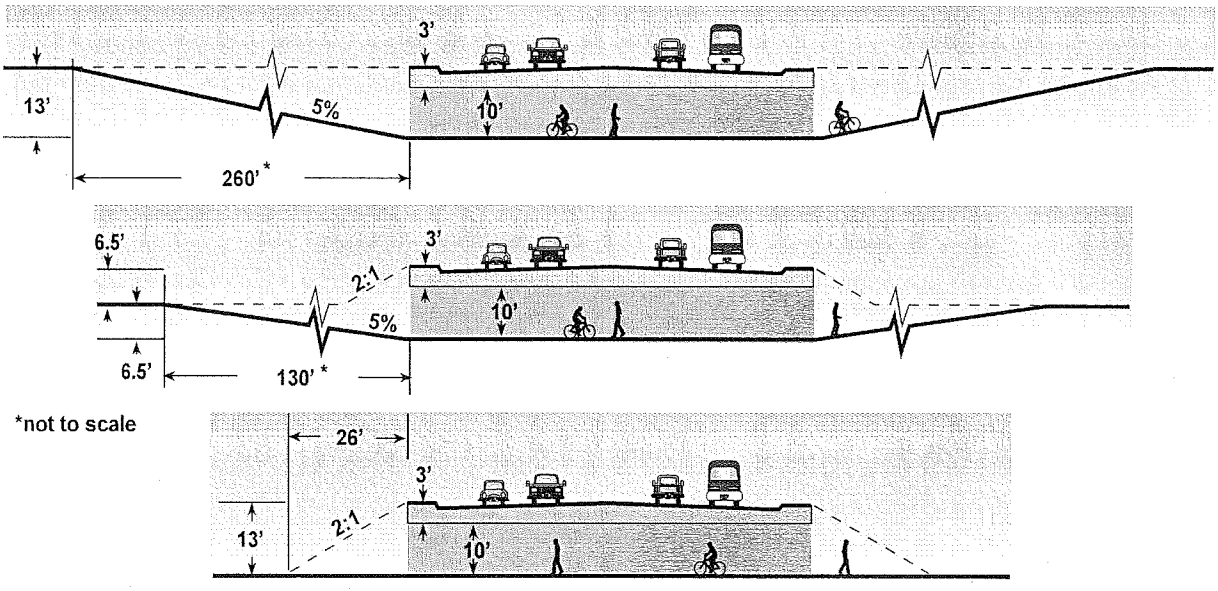
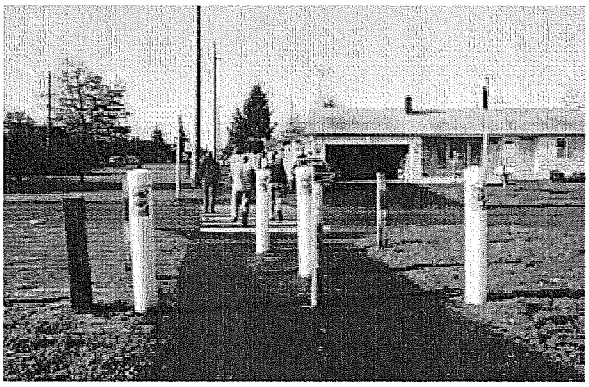
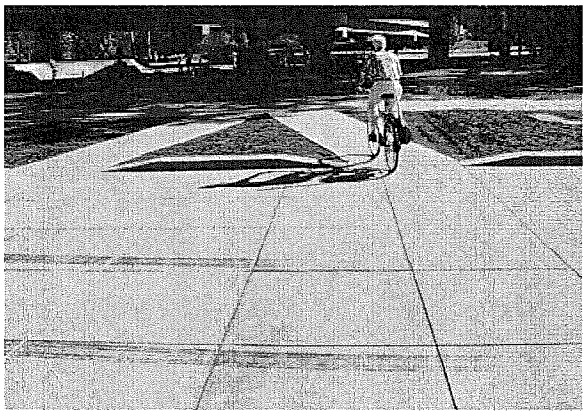


Figure 7-18: Path undercrossings, various configurations

Bollards should only be used when absolutely necessary. When used, they must be spaced wide enough (min. 5 feet) for easy passage by cyclists, bicycle trailers and adult tricycles as well as wheelchair users. A single bollard is preferred, as two may channelize bicyclists to the middle opening, with a potential for collisions. They should not be placed right at the intersection, but set back 20 feet or more, so users can concentrate on motor vehicle traffic conflicts rather than on avoiding the bollard. They should be painted with bright, light colors for visibility, illuminated and/or retro-reflectorized. A striped envelope around the bollard will direct path users away from the fixed object hazard. Flexible delineators, that collapse when struck by a bicyclist, should be considered.



Bollards are overused and can cause injury



Split path entry eliminates need for bollards

Offset Fencing

Placing railing or other barrier part way across a trail makes it possible for intended users to accesses the trail; maintenance vehicle operators are provided with keys to unlock the fences when they need access. The fences, like bollards, can be hazards to bicyclists and can restrict certain trail users from gaining access to the trail. They should be coated with retro-reflective material and well-lit.

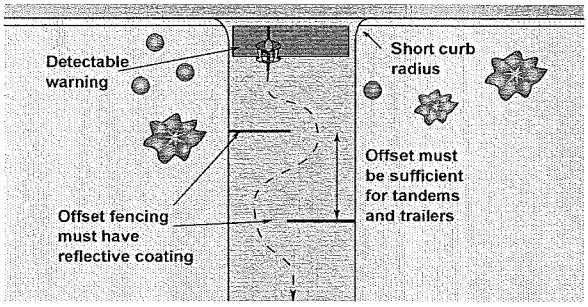
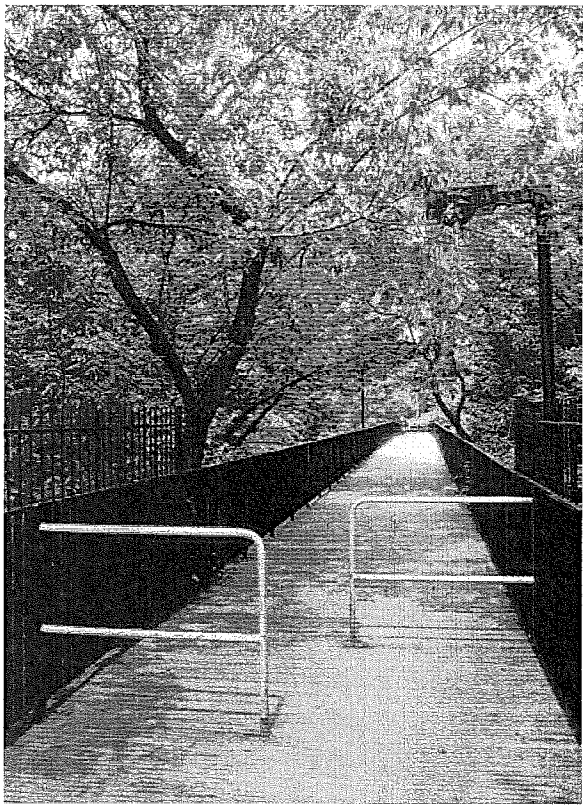


