



Santa Fe Metropolitan BICYCLE MASTER PLAN



APPENDICES

**Preliminary
DRAFT**

SEPTEMBER 2011



Appendix 1: Bicycle Planning in the Santa Fe MPO area

Santa Fe Metropolitan Planning Organization

The MPO has long emphasized the development of bicycle transportation as a key element of the Metropolitan Transportation Plan (MTP). To this end, the MPO adopted the "Complete Streets" approach through Resolution 2007-1, "A Resolution Advancing Complete Streets for the Santa Fe Metropolitan Planning Area" (see Appendix 3), which specifically resolves that

- bicycle, pedestrian, equestrian and transit needs should be given full consideration in the planning and development of transportation facilities in the Santa Fe metropolitan planning area
- Bicycle, pedestrian, equestrian, and transit facilities should be established by ordinance in conjunction with the construction, reconstruction, or other change of any transportation facility in accordance with Complete Streets principles
- The Santa Fe MPO staff will work with City and County land use and public works departments, Regional Planning Authority staff, and related advisory committees to collaboratively designate common Complete Streets specifications that are consistent across jurisdictions for regionally significant roadways.

City General Plan Policies

The City's General Plan sets out the following "guiding policies" for bicycle circulation:

- 6-3-G-1 Provide a comprehensive network of bikeways for safe and efficient transportation.
- 6-3-G-2 Recognize bicycling and walking as viable alternatives to motorized transportation.
- 6-3-G-3 Provide off-road trails as an alternative to on-road travel where natural corridors exist.
- 6-3-G-4 Provide necessary amenities, such as secure bike racks and traffic signals which can be triggered by bicyclists.

The City's General Plan also recommends the following "implementing policies" for bicycle circulation:

- 6-3-I-1 Use the Bikeways Master Plan as the primary tool for detailed policy making and bicycle system planning.
- 6-3-I-2 Consider the feasibility of providing a network of bikeways along acequias and

riparian corridors as part of the planned trail network if development and impacts do not negatively affect the environment or wildlife.

6-3-I-3 Conduct a signage and striping program for the bikeway network shown on the Bikeways Master Plan.

City of Santa Fe, 1993 Bikeways Masters Plan

This plan established short-range and long-range priorities for the development of multi-use trails in Santa Fe, particularly the extension of the Rail Trail and the Arroyo Chamiso Trail and the creation of the River Trail as a multi-use trail. The Plan also outlined the development of the Acequia Trail, but only along alignments farther west than the alignments that have been pursued to date. The 1993 Bikeways Master Plan also created the City's system of signed bike routes as described below, and proposed other initiatives...

City of Santa Fe, Parks and Recreation Plan, 2001

This plan emphasized development of multi-use trails for use by bicyclists and pedestrians in parks and open space alignments throughout the City. The plan identified needs in well-known and –prioritized areas such as the River Trail as well as lesser-known alignments such as the Arroyo Chaparral Trail. Many of these proposed bicycle facilities were removed from consideration under the Parks Division's 2009 "Bond Implementation Plan."

Most of the trails built by the Parks Division through the \$30 million bond have focused on internal, recreational use, rather than a transportation function for bicyclists and pedestrians. Significant construction of multi-use trails through the bond was implemented by the Public Works Department's Trails Division, primarily following plans under BTAC (see below), and in some cases including alignments within city parks (e.g. Ashbaugh Park).

City of Santa Fe, Bicycle and Trails Advisory Committee (BTAC)

BTAC was created by the City Council in 2003(?) to determine the use of a new \$1.5 million Capital Improvement Program fund and to guide bicycle planning in Santa Fe...

BTAC created a "Big Picture" map of proposed trail alignments in and around the City of Santa Fe based on the 1993 Bikeways Master Plan as well as additional input and information from Committee members and staff. Since the creation of BTAC, the City's trail planning and construction has been based on input from the Committee, sometimes in alignment with the 1993 Bikeways Master Plan, along with additional priorities and plans by the City's Public Works Department. BTAC's "On-Road Subcommittee" provided the City with recommendations on the use of shared lane arrows ("Sharrows") as well as bicycle-sensitive signal actuators that the City has subsequently implemented

and marked. BTAC continues to meet on a monthly basis to discuss developments and provide guidance.

City of Santa Fe, Sustainable Santa Fe Commission

The Sustainable Santa Fe Plan (<http://www.santafenm.gov/index.aspx?NID=685>) developed by the City's Sustainable Santa Fe Commission was adopted by City Council in 2008. The plan examines how the City of Santa Fe can reduce its contribution to greenhouse gas emissions and prepare to be more resilient to impacts of global warming. (The Plan responds to a City Council Strategic Plan initiative to "Support Sustainable Development and a Green City," which includes priorities to "Adopt and enforce land use codes and policies that promote sustainable, energy-efficient, carbon-neutral development," "Provide for alternatives to...automobiles," and "keep neighborhoods livable and protect rural areas from sprawl.") The Plan supports the development of bicycle transportation in Santa Fe, along with support for pedestrians, transit, low-emission vehicles, and alternative fuels as well as appropriate land use, to reduce motorized trips.

The Plan summarizes activities underway and proposes actions to

- establish safe transportation routes for "zero-emission" transportation, including bicycles
- support free or inexpensive bicycle rentals
- establish bicycle racks throughout the city
- continue the development of bicycle and pedestrian trails
- increase the bicycle-carrying capacity of transit
- implement "complete streets," including retrofitting where width allows, and
- continue to pursue a wide variety of strategies for on-road facilities including road diets, sharrows, bike lanes, and use of existing streets, especially near transit.

Santa Fe County

Santa Fe County's trail planning is overseen by the County Open Land, Trails, and Parks Advisory Commission (COLTPAC).

The County's recent Sustainable Growth Management Plan includes proposed policy to build complete streets, including bike lanes or shoulders on county roads where appropriate, and to build trails for transportation purposes rather than purely for recreation.

State of New Mexico

New Mexico Department of Transportation (NMDOT), Bicycle Pedestrian Equestrian (BPE) Advisory Committee. The BPE Advisory Committee has produced various iterations of a statewide BPE Advisory Plan, a non-binding document provided to the Transportation Secretary which has generally urged the Agency to follow AASHTO guidelines for bicycles in all construction and maintenance projects. The Committee has

also been charged with recommending the designation through signage of State Bicycle Routes, and among the first routes designated was State Bike Route 9, a series of signed bikeways bisecting the MPO area from Lamy to Tesuque via Santa Fe's plaza area (described in more detail below).

New Mexico State Parks (NMSP), Recreational Trail Program (RTP). As the recognized "state trail agency," NMSP has pursued the development of long-range trails of statewide and regional significance, including the Continental Divide Trail and the Rio Grande Trail, both envisioned to extend from the northern to southern border of the state. Although Santa Fe might be on or near proposed alignments for a statewide Rio Grande Trail, NMSP's planning efforts to date have focused on downstream alignments, including a Belen-to-Bernalillo segment to encompass Albuquerque's 17-mile Bosque Trail and formative efforts in Sierra County and Doña Ana County to the south. NMSP is also relevant to local bikeway planning efforts in Santa Fe in that Hyde State Park and many urban properties in Santa Fe are under NMSP administration. The state RTP under NMSP is also responsible for distributing federal Recreational Trail Program funds, which are a possible source for trail funding in and around Santa Fe.

Appendix 2: Legal framework supporting bicycle transportation in the Santa Fe MPO area

City of Santa Fe Code, Chapter 14

14-8.6 OFF-STREET PARKING AND LOADING

...

(D) Off-Street Bicycle Parking

(1) Applicability. Off-street bicycle space parking standards shall apply to all uses except single-family residential uses.

(2) Requirements. Off-street bicycle spaces shall be provided as follows:

(a) For all uses except those specified below:

TABLE 14-8.6-3: General Off-Street Bicycle Parking	
Parking Spaces Required	Bicycle Spaces Required
10 or less	5
11-50	10
51-100	15
101-150	20
151 or more	25

(Ord. No. 2002-37 § 90)

(b) For hotels or motels:

TABLE 14-8.6-4: Hotel or Motel Off-Street Bicycle Parking	
Number of Employees per Shift	Bicycle Spaces Required
20 or less	5
21-40	10
More than 40	15

(Ord. No. 2002-37 § 90)

- (i) For elementary and middle schools, one bicycle space for every 20 students.
- (ii) For high schools, commercial, trade, or vocational schools, one bicycle space for every 50 students.
- (iii) For colleges, one bicycle space for every 20 students.
- (iv) The number of employees or students shall be based upon an affidavit submitted by the applicant.

(3) Standards. Off-street bicycle spaces shall:

- (a) Not be located on public right-of-way;
- (b) Be designed as illustrated in Chapter XIV. Other rack designs may be approved by the Land Use Department; (Ord. No. 2007-45 § 30)
- (c) Be located on an outside ground surface which shall be paved or planted in a way which avoids mud or dirt and is easily maintained;
- (d) Be anchored so they cannot be easily removed. Racks shall be designed so that both wheels or the frame of a bicycle can be locked securely to it with a chain, cable or padlock;
- (e) Be located so as to be visible, easily accessible near the building entrances, well lit and not conflicting with pedestrian or vehicular traffic; and,

(f) Lockers may be substituted for racks and shall be so designed that an unauthorized person cannot remove a bicycle from them. If a room or common locker not divided into individual lockers or rack spaces is used, one bicycle per 12 square feet of floor area is assumed.

14-8.15 DEDICATION AND DEVELOPMENT OF LAND FOR PARKS, OPEN SPACE, TRAILS AND RECREATIONAL FACILITIES

(A) Purpose
(Ord. No. 2007-12 § 2)

- (1) The Governing Body deems it in the best interest of the City and its citizens that adequate provision is made for parks, open space, trails, and recreational facilities, and for City maintenance thereof.
- (2) These regulations shall provide standards for the dedication of land or easements to the City to assist in implementing of the City's Parks, Open Space, Trails and Recreation Master Plan.
- (3) These regulations shall provide standards based upon the average number of persons per housing unit according to Census 2000 which is 2.0 persons per unit for the City of Santa Fe.
- (4) Land dedicated for neighborhood parks shall be based upon a rate of 3 acres per 1,000 persons, or per 500 housing units.
- (5) Land dedicated for regional parks, community parks, open space and trails shall be based upon a rate of 12 acres per 1,000 persons, or per 500 housing units.
- (6) For usable park land, park dedication should result in a park area of no less than 1 acre.
- (7) Land or easements dedicated for public, nonmotorized trails may be used to satisfy the requirement for dedication of regional parks under paragraph (5) above, and to establish an interconnected regional transportation system.

(B) Applicability
(Ord. No. 2007-12 §3)

- (1) Except as limited in paragraph (B)(3) below, this section shall apply to applications for subdivision or development approvals that create new residential lots or dwelling units submitted after the effective date of this section.
- (2) Developments which are part of an annexation plat, master plan or similar document which dedicated park land in compliance with § 14-8.15 are not required to comply at time of individual subdivision or plan approval.
- (3) Public, nonmotorized trail dedication requirements set forth in § 14-8.15(D) shall only apply to all subdivision for residential lots and development plan approvals for nonresidential uses requiring approvals by the Planning Commission or the Summary Committee.

(C) Land Dedication Requirements; Park Development Requirement

- (1) Any master plan, development plan or subdivision proposing 167 or more single family residential lots shall dedicate park land to the City according to the requirements set out in § 14-8.15(C)(3).
- (2) For any other development proposing dwelling units, the City shall require land to be dedicated for either neighborhood parks or regional parks or both, unless the amount of land or type of land is not suitable for public parks, open space or recreational facilities. Where the City determines that no land is to be dedicated for neighborhood parks, then neighborhood park impact fees shall be collected according to § 14-8.14. Where the City determines that no land is to be dedicated for regional parks, then regional park impact fees shall be collected according to § 14-8.14.
- (3) Where land is to be dedicated to the City for parks, open space and recreational facilities, the amount of land dedicated shall be calculated as follows, in accordance with § 14-8.15(A)(4) and (5):
 - (a) Neighborhood Parks - 0.006 acres per new housing unit;
 - (b) Regional & Community Parks, Open Space and Trails - 0.024 acres per new housing unit.
- (4) The City shall determine the suitability and location of land to be dedicated as set forth in the Parks, Open Space, Trails and Recreation Master Plan, as well as the type, size and dimensions of land dedicated.
- (5) Land dedicated shall be suitable for public use including but not limited to community, neighborhood, special use and pocket parks; open space; recreational facilities for passive and active recreation and sports, playgrounds, and trails.
- (6) Land to be dedicated shall be specified at the time of final subdivision plat or final development plan approval and it shall be clearly written on the plat or plan the specific category of park impact fees to be waived at time of building permit.
- (7) The developer shall be responsible for the development of all neighborhood and regional park land dedicated to the City. The park land shall be developed in accordance with the City's minimum landscaping and equipment standards (playground, ball courts, sports fields, paved trails, benches, picnic tables, etc.) for each type of park created.

(Ord. No. 2003-35 § 4)
- (D) Public, Nonmotorized Trail Dedication Requirements
(Ord. No. 2007-12 § 4)
 - (1) Dedications to the City for the purpose of public, nonmotorized trails shall be made either by the dedication of fee simple land or by dedication of a public easement as determined by City staff. Such dedications are required wherever the approved Parks, Open Space, Trails and Recreation Master Plan indicates a trail within or along the property line of a parcel to which § 14-8.15 applies. The City may, at its discretion, also require trail dedication where it can be demonstrated that public trail use has occurred

continuously for a period of 10 years or more, as demonstrated by City staff through aerial photography supplemented by written testimony from affected parties.

(2) Staff shall determine the width of the required dedication based on the type of trail, existing topography and current City standards. The alignment of the trail may be modified by staff from that shown in the Parks, Open Space, Trails and Recreation Master Plan in order to accommodate preservation of natural resources, address drainage and topography, improve public access, or to accommodate design goals of the property owner as long as the connections between public rights-of-ways, open space or parks shown on the Parks, Open Space, Trails and Recreation Master Plan is accomplished.

(3) The dedication for the trail shall be shown on the subdivision plat or final development plan.

(4) If the area dedicated for a trail is in partial fulfillment toward the regional park land dedication requirements, then the City at its discretion may pro-rate the fee that would ordinarily be required.

(5) The developer shall be responsible for the development of the trail in accordance with City's standards. The City is responsible for maintenance of the trail upon inspection and acceptance of the improvements.

Article 14-9: SUBDIVISION DESIGN, IMPROVEMENT, AND DEDICATION
STANDARDS

...

14-9.2 IMPROVEMENT AND DESIGN STANDARDS

...

(E) Streets. The following standards for streets shall apply to all subdivisions except for inheritance and family transfer subdivisions, the design standards for which are as set forth in §14-9.4:

...

(2) Street Types-Design Criteria (Ord. No. 2002-37 § 102)

(a) The arrangement, character, extent, grade and location of all streets shall conform to the officially adopted master plan and shall be considered in their relationship to existing and planned streets, to topographic conditions, to public convenience and safety. Public streets approved for construction, after the effective date of this ordinance, shall be classified according to projected average daily traffic as shown in the street types-design criteria chart and Illustration 14-9.2-1, "Street Types Design Criteria," except that the Planning Commission, or in the case of City projects, the Public Works Committee may consider and approve innovative street designs that are not included among the street types and street sections shown or described herein. However, all new public streets shall be required to provide adequate pedestrian and bicycle facilities, as well as necessary transit facilities.

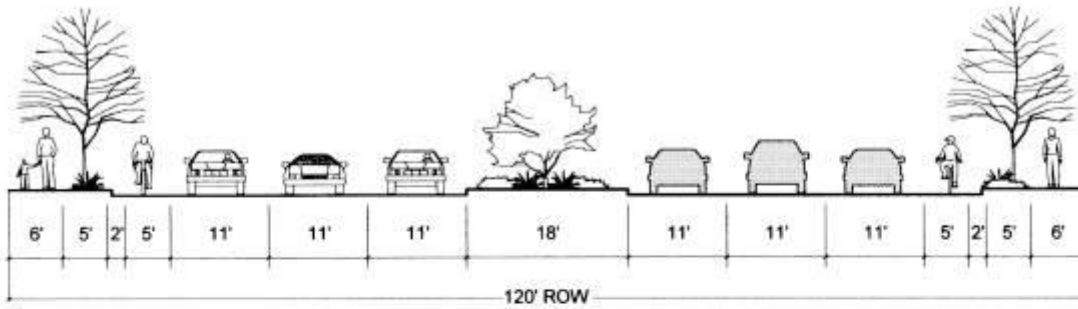
(b) Traffic calming measures are encouraged in new developments and specific measures may be required by the City to ensure traffic safety in new neighborhoods (See City of Santa Fe Calming Program).

(c) The collector mixed use street type is to be constructed in conjunction with the development of neighborhood centers and is designed to function like many of the streets near the plaza.