Figure 7-22: Offset gates prevent motor vehicle access



Offset fencing

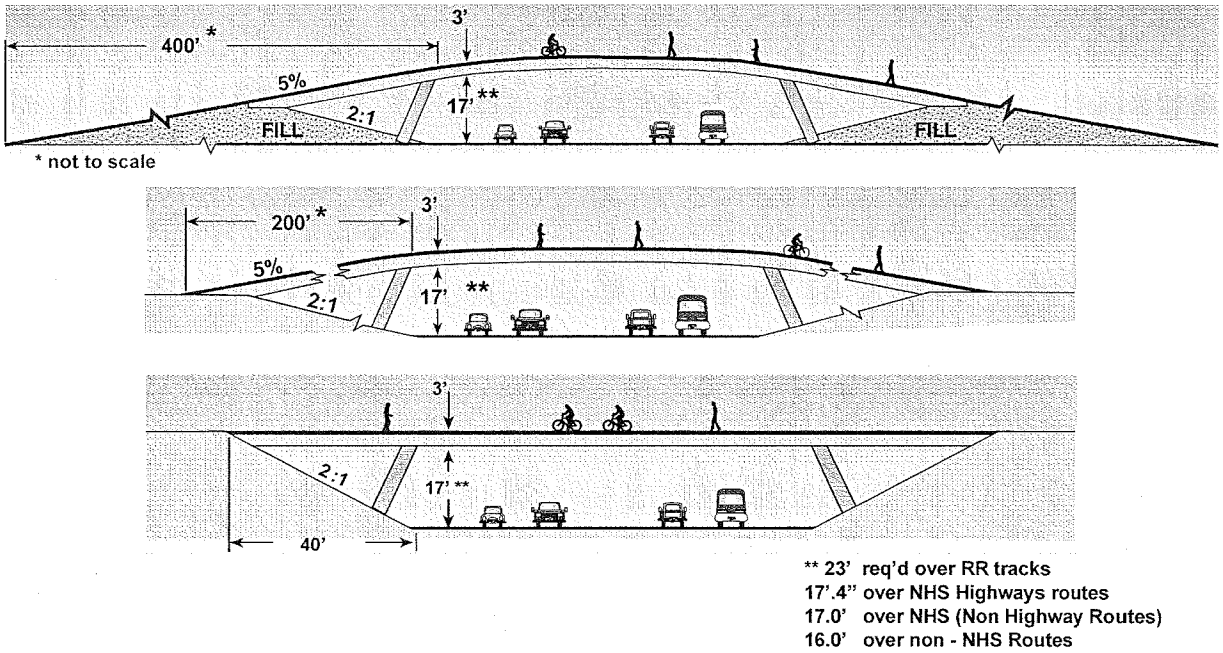


Figure 7-19: Path overcrossings, various configurations

Preventing Motor-Vehicle Access

Geometric Design

The most effective way to discourage motor vehicle access to paths is to make it physically difficult to do so. One method branches the path into two narrower one-way paths just before it reaches the roadway, making it difficult for a motor vehicle to gain access to the path.

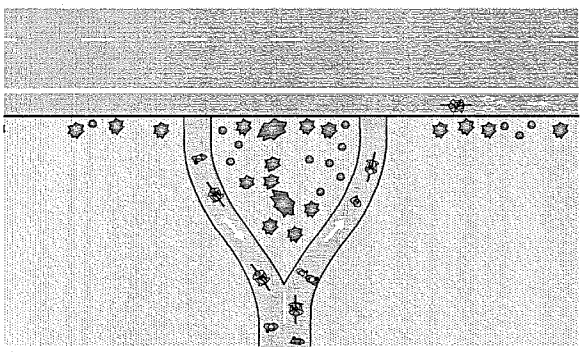


Figure 7-20: Path splits to prevent it appearing like a driveway

Another method is to create very tight curb returns to make it difficult for motorists to enter a path from the roadway.

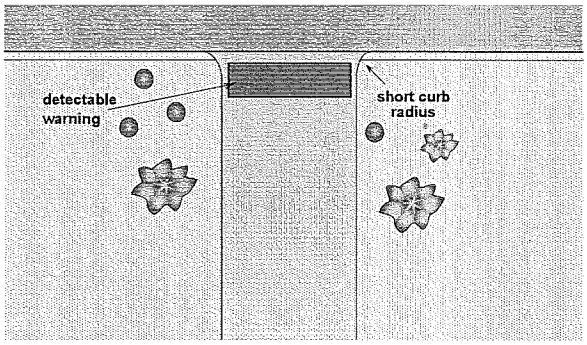


Figure 7-21: Tight curb radii prevent motor vehicle access

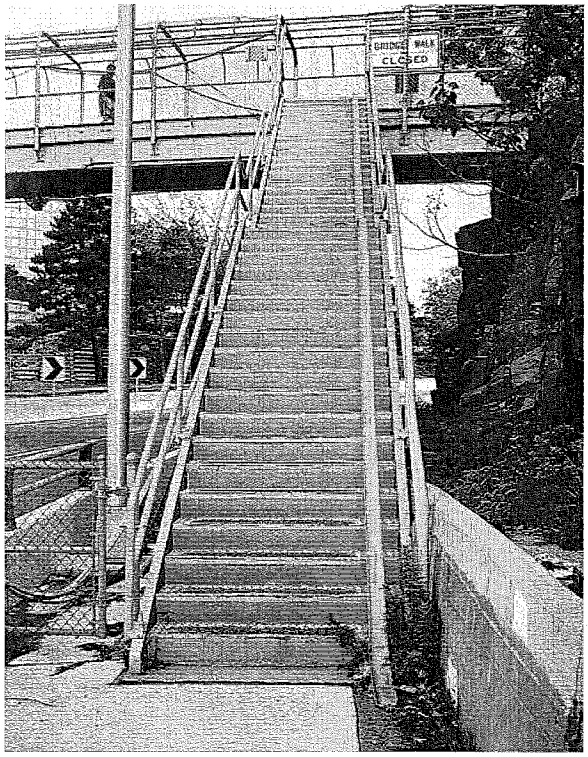
Bollards

Bollards may be used to limit vehicle traffic on paths. However, they are often hard to see, cyclists may not expect them and injuries result when cyclists hit them. Overuse of bollards is a serious hazard to bicyclists and may prevent path use by trailers, wheelchairs and other legitimate path users. In a group of riders, the riders in front block the visibility of those behind, setting up cyclists in the back of the pack for a crash.