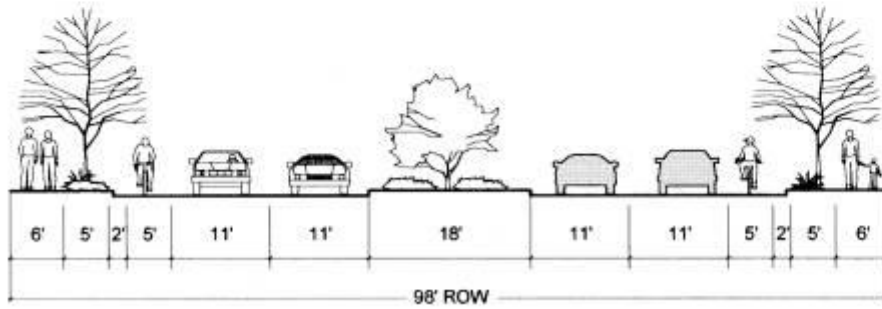
DRAFT Santa Fe MPO Bicycle Master Plan, September 2011, Appendix 2, p. 2-6

TABLE 14-9.2-1: Design Criteria for Street Types									
Criteria	Major Arterial (6-Lane)	Major Arterial (4-Lane)	Secondary Arterial	Collector	Collector Mixed-Use	Subcollector		Lane	Private Driveway
						No Parking	With Parking		
Average Daily Traffic	Up to 60,000	Up to 40,000	5,000-15,000	1,000-5,000	1,000-5,000	300-1,000	300-1,000	0-300	Minimum
Dwelling Unit Access						30-100	30-1000	0-30	(0-8)
Minimum Right-of-way Width	120	98	70	50	50	42	46 or 52	38	20
Slope/Grading Easement (conditional upon staff review)	0-30	0-30	0-30	0-30	0-30	0-30	0-30	0-30	NR
Number of Auto Lanes	6-7*	4-5*	2-3*	2	2	2	2	2	2
Width of Driving Lanes	11	11	11	10	10	9	10	9	9
Median/Turn Lane Width	18	18	14	NR	NR	NR	NR	NR	NR
Minimum Bikeway Width	5	5	5	4	NR	NR	NR	NR	NR
On-Street Parking Width	NA	NA	NA	NA	6**	NA	6**	NA	NA
Curb & Gutter	2	2	2	2	2	2	2	2	NR
Minimum Sidewalk Setback	5	5	5	4	NR	5	3	3-4	NR
Minimum Sidewalk Width	6	6	5	5	7	5	5	4-5	NR
<p>Notes: NA - Not Applicable NR - Not Required * Includes Median/Turn Lane ** Parking required on both sides of street, except no parking on that side of a street adjoining the plaza. *** Parking may be on one side or both sides of the street; parking lane should not be continuous. Private Driveway - Range denotes single family lots served by driveway; Private Driveway proposed to serve multi-family development or commercial development must be approved by the City Engineer, City Traffic Engineer and City Fire Chief. All measurements in feet, unless otherwise noted.</p>									

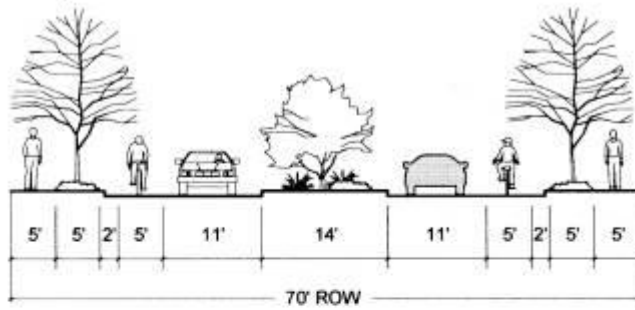
(Ord. No. 2005-24 § 2)



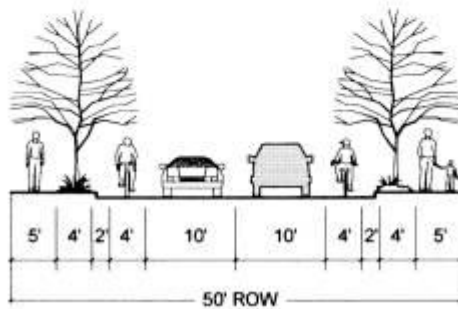
Major Aterial 6-Lane



Major Aterial 4-Lane

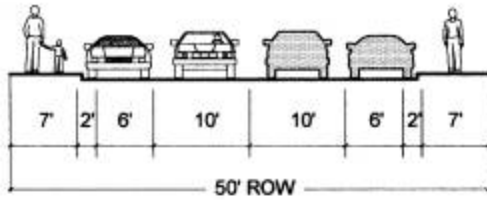


Secondary Aterial

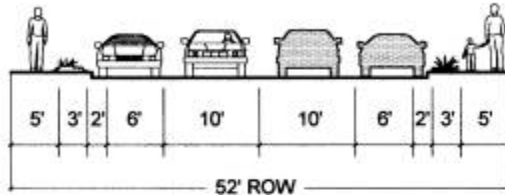


Collector

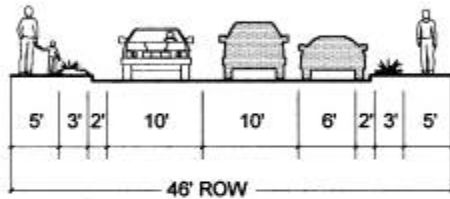
Illustration 14-9.2-1: Street Types Design Criteria



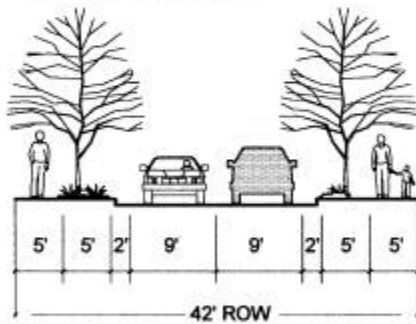
COLLECTOR - MIXED USE



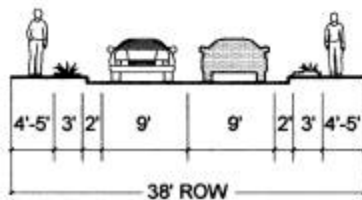
**SUB COLLECTOR W/
PARKING BOTH SIDES**



**SUB COLLECTOR W/
PARKING ON ONE SIDE**



SUBCOLLECTOR WITHOUT PARKING



LANE - NO PARKING

(N) Bikeways

Bikeways shall be provided on each side of the street on collectors (not collector mixed-use), secondary arterials, and major arterials, unless a street is approved as a one way in

which case a bikeway will be placed to the right of the driving lane. Bikeways shall be located between the driving lane and the curb and gutter, or between the driving lane and right turn lane. Bikeways shall be separated from the driving lane by a solid white stripe or other appropriate pavement marking or traffic separation device approved by the City. Bikeway pavement width shall conform to the criteria set out in the street types-design criteria chart.

(Ord. No. 2002-38 § 2)

Appendix 3: Santa Fe MPO Complete Streets Resolution

1 **WHEREAS**, one of the most commonly voiced transportation concerns from the public
2 regards the perceived danger of bicycling and walking in Santa Fe. Public input has repeatedly
3 requested improved conditions and facilities for bicyclists and pedestrians; and

4 **WHEREAS**, according to national highway statistics more than one quarter of all trips
5 are one mile or less – and almost half are less than five miles. Most of those trips are now made
6 by car. Streets that provide travel choices give people the option to avoid traffic congestion and
7 increase the overall capacity of the transportation network; and

8 **WHEREAS**, the National Institute of Medicine recommends fighting childhood obesity
9 by changing ordinances to encourage construction of sidewalks, bikeways, and other places for
10 physical activity. A report of the National Conference of State Legislators found that the most
11 effective policy avenue for encouraging bicycling and walking is Complete Streets; and

12 **WHEREAS**, facilities that follow Complete Streets principles complement and enhance
13 ongoing Share the Road awareness and planning efforts by the City of Santa Fe Bicycle and
14 Trails Advisory Committee as well as safety education and enforcement initiatives such as
15 pedestrian safety awareness campaigns directed by Santa Fe Trails, the Santa Fe Walks study,
16 New Mexico Bicycle Coalition training courses, Safe Kids NM, and programs such as Santa Fe
17 Crossing Guards, and Safe Routes to School.

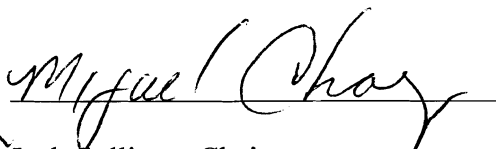
18 **NOW, THEREFORE, BE IT RESOLVED** that bicycle, pedestrian, equestrian and
19 transit needs should be given full consideration in the planning and development of
20 transportation facilities in the Santa Fe metropolitan planning area. Bicycle, pedestrian,
21 equestrian, and transit facilities should be established by ordinance in conjunction with the
22 construction, reconstruction, or other change of any transportation facility in accordance with
23 Complete Streets principles. The Santa Fe MPO staff will work with City and County land use
24 and public works departments, Regional Planning Authority staff, and related advisory

1 committees to collaboratively designate common Complete Streets specifications that are
2 consistent across jurisdictions for regionally significant roadways.

3 **PASSED, APPROVED and ADOPTED this 16th day of August, 2007.**

4
5 **SANTA FE METROPOLITAN PLANNING ORGANIZATION**

6 **POLICY BOARD**

7
8 

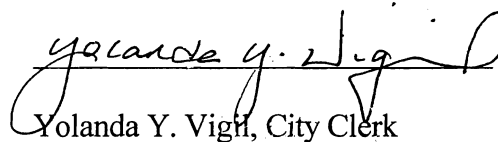
9 Jack Sullivan, Chair

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11 ~~ATTEST:~~ FILED:

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14 Valerie Espinoza, County Clerk

11 FILED:
Attest:

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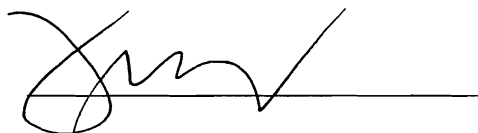
14 Yolanda Y. Vigil, City Clerk

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16 **APPROVED AS TO FORM:**

17
18 

19 Stephen C. Ross, County Attorney

16 **APPROVED AS TO FORM:**

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18 

19 Frank D. Katz, City Attorney

Appendix 4: Bicycle Crash Data for the Santa Fe MPO Area, 2004-2008

According to records provided by the University of New Mexico’s Division of Government Research, there were 136 bicycle crashes reported in the Santa Fe MPO area during the five-year period of 2004-2008.

Year	Crashes	Fatalities
2004	36	0
2005	24	1
2006	16	0
2007	33	0
<u>2008</u>	<u>27</u>	<u>0</u>
Total	136	1

These crashes included one fatality, which occurred on Old Santa Fe Trail (CR 67) in 2005 as a result of a head-on crash with an intoxicated motorist driving in the wrong lane. Fifteen bicyclists (11% of crashes) were reported to have received incapacitating injuries while 91 (67%) had visible injuries or complaint of injures. Just over one-fifth of the crashes were reported as “property-damage only.”

Type of Injury		
Killed	1	0.7%
Incapacitating	15	11.0%
Visible	56	41.2%
Complaint	35	25.7%
None Apparent	<u>29</u>	<u>21.3%</u>
Total	136	100.0%

Per-capita crash reporting for Santa Fe County is nearly identical to the rate for the state as a whole. Bernalillo County’s rate is over 50% higher; extremely low rates in some of Santa Fe’s neighboring counties would seem to be indicative of underreporting. Santa Fe’s single bicycle fatality represented less than one percent of all crashes reported in Santa Fe County in 2004-2008 (0.7% of 142 crashes county-wide), well below the proportion in other NM counties that reported fatalities during the period.

Selected County and State Data, 2004-2008	Crashes	Fatalities	%	Annual reported crashes, per million residents	Annual fatalities, per million residents
Santa Fe County	142	1	0.7%	195.4	1.4
Bernalillo County	964	13	1.3%	303.4	4.1
Dona Ana County	161	3	1.9%	159.9	3.0
Rio Arriba County	2	0	0.0%	9.9	0.0
San Miguel County	7	0	0.0%	49.3	0.0
Sandoval County	68	3	4.4%	111.1	4.9
Taos County	31	0	0.0%	196.8	0.0
New Mexico	1936	26	1.3%	194.9	2.6

The statewide rate of 2.6 annual bicycle fatalities per million population for 2004-2008 is just above the national rate of 2.35 for 2008.¹ The seven deaths in 2008 in New Mexico amounted to 1.9% of all traffic fatalities in the state, the same proportion that bicyclists represented among nationwide traffic fatalities in 2008.

National data on age of cyclists reported in crashes demonstrates an aging population, progressing from an average of 24 yrs. of age in 1998 to 31 yrs. of age in 2008. Average age of cyclists reported in crashes in the Santa Fe MPO area in 2004-2008 was 33.8 years, well above the national average of 30 for the same period. Distribution of age groups in the MPO area in 2004-2008 was as follows:

Age		
<5	0	0%
6-10	10	8%
11-15	13	10%
16-20	13	10%
21-24	13	10%
25-34	18	15%
35-44	20	16%
45-54	21	17%
55-64	11	9%
65-74	5	4%
<u>75-84</u>	<u>0</u>	<u>0%</u>
Total	136	100.0%

Data entry on types of crashes indicates that about three quarters of the reported crashes involved a motor vehicle hitting a bicyclist while for one-quarter of reports the bicyclist was reported to have hit a motor vehicle or an unknown object. Cyclists reported to have been hit at an angle were the highest single category at 60 (44%). Cyclists reported being hit from behind accounted for 26 reports (19%) and head-on for 14 reports (10%).

Reported Type of Crash: Leading Types

Veh-Cyc. Angle	60	44.1%
Cyclist-Veh	30	22.1%
Veh-Cyc. Behind	26	19.1%
Veh-Cyc. Head On	14	10.3%

Crash reports entered in UNM/DGR's database provide primary and secondary street names, though precise location of a given crash is not always clear. Eighteen primary streets listed had more than one crash and ten had more than two crashes listed, as presented in the table below. Where closest intersection was specified, locations with the most reports in 2004-2008 were the intersection of Cerrillos Rd. and Camino Carlos Rey (4) and the intersection of St. Francis Dr. and Siringo Rd. (3).

Street*		
Cerrillos Rd	23	16.9%

¹ NHTSA Traffic Safety Facts, "Bicyclists and Other Cyclists, 2008."

Agua Fria St	13	9.6%
St Francis Dr	12	8.8%
Alameda	6	4.4%
St Michaels Dr	5	3.7%
Airport Rd	4	2.9%
Cordova Rd	4	2.9%
Old Santa Fe Tr (City)	4	2.9%
Paseo De Peralta	4	2.9%
NM 599	3	2.2%

* - Primary street, or secondary street in crashes classified as "Intersection" or "intersection-related."

It is well known that non-fatal bicycle crashes are under-reported throughout the country. UNM's Department of Emergency Medicine² found that 35% of non-fatal bicyclist injuries appearing in emergency rooms in Bernalillo County in 1996-2003 had not been reported to law enforcement, and thus were never entered in the state's crash database.

Bicycle crashes in the Santa Fe MPO area, 2004-2008: Other Data

Time of Day / Light

DAYLIGHT	116	85.3%
DUSK	1	0.7%
DAWN	1	0.7%
DARK-LIGHTED	13	9.6%
DARK-NOT LIGHTED	5	3.7%

Cause of Crash: Driver Inattention, etc.- could refer to cyclists as well as motorist

DRIVER INATTENTION	59	43.4%
FAILURE TO YIELD	40	29.4%
ALCOHOL/DRUG INVOLVED	9	6.6%
RED LIGHT RUNNING	7	5.1%
PASSED STOP SIGN	5	3.7%
EXCESSIVE SPEED	3	2.2%
LEFT OF CENTER	3	2.2%
IMP. OVERTAKING	2	1.5%
IMPROPER TURN	2	1.5%
FOLLOW TOO CLOSE	2	1.5%

Urban / Rural

"SANTA FE"	124	91.2%
RURAL	12	8.8%

Gender

Not available in this data set.

² LaValley, J., et al. UNM Dept. of Emergency Medicine. "Using Emergency Department Records to Enhance Bicycle Injury Surveillance in New Mexico." Presentation to American College of Emergency Physicians, New Orleans, LA, October 2006.

Appendix 5: Assessment of On-Road Bicycle Facilities in the Santa Fe MPO area

Designated bicycle lanes

State Highways with dedicated bicycle lanes

- NM466: Old Pecos Trail and St. Michael's Dr., from Old Las Vegas Highway to Galisteo St. (but with shared lanes at some intersections on St. Michael's Dr.)
- NM14: Cerrillos Rd., from Ave. Cielo Vista to Airport Rd.; south of Airport Rd. to Cristo(?) (city maintained), before transition to striped shoulder

City streets with designated bicycle lanes:

- Don Gaspar, from Paseo de Peralta to Coronado
- Gov. Miles Rd. from Nava Ade to Richards Ave.
- Old Pecos Trail, from NM466 to Coronado St.
- Richards Ave., near Rodeo Rd. and between Cerrillos Rd. and Rufina St.
- Rodeo Rd., west of Richards Ave.
- South Capital Rail Station Rd.
- W. Alameda, from Calle Nopal to Camino Alire

County roads with designated bicycle lanes:

- Ave. del Sur in front of Amy Biehl School

Bike Lane markings not based on MUTCD

- Rabbit Rd. from Oshara to "FHWA connector" (use of sharrows in bike lane)

Bike lane in one direction only:

- Dinosaur Trail between La Pradera and Richards Ave. (compromised correction of a paved shoulder originally intended as a two-way multi-use trail).