Curb Ramps

Ramps for bicycle access to shared-use paths should be built so they match the road grade without a lip. The width of the ramp is the full width of the path when the approaching path is perpendicular to the curb and a minimum of 8 feet wide when the approaching path is parallel and adjacent to the curb. Greater widths may be needed on downhill grades.

Detectable warnings are required wherever a path intersects a public street; they should not be installed at driveways, nor where an on-road bike lane merges with an off-street path.



Metal channel (in yellow) provided for bicycle access

Stairways

Where a connection is needed to a destination or another path at a different elevation, a stairway can be used where the terrain is too steep for a path. A grooved trough should be provided so bicyclists can easily push their bicycles up or down.

Note: *Stairways are usually provided as a shortcut and do not meet all ADA requirements; destinations should also be accessible along a flatter route, even if it is longer and more circuitous. ADA should not be used as a reason to not provide stairs where beneficial and practicable.*

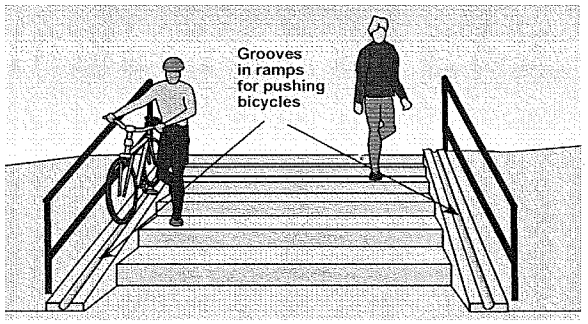


Figure 7-23: Stairway with channel for bicycle tires

Signs

Paths should be signed with appropriate regulatory, warning and destination signs.

Regulatory Signs

Regulatory signs inform users of traffic laws or regulations. They are placed at the point where the regulations apply. Common regulatory signs for bicyclists are signs R1-1 and R1-2 (Stop and Yield signs); they are reduced versions (18 inches x 18 inches) of standard motor vehicle signs, to be used where they are visible only to bicyclists (where a path crosses another path or where a path intersects a roadway at right angles).

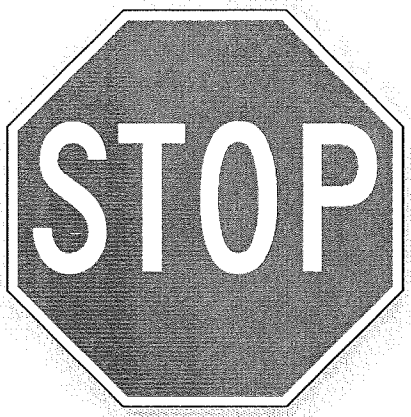


Figure 7-24: Signs R1-1

Signs OBR1-1 and OBR1-2 should be used where the signs are visible to motor vehicle traffic (where a path is parallel and close to a roadway).

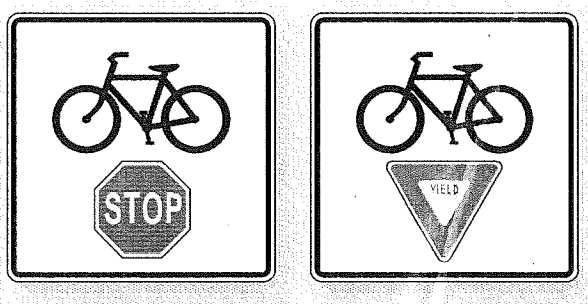


Figure 7-25: Signs OBR1-1 and OBR1-2

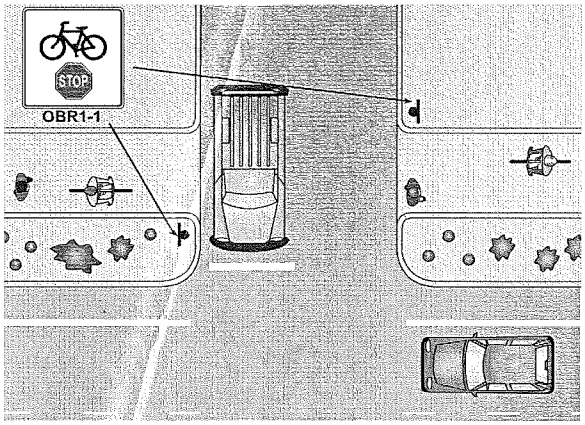


Figure 7-26: Appropriate use of sign OBR1-1 (or OBR1-2)

Sign R9-6 may be used at the beginning of shared-use paths and at important access points to warn cyclists of the presence of other users.

Figure 7-27: Sign R9-6

Signs R5-3 and OBR10-14 may be used at the beginning of a shared-use path if there are problems with motor vehicles using the path.

Figure 7-28: Signs R5-3 and OBR10-14

Where bicyclists using the path must cross a road at a signalized intersection (in a crosswalk) and proceed as pedestrians, sign R9-5 may be used.

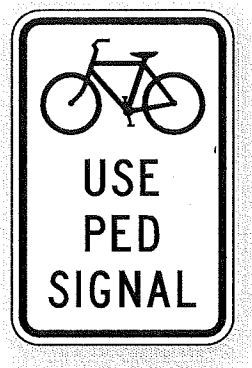


Figure 7-29: Sign R9-5

Warning Signs

Warning signs are used to inform path users of potentially hazardous conditions. They should be used in advance of the condition. Most are reduced versions (18 inches X 18 inches) of standard highway warning signs.

Curves:

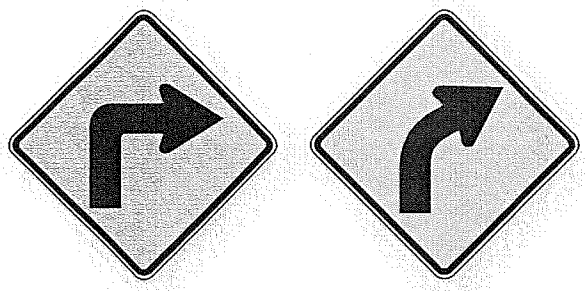


Figure 7-30: Signs W1-1 and W1-2 (18"x18")

Intersections:

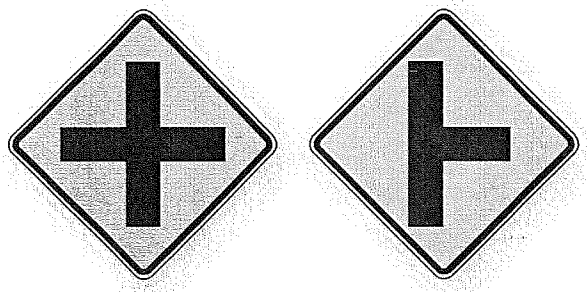


Figure 7-31: Signs W2-1 and W2-2 (18"x18")

Hill:

Figure 7-32: Sign W7-5

Height and Width Constraints:

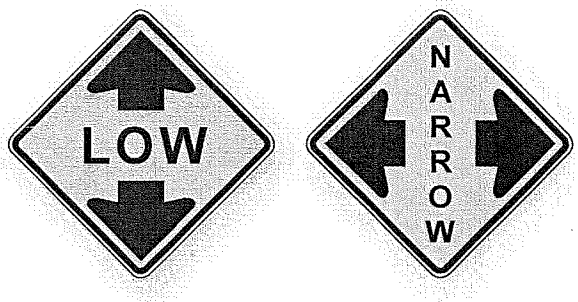


Figure 7-33: Signs OBW12-2 and OBW12-3 (18"x18")

Railroad, STOP Ahead, etc:

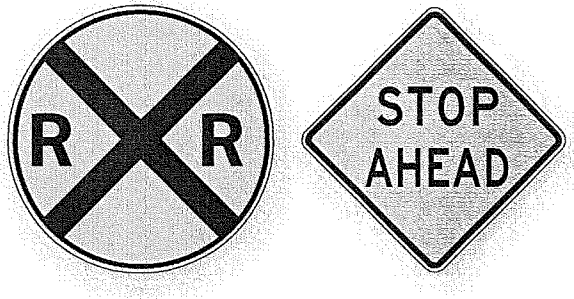


Figure 7-34: Signs W10-1 and W3-1 (18"x18")

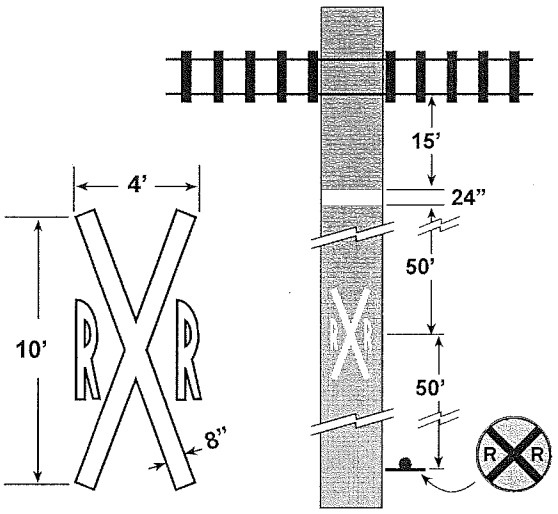


Figure 7-35: Railroad crossing ahead markings

Path Crossing Roadway

Sign W11-15 with "XING" rider should be used only where a shared-use path crosses a roadway at an uncontrolled location. This sign is not for use where bike lanes cross streets at controlled intersections.

Figure 7-36: Sign W11-15 with rider W11-15P

Directional, Destination & Street Signs

Where a path crosses a roadway or branches off into another path, directional and destination signs should be provided. It is also helpful to have street name signs at street crossings and access points. Signs directing users to the path are also helpful.

Figure 7-37: Directional and street signs

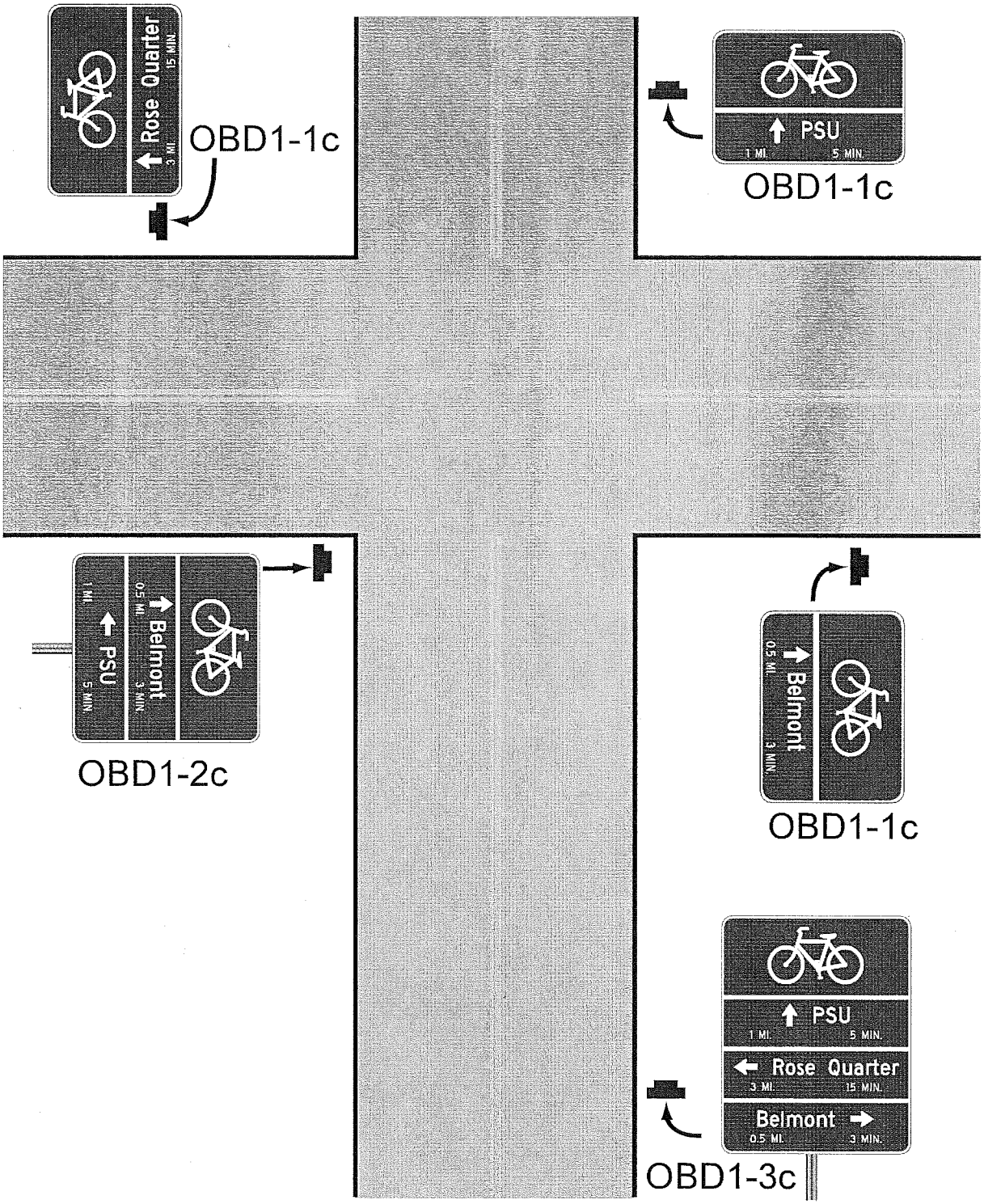


Figure 7-38: Bicycle Route Sign Examples

End of Path

Where bicyclists continue riding on the roadway at the end of a path, the following sign should be used to direct cyclists to the right side of the road to minimize wrong-way riding. Guide signs should be used to direct bicyclists to their destinations.

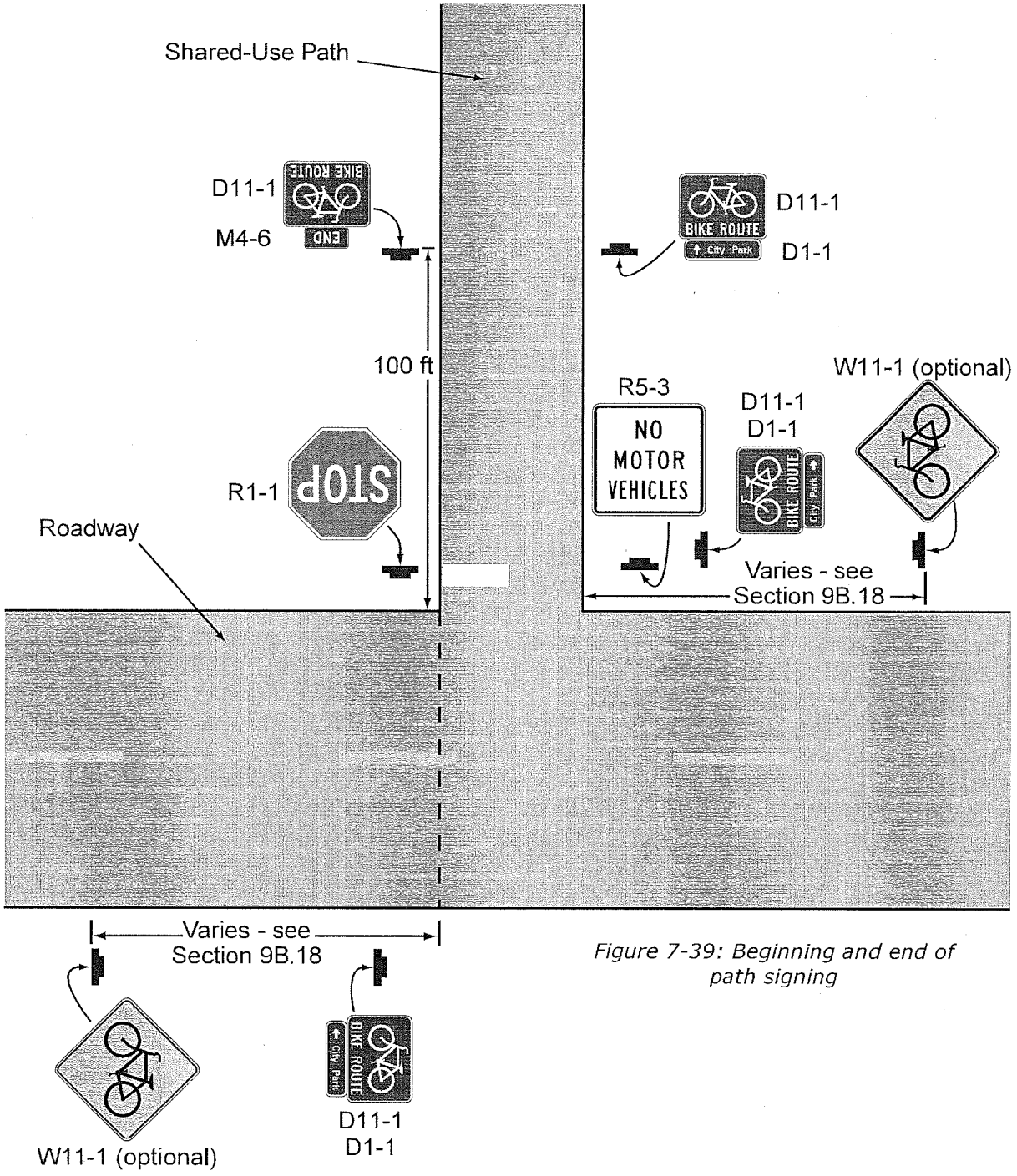


Figure 7-39: Beginning and end of path signing

Placement of Signs

Signs should have 3 feet of lateral clearance from the edge of the path (min 2 feet). Because of cyclists' and pedestrians' lower line of sight, the bottom of signs should be about 5 feet above the path. If a secondary sign is mounted below another sign, it should be a minimum of 4 feet above the path. Signs placed over a path should have a minimum vertical clearance of 8 feet.

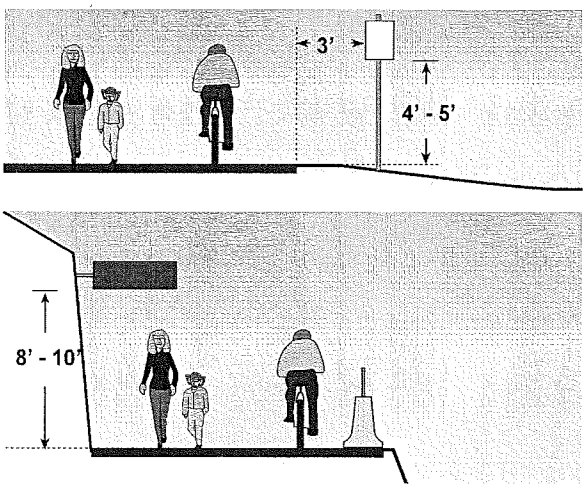


Figure 7-40: Sign mounting clearances

Striping

A centerline stripe is generally not recommended for shared-use paths. Users like to walk or ride side-by-side; a centerline stripe makes them feel confined to one side only, which is rarely possible on a standard 10-foot path. A solid centerline stripe may be used through curves and areas of poor sight distance; the approach to this area may be striped with dashes.