City streets with "quasi-bike lanes" (striped shoulder transitions to lane left of parking or right-turn lane, but w/o bike lane symbols or signage)

- Paseo del Sol; Paseo del Sol W.; Country Club; Jaguar; Plaza Central*
- Rufina St. between Richards Ave. and Siler Rd.
- Galisteo St. between W. Zia Rd. and Rodeo Rd.
- Agua Fria St. at La Cieneguita St.

* Tierra Contenta bike lanes have inconsistent width: often <4ft.

Location-specific ("stand-alone") bike lanes through intersections:

- Old Las Vegas Highway (NM300) at Arroyo Hondo
- Old Las Vegas Highway (NM300) at El Gancho Rd.
- San Mateo at St. Francis Dr. (no symbol)

Wide paved shoulders: Striped shoulders, meeting AASHTO 1999 width specifications for bike lanes [(= or > 4ft.) or (at least 3.5 ft. & 5 ft. with gutter pan)]

City streets

- Agua Fria St. (Osage to Siler)
- Alta Vista St., w. of St. Francis
- Ave. Cristobal Colon (Baca to Agua Fria), includes full striping left of parking
- Cordova, east of Don Diego
- Camino Carlos Rey, north of Siringo
- Camino de Cruz Blanca
- Llano St.
- Galisteo Rd., Zia to Rodeo
- Gov. Miles Rd. west of Nava Ade
- Old Santa Fe Trail, Old Pecos Trail to E. Zia
- Pacheco St., St. Michael's to Siringo
- Rodeo Rd., Richards Ave. to Sawmill
- Rufina St. (Siler to S. Meadows), includes full striping left of parking
- San Mateo, Galisteo to Don Gaspar (check width)
- Sawmill Rd., e. of St. Francis (includes full striping left of parking?)
- South Meadows Rd.
- Yucca St.
- Zafarano n. of Cerrillos
- W. Zia St., Botolph to Capshaw M.S. & west of St. Francis Dr.

County roads:

- Caja del Rio
- Airport Rd.
- Rabbit Rd. east of Oshara section
- Ave. Vista Grande

State Highways:

- Cerrillos Rd. (NM14), between Jaguar Rd. and Beckner and between St. Francis Dr. and Osage
- NM14 between NM599 and Lone Butte (Bonanza Creek Rd.)
- Old Las Vegas Highway (NM300)
- US285 south of NM300
- Santa Fe Relief Route (NM599), main line
- I-25
- St. Francis Dr. (US84/285) south of Siringo and north of Alamo
- US84/285 frontage road from Tano Rd. to Tesuque Village Rd.

Narrow paved shoulders (only examples that are greater than two feet in width)

- Agua Fria St. between St. Francis Dr. and Osage
- E. Zia

- Gonzales Rd. between Cerro Gordo and Hyde Park Rd.
- Ave. Eldorado

Paved shoulders with **pavement edges** resulting in less than four feet of **clear** width:

- NM14 south of Lone Butte
- NM14 between I-25 and NM599, where shoulders exist
- NM599 frontage roads, where shoulders exist
- Camino La Tierra and Buckman Rd. (segments adjacent to NM599 interchange)
- W. Alameda extension (Caja del Rio to S. Meadows Dr.)

Prominent intersections where bike lanes or shoulders approach but do not get through the intersection:

- Airport/Rodeo and Cerrillos (bike lanes on Cerrillos, striped shoulders on Rodeo and Airport)
- Cerrillos Rd. and Jaguar Dr. / Gov. Miles Rd.
- Gov. Miles Rd. and Richards Ave.
- St. Michael's Dr.: bike lanes discontinued at intersections from Galisteo to Arroyo Chamiso
- St. Francis Dr., Cross streets with discontinued bike lanes or shoulders: W. Zia Rd. (east side), Alta Vista St., Cerrillos Rd., W. Alameda St.
- Cerrillos Rd., other intersections where cross streets have bike lanes or shoulders: Zafarano (n. side), Camino Carlos Rey (s. side)
- Agua Fria St., where shoulders exist: Intersections with right-turn lanes (Siler, Osage)
- Rufina St., where shoulders exist: Intersections with right-turn lanes (Siler, Richards)
- W. Alameda St., bike lane: Camino Alire
- Rodeo Rd., other intersections where cross streets have shoulders: Camino Carlos Rey, Yucca St. (?)
- W. Zia Rd., other intersections where cross streets have shoulders:

Shared lanes

Wide shared lanes allow enough space for motorists to pass cyclists without crossing the center line. AASHTO specifies 14 feet as the minimum width needed for this arrangement.

On the Santa Fe bikeways map, roads with significant motor vehicle traffic that have **wide curb lanes** where there is no parking, or where parking is minimal, are often shown in blue, including the following examples:

- Ave. de las Campanas
- Camino Carlos Rey, south of Siringo
- Gov. Miles Rd., Pueblos del Sol and east
- Osage (Rosina to San Ildefonso)

Other wide curb lanes where parking is permitted and significant, where traffic volume is higher, and/or where intersection treatments do not facilitate easy through movements by cyclists are shown on the bikeways map in orange, including:

- Pacheco St. north of St. Michael's Dr. to north of San Mateo
- San Mateo between Galisteo and 2nd St. (with localized westbound bike lane at St. Francis Dr.)
- Siringo from St. Francis Dr. west to La Resolana, except at RR tracks

These examples are significant candidates for retrofitting with bike lanes by reallocating space on the existing roadway – e.g. by restricting parking or narrowing or eliminating travel lanes or turn lanes.

“Shared lane arrows,” or “sharrows”

Sharrows are found in shared lanes on the following streets in the Santa Fe area:

- Artist Rd. (downhill / westbound only)
- Baca St.
- Camino Cabra, Upper Canyon Rd. to Atalaya E.S.
- Camino del Monte Sol
- E. Alameda and W. Alameda to Defouri St.
- Galisteo Rd. north of Coronado
- Gonzales Rd., at Cerro Gordo
- Henry Lynch Rd.
- Old Santa Fe Trail and Old Pecos Trail n. of Cordova
- Pacheco St. from north of San Mateo to Alta Vista St.
- Palace Ave.
- Paseo de Peralta from Cerrillos Rd. to Marcy St. (?)
- Potencia St., single sharrow, westbound west of Acequia Trail @ Larragoite Park
- Washington Blvd.
- Various Oshara Village streets (county)

Based on fieldwork in May-June 2011, the BTAC On-Road Subcommittee in its Memorandum to BTAC of June 21, 2011, “Launching an Annual Bicycle Sharrow Maintenance Program,” reported that, among the 380 sharrows installed by the city in 2005 and 2007, just over half (194)(51%) are no longer visible. The Committee found that sharrows originally installed on Grant Ave., 2nd St., Marcy St. west of Lincoln, and Don Gaspar Ave. are no longer present after repaving. (Sharrows are no longer needed on Don Gaspar Ave., which now has a bike lane.)

What is the experience with “sharrows”?

Motorist and bicyclist understanding of sharrows varies, as do opinions on their utility. No objective research has been done in Santa Fe. Elsewhere sharrows have been shown to accomplish their original intent, which is to help bicyclists avoid getting “doored” by people exiting parked cars. Application of sharrows alongside densely parked cars in

Santa Fe is limited to a few downtown locations, including parts of E. Alameda St., Washington Blvd., and Galisteo St. where the “sharrows” may be achieving this purpose.

Certain other applications of sharrows in Santa Fe also appear to contribute to a better understanding between cyclists and motorists of the appropriateness and acceptability of cyclists “taking the lane.” Examples include narrow, low-speed streets with stop signs, such as parts of E. Alameda; approaches to intersections with right-turn lanes, such as on W. Alameda at Guadalupe and Paseo de Peralta at Guadalupe; four-lane streets such as Paseo de Peralta; and downhill grades such as Artist Rd. On some streets where motor vehicle speeds are higher and controls (stop signs) fewer, motorists may continue to regularly overtake cyclists regardless of where the latter are positioned on the roadway (e.g., Baca St., Pacheco St., Camino Cabra uphill). This may represent appropriate, mutual accommodation (“sharing the road”) as bicyclists may “allow” motorists to pass on the left where there is space to do so (such as on Galisteo when there are no parked cars; on W. Alameda or Paseo de Peralta, where through lanes segue into right-turn lanes; on Baca, Pacheco, Camino Cabra, and E. Alameda when there is no oncoming traffic).

Appendix 6: Assessment of Bike Route Guidance in the Santa Fe MPO Area

A. Guidance provided through Bike Route Signs on Streets in Santa Fe

The 1993 Bikeways Master Plan created a network of bike routes designated through standard “Bike Route” signage on city streets including:

- De Fouri St.
- Montezuma St.
- Galisteo St.
- Don Gaspar
- Coronado
- San Mateo
- Old Pecos Trail (n. of St. Michael’s Dr.)
- Hospital
- Botolph
- Siringo
- Yucca St.
- Avenida de las Campanas
- Airport Rd. (county).

This signage program was implemented within a few years of the plan. The signage scheme only included directional signage at a few decision points (Galisteo and Hospital; Don Gaspar and Montezuma) and no information on destinations or distance. A few facilities proposed for designation never received it, including Richards Ave., part of Old Pecos Trail, and a proposed route to Capital High School including S. Meadows and part of Jaguar Rd. Each of these facilities now includes designated bike lanes or paved shoulders and need not be generically designated as a “bike route,” though each may be considered for specific directional guidance for cyclists, should the need arise.

B. Longer-Range Signed Bike Routes

“**State Bike Route 9**” is a series of primarily on-road facilities connecting Lamy, Eldorado, Santa Fe and Tesuque Village. It was designated by NMDOT in conjunction with the City of Santa Fe in 2006-2007(?). (See MAP of State Bike Route 9).

The link from Lamy to Santa Fe follows paved shoulders and bike lanes along US285, NM300 (Old Las Vegas Highway), and Old Pecos Highway (NM466 and City section) into the network of city streets designated as “Bike Routes” under the City’s 1993 Bikeways Master Plan, including parts of San Mateo, Don Gaspar and Galisteo, adding a one-block link from Don Gaspar to Galisteo via Malaga St., and extending the existing bike routes on Galisteo and Don Gaspar several blocks north to San Francisco St.

The route heads north from the plaza area via Grant St., a short piece of Paseo de Peralta, and Old Taos Highway onto a multi-use trail connection to Camino Encantado near the top of “Opera Hill.” The route then crosses “Paz Bridge” over US84/285, and follows the US84/285 west-side frontage road down to the beginning of Tesuque Village Rd. (CR73).

Each side of State Bike Route 9 brings cyclists to within a block of the plaza but, due to the difficulty of establishing a single best route as well as the sensitivity of signage in the plaza area, the two sides are only connected through reference on the plaques.

State Bike Route 9 added directional information (arrows and destination plaques) at many decision points and added or incorporated small spur or connector bike routes. Cyclists are given specific destination guidance to “SANTA FE” and “PLAZA” on inbound routes and to “LAMY,” “ELDORADO,” “OLD LAMY TRAIL,” or “TO TESUQUE VILLAGE RD.” on outbound routes. Part of St. Michael’s Dr. (NM466) was simultaneously designated a Bike Route by NMDOT as well, with specific guidance to State Bike Route 9 from Galisteo St. to Old Pecos Trail. For cyclists on northbound State Bike Route 9 in this area, alternative guidance plaques are provided: “State Bike Route 9 – Downtown” (right) and “Bike Route – St. Michael’s Dr.” (left) (Part of the rationale was to avoid confusion between the designated bike route on Old Pecos Trail and the bike lane following NM466 onto St. Michael’s.)

Another decision point with alternative destinations created through the state bike route occurs at Galisteo and Montezuma, where a “RAIL YARD” destination plaque was added to the original city bike route sign with left arrow, and the new State Bike Route guidance signage continuing along Galisteo specifies “PLAZA” as destination (See Figure: Photo of Railyard vs. Plaza Destination plaques).

Other Bicycle Tourist Routes: Although State Bike Route 9 in Santa Fe serves to provide guidance in and out of downtown Santa Fe for local cyclists, the primary rationale of the State Bicycle Route program is to provide guidance through New Mexico for longer-range bicycle tourists. Tourists traveling by bicycle visit the Santa Fe area as part of organized and supported tours or self-supported in smaller groups or as individuals. Designated Scenic Byways are typically relatively popular routes for bicycle tourists, including the Turquoise Trail on NM14 south of Santa Fe, the High Road to Taos on NM76 north of Santa Fe, and the Jemez Mountain Byway (NM4) to the northwest toward Los Alamos. Long-Range plans for NMDOT’s “State Bike Route 9” take into account the attractiveness of routes to Galisteo and Moriarty (via NM41) and to Ojo Caliente via Española (via US285).

Many of these popular long-range bike tourism routes are publicized and informally mapped by local cycling groups such as the New Mexico Touring Society (NMTS). Also included on NMTS’s web site are popular day trips starting and ending in Santa Fe, including the Santa Fe Century Route (see Map: Santa Fe Century Route) and many shorter rides such as “the Prison Loop” (see www.nmts.org).

Bicycle tourism to Santa Fe and within Santa Fe may be anticipated to increase for several reasons. Improvement in the environment for bicycling alone can be expected to increase the number of visitors coming to Santa Fe with bicycles regardless of their mode of transportation to the city. The ease of arriving with a bicycle by train on the NM Railrunner has already been observed to contribute to cycling in the downtown area.

Cyclists can also come on public transit from Las Vegas, Moriarty, Los Alamos, Española, and Taos, by private buses running between Albuquerque and Denver, and by AMTRAK to Lamy and “State Bike Route 9.”

Bike Route 66. On November 22, 2010, the premiere provider of mapping and travel information services for long-range bicycle tourists in North America, the Adventure Cycling Association (ACA), announced that it will add “Bike Route 66” between Chicago to Los Angeles to the 40,000 mile network of routes that ACA has researched and mapped (see www.adventurecycling.org/news/20101122.cfm). Unlike most other ACA routes, this route will intentionally bring cyclists into and through urban areas like Phoenix and Albuquerque.



Photo from ACA blog, “[Bicycling the Mother Road](#),” Nov. 24, 2010

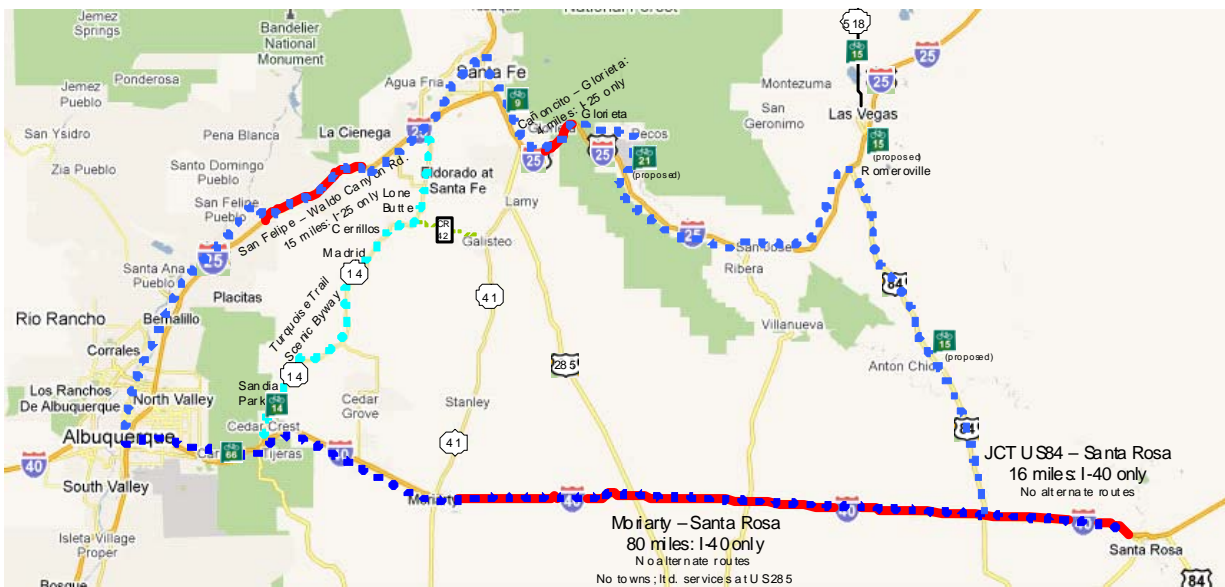
ACA will also be working with state and local agencies and through AASHTO to designate a U.S. Bike Route Bicycle Route 66 in conjunction with ACA’s Bike Route 66. Prospective routes through the Santa Fe metropolitan area will undoubtedly be researched and mapped by ACA, working with local and state agencies, within the next year or so. It can be anticipated that the pre-1937 alignment of Route 66 through Santa Fe will a major alternative, if not the major alternative, promoted by ACA (see MAP: Route 66 Alignments between Santa Rosa and Albuquerque). Although following the pre-1935 alignment to Santa Fe adds at least an extra day to a cyclist’s trip, a route that includes Santa Fe will be more attractive to many bike tourists for a variety of reasons, and there is no doubt that local bike shops, outfitters, tour guides, and well-situated hotels and campgrounds will directly and significantly benefit from future bike tourists following ACA’s route - many of whose last significant city visited will have been Amarillo, Texas, roughly a week earlier.

In order to follow the pre-1935 alignment, ACA will likely have cyclists follow the established Scenic Byway route into Santa Fe along Old Las Vegas Highway (NM300) from Cañoncito. From the junction with US285, this route would coincide with State Bike Route 9 along Old Las Vegas Highway onto Old Pecos Trail up to San Mateo, where SBR9 diverges left. The ACA route would most likely continue on the original alignment and current Scenic Byway route along Old Pecos Trail and Old Santa Fe Trail to Water St. in the plaza area, a route that now offers bicycle lanes to Coronado St. transitioning to sharrows on the narrow descent downtown. (For the reverse direction, ACA may want to consider the SBR9 southbound alignment using Don Gaspar, which offers a bicycle lane and less motor vehicle traffic on the corresponding uphill section.)

It can be anticipated that much of the historic pre-1935 alignment of Route 66 west of downtown Santa Fe that might be followed by motorized tourists will not be a major recommended route for bicycle tourists. Most if not all of Cerrillos Rd. from St. Francis

Dr. to Airport Rd. may not be the kind of facility that ACA will desire to guide cyclists to use. A relatively direct alternative to get to the slightly more “bicycle-friendly” part of Cerrillos Rd. beyond Airport Rd. could include Rufina St., along with South Meadows and Jaguar Rd. This possibility highlights the priority of connecting Rufina St. to the Acequia Trail to create an “Acequia and Rufina Bikeway” from the Railyard Park west.

ACA may give cyclists some alternatives to get back to the main Route 66 alignment in Albuquerque. Although it is not a historic Route 66 alignment, cyclists could continue south on Cerrillos Rd. to the Turquoise Trail Scenic Byway (NM14) south of NM599. NM14 is already a popular bicycle touring route to Tijeras, from which “State Bicycle Route 66” on NM333 provides the classic entrance into Albuquerque on the post-1937 alignment. Cyclists who would like to avoid the topography of NM14, however, may backtrack to NM41 and Moriarty via Galisteo or may continue tracing the pre-1937 alignment to Albuquerque via Bernalillo. The modern driving route for this alignment, which is more commonly associated with the Camino Real, starts with a 15-mile stretch of I-25 starting at Waldo Canyon Rd. with no frontage roads or other convenient alternate routes.



Possible Route 66 Bicycle Routes on Today’s Road Network

- 1. Route 66 Alignment from 1937 on: Albuquerque-Tijeras-Moriarty-Santa Rosa: c. 115 miles (80 miles on Interstate only)
 - 2. Approx. Pre-1937 alignment: Albuquerque-Bernalillo-Santa Fe-Pecos-Santa Rosa: c. 190 miles (35 on Interstate only)
 - 3. Pre-1937 alignment with NM14 connection: Albuquerque-Tijeras-Santa Fe-Pecos-Santa Rosa: c. 200 miles (20 on Interstate only)
- Segments of Interstate with no alternate route (excluding alternate routes with significant out-of-direction travel)
- 66
14
9
15 State Bicycle Routes (designated)
 21
15 State Bicycle Routes (proposed)

Appendix 7: Assessment of Multi-Use Trails in the Santa Fe MPO Area

Multi-Use Trails as “Arterial Bikeways:” Santa Fe’s major multi-use trails can be thought of as core pieces of the city’s “arterial bikeways.” Together with complementary road connections, they can function as an integrated network of comfortable and reasonably convenient alignments that a wide variety of bicyclists can use to get to most parts of the city.

River Trail: The Santa Fe River alignment includes E. and W. Alameda St. as well as various sidewalks, footpaths, and multi-use trail segments west of St. Francis Dr. A narrow sidewalk alignment with no motor vehicle crossings is available in the “River Parkway” west of Defouri St., downtown, to a signalized crosswalk of St. Francis Dr. West of this point, the River Trail is a concrete multi-use trail with no at-grade road crossings and an underpass of Camino Alire. After completion of a short section between Camino Alire and Griego Park playground in the Fall of 2011, and extending the River Trail a half mile west to Frenchy’s Field, scheduled for Spring of 2012, the River Trail west of St. Francis Dr. will measure X miles long, with no at-grade street crossings. Adding on the adjoining trail in Frenchy’s Field and uninterrupted sidewalks west to Defouri St. and Guadalupe St., the continuous alignment will reach a total of nearly three miles.

The County has completed a ten-foot wide, mostly unpaved section of the River Trail between San Ysidro Crossing and Caja del Oro Grant Rd., with plans to create a hard surface when the trail is integrated into a longer alignment. Further downstream, the County is planning construction of another segment, to be paved, in the Camino Real Open Space (?) from San Felipe Rd. to Constellation Dr., near NM599.

Developing the River Trail has been a top priority of bikeway planning since before the City’s 1993 Bikeways Master Plan. Most of the concrete River Trail west of St. Francis Dr. meets AASHTO specifications but between Camino Alire and Ave. Cristobal Colón, the trail is only eight feet wide, typically with one or two handrails located less than one foot from the edge of concrete.

Arroyo Chamiso Trail (Arroyo de los Chamisos Recreational Trail): This asphalt trail currently spans from the Rail Trail at Siringo Rd. to Nava Ade, with three at-grade street crossings (Yucca, C. Carlos Rey, and Ave. de las Campanas), and one grade-separated crossing at Rodeo Rd. A separate paved section of the Arroyo Chamiso Trail to the east, terminating at W. Zia, will be connected to the Rail Trail through an underpass under St. Francis Dr. in 2011, to create an alignment of X miles, counting the overlapping Rail Trail segment, or X miles including adjacent narrow trails in Nava Ade (toward Gov. Miles Rd.) and a wide soft-surface trail continuing south of W. Zia.

To the west, a separate section of the Arroyo Chamiso trail located in Tierra Contenta runs along X miles of a tributary to the Arroyo Chamiso to a point where the arroyos join near NM599. Both segments of the trail have been built to AASHTO specifications for width (10 ft.) and both feature marked crosswalks at all at-grade street crossings, which

are primarily at uncontrolled mid-block locations. The ultimate plan is to connect the two via part of the Arroyo Chamiso south of Capitol High School. Proposed development to the west may eventually bring the trail under NM599 and along the arroyo into La Cienega.

- Rail Trail, with Pen Rd., S. Capital Station Rd.: Montezuma to Rabbit Rd. and beyond.
Railyard Park Trail.

- Acequia Trail, with Potencia, Montano, and Otowi Rd., also Gallegos and Rufina.

Subdivision Trails: Narrow multi-use trails, and paths that otherwise do not meet AASHTO standards for multi-use trails, are typically found within subdivisions such as Pueblos del Sol, Nava Ade, and Rancho Viejo. In a few cases, subdivision trails are also potential major “arterial” bikeway alignments. The section of the Arroyo Chamiso Trail in Nava Ade, for example, preceded the arrival of the main trail south of Rodeo Rd., but, unlike other subdivision trails, it was built the AASHTO-recommended ten feet wide. (Unfortunately, at this point in only feeds into narrower subdivision trails.) Similarly, Rancho Viejo’s “District Trail,” which could become part of a much longer New Mexico Central Rail Trail alignment, was also built to AASHTO specifications as the subdivision’s major, central trail. Trails in Pueblos del Sol could also become part of a longer north-south alignment approximating the NM Central Railroad alignment within the city limits. Unfortunately these trails are extremely narrow (6 ft. wide) and meandering and lack basic internal connectivity.

Side paths

Within the city of Santa Fe, a side path built along Botolph Rd. is one of the only examples of a side path constructed by the City with the specific intent of accommodating bicycle traffic. Several more, relatively minor examples can be found in subdivisions in the city:

- along south side of Gov. Miles Rd., east of Pueblos del Sol
- along Richards and Gov. Miles Rd. in La Sonata

Numerous examples of side paths can be found in county subdivisions and other developed locations, including:

- Eldorado
- Las Campanas
- Rancho Viejo
- La Pradera (along Dinosaur Trail)
- Campus of Santa Fe Community College.

In most cases, side paths serve as a good pedestrian facility but a marginal bicycle facility, suitable for low-speed recreational use only. Because they are along roads, they make for less-than-ideal recreational bicycling alignments, compared to a multi-use trail on an alignment independent of a roadway. Also because they are along roads, they are not very functional for bicycle through traffic, and commuter or other on-road cyclists travelling adjacent roadways tend to avoid them. Typical pitfalls of side path alignments,

compared to the roads that they follow, are numerous street and/or driveway crossings that introduce hazards not found on the roadway and may require frequent stopping or yielding to motor vehicle traffic, and additional grades and meanders that limit safe or comfortable travel speed and increase cycling distance.

Sidepaths that have been Proposed along Major Roads: Past bicycle planning in Santa Fe has included numerous side path alignments with little reference to the concerns expressed by AASHTO and LAB. BTAC's Big Picture map, for example, depicts countless roadways as proposed trail alignments, including much of Rufina St. (also identified as a trail alignment by the 1993 Bikeways Master Plan), St. Francis Dr. (US84/285), Richards Ave., Old Pecos Trail, Gonzales Rd., Artist Rd./Hyde Park Rd. (NM475), and even St. Michael's Dr. (NM466). In most cases, however, side paths have NOT been pursued as a solution for accommodating bicyclists and pedestrians along these alignments. Rather, City has pursued the combination of on-road bicycle facilities and sidewalks that is recommended by AASHTO, endorsed by LAB, and well-suited to accommodate bicyclists and pedestrians along most of these roadways, and many more.

The proposed Gonzales Rd. "side path," which has been designed but not yet constructed for the City, might seem to be an exception, but BTAC and the City have determined that this is not to be considered a bicycle facility, in which case it can be considered a sidewalk.

Several major roadways with high-speed traffic in Santa Fe have also been proposed as side path alignments, particularly Richards Ave. and St. Francis Dr. In neither case is a side path recommendable for long distances along these roadways as envisioned in early bicycle planning, as well as in NMDOT's recent St. Francis Dr. Corridor Study. Both alignments, however, do have specific segments with merits specifically relating to their prospective role in connecting trails and bikeways on other alignments that are independent of roadways.

- **Richards Ave.** has ample paved shoulders or bike lanes throughout its alignment north of Rancho Viejo. A side path along Richards Ave. to the Santa Fe Community College was proposed both by the 1993 Santa Fe Bikeways Master Plan and by BTAC's "Big Picture" map. Initial planning and design activities were funded by BTAC but the Committee eventually rejected the use of city trail funds for a Richards Ave. side path.

Given the convenience of Richard Ave.'s underpass of I-25 (with no conflicts at interchange ramps), independent trail alignments planned to the north and south of I-25, local land uses including SFCC, planned developments such as a Railrunner Station at Las Soleras, and Richard Ave.'s lack of pedestrian facilities in the form of a sidewalk, a side path may be an appropriate accommodation in this area in the very near future.

- **St. Francis Dr.** has very limited on-road facilities for cyclists, primarily south of Siringo Rd. St. Francis Dr. is another corridor that has been proposed for various side paths, as reiterated and expanded by the NMDOT's St. Francis Dr. Corridor

Study. The Rail Trail briefly acts as a side path at the signalized crossing of W. Zia Rd. Although all proposed segments benefit from access control for the roadway, and thus have no conflicts at driveway or small intersections, they also would require bicyclists to use signalized crosswalks at busy, high-speed highway intersections that have not been designed for trail traffic and, in most cases, have handled minimal pedestrian traffic to date.

The currently planned St. Francis Dr. Trail will create a high level of connectivity between significant bikeway alignments independent of St. Francis Dr., namely the Rail Trail and Arroyo Chamiso Trail on one hand and Santa Fe's network of designated on-road facilities on the east side, including signed bike routes on Galisteo, Don Gaspar, and San Mateo as well as bike lanes on St. Michael's Dr. and Old Pecos Trail. This connectivity can be achieved through a "side path" with only one location of motor vehicle conflict, the signalized crossing of Siringo Rd., though the City's current design also brings the trail to intersections at W. Zia to the south and St. Michael's Dr. (NM466) to the north.

- More recently, the Las Soleras subdivision has planned a side path along **Beckner Dr.**, which will also have standard bike lanes per city code.

Expanded definition of Sidepath in AASHTO 2011

The latest AASHTO guidance (2011) expands the definition of a "side path" to include multi-use trails that use intersection crosswalks in general. These "side path-like" conditions exist at the following major, signalized intersections in Santa Fe:

- Acequia Trail at St Francis and Cerrillos
- Rail Trail at St. Francis and W. Zia
- River Trail at St. Francis and W. Alameda.

"Side path-like" conditions also occur on Santa Fe's major multi-use trails at the following non-signalized locations:

- Rail Trail at Rodeo Rd. and Galisteo Rd. (cross-traffic not controlled)
- Acequia Trail at Baca and Potencia (e. of Baca, still under construction)

Mitigation of Conflicts created by Sidepaths

While there are methods promoted by AASHTO and FHWA to design intersections for pedestrian safety and to accommodate trails in crosswalks, construction of side paths in the Santa Fe area has typically not included improvements to existing ramps and crosswalks at road crossings.

Appendix 8: Santa Fe MPO Bicycle Master Plan Goals and Recommendations

Goal: More Bicycle Facilities and Better Bicycle Facilities, within an Integrated and Effective Bikeway System

Recommendation 1.1. Implement “Complete Streets” policies for all construction and maintenance in the MPO area.

Recommendation 1.2: Create and implement programs to retrofit roadways in need of bicycle facilities

Recommendation 1.3: Adopt and adhere to established engineering guidelines for planning, designing, building, and maintaining roads, trails, and other bicycle facilities.

Recommendation 1.4: Target investments in new infrastructure that maximizes cost effectiveness toward a better bikeway system

Recommendation 1.5: Support pro-active maintenance of on-road and off-road facilities while minimizing impact to users

Recommendation 1.6: Coordinate planning of bikeway facilities in the MPO area

Recommendation 1.7. Provide bicyclists with useful guidance through Bike Route signage and other wayfinding assistance on trails, roads and routes connecting the two

Recommendation 1.8. Research, consider, promote, and implement best design practices

Recommendation 1.9. Support Higher-Density, Mixed-Use Development

Recommendation 1.10. Gather Data to Support and Guide Bicycle Planning

Goal: Santa Feans and their guests are able to confidently, safely, and effectively ride bicycles within a shared transportation network where cyclists’ rights and responsibilities are understood, respected, and enforced.

Recommendation 2.1: Support Bicycle Education for Children and Adults

Recommendation 2.2: Educate Motorists about Safe Operating Behavior around Bicyclists

Recommendation 2.3: Enforce Traffic Laws Relating to Bicycling

Recommendation 2.4: Establish a District-Wide Safe Routes to School Program

Recommendation 2.5: Continue to Promote and Celebrate Bicycles and Bicycle Transportation in the Santa Fe Area

Recommendation 2.6: Establish a Bike-Sharing Program as an Extension of Public Transit Services

Recommendation 2.7: Encourage and facilitate the use of bicycles by public agency staff and in the private sector

Recommendation 2.8: Create Incentives / Remove Barriers to Travel by Bike

Appendix 9: A Proposed Policy Approach with regard to ADA and Multi-Use Trails

Multi-use trails need to be designed to safely and conveniently accommodate bicycle traffic, specifically meeting engineering guidelines for bikeways under AASHTO. Strict application of perceived requirements under the federal Americans with Disabilities Act (ADA), however, can work against good design for bicycles. Requirements for multi-use trails under ADA should NOT be equated with strict requirements and best practices for the federal ADA Accessibility Guidelines (ADAAG), as is currently the case.

ADAAG needs to be recognized as a set of guidelines developed for access to buildings and specific public services. ADAAG should not be automatically and strictly applied to Multi-use trails, for which the bicycle is the intended design vehicle. Federal and local guidance on accessibility in the areas of transportation and recreation is in fact still under development, including the U.S. Access Board's current draft version of the federal Accessibility Guidelines for Outdoor Areas (AGODA), covering recreational trails, and current proposed rulemaking on "Shared Use Path Accessibility Guidelines," covering transportation-oriented trails (see <http://edocket.access.gpo.gov/2011/2011-7156.htm>).

Applying ADAAG requirements to the design and construction of any facility should only follow determination that failure to do so would be a violation of ADA itself. When considering ADA requirements for multi-use trails in the MPO area, the first question to ask is, "What is the specific 'Public Service' to which access must be provided?" In many cases, such as roadways and recreational trails, the transportation through-facility itself is not interpreted as a public service for which it is necessary to mandate optimal access for people with mobility or other impairments, when doing so would compromise the design for the majority of intended users (e.g., motorists or hikers).

Shouldn't multi-use trails, with the bicycle as the intended design vehicle, merit this same consideration? If a bikeway is taking advantage of an optimal alignment for bicycles (such as the Arroyo Chamiso Trail behind SFHS), it may include slopes that are simply not an optimal alignment for wheelchairs; in such cases, mandating switchbacks or flat spots on optimal bikeway alignments in order to meet ADA grade requirements can be a self-defeating proposition. The result, if even feasible, can be a multi-use facility that is dysfunctional for bicycles and by definition a poor use of public investment. (At the very least, if it IS decided that an accessible route is to be provided via switchbacks or flat spots, bicyclists should still be provided an optimal bikeway alignment rather than required to negotiate compromised alignments designed for wheelchair use.)

A second question to ask when considering ADA requirements for multi-use trails in the MPO area is, "Is there an alternate route available?" For the hypothetical case of SFHS, and the real cases of Pueblos del Sol Trails, the River Trail at Camino Alire, or the Acequia Trail at St. Francis Dr., examination of accessible pedestrian routes available to those with disabilities would reveal that accessible sidewalks are indeed available to reach the same destinations served by prospective bikeway alignments that may not be compliant with strict ADAAG requirements. Thus it is possible for a facility to meet ADA without meeting ADAAG.