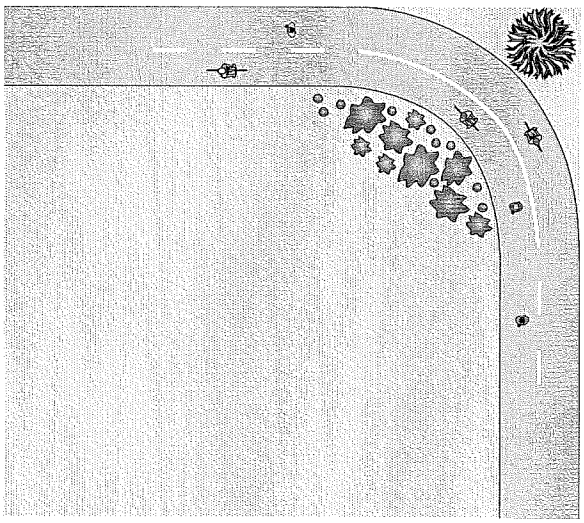
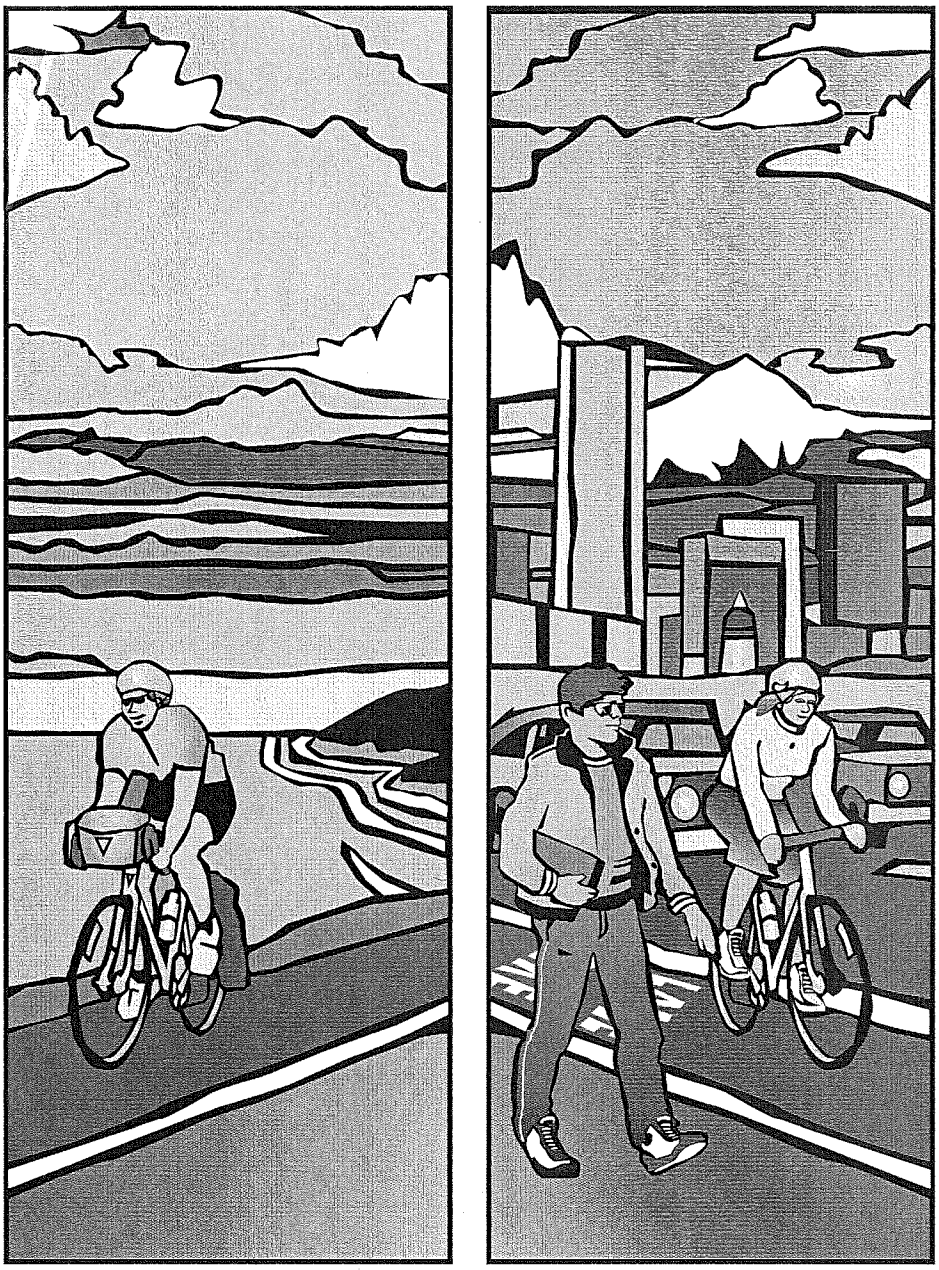


Figure 7-41: Skip stripe followed by solid stripe in a curve



Printed 2012

Memo

CITY OF ASHLAND

Date: June 20, 2013
From: Scott A. Fleury
To: Transportation Commission
RE: Alley-Installation of a Dust/Slow Sign

QUESTION:
Does the Transportation Commission have a recommendation regarding installation of a "dust/slow" sign in a local alley?

BACKGROUND:
Engineering received a request from David Qotsaisaw to install a "Dust/Slow" sign in the alley parallel to Ohio St. (reference attached map and request).

The alley is 300 feet long and 16 feet wide. There are approximately 17 residences adjacent to the alley along its length. The City does not have speed and volume counts for the alley. The state mandated speed limit for an alley is 15 mph.

The Manual on Uniform Traffic Control Devices (MUTCD) does not have a specific sign dedicated for dust and slow. Staff has found variations of signs that can be made for installation for this purpose. The sign would be considered an information sign placed within the public right of way by the City and exempt from the sign code.

Staff made a site visit to inspect the condition of the alley and to determine a safe driving speed. Staff believes a safe travel speed for the alley is within the 10 to 15 mph range. With its current configuration higher speeds are attainable thus contributing to increased dust and potential safety issues with driveway access points (reference photos). The primary use of the alley is residential access for adjacent property owners.

Figure 1: Looking east

Figure 2: Looking west

Many residents adjacent to dirt roads and alleys within the City limits use private contractors to apply a dust suppressant during the summer season to minimize its impact. Mr. Qotsaisaw was informed of this as a possibility, but did not think the residents of this alley could financially support dust suppressant application.

CONCLUSION:

Staff does not have a primary recommendation towards installation of a dust/slow sign at each end of the alley and is therefore bringing this issue to the Commission for discussion and potential solution.

Scott Fleury

From: D.Qotsaisaw [tierraylibertad@lavabit.com]
Sent: Monday, June 10, 2013 4:27 PM
To: 'Scott Fleury'
Subject: Request for Sign Instillation from the City of Ashland, Public Works, Transportation Commission

To: Scott A. Fleury
Engineering Services Manager
City of Ashland
Public Works
20 East Main Street
Ashland OR 97520
(541) 552-2412

Mr. Fleury:

I would like to formally request to the City of Ashland, the Public Works Director, and the Transportation Commission for the installation of street signs indicating "SLOW" and "DUST" in the alley running parallel and between Ohio Street and Hersey Street. There persists a chronic speeding and unsafe use of this narrow dirt alley which has a direct negative impact on the residents who live along this alley. This sign would serve as an informational sign for residents who use this right of way to alert them to the dust and safety issues of this narrow dirt alley where children, pets, and people frequently walk. Residents of Ohio Street and Hersey Street also regularly use this alley for primary and secondary access to their residences.