[will expand/improve this and add photos for discussion]

Appendix 10: Best Practices and Emerging Practices

Guidance for many best practices for bikeways is provided by AASHTO, the MUTCD, and other established sources and are discussed and recommended in this plan in Chapter IV through Recommendation 1.3: “Adopt and Adhere to Established Engineering Guidelines for Planning, Designing, Building, and Maintaining Roads and Trails.”

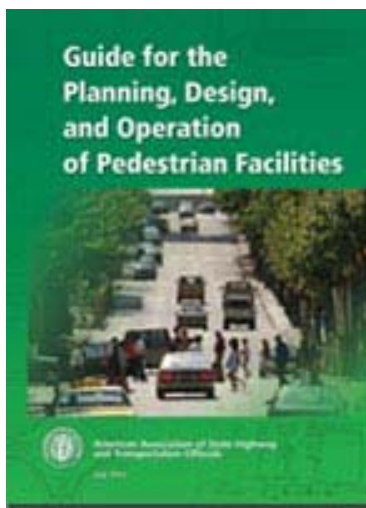
Many other best practices, particularly with regard to trail crossings, come from the field of pedestrian safety, and particularly from FHWA and AASHTO, and are discussed in Chapter IV under Recommendation 1.7: Research / consider / promote / implement best (latest) design practices.

Best Practices: At-Grade Trail Crossings and Intersections

Path-Roadway Intersections. Intersections between paths and roadways are often the most critical issue in shared use path design. Due to the potential conflicts at these junctions, careful design is of paramount importance to the safety of path users and motorists alike.

- AASHTO Guide for the Development of Bicycle Facilities (1999), p. 46.

Best practices for trail crossings and junctions with roadways take advantage of a combination of proven effective pedestrian safety techniques for crosswalks and good multi-use path design for bicycles as described by AASHTO.

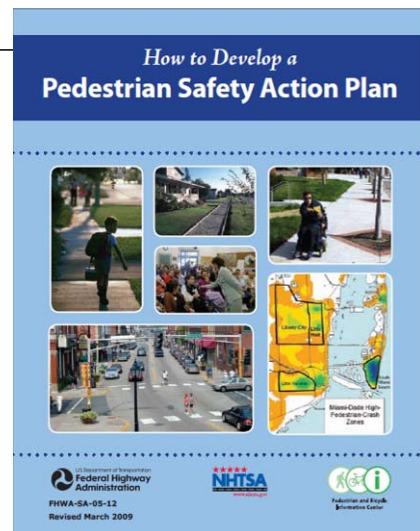


Safety Effects of Marked vs Unmarked Crosswalks at Uncontrolled Locations: Executive Summary and Recommended Guidelines



U.S. Department of Transportation
Federal Highway Administration
Research and Development
Center for Roadway Research Center
6330 Georgetown Pike
Westborough, MA 01581-2295

November, 2000



Best Practices for Crossings, Using Pedestrian Safety Techniques¹

- high-visibility markings
- median refuge
- bulb-out

¹ AASHTO 2003, FHWA 2000, and FHWA 2009 (see figure).

- speed table
- reduction of curb radius
- adjusting signal timing
- eliminating or adjusting angle of separated right-turn ramps
- pedestrian hybrid signal

Best Practices for Crossings and Junctions, Designing for Multi-Use Paths

- ramp width at least same as trail
- angle of entry near 90 degrees for crossings
- limit use of bollards (posts) in pathway, consider alternatives where needed
- where bollards are installed: adequate spacing from roadway, adequate spacing between bollards, establishment of centerline of trail

Best Practices for At-grade Crossings

- Highly-visible Crosswalk Markings
- Median Refuge
- Good Transition:
 - perpendicular to roadway
 - sufficient space for two-way travel

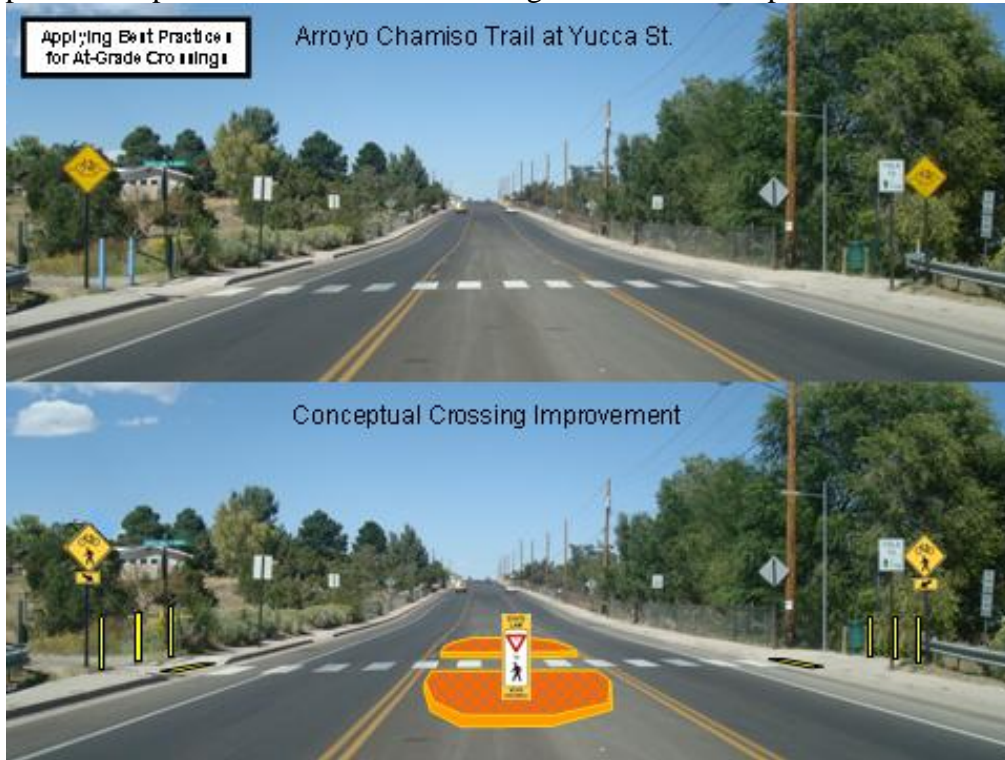
Marked Crosswalk with Median Refuge:
W. Alameda at Gonzales Community School, Connection to River Trail

References: AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities (July 2004), p. 75; FHWA, "Designing Streets for Pedestrian Safety" Training Materials; AASHTO Guide for the Development of Bicycle Facilities (1999), p. 47-52.

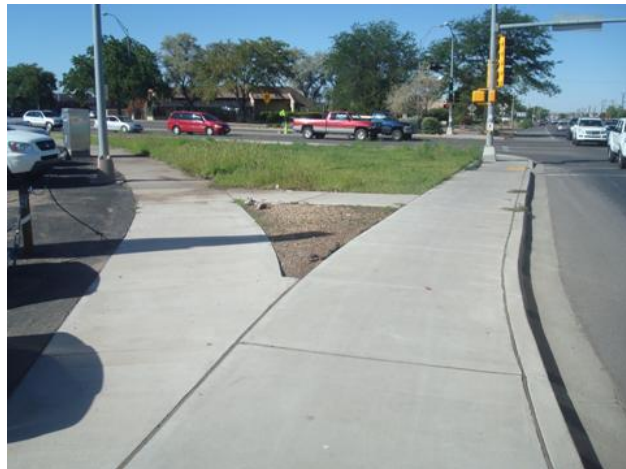


There are many examples of these best practices for crossings put into place in Santa Fe (see figure above). There are also many opportunities remaining to apply these practices to local trail crossings where the safety and convenience of bicycle travel is significantly challenged.

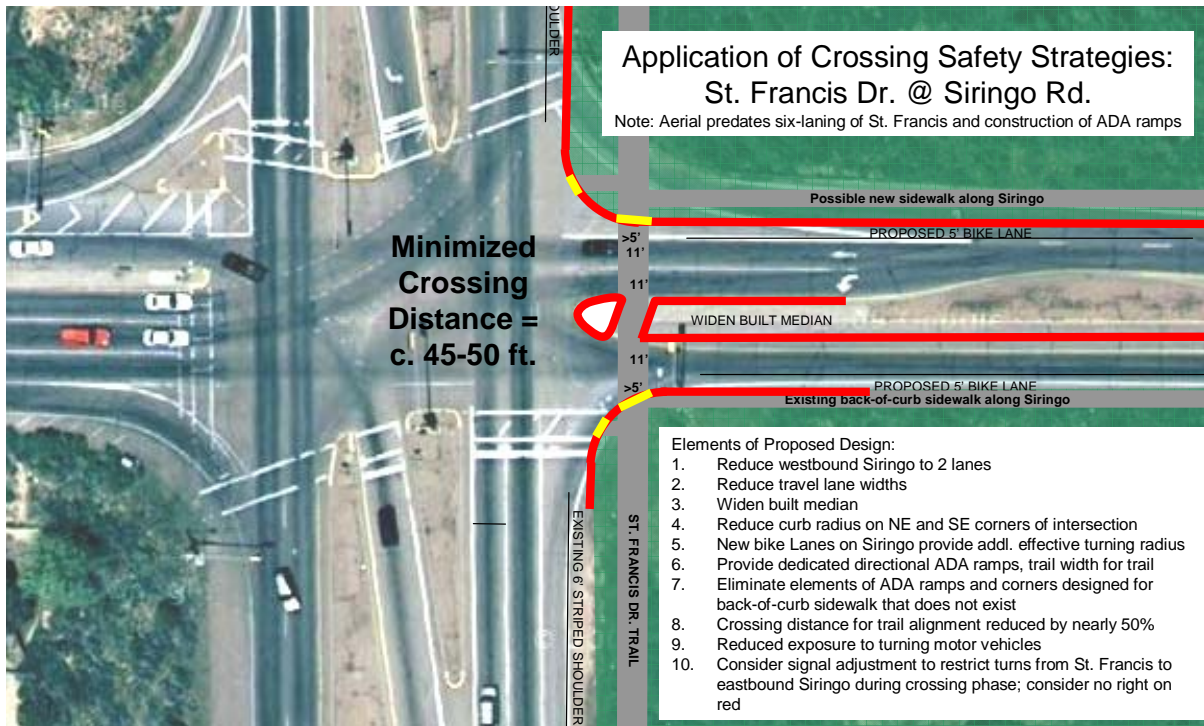
Improvements of Arroyo de los Chamisos trail crossings are a high priority listed in Phase 1 of the BMP implementation plan (Chapter VI); the following illustration depicts possible improvements at Yucca St. using some of the best practices outlined above.

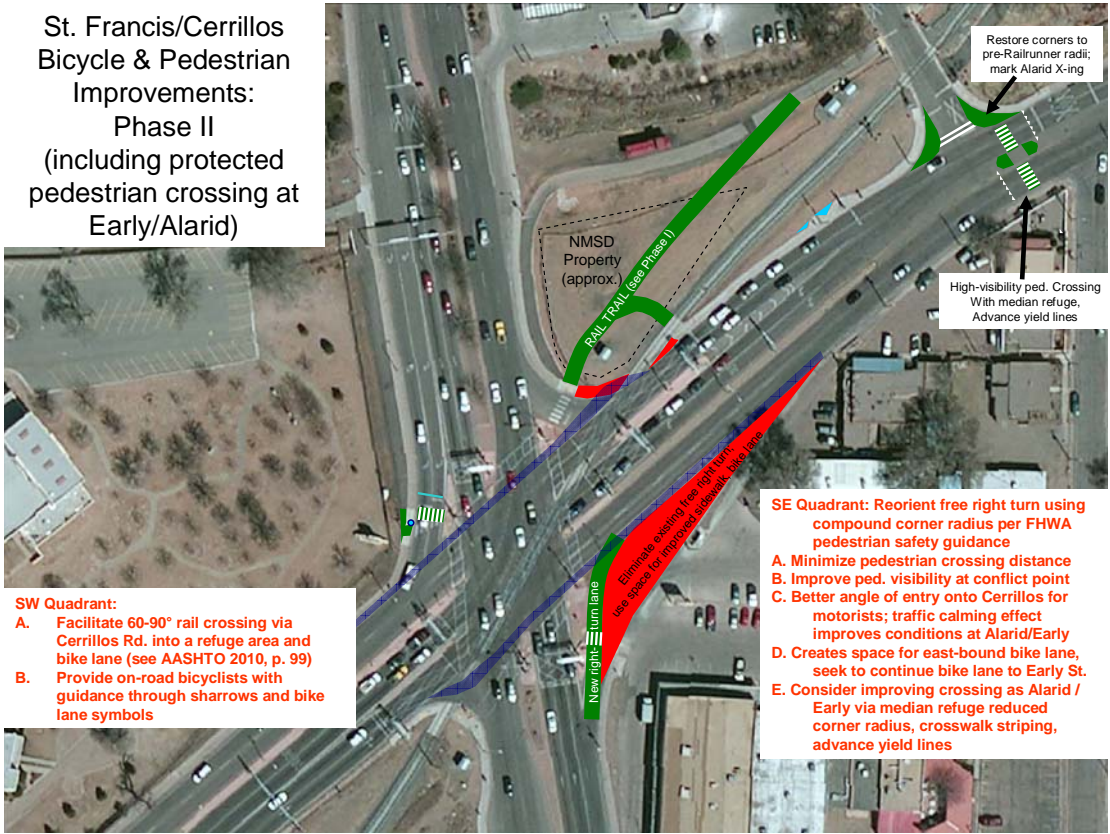
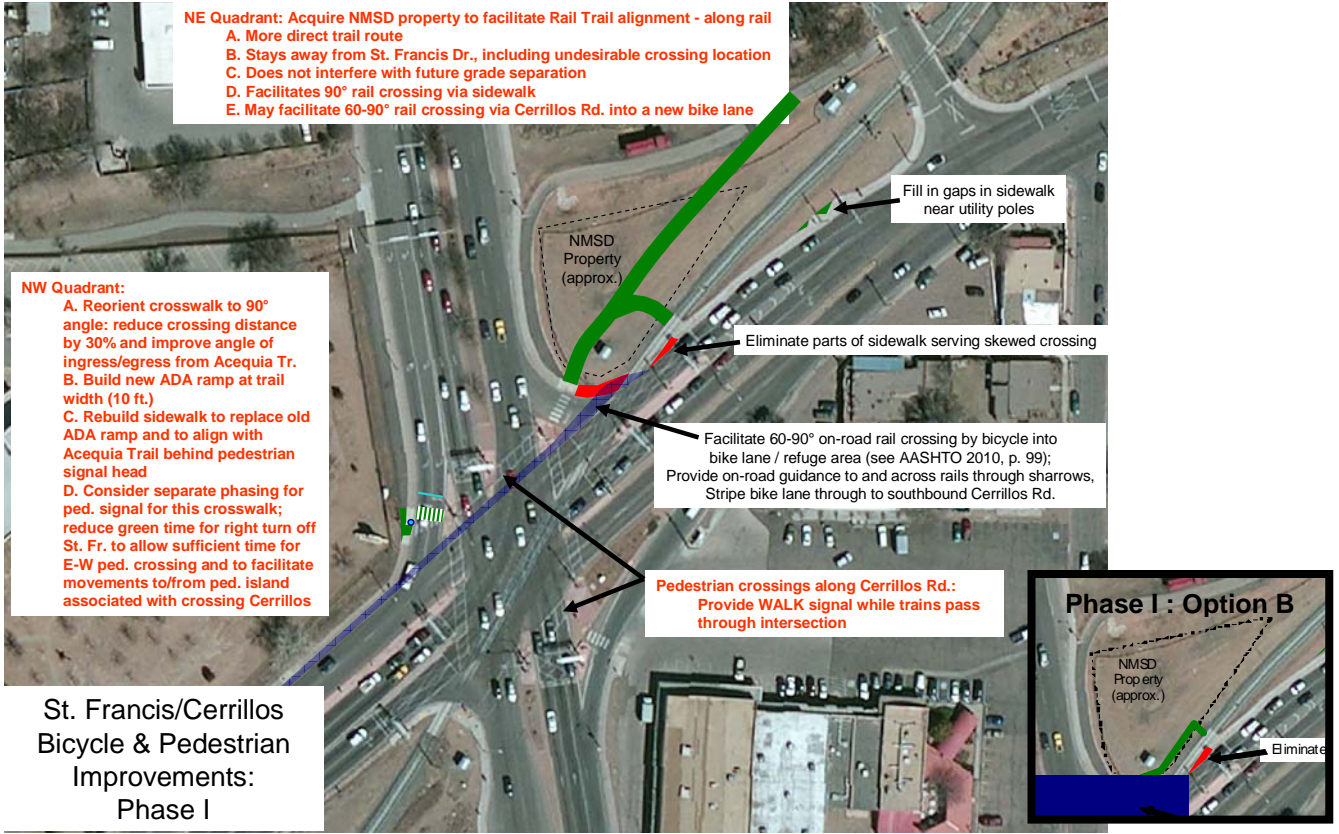


The City of Santa Fe recently eliminated a free right-turn lane from St. Michael's Dr. onto Cerrillos Rd. (see photo at right). Pedestrian safety, specifically relating to the use of the intersection by schoolchildren, was a major reason for the change. Trail crossings at signalized intersections are another major opportunity to employ this best practice for pedestrian accommodation.



The following illustrations propose measures to improve existing and planned signalized trail crossings along St. Francis Dr., including elimination or adjustment of free right-turn lanes, reducing corner radii, building or expanding median refuges, adjusting signal timing, and in the case of the intersection with Cerrillos Rd., employing strategies to reduce hazards associated with rail crossings (see next section). Each case also represents an opportunity to consider the improvement of on-road facilities for bicyclists crossing St. Francis Dr.





Best Practices: Dealing with Skewed Rail Crossings (On- and off-road)

Guidance on reducing hazards presented to bicyclists by rail crossings is provided by AASHTO’s Guide for the Development of Bicycle Facilities as well as in USDOT’s “Rails-with-Trails: Lessons Learned” (see below left). Crossings of rails at a skewed angle are particularly difficult for bicyclists on trails or roadways.

Recommended strategies to deal with skewed rail crossings include:

- Seek to reroute trail or sidewalk in order to achieve 90° angle of rail crossing² (see illustration from USDOT, p. 73, below right.)
- Seek to provide space for on-road cyclists to facilitate 60-90° angle on road: “It is often best to widen the roadway, shoulder, or bike lane to allow bicyclists to choose the path that suits their needs the best. On extremely skewed crossings (30° or less), it may be impracticable to widen the shoulders enough to allow for 90° crossing; widening to allow 60° crossing or better is often sufficient. It may also be helpful to post a warning sign at these locations.³”



Rails-with-Trails: Lessons Learned

Literature Review, Current Practices, Conclusions



August 2002
FTA/MA-26/0052/04.1

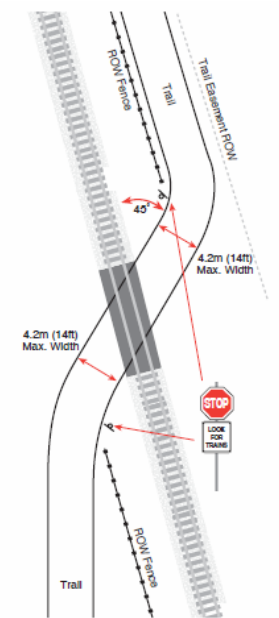


FIGURE 5.20 45° Trail-rail crossing

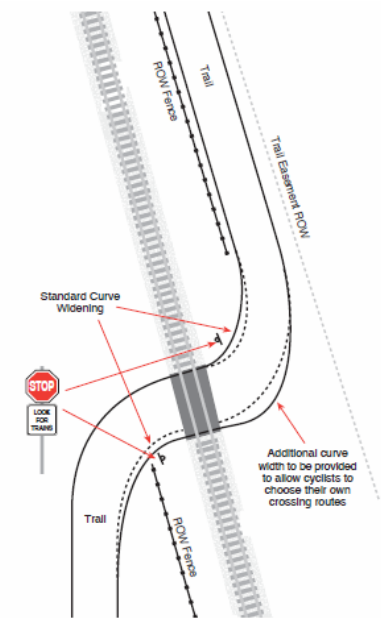


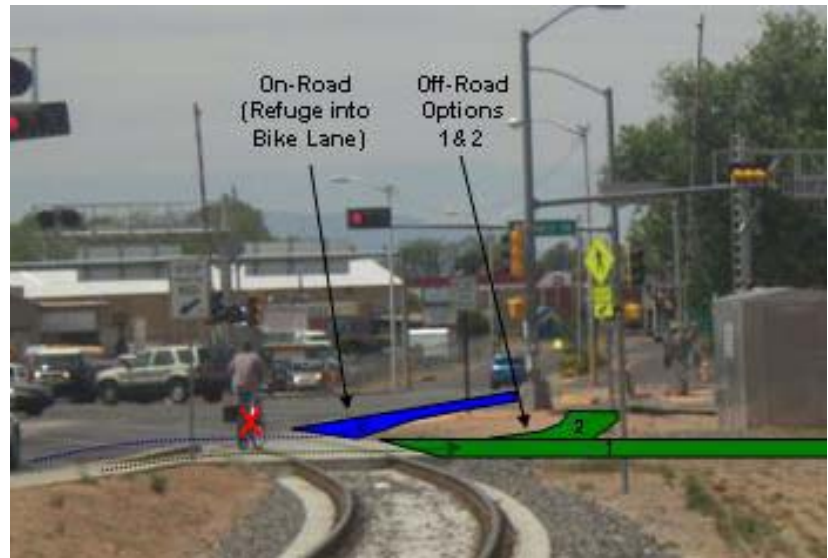
FIGURE 5.21 90° Trail-rail crossing

“Railroad-highway grade crossings should ideally be at a right angle to the rails....The greater the crossing deviates from this ideal crossing angle, the greater is the potential for a bicyclist’s front wheel to be trapped in the flangeway, causing loss of steering control. If the crossing angle is less than approximately 45 degrees, an additional paved shoulder of sufficient width should be provided to permit the bicyclist to cross the track at a safer angle, preferably perpendicularly.”

² AASHTO Guideline for the Development of Bicycle Facilities (1999); Also see USDOT, “Rails with Trails: Lessons Learned” (2002), pp. 72-73.

³ AASHTO Guide for the Planning, Design, and Operation of Bicycle Facilities (2010 Draft), p. 99, “4.12.1 Railroad Crossings.”

Conceptual images of improvements at the intersection of St. Francis Dr. and Cerrillos Rd. on p. 6 above seek to employ these on-road and off-road strategies in order to address these major hazards to Santa Fe bicyclists. In the image at right, these conceptual improvements are superimposed onto a photo showing perpendicular on-road and off-road approaches to the rail crossing at the northeast corner of the intersection.



Coloring bike lanes – typically blue, as shown here in Cambridge MA – has emerged as a useful technique for guiding cyclists through complicated intersections.

Best Practices: Bike Boulevards

Bike Boulevards are roads where an agency has taken measures to prioritize bicycle through-traffic over motor-vehicle through-traffic. Bicycle boulevards function best within a grid system where alternative parallel roads can serve the needs of motor vehicle through-traffic. Creation of bicycle boulevards benefits pedestrians as well as bicyclists.

Bicycle Boulevards are defined and characterized in new AASHTO guidance as well as NACTO.⁴ Typical bicycle boulevard treatments include:

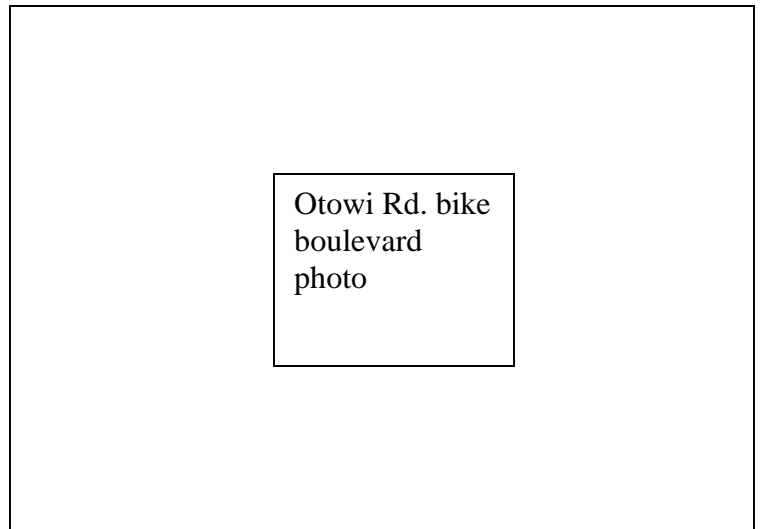
- High-visibility pavement markings
- Distinctive signage (typically purple)
- Motor vehicle traffic diverters
- Traffic calming, both on the bicycle boulevard and on cross streets
- Higher consideration of assignment of priority to the bicycle boulevard at intersections.

Some bicycle boulevard treatments can involve turning small stretches of streets into neighborhood parks.

While there are few clear opportunities to implement true bicycle boulevards in the Santa Fe area, there are several opportunities to utilize bike boulevard techniques on some streets. One exists on Otowi Rd., which acts part of the “Acequia Bikeway,” a valuable through alignment for bicycles that cannot be used by motorists, who must instead use parallel (and less bicycle-friendly) routes on Agua Fria St. or Cerrillos Rd. Segments of the Acequia Trail continue the bikeway alignment on either end, and the only significant street crossing, at



A Bicycle Boulevard in Berkeley CA: Motor vehicle through traffic is diverted to parallel streets.



Otowi Rd. already functions like a “bike boulevard” in Santa Fe. As the City completes adjacent Acequia Trail segments, it is rapidly gaining significance as the through route, compared to San Felipe St., the cross street in this photo. Among typical bike boulevard treatments described by AASHTO (2010): “At two-way stop-controlled intersections, priority assignment that favors the bicycle boulevard, so bicyclists can ride with few interruptions.” Thus assignment of right of way could be reversed at this intersection.

⁴ See AASHTO 2010 (draft), Section 4.10, “Bicycle Boulevards,” pp. 93-94; NACTO reference here.

Osage Ave., is controlled by a four-way stop. The only other street crossing on Otowi Rd. is at San Felipe, and it is at this intersection that the STOP sign orientation could be reversed to favor Otowi Rd. as the more significant through route (see photo above). In light of the changing role of Otowi Rd., stop conditions should also be re-evaluated at two intersections with uncontrolled side streets - at Apache Ave. and at Lujan St.

Elsewhere, Oñate Pl. and parallel roads to the west may be thought of as bicycle-friendly alternatives to a limited section of St. Francis Dr. between the Acequia Trail to the south and Agua Fria St. and the River Trail to the north. (This relationship gives high priority to creating bridge connections to the Acequia Trail from the dead-ends of Oñate Pl. and Kathryn St.) Because Oñate does not cleanly connect with the continuation to the north (Urioste St.), and because bicyclists can use any number or combination of parallel neighborhood streets for N-S movements (Franklin, Kathryn, Cortez, etc.) it is unnecessary to focus on a single street for “bicycle boulevard” designation. It may however be possible to improve safety and convenience of bicycle and pedestrian movements across Hickox St. in particular, which has on-street parking, through the use of bulb-outs at corners.

Albuquerque Bike Boulevard photo: Girard at Silver

Curb extensions act as traffic calming on Girard Blvd. in Albuquerque, in order to benefit users of the Bicycle Boulevard on Silver Ave. (the cross street in this photo), which runs parallel to Central Ave. near the University of New Mexico. This kind of treatment on Hickox St. would benefit bicyclists using Oñate Pl. as an alternative to St. Francis Dr.

Further west, the parallel alignment of Felipe St., Alicia St., and La Madera St., is part of a much longer north-south bikeway alignment that includes the Rail Trail. This segment provides a more direct connection between the Acequia Trail and the River Trail that would be further improved with a proposed ramp to the River Trail from Alto St. at the end of La Madera St. The route already benefits from marked school crossings at Alto St. and Agua Fria St. and a four-way stop at Hickox St. Given its growing significance as a bicycle through route, this alignment might warrant placement of STOP signs to create a four-way stop at Camino Sierra Vista as well, an action which may also serve to address general traffic calming concerns on Camino Sierra Vista.

Other streets in Santa Fe which already function, and are used by bicyclists, like bicycle boulevards include W. Manhattan from St. Francis Dr. to the Railyard, and W. De Vargas St., as a continuation of Agua Fria St., from Guadalupe St. to Don Gaspar Ave. and E. De Vargas St. Both already feature intersections where bicyclists and pedestrians can pass through but motorists must turn.

Best Practices: Contra-flow bike lanes

Contra-flow bike lanes are facilities that facilitate two-way use by bicyclists of roads that are one-way facilities for motor vehicles. When applied judiciously – where they do not create unwarranted conflicts with motorists entering or departing the roadway who would not expect a bicyclist travelling in the opposite direction of motorists – contra-flow bike lanes can create useful connections for bicyclists who would otherwise need to dismount or travel several blocks out of direction to legally get to a desired facility or destination. They can be used as an effective tool to prioritize and encourage bicycle travel over motorized travel.



“Contra-flow” travel on this street in Madison WI is permitted for bikes, busses, and emergency vehicles.

The best applications of contra-flow bike lanes make a critical connection between other bike facilities, have few or no conflicts with cross streets, driveways, or alleys, and feature signage and striping making it clear to all users that bicyclists are exempt from one-way restrictions on motorists and should be expected to be traveling against the flow of motor vehicles. A center line (typically a double yellow line) is provided to delineate the contra-flow bike lane from the travel lane that is used by all other road users (with or without a corresponding bike lane for travel in that direction). Opportunities to implement contra-flow bike lanes in the Santa Fe MPO area are presented in Chapter IV Section B (p. 51).



A very useful, easy, and virtually conflict-free application to permit contra-flow bike travel on W. San Francisco St. from the Plaza.

Best Practices for Trails: Conversion of concrete box culvert into trail underpass

This “home-grown” solution to achieve a convenient grade separation between trails and roads is highlighted in Chapter IV, p. 47. Candidate locations in the Santa Fe MPO area are listed on p. 56 (see section “iv.”).



Grade-Separated Crossing using existing culvert, Arroyo Chamiso Trail at Rodeo Rd.

Emerging Practices

Other emerging bikeway design practices have originated in Europe or Canada, or otherwise have not been addressed in AASHTO or MUTCD guidance in the United States. A new source of guidance on emerging bikeway practices in the United States is the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide (see <http://nacto.org/cities-for-cycling/design-guide/>).

Emerging Practices: Cycle Tracks

Cycle tracks are one-way or two-way bike lanes that are separated from motor vehicle lanes by a curbed median or other physical barrier. One-way cycle tracks have successfully been implemented along major roads in European cities such as Amsterdam and Copenhagen, where they are part of city-wide networks, one on each side of the street, often with their own phase at signalized intersections, and with high levels of usage. Cycle tracks have also been built as site-specific applications in some American cities such as Cambridge, Mass., New York City, and Washington DC. They can



A two-way cycle track in Washington DC, in effect converting part of 15th St. into a multi-use path..

require considerable right of way but are also possible to implement as road retrofits through adjustments to lanes, parking, or medians. They may introduce the some of the same conflicts as bicycling on sidewalks or sidepaths, particularly in areas with multiple driveways and street intersections, but also with respect to conflicts with pedestrians. They also may limit cyclists' ability to make turns or otherwise access the opposite side of a street.

Guidance on the developing use of cycle tracks in the United States is available in the. This Bicycle Master Plan's recommendation is to refrain from considering cycle tracks until applications in other American cities have demonstrated their efficacy and safety and researchers have determined how best to design cycle tracks in American cities. At such a time, specific applications in Santa Fe may be considered in locations that appear conducive to cycle tracks, given local land use, presence of cross traffic, ability to mitigate hazards presented by cross-traffic, and potential bicycle demand.

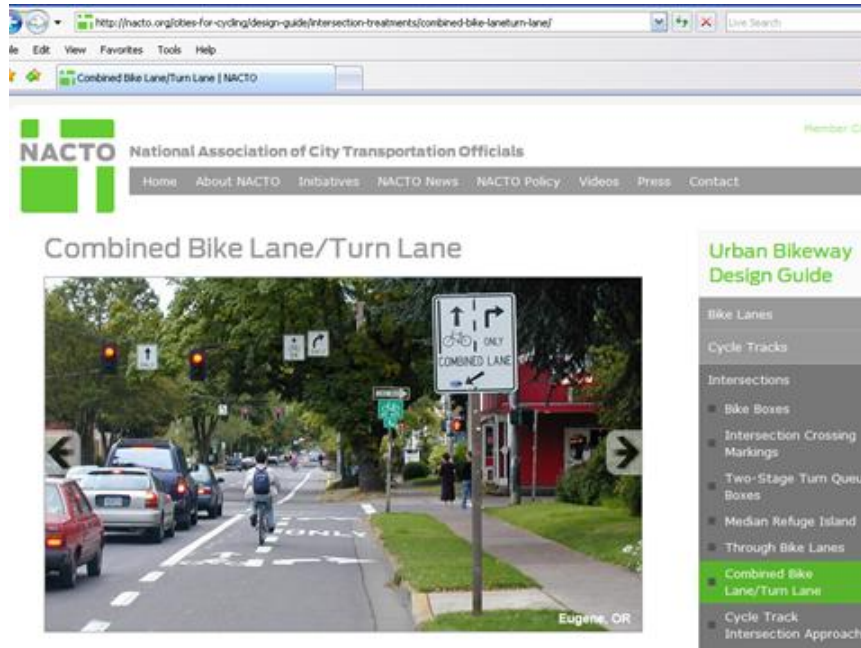
Emerging Practices: Bike Boxes

See <http://nacto.org/cities-for-cycling/design-guide/intersection-treatments/bike-box/>

1. Paragraph describing bike boxes
2. Photo from Albuquerque

Emerging Practices: Combined Bike Lane Turn Lane

See <http://nacto.org/cities-for-cycling/design-guide/intersection-treatments/combined-bike-laneturn-lane/>



A page on the NACTO web site demonstrates how various jurisdictions have combined bike lanes with right-turn lanes, a strategy that may have applications in Santa Fe on St. Michael's Dr. east of St. Francis Dr. and on Cerrillos Rd. north of Rodeo Rd. (below).