Thanks for your time,
Sincerely,

David Qotsaisaw
142 Ohio St.
Ashland OP 97520
(541)488-3365


2502
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N LAUREL ST
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OHIO ST
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100
1400
1700


SLOW
DOWN
NO
DUST

Transportation Commission

Action Summary

as of June 2013

Month Year	Item Description	Status	Date Complete
May 23 TC	Bike Path Signage	TR13-08	
May 23 TC	Plaza Parking Prohibition	TR13-09	
February 28 TC	Main St. Parking Restriction	TR13-07	4/13
February 28 TC	Fair Oaks No Parking Restriction	TR13-03	4/13
February 28 TC	East Main Crosswalk Signage	TR 13-04	4/13
October 12 TC	B St. and Eighth St. sight distance	Approved, TR 2012-04	
October 12 TC	B St. and Second crosswalk sight distance	Approved, TR 2012-05	
September 12 TC	B St. and Second sight distance analysis	Staff report complete	
September 12 TC	Lithia/First Intesection Analysis	Traffic Engineer under contract to perform services	
August 12 TC	Centerline marking on Takelma Way	Approved, TR 2012-03	9/12
March 12	Sharrow markings on Maple St.	approved, TR 2012-01	10/12
March 12	Centerline marking on Crispin St.	approved, TR 2012-02	10/12
March 12	Loading zone on Lithia Way	not approved	
November 11 TC	Parking prohibitions on Highwood Dr.	approved, TR 2011-09	2/26/12
October 11 TC	Crosswalk on A Street	approved TR 2011-08	12/1/11
August 11 TC	Parking prohibitions on Almond	approved TR 2011-07	✓
August 11 TC	Stop sign at 4th and A Streets	not approved	
Jul 11 TC	Parking Prohibitions on E. Nevada	approved;TR 2011-04	3/6/12
Jul 11 TC	Stop Sign at Starflower	approved yield; TR 2011-05	11/17/11
Jul 11 TC	A' Shared Road	approved; TR 2011-06	10/28/11
June 11 TC	N. Main Road Diet	TC recommend implementation asap, approved 8/2/11	
June 11 TC	Parking prohibition on Central	TR 2011-03, install painted centerline, only	✓
May 11 TC	Stop sign on Homes	Stop sign not approved, other improvements implemented.	
May 11 TC	Stop sign on Pinecrest	not approved	
May 11 TC	Left turn signal at Wightman	recommended review by traffic engineer	
May 11 TC	Memorial Sign Request	recommended development of a policy, approved by Legal/Planning. Approved by Council	1/27/12
Apr 11 TC	N. Main Road Diet Pilot	Approved by Council 8/2/11	
Feb 11 TC	Parking Prohibitions Meadowbrook	TR 2011-02 order sent to Street Div.	✓
Feb 11 TC	Parking Prohibitions on Liberty St	TR 2011-01 order sent to Street Div.	✓
Feb 11 TC	Bike Corral on Third Street	Completed & installed	✓
Dec 10 TC	Petition for ped. rail crossing	referred to TSP process	
Dec 10 TC	Siskiyou Blvd x-walk at Frances	no action required	12/16/10
Nov 10 TC	S Mountain Mid Block Crosswalk	Approved to be installed in cooperation with SOU	
Nov 10 TC	E Main @ RR Crosswalk Review	Commission asked stop sign replaced	
Oct 10 TC	A St Sharrow Designation	Commission asked for Kittleson review	
Oct 10 TSC	Safety Sleeve for Bollard @ RR Park	replaced	✓
Oct 10 TSC	Storm Drain on Bike Path @ N Mtn	staff is researching	
Oct 10 TSC	Additional Vehicle Parking Downtown	Contacted ODOT	
Oct 10 TSC	Crosswalk at Lithia and E Main	TR 2010-06, order sent to Street Division	✓
Oct 10 TSC	Stop Sign at Helman & Nevada	not approved	✓
Oct 10 TSC	Stop Sign on 'B' @ Third	not approved	✓
Oct 10 TSC	Crosswalk on Siskiyou @ Morton	not approved	✓
Aug 10 TSC	Grandview/Sunnyview/Orchard/ Wrights	vegetation clearance referred to street dept for implementation	
Aug 10 TSC	15 Minute Parking on A Street	TR 2010-05, order sent to Street Division	
Aug 10 TSC	First St Parking Prohibition Change	TR 2010-04, order sent to Street Division	
Aug 10 TSC	Granite St Parking Prohibition Change	not approved, Swales will resubmit request	✓
Aug 10 TSC	Hargadine St Parking Prohibition Change	review as part of TSP update	
Aug 10 TC Jul 10 TSC	Bridge Street Parking Prohibition Change	Memo received from Fire Dept recommending against change	✓
Aug 10 TC	Truck Route Ordinance Review	Staff researching, Nov 2010 agenda item	
Jun 10 TC	2 Year Project List Goal Setting	3 goals selected	✓
Jul 10 TC	Audible Crosswalk Signals for Downtown	Vieville working w/staff to develop priority list for $27K budget	
Jul 10 TC	Shared Road Policy	review as part of TSP update	
Mar 10 TSC	Yield Sign at Terrace @ Holly	TR 2010-02	✓
Mar 10 TSC	Ashland St @ YMCA Crosswalk	not approved by ODOT	✓
Mar 10 TSC	Oak St Crosswalk at A St	included in Misc Concrete Project; bids due 11/17/10	
Jul 09 TC	Additional Downtown Bike Parking	Implementation list complete, will be installed as budget permits	
Nov 09 TC & TSC	Crosswalk for East Main @ Campus Way	Staff applying for funding through grant application	
Nov 09 TC & TSC	Grandview Shared Road Improvements	TR 2010-03, other improvements likely in future	
Aug 09 TC	Oak Street Sharrows	TR 2010-01	✓
Jul 09 TC	Will Dodge Way Improvements	Complete	9/2010
Apr 09 TC	Siskiyou Bv Pedestrian Improvements	complete	✓
Aug 09 TSC	Union/Allison and Fairview Intersection	not approved	✓
Nov 09 TSC	Yield Sign at Palmer Rd	not approved	✓
Nov 09 TSC	Stop Sign at Indiana St	not approved	✓
Dec 09 TSC	Terrace St Traffic Calming	not approved	✓
Dec 09 TSC	Ashland Village Traffic Calming	not approved	✓