This practice might facilitate opportunities to retrofit bike lanes within constrained environments. St. Michael's Dr. (NM466) between Old Pecos Trail and Galisteo Rd., in a fairly high-speed environment, effectively already has this condition but without special markings or other treatments that are now recommended by NACTO at intersections. This location should be re-examined for possible improvements. A more clear-cut candidate for the kind of treatment described by NACTO is northbound Cerrillos Rd. north of Rodeo Rd. (see photo).

(photo of opportunity on Cerrillos east of Rodeo), possibly on St. Michael's Dr.

Appendix 11: Prioritization of Trail Segments and Selected Crossing Improvements

Rank	Impact + Feasibility	Multi-Use Path Segment	Anticipated Demand	System Connectivity	Safety Considerations	Feasibility	IMPACT + FEAS.: TOTAL
		Multi-Use Path Segment	Anticipated Demand	System Connectivity	Safety Considerations	Feasibility	IMPACT + FEAS.: TOTAL
1		RIVER TRAIL: Don Gaspar to Carrizo del Campo, w/underpasses	10	9	9	5	33
2		RAIL TRAIL: St. Francis Dr. to Cordova (along Pen Rd.)	9	8	5	10	32
2		RIVER TRAIL: Connections/Crosswalks to Carrizo, Candelario	8	8	6	10	32
4		ACEQUIA TRAIL: Grade Separated St. Francis Crossing	9	8	9	5	31
4		ACEQUIA CHILE LINE (Railroad Pk.): X-walk across Carrillos to Gilmore St.	8	7	7	9	31
4		RIVER TRAIL: Connections to Closson, La Madera, Cam. de la Congo., Cam. De Chelly	7	8	6	10	31
7		ACEQUIA TRAIL: Bridges to Orate & Kathryn	7	8	6	9	30
7		RAIL TRAIL: Cordova to Alta Vista (S. Capitol Station)	9	8	5	8	30
9		ACEQUIA TRAIL: Connection to Larragite Park (w/ X-Walk) & Agua Fria St.	5	8	6	10	29
9		NM CENTRAL/ KENNEDY LINE: SFCC to Ave. del Sur / Rancho Viejo "District Trail"	6	9	5	9	29
9		RIVER TRAIL: Carrizo del Campo to St. Francis Dr.	8	8	5	8	29
9		RIVER TRAIL: San Ysidro Crossing to Caja del Oro (pave existing trail)	6	8	5	10	29
13		ARROYO CHAPPARAL TRAIL: from Ragle Park to Zia Station via Candelero Park	7	8	5	8	28
13		ARROYO HONDO: NM599 Station to Fire Place Rd.	5	7	7	9	28
13		CSF ROADBED along E. Boundary Ditch	8	7	5	8	28
13		LA TIERRA TRAILS: Connection from Carrizo de los Montañas via NM599 Underpass	4	8	7	9	28
13		NM CENTRAL/ KENNEDY LINE: Pinon ES to Pueblos del Sol trails	6	9	5	8	28
13		RIVER TRAIL: Francis's Field to Silver Rd.	6	9	5	8	28
13		TIERRA CONTENTA (N. Arroyo Chantiso): Buffalo Grass Rd. to S. Meadows	6	10	5	7	28
20		ACEQUIA TRAIL: Oborn to Harrison	6	9	5	7	27
20		ARROYO CHAMISO TRAIL: Connection south to Richards Ave.	5	8	5	9	27
20		ARROYO CHAMISO TRAIL: from Gov. Miles to Cerrillos Rd.	5	8	5	9	27
20		ARROYO EN MEDIO TRAIL: completing route from Zia to Sawmill	7	8	5	7	27
20		ARROYO MASCARAS TRAIL: From San Francisco St. to St. Francis / Alameda	7	6	5	9	27
20		NM CENTRAL/ KENNEDY LINE: AC Trail / GCCC to Rodeo Rd.	6	7	5	9	27
20		NORTH SPINE TRAIL: Calle Mejia to Zocalo	4	8	6	9	27
20		RAIL TRAIL CONNECTIONS: Calle Somera, Monterey, Rodeo Park E.	6	8	5	8	27
20		RIVER TRAIL: Silver Rd. to San Ysidro Crossing	6	8	5	8	27
28		GAILRYBA TRAIL: East to Boulder Side Path, w/ St. M's connection	5	9	5	7	26
28		GAILRYBA TRAIL: Zia to Zia Connection	7	8	5	6	26
28		ARROYO CHAPPARAL TRAIL: from Arroyo Chamiso Trail to Ragle Park or Chapparral E.S.	6	8	5	7	26
28		E-25 NORTH FRONTAGE: Richards Ave. to Las Soledades (assuming no Richards Intrchn)	6	6	5	9	26
28		NM CENTRAL/ KENNEDY LINE: Rabbit Rd. to SFCC	5	8	5	8	26
28		NM CENTRAL/ KENNEDY LINE: Rancho Viejo "District Trail" to Eldorado	5	8	5	8	26
28		NORTH SPINE TRAIL: Alameda to Carrizo de las Cruces	7	6	5	8	26
28		PUEBLOS DEL SOL: N-S Connector across Gov. Miles (w/related improvements)	5	9	5	7	26
28		RIVER TRAIL: Caja del Oro to San Felipe	5	8	5	8	26
28		ST. FRANCIS TRAIL: if built to Zia, continue south to Albertson's	8	5	5	8	26

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Rank Impact + Feasibility	Multi-Use Path Segment	Anticipated Demand	System Connectivity	Safety Considerations	Feasibility	IMPACT + FEAS.: TOTAL
38	ACE QUIA TRAIL: Atajo to Rufina	7	6	5	7	25
38	ACE QUIA TRAIL: S Meadows Open Space to San Felipe	4	7	5	9	25
38	ARROYO DE LOS PINOS TRAIL: Through Herb Martinez Park and west to Richards Ave. Extension Trail	6	6	5	6	25
38	ARROYO HONDO (south branch) Rancho Viejo Blvd. to Richards Ave. /SFCC	3	8	5	9	25
38	ARROYO HONDO: NM14 to Rancho Viejo Blvd.	3	6	5	9	25
38	DALE BALL TRAILS: Connection to Little Tesuque River (SFNF Trails) from Sierra del Norte Area	4	8	5	8	25
38	LA TIERRA TRAILS: Connection from North Spine Trail (south of Tano Rd.)	4	8	5	8	25
38	MRC TRAIL: From Agua Fria to River Trail	3	7	5	10	25
38	MRC TRAIL: From River Trail to Rugby Field and MRC entrance & soccer fields (via NM 599 underpass)	3	7	5	10	25
38	RIVER TRAIL: Connect from Felipe to MRC Trail and NM599	4	8	5	8	25
38	RIVER TRAIL: Constelation to Water Treatment Plant	3	7	5	10	25
38	SARAH WILLIAMS TRAIL: Gonzales Rd. to Dale Ball Trails along Hyde Park Rd.	5	7	5	8	25
38	TIERRA CONTENTA (N. Arroyo Chamiso): To Camino Entrada, via S. Meadows, School Crossing	6	6	5	8	25
52	ARROYO CHAMISO TRAIL: Connection north to Richards Ave.	6	9	5	4	24
52	I-25 NORTH FRONT AGE: Pueblos del Sol to Richards Ave.	4	7	5	8	24
52	NORTH SPINE TRAIL: Alamo to Calle del Viento (@ Calle Mejia)	5	5	5	9	24
52	PUEBLOS DEL SOL TRAILS: Utility Line to Camino Carlos Rey	4	6	5	9	24
52	RIVER TRAIL: Connection to Camino Atajo	6	8	5	5	24
52	SARAH WILLIAMS TRAIL: Dale Ball Trails to Nunn's Curve (SFNF) along Hyde Park Rd.	5	8	5	6	24
58	ACE QUIA TRAIL: Lopez Lane to Atajo	5	6	5	7	23
58	ARROYO CHAMISO TRAIL: West from Nava Ade to Gov. Miles / Las Soleras	4	8	5	6	23
58	MRC TRAIL: From Soccer Fields to Caja del Oro Rd. (w/NE connection to Caja del Rio Rd.)	3	5	5	10	23
58	RAIL TRAIL: West Spur from Rodeo Rd. south along Galisteo Rd.	5	6	5	7	23
62	ARROYO CHAMISO TRAIL: Entrada Contenta to North A.C. (Tierra Contenta) Trail	4	7	5	6	22
62	ARROYO HONDO connection to Dinosaur Trail	3	6	5	8	22
62	I-25 NORTH FRONT AGE: Rail Trail /W. Spur to Camino Carlos Rey & Pueblos del Sol Trails	4	7	5	6	22
62	NM CENTRAL / KENNEDY LINE: El Morado to Galisteo	2	7	5	8	22
62	NM CENTRAL / KENNEDY LINE: Rodeo Rd. to Pinon ES	6	9	5	2	22
62	NORTH SPINE TRAIL: Camino de las Crucitas to Alamo	5	5	4	8	22
62	WEST: To La Bejuda & Cochiti via Santa Fe River / Old 66 (as alternative to I-25)	2	6	5	9	22
68	ACE QUIA TRAIL: Siler Rd. to Henry Lynch Rd. & west	6	5	5	5	21
68	ARROYO HONDO to ARROYO CHAMISO	3	5	5	8	21
68	ARROYO HONDO: NM599 Station to NM599 frontage road via I-25	4	8	6	3	21
68	ARROYO HONDO: NM599 Station Old I-25 On-Ramp to existing trail (w/ NM14 underpass)	4	8	6	3	21
68	ARROYO HONDO: under NM599 and west	4	8	6	3	21
68	CHILI LINE: Connection SW corner of La T. Trails to Pipeline Rd. Trail	4	6	5	6	21
68	LA TIERRA TRAILS: Connection from NM 599 frontage road to SW corner / Chili Line	2	6	5	8	21
68	LA TIERRA TRAILS: Connection from NM 599 Underpass west to NM599 frontage road	2	6	5	8	21
68	MRC TRAIL: From Airport Rd. to Acequia Trail to Agua Fria St.	5	5	5	6	21
68	ARROYO de los PINOS (Mus. Hill): Along SE branch of Arroyo, Corrales Rd. to Camino Lejo	4	5	5	7	21
68	NM CENTRAL / KENNEDY LINE: I-25 to Rabbit Rd.	4	6	5	6	21
81	SARAH WILLIAMS TRAIL: Ft. Marcy Park to Gonzales Rd. along Hyde Park Rd.	5	6	5	5	21
81	ARROYO DE LAS GALLINAS: from Aldea area to W. Alameda (via NM599 underpass)	2	6	5	7	20
82	DALE BALL TRAILS / DOROTHY STEWART TRAIL: Form alize connection to Upper Canyon	2	7	5	5	19
83	EAST: Canoncito Glorieta via BNSF RR, Galisteo Creek, and/or Old 66 (alternative to I-25)	2	7	5	4	18
84	NORTH: To Buckman / Otowi via Chilli RR Line, Buckman Diversion, and br Cam. La Tierra	2	8	5	2	17
84	SOUTH WEST: To Waldo Canyon / Carrillos via Railrunner line	2	5	5	5	17
86	ARROYO DE LOS PINOS (Museum Hill) TRAIL: Sidepath along Lejo to Old SF Trail	5	2	2	7	16
86	ARROYO VERDE TRAIL: Connecting Gonzales Rd. to La Vereda Palace Ave.	3	5	5	3	16

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Appendix 12: Implementation Plan, Phases A-C with Projects Grouped by Lead Agency

Type of Improvement	Improvement	Lead Agency	miles	Cost Estimate
Phase A: < 5 yrs., listed in order of Agency, and then project priority				
Multi-Use Path	RAIL TRAIL: St. Francis Dr. to Cordova (along Pen Rd.)	City Trails	0.2	\$160,000
Multi-Use Path	ACEQUIA TRAIL: Bridges to Onate & Kathryn	City Trails		\$132,400
Multi-Use Path	RAIL TRAIL: Cordova to Alta Vista (S. Capitol Station)	City Trails / NM Railrunner	0.2	\$160,000
Multi-Use Path	ARROYO CHAPPARAL TRAIL: from Ragle Park to Zia Station via Candelero Park, with tie-in to ped bridge to Zia	City Trails / Parks	0.5	\$600,000
Multi-Use Path	LA TIERRA TRAILS: Connection from Camino de los Montoyas via NM599 Underpass	City Trails	0.4	\$240,000
Multi-Use Path	NM CENTRAL / KENNEDY LINE: Pinon ES to Pueblos del Sol trails	City Trails / SFPS	0.2	\$120,000
Multi-Use Path	TIERRA CONTENTA (N. Arroyo Chamisos): Buffalo Grass Rd. to S. Meadows	City Trails	0.25	\$150,000
Multi-Use Path	ACEQUIA TRAIL: Otowi to Maclovía Park	City Trails	0.1	\$60,000
Multi-Use Path	ACEQUIA TRAIL: Maclovía Park to Hnos. Rodríguez Park	City Trails	0.2	\$126,700
Multi-Use Path	ARROYO CHAMISO TRAIL: Connection south to Richards Ave.	City Trails		\$162,000
Multi-Use Path	ARROYO EN MEDIO TRAIL: completing route from Zia to Sawmill	City Trails	0.25	\$125,000
Multi-Use Path	ARROYO MASCARAS TRAIL: From San Francisco St. to St. Francis / Alameda sidewalks, including speed table at San Francisco (Villa Alegre)	City Trails	0.1	\$86,000
Multi-Use Path	CANADA RINCON TRAIL: Calle Mejía to Zocalo	City Trails / Land Use	0.2	\$120,000
Multi-Use Path	RAIL TRAIL CONNECTION: Calle Sombra	City Trails / Land Use		\$81,000
Multi-Use Path	RAIL TRAIL CONNECTION: Monterrey	City Trails		\$54,000
Multi-Use Path	RAIL TRAIL CONNECTIONS: Rodeo Park E. (x2-3)	City Trails / Private Owners		\$81,000
Multi-Use Path	GAIL RYBA TRAIL: East to Botolph Side Path, w/ St. M's connection	City Trails	0.4	\$240,000
Multi-Use Path	GAIL RYBA TRAIL: Zia to Zia Connection	City Trails	0.2	\$120,000
Multi-Use Path	ACEQUIA TRAIL: S Meadows Open Space to San Felipe	City Trails	0.75	\$450,000
Soft-surface trail easement	LA TIERRA TRAILS: Connection from Cañada Rincon Trail (s. of Tano Rd.)	City Trails / Users	0.4+	\$0
Soft-Surf. Trail	SARAH WILLIAMS TRAIL: Gonzales Rd. to Dale Ball Trails along Hyde Park Rd.	City Trails	0.9	\$40,500
Soft-surface trail easement	ARROYO POLA: Formalize connection from Upper Canyon Rd. to Dale Ball and D Stewart Trails	City Trails	0.2	\$0
Soft-surface trail easement	ARROYO VERDE TRAIL: Connecting Gonzales Rd. to La Vereda/Palace Ave.	City Trails / Land Use	NA	\$0
Crossing	ACEQUIA / CHILE LINE (Railyard Pk.): X-walk across Cerrillos to Gilmore St.	City Streets	0.00	\$11,400
Crossing	St. Francis-Cerrillos Intersection Improvements, Phase I	City Streets / NMDOT		
Crossing	Rail Trail Crossings: Mark Alta Vista, 2nd St., Siringo; Improve Paseo de Peralta markings; consider Manhattan, Alcaldesa	City Streets	0.00	\$2,800
Bike Lanes	Siler Road Diet (under way)	City Streets	0.4	\$16,800
Bike Lanes	Galisteo: Stripe bike lanes from St. Michael's/Harkle to Hospital	City Streets	0.4	\$13,125
Bike Lanes	Galisteo: Widen by 5 ft. from San Mateo to Hospital	City Streets	0.4	\$12,500
Bike Lanes	Siringo: Study and Implement Bike Lanes where feasible (Ave de las C to Botolph)	City Streets	2.5	\$105,000
Bike Lanes	San Mateo: Study and Implement Bike Lanes where feasible (Galisteo to 2nd St.)	City Streets	1	\$42,000
Bike Lanes	Pacheco St.: Study and Implement Bike Lanes where feasible (n. of San M to Siringo)	City Streets	1	\$28,000
Sharrows	Osage: Sharrows bet. Agua Fria and San I	City Streets	0.1	\$500
Sharrows	Paseo de Peralta: Sharrows bet. Washington and Palace	City Streets	0.3	\$1,500
Crossing	St. Francis-Siringo Intersection Improvements	City Streets / NMDOT		
Crossing	Rail Trail Crossing: Consider Ped. Hybrid Signal at Cordova	City Streets / Trails		\$200,000
Crossing	Rail Trail Crossing: Consider Ped. Hybrid Signal at St. M.'s	City Streets / Trails		\$200,000
Bike Lanes	W. San Francisco: Contra-flow bike lane from plaza to Galisteo (sign only)	City streets	0.1	\$560
Multi-Use Path	RIVER TRAIL: Connections/Crosswalks to Campo, Candelario	City Parks / Watershed	0.01	\$35,800
Multi-Use Path	RIVER TRAIL: Connection to La Madera St.	City Parks / Watershed	0.02	\$54,000
Multi-Use Path	RIVER TRAIL: Connection to Cam. de la Cong.	City Parks / Watershed	0.01	\$32,400
Multi-Use Path	RIVER TRAIL: Connection to Cam. De Chelly	City Parks / Streets	0.02	\$56,400
Crossing	Arroyo Chamiso Trail Crossings: fix gates, median refuges	City Parks - Trails		\$5,000
Multi-Use Path	ACEQUIA TRAIL: Connection to Larragoite Park (w/ X-Walk) & Agua Fria St.	City Parks / Streets	0.06	\$168,700
Multi-Use Path	PUEBLOS DEL SOL: N-S Connector across Gov. Miles (w/related improvements)	City Parks / Recreation		\$218,700
Multi-Use Path	PUEBLOS DEL SOL TRAILS: Utility Line to Camino Carlos Rey	City Parks	0.2	\$120,000
Multi-Use Path	MRC TRAIL: From Soccer Fields to Caja del Oro Rd.(w/NE connection to Caja del Rio Rd.)	City Parks	0.2	\$120,000
Multi-Use Path	Park Retrofits (not covered above): ramps, etc.	City Parks / Watershed		
Multi-Use Path	Misc. City Park Connections: ramps, etc. (e.g. River Trail @ C Colon; AC Trail @ SF Place; Railyard Park minor improvements @ Site S Fe, W21, SF Clay)	City Parks		
Multi-Use Path	ACEQUIA TRAIL: Hmnos Rodríguez Park to Harrison	City Land Use / Private Dev.	0.1	DD
Multi-Use Path	I-25 NORTH FRONTAGE: Pueblos del Sol to Richards Ave.	City Land Use / Private Dev.	0.5	DD
Multi-Use Path	NM CENTRAL / KENNEDY LINE: SFCC to Ave. del Sur / Rancho Viejo "District Trail" (under way)	County / SFCC	0.2	DD
Multi-Use Path	ARROYO HONDO: NM599 Station to Fire Place Rd.	County Trails / Railrunner	0.25	\$150,000
Multi-Use Path	NM CENTRAL / KENNEDY LINE: Rancho Viejo "District Trail" to Eldorado	County OS & Trails	3	\$1,800,000
Multi-Use Path	NM CENTRAL / KENNEDY LINE: Rabbit Rd. to SFCC	County OS & Trails	0.5	\$550,000
Soft-Surf. Trail	DALE BALL TRAILS: La Piedra Connection to Little Tesuque River (SFNF Trails) from Sierra del Norte Area	County OS & Trails	0.6	\$27,000
Multi-Use Path	MRC TRAIL: From Agua Fria to River Trail (under way)	County OS & Trails	0.2	\$120,000
Multi-Use Path	RIVER TRAIL: San Felipe to Constellation, with bridge(s) over River (under way)	County OS & Trails	0.75	\$700,000
Multi-Use Path	Misc. County Trail connections: e.g. County River Trail to sidewalk along Caja del Rio & to Agua Fria Park trails	County OS & Trails		
Bike Lanes	Road Diet: Tesuque Village Rd.	County Streets	1.2	\$50,400
Bike Lanes	Widen Old Santa Fe Trail to El Gancho Rd.	County Streets	2	\$2,000,000
Bike Lanes	Road Diet: OLVH east of US285	NMDOT District 5	0.5	\$21,000
Bike Lanes	Intersection of Airport Rd./Rodeo Rd. and Cerrillos Rd. (NM14): Study and Implement Bike Lanes	NMDOT District 5 / City Streets		