MOTOR VEHICLE CRASH SUMMARY

MONTH: MAY NO. OF ACCIDENTS: 11

DATE	TIME	DAY	LOCATION	NO. VEH	PED INV.	BIKE INV.	INJ.	DUII	CITED	PROP DAM.	HIT/ RUN	CITY VEH.	CAUSE - DRIVER ERROR
1	17:10	Wed	N Main St at Maple	2	N	N	P	N	N	Y	N	N	v1 rearended at stoplight. After stopping, dv2 inadvertently allowed vehicle to roll into back of v1. No citation.
1	20:55	Wed	Lit Way near Ashland St	2	N	N	N	N	N	Y	N	N	dv2 ran into v1 which was parked at the side of the road. No citations.
7	08:57	Tue	E Main St at Wightman	1	N	Y	Y	N	N	Y	N	N	Bicyclist traveling in continuous bike lane was struck by v1 crossing controlled intersection. DV1 at fault, no citation.
7	10:46	Tue	Fork St at Vista	2	N	N	N	N	N	Y	N	Y	city vehicle was backing uphill and ran into car stopped in travel lane waiting for city truck to clear. Minor damage.
13	14:47	Mon	Fourth St and C St	2	N	N	N	N	Y	Y	N	N	V1, travelling north on 4th St, was struck by v2 who pulled out from C St. Dv2 cited for failure to obey tcd; dv1 cited for no insurance.
14	11:21	Tue	Siskiyou at Indiana	2	N	N	N	N	Y	Y	N	N	dv2 was driving on the wrong side of the median on Siskiyou, ran into v1 head on. Dv2 cited for failure to drive on right side of road.
16	02:00	Thr	Siskiyou west of Park St	1	N	N	N	U	N	Y	Y	N	Veh. found down an embankment, crashed into an elec pole. Owner of veh could not be conclusively found at fault; he said someone had stolen veh. No citation.
19	22:00	Sun	Helman south of Nevada	2	N	N	U	U	N	Y	Y	N	Hit and run, parked vehicle. No leads or suspects.
21	07:42	Tue	Siskiyou Blvd at Harrison	2	Y	N	P	N	Y	Y	N	N	dv1 rearended by v2 while stopped for peds crossing in a crosswalk. Dv1 possible injury. Dv2 cited for following too closely.
21	13:40	Tue	Beach St north of Henry	2	N	N	Y	N	Y	Y	N	N	dv2 who was stopped to let passenger out was rearended by v1. dv1 had minor injuries, was cited for careless driving.
25	21:46	Sat	Oak St near B St	3	N	N	N	Y	Y	Y	Y	N	dv3 struck parked vehicles 1 and 2, and left scene. Driver was found and cited multiple counts incl. duii, reckless driving, etc.

Memorandum

To: Mike Faught, Ashland Public Works Director

From: Kim Parducci, Southern Oregon Transportation Engineering, LLC

Date: 05/31/2013

Re: North Main Street Evaluation

Comments: Southern Oregon Transportation Engineering gathered N. Main Street corridor and intersection data for the month of May. Results are summarized below.

- The average corridor travel time in May was measured to be 2 minutes 34 seconds southbound from Valley View to Maple (average speed of 33 mph) and 2 minutes 22 seconds northbound (average speed of 36 mph). The average corridor travel time southbound from Maple to Helman was 1 minute 33 seconds (average speed of 22 mph) and 1 minute 23 seconds northbound (average speed 25 mph).

- The average stopped time in May for vehicles on Wimer at N. Main (between 3:30-5:30pm) was measured to be 23.55 seconds with a maximum stopped time of 90 seconds. The average queue length was less than one vehicle and the maximum queue length was 4 vehicles. Similarly, the average stopped time for vehicles on Hersey at N. Main (3:30-5:30pm) was measured to be 24.56 seconds for left/throughs and 22.95 seconds for right turns with a maximum stopped time of 113 seconds for left/throughs and 96 seconds for right turns. The average and maximum queue length for left/throughs was 1 vehicle. The average queue length for right turns was 2 vehicles and the maximum queue length was 10 vehicles.

- Between 3:30-5:30pm in May there were 558 gaps of adequate size on N. Main Street for right turn movements from Wimer (~ 101 measured in the 2-hr PM peak period) and 496 gaps of adequate size for right turn movements from Hersey (~ 207 measured in the 2-hr PM peak period). There were 137 gaps of adequate size for left and through movements from either Wimer or Hersey (~ 16 from Hersey and ~ 12 from Wimer).

- In the first three months since implementation of the road diet project, pedestrian volumes on Main Street between Maple and Laurel increased on average from 51 to 60 in a 4-hour PM peak period, and bicycle volumes increased from 22 to 35. In the second quarter (January-February-March), pedestrian and bicycle volumes on Main Street showed a slight decline to 52

average pedestrians and 27 average bicyclists. In April and May, pedestrian volumes decreased to 46 on average and bicycle volumes increased to 39 on average.

Prior to the Road Diet, the intersection of Wimer/Hersey/N Main was shown to operate at a LOS F with a v/c ratio of 1.68. In January of 2013 the intersection was shown to operate at a LOS C with a v/c ratio of 0.28. In May of 2013, the intersection was shown to operate at a LOS D with a v/c ratio of 0.46. This will continue to be monitored through the summer months as the tourist season begins.

Post Road Diet - Data Summary

	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct
Travel Time SB										
V.V.-Maple Avg Time (min)	2:18	2:20	2:20	2:21						
V.V.-Maple Avg Speed (MPH)	37	36	36	36						
Maple-Helman Avg Time (min)	1:28	1:27	1:30	1:32						
Maple-Helman Avg Speed (MPH)	24	24	23	23						
Travel Time NB										
V.V.-Maple Avg Time (min)	2:12	2:19	2:22	2:20						
V.V.-Maple Avg Speed (MPH)	38	36	36	36						
Maple-Helman Avg Time (min)	1:26	1:28	1:23	1:25						
Maple-Helman Avg Speed (MPH)	24	24	25	25						
Wimer SD										
Avg Stopped Time (sec)	25.18	19.92	21.55	14.98						
Max Stopped Time (sec)	128	113	194	76						
Avg Queue (veh)	1	1	1	1						
Max Queue (veh)	4	3	4	2						
Hersey SD										
Left/Throughs				*All*						
Avg Stopped Time (sec)	26.69	38.92	25.18	24.85						
Max Stopped Time (sec)	146	103	65	166						
Avg Queue (veh)	1	1	1	2						
Max Queue (veh)	1	2	2	6						
Right Turns										
Avg Stopped Time (sec)	15.07	24.15	23.78							
Max Stopped Time (sec)	124	116	130							
Avg Queue (veh)	1	2	2							
Max Queue (veh)	4	5	6							
North Main Street SD										
Northbound Lefts										
Avg Stopped Time (sec)	NA	7.81	NA	TBD						
Max Stopped Time (sec)	NA	59	NA	TBD						
Avg Queue (veh)	NA	1	NA	TBD						
Max Queue (veh)	NA	3	NA	TBD						
Southbound Lefts										
Avg Stopped Time (sec)	NA	10.69	NA	TBD						
Max Stopped Time (sec)	NA	47	NA	TBD						
Avg Queue (veh)	NA	1	NA	TBD						
Max Queue (veh)	NA	3	NA	TBD						
North Main Street Gaps										
Southbound Right Turns	617	553	637	699						
Northbound Right Turns	454	516	533	561						
NB-SB Left/Throughs	101	119	150	154						