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Type of Improvement	Improvement	Lead Agency	miles	Cost Estimate
Phase A and ongoing				
Wayfinding	Wayfinding: Bike Routes along Trails and Roads (see pp 39-40)	City Program TBD		
Bike Lanes	Stripe bike lanes elsewhere as recommendable (e.g. W. Alameda bet. Guadalupe and Camino Alire; Wagon Rd.; Osage s. of San I)	City Streets		
Bike Lanes	Widen other roadways to create shoulders (see text)	City, County, NMDOT District 5		
Soft-surf. Trail	COUNTY RAIL TRAIL improvements, Rabbit Rd. to New Moon Overlook	County OS & Trails		programmed
Wayfinding	Wayfinding: Bike Routes along Trails and Roads (see pp 39-40)	County Program TBD (Planning?)		
Wayfinding	Wayfinding: State Bike Routes 9 and 66	NMDOT BPE Program		
Bike Lanes	Full-width paving (selected state highways on p 35)	NMDOT District 5		
Bike Share System	Bike Share System	Partnership TBD		

Phase B: 5-10 yrs., listed in order of agency, and then project priority

Multi-Use Path	ACEQUIA TRAIL: Grade Separated St. Francis Crossing	City Trails		\$3,000,000
Multi-Use Path	CSF ROADBED along E. Boundary Ditch, with tie-in to shopping center / DV MS	City Trails	0.5	\$350,000
Multi-Use Path	ARROYO CHAMISO TRAIL: from Gov. Miles to Las Soleras	City Trails	0.1	\$60,000
Multi-Use Path	ARROYO CHAPPARAL TRAIL: from Arroyo Chamiso Trail to Chapparal E.S. (to ped bridge to north)	City Trails	0.5	\$400,000
Multi-Use Path	CANADA RINCON TRAIL: Alameda to Camino de las Crucitas	City Trails	0.2	\$120,000
Multi-Use Path	ST. FRANCIS TRAIL: If built to Zia, continue south to Albertson's	City Trails	0.1	\$60,000
Multi-Use Path	ARROYO DE LOS PINOS TRAIL: Fifth St. @ Cam. Lado to Yucca/CSF, via LaF Lib; tie-in to CSF trail	City Trails	0.4	\$290,000
Multi-Use Path	ARROYO DE LOS PINOS TRAIL: Through Herb Martinez Park and west to Richards Ave. Extension Trail	City Trails	1	\$600,000
Multi-Use Path	MRC TRAIL: From River Trail to Rugby Field and MRC entrance & soccer fields (via NM599 underpass)	City Trails	1.8	\$1,130,000
Multi-Use Path	TIERRA CONTENTA (N. Arroyo Chamiso): To Camino Entrada, via S. Meadows, School Crossing	City Trails	0.4	\$240,000
Multi-Use Path	ARROYO CHAMISO TRAIL: Connection north to Richards Ave.	City Trails / Fire Dept.	0.25	\$0
Multi-Use Path	ARROYO CHAMISO TRAIL: West from Nava Ade to Gov. Miles	City Trails / Land Use	0.5	\$300,000
Multi-Use Path	RAIL TRAIL: West Spur from Rodeo Rd. south along Galisteo Rd.	City Trails	0.5	\$300,000
Multi-Use Path	NM CENTRAL / KENNEDY LINE: Rodeo Rd. to Pinon ES	City Trails	0.8	\$480,000
Multi-Use Path	ARROYO de los PINOS (Mus. Hill): Along SE branch of arroyo, Corrales Rd. to Camino Lejo	City Trails	0.1	\$60,000
Multi-Use Path	LA TIERRA TRAILS: Connection from NM599 Underpass west to NM599 frontage road	City Trails	0.25	\$150,000
Soft-Surf. Trail Crossing	SARAH WILLIAMS TRAIL: Ft. Marcy Park to Gonzales Rd. along Hyde Park Rd. Rail Trail Crossing: Re-route trail to cross east of Rodeo with median refuge, striping	City Trails	1	\$45,000
Bike Lanes	St. Francis-Cerrillos Intersection Improvements (Phase II)	City Streets / NMDOT		
Bike Lanes	Widen Camino de las Crucitas: 5 ft., Michelle to Buckman	City Streets	0.25	\$125,000
Bike Lanes	Widen Gov. Miles Rd. from Richards to Pueblos del Sol	City Streets	0.5	\$500,000
Bike Lanes	Widen San Felipe Rd., Airport Rd. to Agua Fria St.	City Streets	0.3	\$300,000
Bike Lanes	St. Michael's Road Diet, west of St. Francis Dr.	City Streets		
Bike Lanes	Widen W. Alameda: Calle Nopal to Siler Rd.	City Streets	1.25	\$1,250,000
Multi-Use Path	RIVER TRAIL: Don Gaspar to Camino del Campo, w/underpasses	City Parks / Watershed	0.4	\$620,000
Multi-Use Path	RIVER TRAIL: Connection to Closson St.	City Parks / Watershed		\$0
Multi-Use Path	RIVER TRAIL: Camino del Campo to St Francis Dr. (widen existing trail)	City Parks / Watershed	0.4	\$213,333
Multi-Use Path	NM CENTRAL / KENNEDY LINE: AC Trail / GCCC to Rodeo Rd. (plus ramp to front entrance)	City Parks / Recreation	0.3	\$180,000
Multi-Use Path	RIVER TRAIL / Route, Patrick Smith Park to Hydroelectric Plant Park:	City Parks / Streets		\$162,100
Multi-Use Path	ACEQUIA TRAIL: Atajo to Rufina (east half: north of Las Acequias Park and west)	City Parks / Land Use	0.2	DD
Multi-Use Path	Las Acequias Phase 4: E-W trail route to the extent that it can be continued	City Parks	0.2	\$120,000
Multi-Use Path	ARROYO CHAMISO TRAIL: from s. of Gov. Miles to Cerrillos Rd.	City Land Use / Private Dev.	DD	DD
Multi-Use Path	I-25 NORTH FRONTAGE: Richards Ave. to Las Soleras (assuming no Richards intrchn)	City Land Use / Private Dev.	DD	DD
Multi-Use Path	Richards Ave. Westside Sidepath, south of Beckner and under I-25	City Land Use / Private Dev.	0.4	DD
Multi-Use Path	ACEQUIA TRAIL: Atajo to Rufina (west half: pending development)	City Land Use / Parks	0.2	DD
Multi-Use Path	RIVER TRAIL: San Ysidro Crossing to Caja del Oro (pave existing trail)	County OS & Trails	0.5	\$200,000
Multi-Use Path	RIVER TRAIL: Frenchy's Field to Siler Rd.	County OS & Trails	1	\$600,000
Multi-Use Path	RIVER TRAIL: Siler Rd. to San Ysidro Crossing	County OS & Trails	1	\$600,000
Multi-Use Path	Richards Ave. West Side Sidepath through Petches Ranch (Old Dinosaur Trail to roundabout at Santo Nino church)	County OS & Trails	0.75	\$450,000
Multi-Use Path	RIVER TRAIL: Caja del Oro to San Felipe	County OS & Trails	2	\$1,200,000
Multi-Use Path	ARROYO HONDO: NM14 to Rancho Viejo Blvd. (include fix ramp to Vista del Arroyo)	County OS & Trails	1	\$600,000
Multi-Use Path	RIVER TRAIL: Constellation to Water Treatment Plant	County OS & Trails	1	\$600,000
Multi-Use Path	RIVER TRAIL: Connection to Calle Atajo	County OS & Trails	0.2	\$370,000
Soft-Surf. Trail	SARAH WILLIAMS TRAIL: Dale Ball Trails to Nunn's Corner (SFNF Trails) along Hyde Park Rd.	County OS & Trails	0.25	\$11,250
Multi-Use Path	ARROYO HONDO connection to Dinosaur Trail	County OS & Trails	1	\$600,000
Multi-Use Path	ARROYO HONDO: NM599 Station/Old I-25 On-Ramp to existing trail (w/NM14 underpass)	County OS & Trails	0.25	\$250,000
Bike Lanes	Widen W. Alameda: e. of Chicoma Vista to NM599 frontage road	County Streets	0.375	\$375,000
Bike Lanes	Widen Ave del Sur: e. and w. of Amy Biehl School (& eliminate parking)	County Streets	0.3	\$150,000
Multi-Use Path	ARROYO HONDO (south branch): Rancho Viejo Blvd. to Richards Ave. / SFCC	County / Private Dev.	2.25	DD
Soft-Surf. Trail	NM CENTRAL / KENNEDY LINE: Eldorado to Galisteo	County / Private Dev.	10	DD
Bike Lanes	Paseo de Peralta Road Diet, where feasible	NMDOT District 5 (NM475); city streets		

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Type of Improvement	Improvement	Lead Agency	miles	Cost Estimate
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Phase C: >10 yrs., listed in order of agency, and then project priority

Multi-Use Path	CANADA RINCON TRAIL: Alamo to Calle del Viento (@ Calle Mejia)	City Trails / NMDOT	0.5	\$300,000
Multi-Use Path	ACEQUIA TRAIL: Lopez Lane to Atajo	City Trails / Land Use	0.2	\$120,000
Multi-Use Path	I-25 NORTH FRONTAGE: Rail Trail / West Spur to Camino Carlos Rey & Pueblos del Sol Trails	City Trails / Land Use	0.8	\$480,000
Multi-Use Path	ACEQUIA TRAIL: Siler Rd. to Henry Lynch Rd. & west	City Trails / Land Use	0.6	\$360,000
Multi-Use Path	ARROYO CHAMISO, west of Tierra Contenta to NM599	City Trails	0.5	\$300,000
Multi-Use Path	CANADA RINCON TRAIL: Camino de las Crucitas to Alamo	City Trails	0.4	\$246,700
Multi-Use Path	LA TIERRA TRAILS: Connection from NM599 frontage road to SW corner / Chili Line	City Trails	0.1	\$60,000
Multi-Use Path	MRC TRAIL: From Airport Rd. to Acequia Trail to Agua Fria St.	City Trails	0.4	\$240,000
Multi-Use Path	ARROYO CHAMISO TRAIL: Entrada Contenta to North A.C. (Tierra Contenta) Trail	City Land Use / Trails / Parks	2	DD
Multi-Use Path	ARROYO CHAMISO, under NM599 and west to La Cienega area	City Land Use	2	DD
Multi-Use Path	ARROYO DE LAS GALLINAS: from NM599 underpass to a street with access to W. Alameda	City Land Use	1	DD
Bike Lanes	Widen Old Santa Fe Trail from El Gancho Rd. to Two Trails Rd.	County Streets	1.75	\$1,750,000
Bike Lanes	Other Road Widening Opportunities: e.g. Rancho Viejo Blvd.	County Streets	1.75	\$1,750,000
Multi-Use Path	ARROYO HONDO to ARROYO CHAMISO	County / Private Dev.	1.25	DD
Multi-Use Path	ARROYO HONDO: NM599 Station to NM599 frontage road via I-25	County / Private Dev.	0.25	DD
Multi-Use Path	ARROYO HONDO: under NM599 and west	County / Private Dev.		DD
Multi-Use Path	CHILI LINE: Connection SW corner of La T. Trails to Pipeline Rd. Trail & Thistle Lane	County / Private Dev.	0.8	DD
Multi-Use Path	NM CENTRAL / KENNEDY LINE: Rabbit Rd. north to I-25, east to Rabbit Rd.	County / Private Dev.	0.5	DD
Multi-Use Path	ARROYO DE LAS GALLINAS: from NM599 frontage road in Aldea area to NM599 underpass	County / Private Dev.	0.1	DD
Bike Lanes	Widen Hyde Park Rd. (NM475) where possible	NMDOT District 5	2	\$2,000,000
Bike Lanes	Other Road Widening Opportunities: Bishop's Lodge Rd., Rodeo e. of St. Fr.	City / County Streets		

Phase D: Long-term, Long-range alignments

Multi-Use Path	WEST: To La Bajada & Cochiti via Santa Fe River / Old 66 (as alternative to I-25)	County OS & Trails	NA	
Multi-Use Path	NORTH: To Buckman / Otowi via Chili RR Line, Buckman Diversion, and/or Cam. La Tierra	County OS & Trails	NA	
Multi-Use Path	EAST: Canoncito to Glorieta via BNSF RR, Galisteo Creek, and/or Old 66 (as alternative to I-25)	County OS & Trails	NA	
Multi-Use Path	SOUTHWEST: To Waldo Canyon / Cerrillos via Railrunner line	County OS & Trails	NA	

Color Code

	City Trails
	City Streets
	City Parks
	County Trails & Open Space
	County Streets
	NMDOT

Phase A: 2012-2016

City Trails	\$3,308,600
City Streets	\$634,185
City Parks	\$811,000
County OS and Trails	\$3,347,000
County Streets	\$2,050,400
NMDOT	\$21,000
TOTAL	\$10,172,185

Phase B: 2017-2021

City Trails	\$7,585,000
City Streets	\$2,175,000
City Parks	\$1,295,433
County OS and Trails	\$5,481,250
County Streets	\$525,000
NMDOT	\$0
TOTAL	\$17,061,683

Phase C: 2022-2031

City Trails	\$2,106,700
City Streets	\$0
City Parks	\$0
County OS and Trails	\$0
County Streets	\$3,500,000
NMDOT	\$2,000,000
TOTAL	\$7,606,700

Total: 2012-2031

City Trails	\$13,000,300
City Streets	\$2,809,185
City Parks	\$2,106,433
County OS and Trails	\$8,828,250
County Streets	\$6,075,400

Appendix 13: References

- AASHTO** Guide for the Development of Bicycle Facilities (1999)
- AASHTO** Guide for the Planning, Design, and Operation of Pedestrian Facilities (2003)
- AASHTO** Guide for the Planning, Design, and Operation of Bicycle Facilities (2010 Draft)
- BPE Advisory Committee.** BPE Advisory Plan (2009)
- FHWA** How to Develop a Pedestrian Safety Action Plan (2009).
- FHWA** Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations (2000).
- MUTCD** Manual of Uniform Traffic Control Devices (2009).
- NACTO** Urban Bikeway Design Guide (see <http://nacto.org/cities-for-cycling/design-guide/>)
- U.S. Access Board** Accessibility Guidelines for Outdoor Developed Areas (Draft, 2009).
- USDOT** Rails with Trails: Lessons Learned (2002)